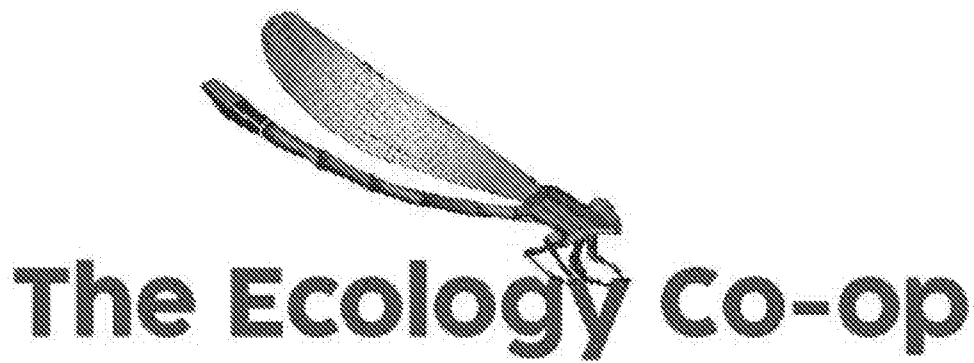
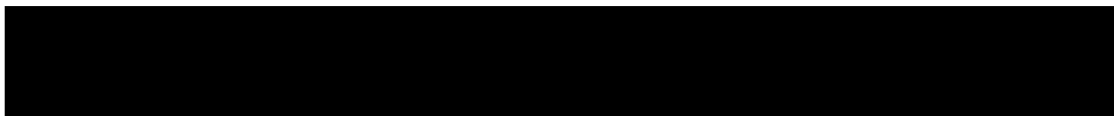




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Updated Preliminary Ecological Assessment

Land North of Sunnyside Cottages, Barnham

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Issue No	Issue Date	Author	Reviewer	Notes
Original	22/11/18	EB	PW	
REV01	20/01/20	EB	OC	Updated PEA with revised proposals on a larger footprint



Report Summary

1. The Ecology Co-op has been commissioned by Manorwood to undertake an updated ecological assessment of the Land North of Sunnyside Cottages. A Preliminary Ecological Appraisal of the site was undertaken by The Ecology Co-op on the 12th of November 2018, in relation to a different development proposal (BN/48/18/PL), which was approved conditionally on the 18th of March 2019.
2. An updated site walkover survey visit was carried out on the 10th of January 2020 to evaluate the site for habitats potentially suitable to support EU and UK protected species. The purpose of this report is to record the findings of the survey and identify potential ecological constraints for a proposal to construct three residential dwellings with associated hard and soft landscaping.
3. The updated survey was undertaken by Emma Baker BSc (Hons) MSc GradCIEEM.
4. The site is located off a shared track north of Yapton Road, in the village of Barnham, West Sussex. It is separated into three parcels of land which include: buildings, amenity grassland, bare ground, areas of ruderal habitat and scrub, as well as a wet ditch. The boundaries include fencing and hedgerows. The site is surrounded by fields of pasture, deciduous woodland, a small caravan park and residential properties. There are no nationally designated sites within 2km of the site and no internationally designated sites within 5km of the site.
5. Overall, the site holds little ecological value, predominated by short grassland, species-poor and defunct hedgerows and disused buildings, with some areas of scrub and ruderal habitat.
6. No evidence of protected/notable species was found during the survey, but the site has the potential to support reptiles and common UK species of nesting birds.
7. In order to avoid destruction of active nests, any hedgerow removal is to be timed outside of the nesting bird season (typically 1st March to 31st August), unless features are first searched by a suitably qualified ecologist and no active nests are found.
8. Without further survey work the impacts of the proposed development on reptiles cannot be fully assessed. For the development to proceed, a presence/absence survey for reptiles will be necessary. The optimal months for the survey are April, May and September but this can be undertaken at any time from April to October, provided weather conditions are suitable. If presence of reptiles is confirmed through such a survey, this can be mitigated for through a reptile translocation. As reptiles are not a European protected species, the local planning authority may condition the further work necessary.



9. The ecological value of the site can be enhanced through the planting of native-species hedgerows, wildflower meadow creation and the installation of bird and bat boxes across the site, as detailed within section 5 of this report.

This report has been prepared by The Ecology Co-operation Ltd, with all reasonable skill, care and diligence within the terms of the Contract with the client. This report only becomes the property of the client once payment for it has been received in full.

We disclaim responsibility to the client and others in respect of any matters outside the scope of the above.

This report is confidential to the client and we accept no responsibility of whatsoever nature to third parties to whom this report, or any part thereof, is made known. Any such party relies on the report at their own risk.



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1 INTRODUCTION

1.1 Purpose of the Report

A Preliminary Ecological Appraisal of the Land North of Sunnyside Cottages, Yapton Road, Barnham, Bognor Regis, West Sussex PO22 0AZ was undertaken by the The Ecology Co-op on the 12th of November 2018¹, in relation to a proposal to construct two new residential properties, with associated soft and hard landscaping. This report was submitted with a planning application (BN/48/18/PL), which was approved conditionally on the 18th of March 2019. The Ecology Co-op has subsequently been commissioned by Manorwood to undertake a repeat Preliminary Ecological Appraisal of the site; including additional land parcels not previously surveyed.

This report presents the findings of a walkover survey undertaken by Emma Baker MSc, a graduate member of the Chartered Institute for Ecology and Environmental Management (CIEEM) on the 10th of January 2020. It provides details on the potential for any protected species and/or habitats to be present at the site and an assessment of the potential ecological constraints and opportunities for a proposal to construct three properties on the site, with associated soft and hard landscaping. Recommendations for further surveys that are likely to be required to inform a planning application and Ecological Impact Assessment (EclA) of the proposal are provided where necessary, and measures to avoid, mitigate and/or compensate for adverse impacts and effects are outlined.

1.2 Background

The site is located to the north of Yapton Road towards the southern end of Barnham, a small semi-rural village 5km east of the city of Chichester in West Sussex. The central grid reference for the site is SU 96497 04139.

This is a mixed-use site measuring 0.5 hectares. The site is located off a shared track north of Yapton Road, in the village of Barnham, West Sussex. It is separated into three parcels of land including a disused sand school, storage yard and garden space, which support sheds and greenhouses, amenity grassland, bare ground, areas of ruderal habitat and scrub, as well as a narrow wet ditch. The boundaries include fencing and hedgerows. The site is surrounded by fields of pasture, deciduous woodland, a small caravan park and residential properties. Figure 1 shows the boundary of the site.

The revised proposal includes the construction of three residential dwellings on the site with associated soft and hard landscaping. Figure 2 details the proposed layout for the site.

¹ The Ecology Co-op (2018). *Preliminary Ecological Appraisal – Land North of Sunnyside Cottages*.



Figure 1. An aerial image showing the location of the site. The approximate site boundary is outlined in red. Images produced courtesy of Google maps (Map data ©2019 Google).



Figure 2. Proposed development plans for the Land North of Sunnyside Cottages, Barnham produced by Manorwood (drawing number:191224_001 – 10.01.2020).



1.3 Policy and Legislation

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

Local planning policy for Arun District Council is detailed within Appendix 2 of this report.

2 METHODOLOGY

The methodologies used for this survey are in accordance with the Guidelines for Preliminary Ecological Appraisal (CIEEM 2017)², but also considers the Guidelines for Ecological Report Writing, Second Edition (CIEEM 2017)³ and the Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM 2018)⁴.

2.1 Desk Study

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

A search of online mapping resources was undertaken to identify the location of any features of potential ecological interest including ponds within 500m (relevant to great crested newts *Triturus cristatus*), watercourses (relevant to riparian mammals and crayfish) and connectivity to woodland, scrub, and hedgerow networks (relevant to bats, dormice *Muscardinus avellanarius*) in the wider landscape around the site. The connectivity of the site to these features, buildings, and other semi-natural habitats such as grassland and heathland are also relevant to bats, great crested newts and reptiles.

The MAGIC website resource (www.magic.gov.uk) was used to identify the location of designated sites for nature conservation and European Protected Species (EPS) licences granted in relation to the survey site. Field Survey

2.2 Field Survey

A repeat site walkover survey was undertaken on 10th of January 2020 during which the habitats contained within the site were described and evaluated. Since this site is relatively small scale and contains limited semi-natural habitat diversity, it was not considered necessary to undertake

² CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal, 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

³ CIEEM (2017). *Guidelines for Ecological Report Writing, 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

⁴ 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.



comprehensive Phase 1 Habitat Mapping of the site. All habitat types contained within the site, together with the dominant botanical species and indicators of important habitat types such as ancient woodland or unimproved grasslands, have simply been listed and described where identified.

Habitats and features at the site were evaluated for their potential to support legally protected species and/or species of conservation interest. In addition, 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. Any site-specific limitations to the survey, e.g. access constraints or seasonal constraints are set out in section 3.12.

2.3 Badgers

Badgers *Meles meles* exploit a range of habitats, including gardens, coniferous woodland, deciduous woodland, mixed woodland and arable land. They live in an underground system of tunnels and nesting chambers, known as a sett, with territories ranging from 30ha to 150ha or more. Habitats within the site and surrounding areas were broadly assessed for their potential to support badgers. Any signs of badger activity, for example setts, footprints, latrines, well-worn paths and foraging marks, were recorded.

2.4 Bats

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.

Trees, buildings, and other structures were broadly assessed for their potential to support roosting bats and further surveys are recommended as appropriate.

The potential for roosting bats for each feature, or group of features was assessed as either negligible, low, moderate, or high, in accordance with the Bat Conservation Trust Survey Guidelines (Collins, J.(ed.) (2016)⁵. Any evidence confirming the presence of bats that was found was clearly recorded including photos and samples (e.g. droppings) where appropriate.

The site was also assessed for its potential to support foraging and/or commuting bats and further surveys recommended where necessary.

2.5 Breeding Birds

Birds can use a wide range of natural and artificial habitats when breeding, including trees, hedgerows,

⁵ Collins, J.(ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London.



fields, houses and garden sheds. The habitats contained within the site and adjacent areas were broadly assessed for their potential to support important bird species/assemblages, and breeding birds. Any birds identified during the site visit were recorded. Special attention was paid to notable species such as red-listed Birds of Conservation Concern (Eaton *et al.* 2015)⁶ and those species afforded special protection on Schedule 1 of the Wildlife and Countryside Act (1981). Further surveys are recommended as appropriate.

2.6 Dormice

Dormice are found in deciduous woodland and hedgerows, feeding on flowers, pollen, fruits, insects and nuts, favouring hazel *Corylus avellana* and honeysuckle *Lonicera periclymenum* for food and as bedding. The site was broadly assessed for its potential to support dormouse. This included use of on-line mapping resources to assess the surrounding area for connectivity to large blocks of woodland, scrub and extensive hedgerow networks.

Further surveys are recommended as appropriate in accordance with best practice guidance (Bright *et al.* 2006)⁷.

2.7 Great Crested Newt

Great crested newts breed in ponds during the spring and spend the rest of the year feeding on invertebrates in woodland, hedgerows, marshes and tussocky grassland. A desk study was undertaken to identify ponds and wet ditches within 500m of the site that might support breeding great crested newts. Where access permission was granted, or ponds could be viewed from public roads or footpaths, the ponds were assessed for their potential to support great crested newts using the Habitat Suitability Index (HSI) (Oldham *et al.* 2000)⁸. The value of the site for terrestrially foraging great crested newts and any features that might be used by hibernating newts has also been assessed.

Further surveys are recommended as appropriate, in accordance with best practice guidance (English Nature 2001)⁹.

2.8 Reptiles

Habitats on the site were broadly assessed for their potential to support reptiles. Particular attention was paid to those features that provide suitable basking areas (e.g. south-facing slopes), hibernation sites (e.g. banks, walls, piles of rotting vegetation) and opportunities for foraging (rough grassland and

⁶ Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, Leigh., Musgrove, A., Noble, D., Stroud, D., Gregory, R. (2015) *Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man*. British Birds 108, pp 708-746.

⁷ Bright, P., Morris, P. and Mitchell-Jones, T. (2006). *The dormouse conservation handbook 2nd Ed.* English Nature, Peterborough.

⁸ Oldham, R.S., Keeble, J., Swan, M.J.S. and Jeffcote, M. (2000). Evaluating the suitability of habitat for the great crested newt (*Triturus cristatus*). *Herpetological Journal* 10, 143-155.

⁹ English Nature (2001). *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.



scrub). 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 any of these habitats, whereas smooth snake *Coronella austriaca* and sand lizard *Lacerta agilis* have much more restricted and isolated populations on lowland heathland and sand dunes.

2.9 Riparian Wildlife

Any watercourses identified during the desk study or field survey were assessed for their suitability to support otter *Lutra lutra*, water vole *Arvicola amphibius* and American mink *Neovison vison*. Suitable habitat includes grassy banks along slow-moving rivers, ditches, streams, lakes, ponds, canals, as well as marshland and upland. Signs to look out for include faeces, latrines, feeding stations, burrows, footprints and runs or pathways.

2.10 Other Notable Species

The site habitats were broadly assessed for their potential to support species of principal importance for nature conservation (Section 41 NERC Act 2006) and other notable species. This includes mammals such as harvest mouse *Micromys minutus*, hedgehog *Erinaceus europaeus*, brown hare *Lepus europaeus*, and many bird species. The site was broadly assessed for its potential to support important invertebrate assemblages with particular attention paid to features such as standing deadwood, wet flushes, bare earth banks and botanically rich areas.

2.11 Impact Assessment Methodology and Mitigation

The assessment of ecological impacts and mitigation recommendations in this report follow CIEEM Guidelines for Ecological Impact Assessment (EclIA)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'.

2.11.1 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 3):

- 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 ecological assessment. 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. Similarly, irreplaceable habitats such as ancient broadleaved woodland are considered as ‘important features and included in ecological assessment. The level of importance will vary depending on the size of the habitat parcel, its distribution and abundance at different 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 ecological assessment and it should be reasonable to assume that if a feature is not mentioned, it is not ecologically important.

2.11.2 Significance of Impacts and Effects

In accordance with EclA (CIEEM 2018)³ a significant effect is defined as “an effect that either supports or undermines biodiversity conservation objectives for important ecological features”. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy). The effects may be described as significant at a range of geographic scales as defined above. 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

This report has only sought to describe in detail the impacts that are likely to be significant. Impacts that are either unlikely to occur, or if they did occur are unlikely to have a significant effect have been discounted or ‘scoped out’ at an earlier stage. Effects on the conservation status of ecological features are only assessed in detail if they have a high enough value (local or above) and impacts upon them may be a material consideration in decision-making in terms of legislation and planning policy. Impacts on features below local value are categorised as of neutral significance and are not considered further. However, where it has not been possible to robustly conclude that there are no significant effects (due to insufficient survey data or scientific research for example), then the precautionary principle will be applied and a significant effect is assumed.

2.11.2 The ‘Mitigation Hierarchy’

The assessment of the significance of an impact 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 impacts and 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 impacts and effects are unavoidable.

When residual significant adverse impacts and effects remain after all practicable measures to avoid and/or minimise these 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 development. These measures are intended to ensure that the proposed development contribute towards national and local biodiversity objectives.

3 BASELINE CONDITIONS

3.1 Designated Sites

There are no designated sites within the zone of influence from the site and therefore sites designated for nature conservation are unlikely to be a consideration for the proposed development. There is Priority Habitat Deciduous Woodland 70m west of the site, 300m east of the site.

There are no granted EPS licenses for mitigation projects within 1km of the site boundaries.

3.2 Habitats

The site is separated into three parcels of land, including a disused sand school, a storage yard and a garden space.

Disused Sand School

Short ephemeral vegetation is still present across the sand school area (see Photograph 1) and is dominated by rough hawk's-beard *Creppis biennis*, with an abundance of Yorkshire fog *Holcus lanatus*, with an occasional presence of white clover *Trifolium repens* and a rare presence of doves-foot cranesbill *Geranium molle*, bristly oxtongue *Helminthotheca echinoides*, spear thistle *Cirsium vulgare*, red dead nettle *Lamium purpureum*, daisy *Bellis perennis*, common fleabane *Pulicaria dysenterica*, germander speedwell *Veronica chamaedrys*, ribwort plantain *Plantago lanceolata*, ragwort *Jacobea vulgaris*, bramble *Rubus fruticosus* and great mullein *Verbascum thapsus*. Within this habitat is a small bonfire pile (see Photograph 2), and at the western end is an area of bare ground and rubble which was previously grassland and ruderal habitat (see Photograph 2), as well as a small greenhouse, discussed in detail in section 3.4

South of this is a large greenhouse currently used as storage space (see section 3.4 for more detail) bordered to the south by an area of improved (see Photograph 3) with an abundance of Yorkshire fog, cocks-foot *Dactylis glomerata* and meadow grass species *Poa* spp., a frequent presence of dandelion *Taraxacum officinale*, white clover and dove's-foot cranesbill, an occasional presence of giant fescue



grass *Festuca gigantea*, bristly oxtongue, red dead-nettle and yarrow *Achillea millefolium* and a rare presence of daisy. At the eastern end of the grassland there is one juvenile blackthorn *Prunus spinosa* tree. Along the southern wall of the green house is a thin strip of longer vegetation including broad-leaved dock *Rumex obtusifolius*, common groundsel *Senecio vulgaris*, rosebay willowherb *Chamaenerion angustifolium*, small mallow *Malva parviflora*, cleavers *Galium aparine* and lesser burdock *Articum minus*.

Running along the northern wall of the greenhouse is ruderal habitat (see Photograph 4) and small amounts of scrub dominated by common nettle *Urtica dioica* and bramble, with a frequent presence of rough hawk's-beard and less burdock, with a rare presence of common winter-cress *Barbarea vulgaris*, pendulous sedge *Carex pendula* and spear thistle, lesser burdock with one sycamore *Acer pseudoplatnus* sapling. Bordering the greenhouse to the east is an area of ruderal habitat (see Photograph 4), with multiple rabbit holes. This is dominated by common nettle *Urtica dioica*, with an occasional presence of bramble and a rare presence of cleavers.

The northern boundary of this area is formed by a defunct species-poor hedgerow atop a low bank (see Photograph 5) including ornamental species shrubs, bay laurel *Laurus nobilis*, cherry laurel *Prunus laurocerasus* saplings and two juvenile blackthorn trees. Just south of the bank is an area of developing ruderal habitat, including bramble, cleavers, hemp agrimony *Eupatorium cannabinum*, nettles and creeping cinquefoil *Potentilla reptans*. The southern and western site boundaries are bordered by the private access road (see Photograph 6).

The northern end of the eastern boundary originally included a row of cypress *Cupressus* sp. trees (see Photograph 7), which have since been removed, as they were in a dangerous condition. To the south, this transitions into a wet ditch running north to south (see Photograph 8) that was dry at the time of the original survey. It is approximately 1m wide and 1m in depth and runs underground through a drainage system at the north and southern ends. Vegetation has colonised the ditch including watercress *Nasturtium officinale* and hemlock water dropwort *Oenanthe crocata*. Within the banks and on the western bank were a number of small mammal holes which are discussed in detail within section 3.3. On the eastern bank is an abundance of bramble and common nettle, with a frequent presence of spear thistle *Cirsium vulgare* and common winter-cress, and a rare presence of black nightshade *Solanum nigrum*, bristly oxtongue, cleavers, red dead-nettle, small mallow and common burdock, as well as a small fallen crack willow *Salix fragilis* tree.

Storage Yard

West of the sand school is a storage yard comprising of tightly-mown amenity grassland and tarmac. It houses two buildings which are described in detail in section 3.4, a shipping container and multiple caravans (see Photograph 9). It is bordered to the west and north by a wooden panel fence and cypress hedgerow approximately 3m in height and to the south by a yew *Taxus baccata* hedgerow of the same height. The grassland includes an abundance of creeping bent *Agrostis stolonifera* and meadow grass species, with an occasional presence of scarlet pimpernel *Anagallis arvensis*, daisy, forget-me-not *Myosotis* sp., creeping thistle *Cirsium arvense*, common nettle, red dead nettle, dove's-foot cranesbill, common stork's-bill *Erodium cicutarium* creeping buttercup *Ranunculus repens*, bristly oxtongue, ground ivy *Glechoma hederacea*, cleavers, ragwort, thyme-leaved speedwell *Veronica serpyllifolia* and a rare presence of green alkanet *Pentaglottis sempervirens*. In the south-western corner of the site is



an old flower bed with two cherry laurel shrubs and some box *Buxus* sp..

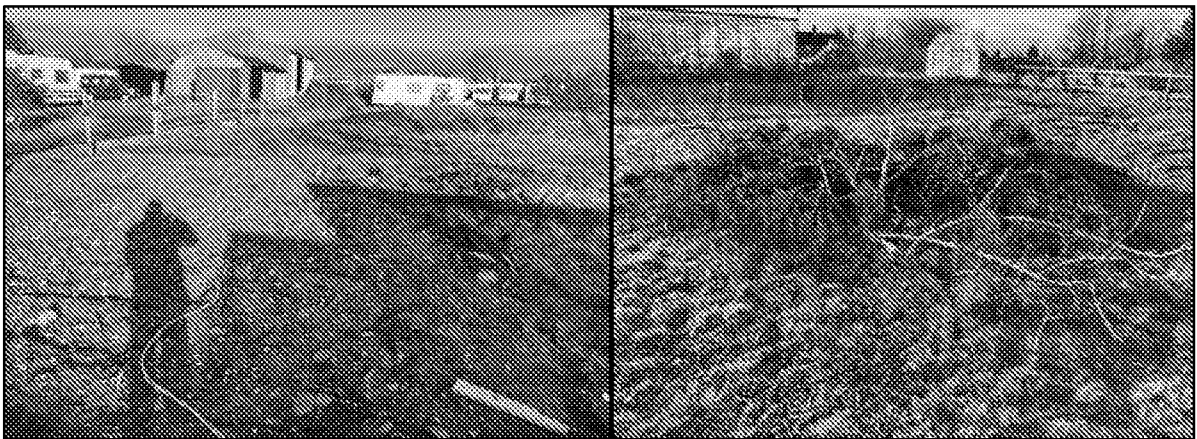
Garden

South of the storage yard is a garden space, bordered by a wooden panel fence and dense yew hedgerow approximately 3m in height (see Photograph 10). There are three buildings within the garden space, which are discussed in detail in section 3.4. The garden space is entirely regularly mown amenity grassland, predominated by meadow grass, with a rare presence of selfheal *Prunella vulgaris*, ground ivy, daisy, red dead nettle, bristly oxtongue, common nettle, dove's-foot cranesbill, cleavers, scarlet pimpernel and creeping buttercup.

Overall, the habitats contained by the site are considered to be important at the site level only. The hedgerows bordering the site are species-poor/defunct and do not meet the S41 criteria.



Photograph 1. View north-westwards across disused sand school.



Photograph 2a & 2b. Left image: bonfire pile at the centre of the disused sand school. Right image: previously ruderal habitat and establishing vegetation is now bare ground and rubble.



Photograph 3. View south-eastwards across amenity grassland south of the large greenhouse.



Photograph 4a & 4b. Left image: View south-west along scrub on the northern wall of the large greenhouse. Right image: view southwards along scrub and ruderal habitat east of the large greenhouse.



Photograph 5. View westwards along defunct hedgerow with developing scrub.



Photograph 6. View southwards along shared tarmac driveway, running the western site boundary.



Photograph 7. View northwards along area which was previously a line of cypress trees.



Photograph 8. View southwards along wet ditch to the east of the large greenhouse.



Photograph 9. View north-westwards across the storage yard area which bare ground and tightly-mown amenity grassland.



Photograph 10. View southwards across the garden space with tightly-mown amenity grassland and yew hedgerow.



3.3 Badgers

There are multiple small mammal holes within the western bank of the wet ditch and the bank forming the northern boundary of the sand school. These holes are small and belong to rabbits, which were observed on the site, as well as digging and their droppings.

No signs of any badger activity were seen during the survey assessment, though there are habitats of value for this species within the site and surrounding landscape. It is likely that if any setts were situated within 30m of the site boundary, then some evidence of badger activity would have been observed.

Records of badgers are not provided by SxBRC, due to the sensitive nature of this information.

The site is considered to be of **negligible** importance to badgers.

3.4 Bats

There were no mature trees on the site. There are seven buildings on the site (see Figure 1) including two greenhouses and an assortment of sheds, which are described in Table 1 below.

Table 1. Assessment of potential roost features associated with building at the Land North of Sunnyside Cottages.

Building section	Description of features	Assessment of potential (Collins 2016)
Building 1	This is a large disused greenhouse (see Photograph 11) with a metal frame and thin glass panels. It is open to the elements and offers no opportunities for roosting bats.	'Negligible' bat roost potential
Building 2	Small disused greenhouse with a metal frame and thin glass panels, which is open to the elements and offers no opportunities for roosting bats (see Photograph 11).	'Negligible' bat roost potential
Building 3	Small dilapidated shed within the storage area of the site (see Photograph 12), with single skin shiplap walls and a bitumen roof. This is well lit by windows.	'Negligible' bat roost potential
Building 4	Outbuilding within the storage area of the site (see Photograph 12). Constructed from single-skin corrugated metal bent tightly over plywood. There were no gaps present.	'Negligible' bat roost potential
Building 5	Shed within the south-eastern corner of the garden space with single-skin shiplap walls and a single-skin bitumen roof (see Photograph 13). There were no gaps present within the shiplap or at the eaves, meaning there are no access points for bats. There are windows, making it well-lit inside.	'Negligible' bat roost potential
Building 6	Summerhouse within the south-eastern corner of the garden space (see Photograph 13) with single-skin shiplap walls and a single-skin bitumen roof. This is currently used, with multiple windows, making it well-lit. There were no gaps present within the shiplap or at the eaves, meaning there are no access points for bats.	'Negligible' bat roost potential
Building 7	Small summerhouse in the north-western corner of the garden space (see Photograph 13). This is currently used and is constructed from single-skin shiplap walls and a single-skin bitumen roof. It has multiple	'Negligible' bat roost potential



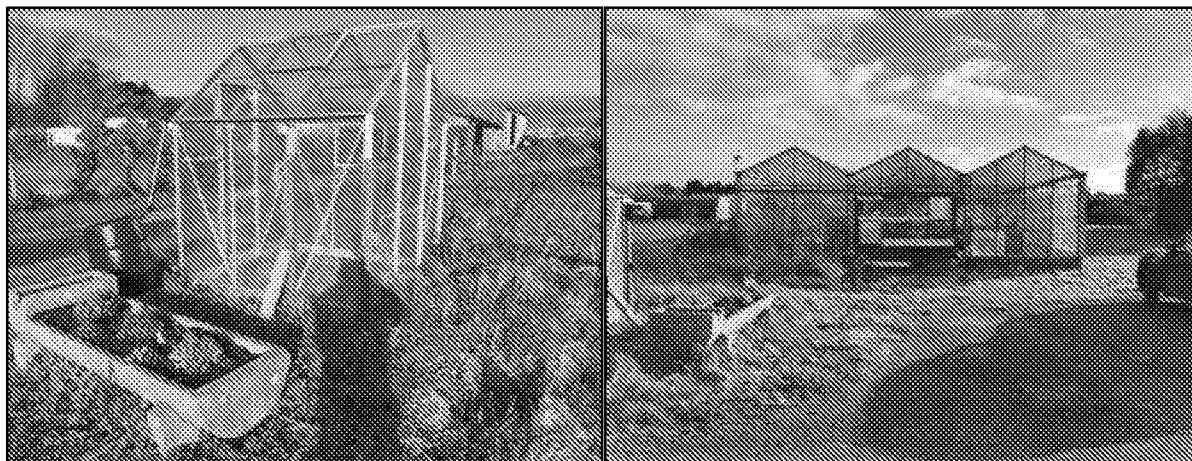
	windows, meaning it is well lit. There were no gaps present within the shiplap or at the eaves, meaning there are no access points for bats.	
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Bats may commute along the hedgerows bordering the site but given the isolation of these features within the landscape, this is less likely. Though there was little vegetation at the time of the survey, within the summer months the ruderal habitat and scrub at the site will provide a good foraging resource for bats. The site is considered to be important for commuting and foraging bats at the **site level**.

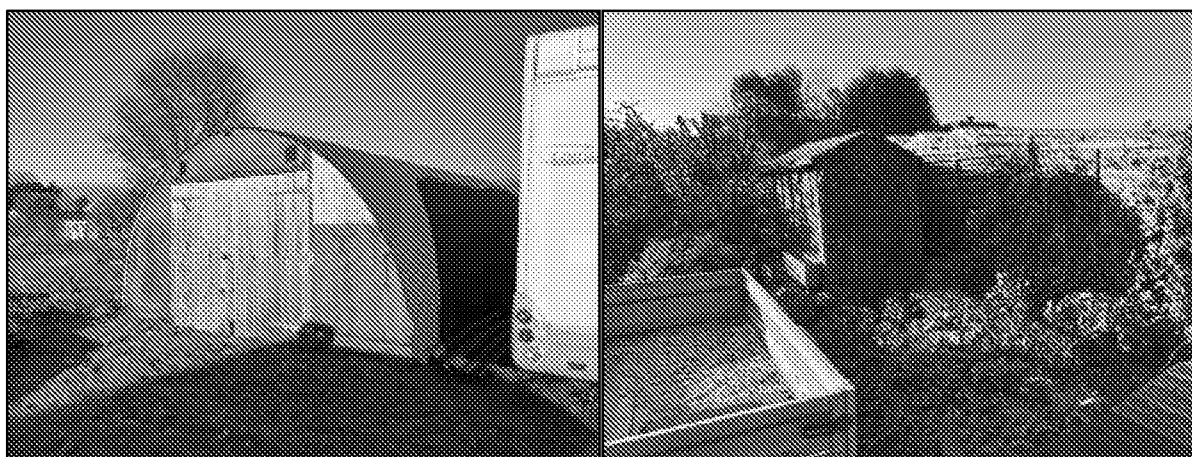
SxBRC provided 17 bat records in the search area comprising seven identified species within the search area which included: serotine *Eptesicus serotinus* – one record, common pipistrelle *Pipistrellus pipistrellus* – four records, soprano pipistrelle *Pipistrellus pygmaeus* – one record, brown long-eared bat *Plecotus auritus* – one record, nathusius's pipistrelle *Pipistrellus nathusii* – one record, noctule *Nyctalus noctula* – one record, barbastelle *Barbastella barbastellus* and unspecified bat records - three records. The closest of these was a record located 180m south-west of the site for a brown long-eared dated 1/6/2017, and a soprano pipistrelle dated 3/10/2015. The exact location of the barbastelle records was not provided by the records centre, but they are situated within the parish of Barnham.



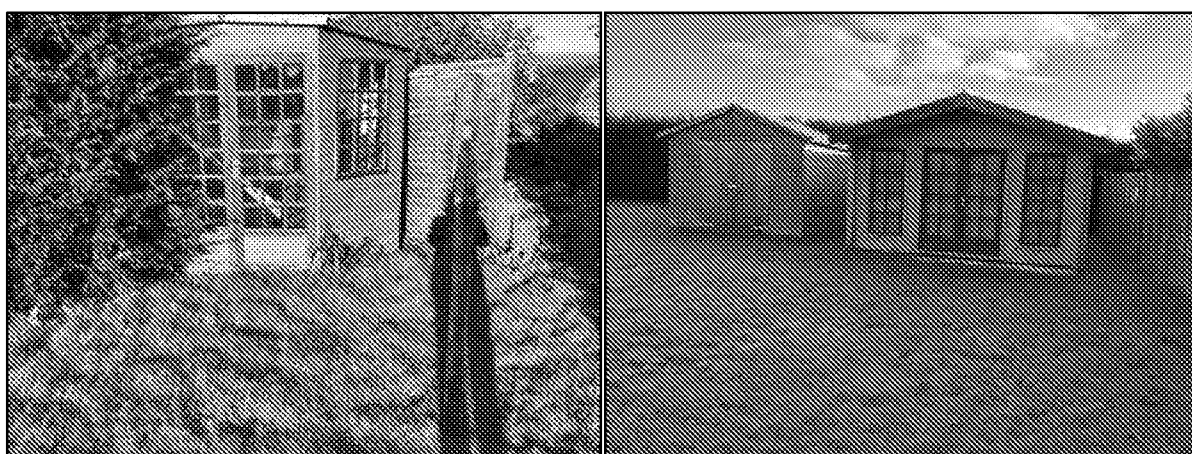
Figure 3. Aerial image indicating the location of the seven buildings contained by the site. Images produced courtesy of Google maps (Map data ©2019 Google).



Photograph 11a & 11b. Left image: Large greenhouse in the south-western corner of the site. Right image: small, disused greenhouse on the western site boundary.



Photograph 12a & 12b. Left image: Small dilapidated shed in the south-western corner of the storage area. Right image: outbuilding on the western boundary of the storage yard.



Photograph 13a & 13b. Left image: Shed and summerhouse in the south-eastern corner of the garden space. Right image: small summerhouse in the north-western corner of the garden space.

3.5 Breeding Birds

The hedgerows bordering site and single blackthorn tree may support common UK nesting birds. During



the site visit, a wren *Troglodytes troglodytes* was observed within the hedgerow forming the northern boundary of the sand school, and starlings *Sturnus vulgaris*, (S41 NERC Act 2007 and Red Listed under the Birds of Conservation Concern (BoCC)) were observed on the nearby properties.

SxBRC provided numerous bird records for the search area concerning a total of 107 species. Most of these species are relatively common and widespread, but the list includes 26 species of principle importance for conservation (S41 NERC Act 2007), and 23 species listed on Schedule 1 of the Wildlife and Countryside Act. In addition, 27 species are red listed on the BoCC.

The majority of the records returned were waterfowl and are not relevant to the proposed development site. However, the following S41 species could potentially breed within the hedgerow on the site: dunnoek *Prunella modularis*, song thrush *Turdus philomelos*.

The site is considered to be important to breeding birds at the **site level**.

3.6 Dormice

The hedgerows at the site offer limited habitat and suitable foraging opportunities for dormice. They are also isolated features and have no connectivity to woodland or further hedgerows within the wider landscape.

While no records of this species were provided by SxBRC, this species is known to be under-recorded and could occur in any suitable habitat.

However, overall, it is highly unlikely that hazel dormouse will be found on the site at any time and the site is considered to be of **negligible** importance to hazel dormouse.

3.7 Great Crested Newts and other Amphibians

There are no ponds contained by the site but there is one pond located 160m south of the site boundaries (Pond 1), the location of which is indicated in Figure 4. The scrub and ruderal habitat present on the site provides suitable habitat for great crested newts. There are also multiple wood chipping and log piles across the site, which provide suitable hibernaculum (see Photographs 14a & 14b).

Pond 1 underwent an HSI assessment on the 21st of November 2018. This pond, which is shown in Figure 4 and Photograph 15, is located within a nursery south of the site and was surrounded by grass, gravel pathways, a disused greenhouse, a hedgerow, scattered trees and a small area of scrub. The pond is lined with butyl and is used to collect rainwater that pools off the greenhouse roof. Immediately surrounding the pond is a mesh wire fence and dense bramble. Vegetation observed covering the banks includes common nettle, rosebay willowherb and young ornamental species trees. Within the water was mare's-tail *Hippuris-vulgaris*. There was also some rubbish and leaf litter within the water, and it was of a poor quality. Overall the pond was rated as having a 'below average' suitability for great crested newts with a score of 0.55. The full results of the HSI assessment are displayed in Appendix 3 of this report. Yapton Road which runs in-between the identified pond and the site is busy and curbed, decreasing



the likelihood this species will be found on the site further.

SxBRC provided 14 amphibian records in the search area. This included two records for great crested newt, two records for smooth newts *Lissotriton vulgaris*, six records for common frog *Rana temporaria* and four records for common toad *Bufo bufo*. The closest of these was a record for a great crested newt male 500m north from the boundary of the site, dated from 2012.

Given the evidence above and the lack of records for great crested newt, the site is considered to be of **negligible** importance to this species.

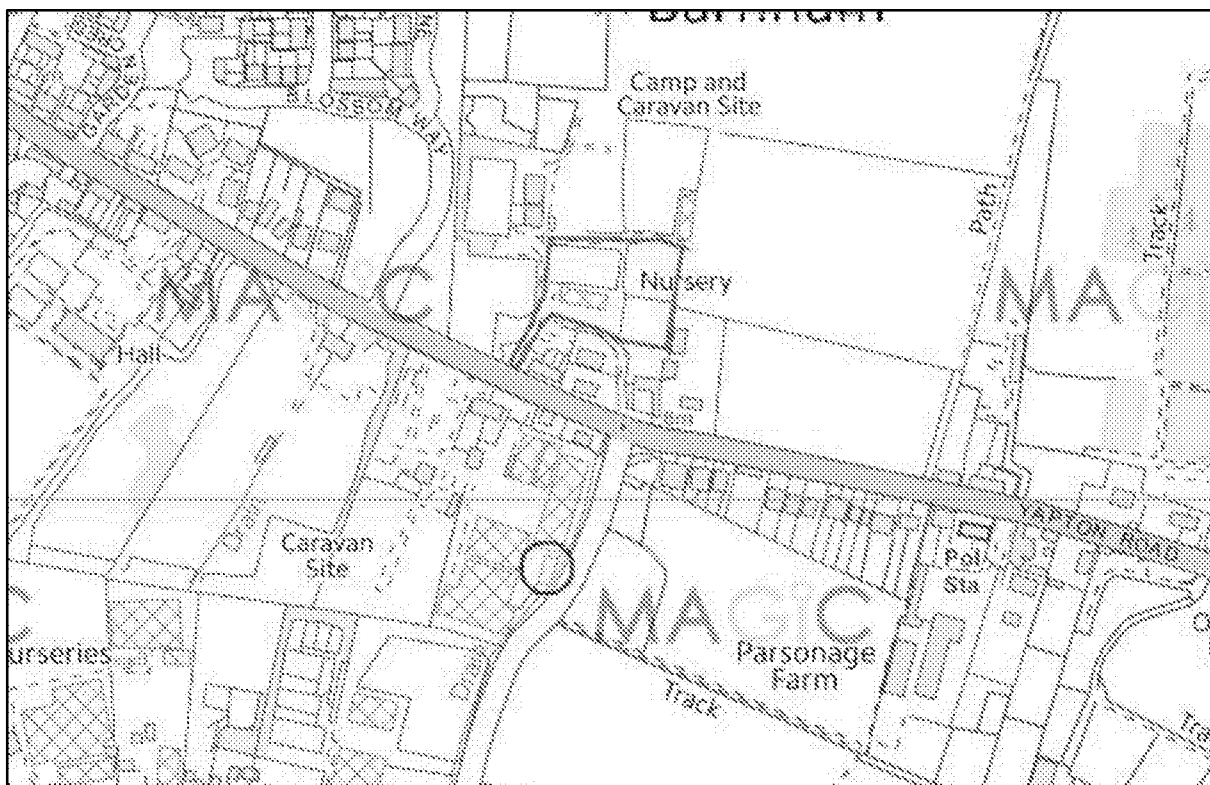
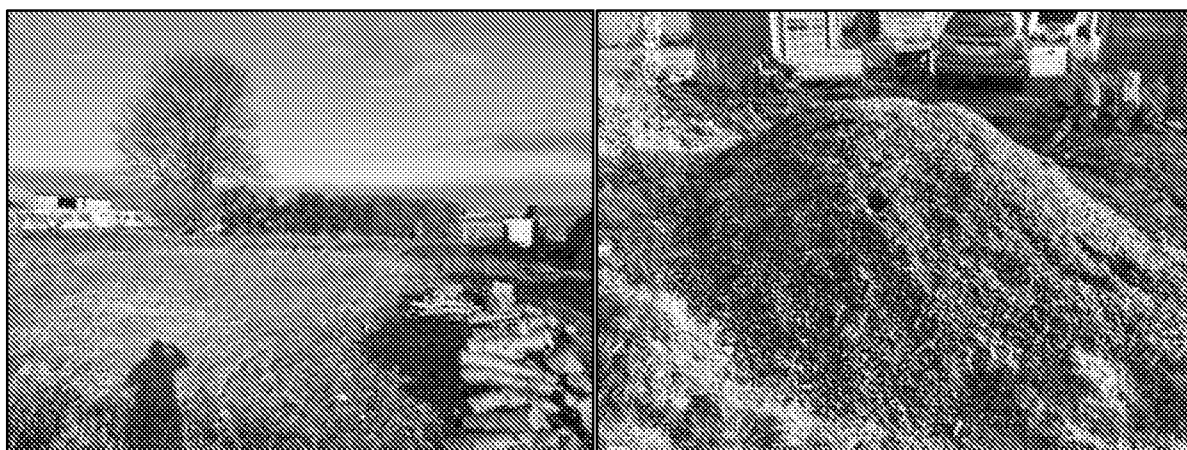


Figure 4. Map indicating the location of Pond 1, shown by the blue circle. The site boundaries are outlined in red. Images produced courtesy of Magic maps (<http://www.magic.gov.uk/>, contains public sector information licensed under the Open Government Licence v3.0).



Photograph 14a & 14b. Log piles and wood chipping piles across the site.



Photograph 15. View north across Pond 1, located south of the site within a plant nursery.



3.8 Reptiles

The scrub and ruderal habitat at the site provide highly suitable habitat for common UK reptiles, especially slow worms and common lizards. Tall vegetation such as this provides both cover from predators and a foraging resource. The log piles and wood chipping piles (see Photographs 14a & 14b) may be used as hibernaculum and reptiles may commute along the hedgerows bordering the site. Therefore, the site is considered to be important for reptiles at the **site level**.

SxBRC provided 86 reptile records in the search area including records for slow worm, grass snake and common lizard. The closest of these records was located 320m north-west from the boundary of the site and included the presence of common lizard, grass snake and slow worm, dated April 2011.

3.9 Riparian Wildlife

East of the large greenhouse is a wet drainage ditch, described in detail within section 3.2 of this report. There were no field signs of water vole found within the ditch and it is unlikely to hold water during the drier months. It is therefore highly unlikely to be used by water voles and the site is considered to be of **negligible** importance for riparian mammals.

SxBRC provided five records of water vole in the search area. The closest of these was situated 550m north-west from the boundary of the site, dated from 2014.

3.10 Invasive Non-native Species

Some cherry laurel was observed within the storage area and the defunct hedgerow on the site. Though this is not listed under Schedule 9 of the Wildlife and Countryside Act 1981, it is invasive.

3.11 Other Notable Species

Multiple records were returned for west European hedgehog *Erinaceus europeaus*, with one record returned just 71m south-west of the site boundaries, though this dates back to 2003. A more recent record was returned 550m south-west of the site, dated from June 2017. This species may commute along the hedgerows at the site and use the bonfire pile or log piles as shelter or for hibernation. The site is therefore considered to be important for this species at the **site level**.

3.12 Survey Limitations

An initial site assessment such as this is only able to act like a 'snapshot' to record any flora or fauna that is present at the time of the survey. It is therefore possible that some species may not have been present during the survey but may be evident at other times of the year. For this reason, habitats are assessed for their potential to support some species, even where no direct evidence (such as droppings) has been found.



During the HSI assessment of Pond 1 on the 21st of November 2018, the overgrown bramble immediately surrounding the waterbody made it challenging to get a full view of the pond. However, enough of the pond could be assessed to generate an accurate HSI score.

4 IMPACT APPRAISAL

4.1 Designated Sites

The site is outside the zone of influence from all designated sites and, based on this and the small scale of the development, there are no identified mechanisms of impact on designated sites as a result of the proposed development. As such the proposed development will have a **neutral** effect on designated sites.

4.2 Habitats

Given the distance of the site from the priority/ancient woodland parcels, it is highly unlikely to impact on these habitats and therefore will have a **neutral** effect on high value woodlands.

The proposed development will result in the removal of all buildings on the site, as well as much of the amenity grassland, scrub, ruderal habitat, log and wood chipping piles and the defunct hedgerow on the northern boundary of the sand school.

The wet ditch will be retained as well as the cypress and yew hedgerows bordering the storage area and garden space. New hedgerows will be planted around the new plots (see Figure 2), which will provide habitat for birds, bats and invertebrates. These new hedgerows must be native species only, and should include a minimum 50% composition of thorny species, such as hawthorn *Crataegus monogyna* and blackthorn, with the remaining mixture to contain:

- hazel
- field maple *Acer campestre*
- wayfaring tree *Viburnum lantana*
- wild privet *Ligustrum vulgare*
- dogwood *Cornus sanguinea*
- guelder rose *Viburnum opulus*
- spindle *Euonymus europaeus*

4.3 Badgers

No signs of badger activity were identified during the assessment and no badger setts are situated on or near to the proposed construction zone. No further mitigation for badgers is advised, however if any signs of digging by large animals is identified on or near to the site prior to construction, then an ecologist should be contacted for advice. Overall, the proposed development will have a **neutral** effect on badgers.



4.4 Bats

The hedgerows, scrub and ruderal habitat present on the site may be used by foraging and commuting bats as part of a wider resource across the landscape. Unmitigated, artificial lighting from the proposed development may disturb commuting and foraging bats, creating an uncertain **negative** effect at the **local level**.

As such, it is important that the potential for disturbance from artificial lights is considered. The proposed development should include an 'ecologically sensitive lighting scheme' in accordance with guidance produced by the Bat Conservation Trust (summarised in Appendix 4). With this suggested mitigation, the proposed development will have a **neutral** effect on bats, and with the recommended enhancements (see section 5), it will have a **likely positive** effect on roosting bats at the local level.

4.5 Breeding Birds

The hedgerows forming the site boundaries have the potential to support a variety of common nesting birds. It is proposed to remove the hedgerow forming the northern boundary of the sand school to create a bund. Unmitigated, this could cause damage to nests or breeding birds and their young. Unmitigated, this could have a **likely negative** effect on breeding birds at the **local level**.

Therefore, if this hedgerow is to be removed, it is important that this work is carried out outside of the nesting bird season (typically 1st March to 31st August), unless features are first searched by a suitably qualified ecologist and no active nests are found.

With the above mitigation, the proposed development will have a **neutral** effect on breeding birds, and with the recommended enhancements (see section 5), it will have a **likely positive** effect on breeding birds at the local level.

4.6 Dormice

No records for this species were returned by the records centre, and while they are under-recorded the hedgerows bordering the site are isolated features and lack suitable habitat for hazel dormice.

Therefore, overall, the proposed development will have a **neutral** effect on hazel dormice.

4.7 Great Crested Newts

Though there is valuable habitat for this species contained by the site, the nearby pond is not suitable for this species and the road forms a barrier to movement. Overall, it is therefore unlikely that they would be found upon the site at any time. Therefore, the proposed development will have a **neutral** effect on this species, and no further mitigation measures are necessary.

4.8 Reptiles

The scrub, ruderal habitat, log piles and wood chipping piles which provide suitable reptile habitat will



be removed as part of the development.

Without further survey data, it is not currently known if reptiles are present on the site, and therefore the proposed development will have an **unknown** effect on reptiles.

As such, a reptile presence/absence survey is recommended for this site. The standard approach to reptile presence/absence surveys require a minimum of eight site visits, first to set out artificial refuges ('reptile mats'), followed by seven survey visits. The optimal months for survey are April, May and September, but they can be undertaken at any time from April to October, provided weather conditions are suitable. If presence of reptiles is confirmed through such a survey, this can be mitigated for. This would likely involve a reptile translocation strategy. As reptiles are not a European protected species, the local planning authority may be able to condition these surveys and mitigation.

4.9 Riparian wildlife

While records for water vole were returned by the records centre, the wet ditch bordering the site to the east has little vegetation and no signs of water vole were found. It also appears to be an isolated feature with no connectivity to further watercourses. There is no further suitable habitat for this species on the site. It is therefore unlikely that water voles will be found within this ditch and the proposed development will have a **neutral** effect on water vole.

4.10 Invasive Non-native Species

It is likely that the cherry laurel saplings within the hedgerow bordering the sand school will be removed and should be replaced with native only species. The two cherry laurel shrubs within the storage yard should also be removed if possible. Overall, the removal of these shrubs and replacement with native species trees will have an overall **positive effect** at the **site level**.

4.11 Other Notable Species

European hedgehog may be present within the hedgerows or the log piles across the site. The hedgerow north of the sand school and these log piles are likely to be removed as part of the development, which poses the risk of disturbance or harm to this species. Given that population of hedgehogs is declining within the UK, this would have an **uncertain negative** effect at the **local level**.

It is therefore important that a suitably qualified ecologist should undertake a hand search of these features to be removed within the site. If any hedgehogs are identified in hibernation (between November and early March usually), then either the area where the hedgehog is found should remain undisturbed, or at the discretion of a suitably qualified ecologist, it may be possible to move the animal with the material that it is hibernating in to a safe location.

With this mitigation in place, the proposed development will have a **likely neutral** impact on hedgehogs.



5 OPPORTUNITIES FOR ENHANCEMENT

The proposed development represents an opportunity for habitat enhancement to benefit insects, birds, and bats. Any planting scheme could include native shrub species and flowering species known to encourage insect diversity. Such enhancement measures are in line with the recommendations of the NPPF and as such would be considered favourably when determining the planning application.

As areas of greenspace will be created within the landscaping for the development, and to enhance the site, one area could be used for wildflower meadow creation. A Meadow Mixture for Sandy Soils EM7 (see Table 2) is recommended for the site. The process for wildflower meadow creation is detailed in full in Appendix 6 of this report and a suitable location indicated in Figure 5 below.

Table 2. EM7 meadow mixture for sandy soils from Emorsgate Seeds.

WILDFLOWERS		
%	Latin name	Common name
0.5	<i>Achillea millefolium</i>	Yarrow
3	<i>Centaurea nigra</i>	Common Knapweed
1.5	<i>Daucus carota</i>	Wild Carrot
2	<i>Echium vulgare</i>	Viper's Bugloss
2.5	<i>Galium verum</i>	Lady's Bedstraw
0.5	<i>Leucanthemum vulgare</i>	Oxeye Daisy
0.2	<i>Linaria vulgaris</i>	Common Toadflax
0.5	<i>Lotus corniculatus</i>	Birdsfoot Trefoil
1	<i>Malva moschata</i>	Musk Mallow
0.5	<i>Plantago media</i>	Hoary Plantain
1	<i>Primula veris</i>	Cowslip
1.5	<i>Prunella vulgaris</i>	Selfheal
1	<i>Ranunculus acris</i>	Meadow Buttercup
2	<i>Ranunculus bulbosus</i>	Bulbous Buttercup
1.5	<i>Rumex acetosa</i>	Common Sorrel
0.5	<i>Rumex acetosella</i>	Sheep's Sorrel
0.2	<i>Scorzonoides autumnalis</i> - (<i>Leontodon autumnalis</i>)	Autumn Hawkbit
0.1	<i>Trifolium pratense</i>	Wild Red Clover
20		
GRASSES		
10	<i>Agrostis capillaris</i>	Common Bent
4	<i>Agrostis vinealis</i>	Brown Bent (w)
4	<i>Anthoxanthum odoratum</i>	Sweet Vernal-grass (w)
16	<i>Cynosurus cristatus</i>	Crested Dogstail
2	<i>Deschampsia flexuosa</i> - (<i>Avenella flexuosa</i>)	Wavy Hair-grass (w)
20	<i>Festuca ovina</i>	Sheep's Fescue
16	<i>Festuca rubra</i>	Slender-creeping Red-fescue
3	<i>Koeleria macrantha</i>	Crested Hair-grass (w)
5	<i>Phleum bertolonii</i>	Smaller Cat's-tail (w)
80		



Though the new native species hedgerow will provide new nesting bird habitat on the site, to enhance the site further for birds, bird boxes can be installed on the new buildings. Records for house sparrow *Passer domesticus* (S41 species) were returned by SxBRC, with wren and starling observed within and nearby the site. Therefore, two Starling Nest Boxes, two 1SP Schwegler Sparrow Terraces can be affixed to the new properties (see Figure 6). These should be placed at least 3m above the ground level, facing away from prevailing winds and with a clear flight path to the box. One 1ZA Schwegler Wren Roundhouse can be placed within the undergrowth in a shady place and should not be placed at height (see Figure 6).

As bats may commute or forage at the site, it would be beneficial to create new opportunities for roosting bats. Therefore, two Eco Bat Boxes (cavity box) (see Figure 6) could be placed on the south, west or east facing elevation of the proposed buildings. As best practice, the lighting scheme should be designed to minimize light spill (see Bat Conservation Trust website), around these roosting features and potential commuting routes.



Figure 5. Plan showing a suitable location for the wildflower meadow (orange block).

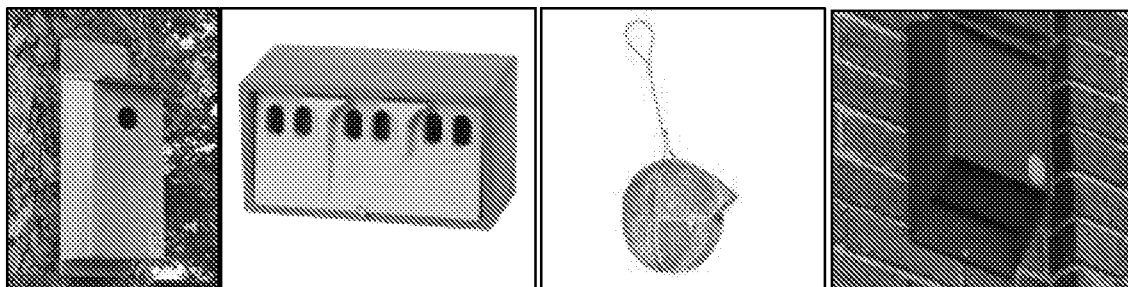


Figure 6. Left to Right: Starling Nest Box, 1SP Schwegler Sparrow Terrace, 1ZA Schwegler Wren Roundhouse and Eco Bat Box (cavity box).

6 CONCLUSIONS

Overall, the habitats to be lost as a result of the development are of low value and the enhancement opportunities identified in Section 5 of this document will result in new opportunities for nesting birds and roosting bats, and an increase in the ecological value of the site should they all be implemented in full.

Without further survey work, impact on reptiles cannot be fully assessed and a reptile presence/absence survey is recommended to inform an appropriate mitigation strategy.

Unmitigated, the construction of the three new dwellings on north of Sunnyside Cottages as set out in Figure 2 of this report will have possible impacts on bats, breeding birds, reptiles and European hedgehog. Therefore, the reasonable avoidance and mitigation measures set out within the report must be followed to ensure the protection of these animals.

Should you need any further advice on the information provided above, please do not hesitate to contact The Ecology Co-op, [REDACTED] Office:

[REDACTED]

[REDACTED]

Office:



APPENDIX 1 – Wildlife Legislation and National Planning 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 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 (for example Bechstein’s bat *Myotis bechsteinii*, Barbastelle bat *Barbastella barbastellus* and white-clawed crayfish *Austropotamobius pallipes*. Together with ‘Special Areas of Conservation’ (SPAs), designated under the Birds Directive, SACs form a network across Europe of protected areas known as the ‘Natura 2000 sites’.

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 (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 receive the highest level of protection under this regulation 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 on the integrity of the site 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.

This 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 *Satyrrium 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 landowner]. 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) created the statutory nature conservation body Natural England, and places a



statutory duty on all public bodies, including planning authorities, under Section 40, 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 of the NERC Act 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.

Protection of Badgers Act (1992)

The Badger *Meles meles* is afforded specific legal protection in Britain under the Protection of Badgers Act (1992), 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 2018)¹⁰ 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 174b, which states that council policies 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)¹¹. 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,

¹⁰ ¹⁰ HM Government (2018). National Planning Policy Framework. Department for Communities and Local Government. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/728643/Revised_NPPF_2018.pdf.

¹¹ HM Government (2005) ODPM Circular 06/05 Government Circular: *Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System*. Available online at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf.



- 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), first published in 1994, was the UK's response to the commitments of the Rio Convention on Biological Diversity (1992) until 2010, when 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), and a progress update was provided in July 2013 (Defra 2013).

'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 and species because the Government believes that local people and organisations are best placed to decide how to implement the strategy in the most appropriate way for their local area or situation.

Birds of Conservation Concern (BoCC)

In 1996, the UK's leading non -governmental bird conservation organisations listed 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 5 years and are a useful reference for determining the current importance of a particular site for birds. The most recent review was undertaken in 2015 (Eaton et al, 2015), which provides an up to date assessment of the conservation status of birds in the UK.

References

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<http://jncc.defra.gov.uk/page-1379>

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Wildlife and Countryside Act (WCA) (1981). HMSO London. Available at:
<http://www.legislation.gov.uk/ukpga/1981/69/contents>



APPENDIX 2 – Local Planning Policy

Arun District Council – Adoption Arun Local Plan 2011-2031 (July 2018)

Policy Number/Title	Policy Summary
Policy C SP1 Countryside	Outside the Built-Up Area Boundaries (as identified on the Policies Maps) land will be defined as countryside and will be recognised for its intrinsic character and beauty. Development will be permitted in the countryside where it is: a. for the operational needs of agriculture, horticulture, forestry, the extraction of minerals or the management of waste as part of a waste site allocation within the West Sussex Waste Local Plan; or b. for quiet, informal recreation; or c. for green infrastructure; or d. for the diversification of the rural economy; or e. for road and/or cycle schemes; or f. in accordance with other policies in the Plan which refer to a specific use or type of development. 7 Settlement Structure & Green Infrastructure The Council will take into account cumulative impact of development in the consideration of planning applications. To ensure better management of the rural-urban fringe in those areas where significant new development is proposed, early consideration will need to be given to landscape and biodiversity enhancement, woodland management, recreation provision and access routes.
ENV SP1 (Natural Environment)	Arun District Council will encourage and promote the preservation, restoration and enhancement of biodiversity and the natural environment through the development process and particularly through policies for the protection of both designated and non-designated sites. Where possible it shall also promote the creation of new areas for habitats and species. In relation to designated sites, development will be permitted where it protects sites listed in Tables 17.1-17.7 that are recognised for the species and habitats contained within them.
ENV DM1 (Designated Sites of biodiversity or geological importance)	a. Proposed development likely to have an adverse effect on land with the designated features of any Site of Biodiversity or Geological Importance as listed in Tables 17.1 - 17.7 or any subsequently designated sites (either individually or in combination with other developments), will not normally be permitted. Consideration will be given to the exact designated features present on the site, their scarcity/rarity and recognition of the protection offered by their existing status. Development on wildlife sites with the highest value will only be permitted exceptionally where the following can be demonstrated: i. There is no alternative solution (which shall be adequately demonstrated by the developer). ii. There are reasons of public health or public safety or iii. There are benefits of primary importance to the environment or iv. There are imperative reasons of overriding public interest. Notwithstanding the above however, the presumption in favour of sustainable development does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined. b. In determining any planning application affecting Sites of Biodiversity or



	Geological Importance the Council will ensure that the intrinsic natural features of particular interest are safeguarded or enhanced having regard to; i. The European, National or Local status and designation of the site; ii. The nature and quality of the site's features, including its rarity value; iii. The extent of any adverse impacts on the notified features of interest; iv. The need for compensatory measures in order to re-create remaining features of habitats on or off the site. c. Where appropriate the Council will ensure the effective management of designated sites through the imposition of planning conditions or Section 106 agreements as appropriate.
Policy ENV DM3 Biodiversity Opportunity Areas	Development shall: a. Retain and sympathetically incorporate locally valued and important habitats, including wildlife corridors and stepping stones b. Be designed in order to minimise disturbance to habitats Development proposals that do not reasonably address opportunities for enhancing these through their design, layout and landscaping or access/management shall not be permitted. Where a development scheme would result in a habitat loss, mitigation measures will be proposed as part of the proposed scheme and such measures agreed with the Local Planning Authority prior to the determination of any planning application. Within Biodiversity Opportunity Areas (BOAs) identified on the Policies Maps or where likely to have an impact on species or habitats within the BOAs, any application for planning permission shall include a properly conducted survey of the presence must be proposed within the planning permission.
ENV DM4 (Protection of trees)	Development will be permitted where it can be demonstrated that trees protected by a Tree Preservation Order(s), (TPO) identified as Ancient Woodland, in a Conservation Area or contributing to local amenity, will not be damaged or destroyed now and as they reach maturity, unless development: a. Would result in the removal of one or more trees in the interests of good arboricultural practice. This shall be demonstrated by the developer following the advice of a suitably qualified person which shall be guided by BS 5837 (2012). Details of any advice received having regard to BS 5837 (2012) shall be submitted, in writing, as part of a planning application; or b. Would enhance the survival and growth prospects of other protected trees; c. The benefits of the proposed development in a particular location outweigh the loss of trees or woodland, especially ancient woodland. Where planning permission is granted in any of the above instances, conditions shall be used to ensure that, for any trees which are removed as part of a development, at least an equivalent number of a similar species and age (where practical) are planted on the proposed development site. Sufficient space for replacement trees to mature without causing future nuisance or damage shall be provided. The planting of new trees shall form an integral part of the design of any development scheme. Proper provision must be made for the protection and management of trees or areas of woodland on-site when undertaking development. A management plan shall be provided as part of a planning application in accordance with BS 5837



	(2012) in order to ensure that trees are adequately protected during development and appropriately maintained in the future. Conditions for the continued protection of trees on sites shall be included in any planning permission given. Where there are existing trees on or adjacent to a development site, developers shall be required to provide: d. Land and tree surveys e. A tree constraints plan f. An arboricultural impact assessment to include a tree protection plan and arboricultural method statement These will ensure that development is planned to take a comprehensive view of tree issues at an early stage in the design process and that development works do not have a negative impact on existing trees.
ENV DM5 (Development and biodiversity)	Development schemes shall, in the first instance, seek to achieve a net gain in biodiversity and protect existing habitats on site. They shall also however incorporate elements of biodiversity including green walls, roofs, bat and bird boxes as well as landscape features minimising adverse impacts on existing habitats (whether designated or not). Development schemes shall also be appropriately designed to facilitate the emergence of new habitats through the creation of links between habitat areas and open spaces. Together, these provide a network of green spaces which serve to reconnect isolated sites and facilitate species movement. Where there is evidence of a protected species on a proposed development site, planning applications shall include a detailed survey of the subject species, with details of measures to be incorporated into the development scheme to avoid loss of the species. This involves consideration of any impacts that will affect the species directly or indirectly, whether within the application site or in an area outside of the site, which may be indirectly affected by the proposals. All surveys shall be carried out at an appropriate time of year and shall be undertaken by a qualified and, where appropriate, suitably licensed person. All developments shall have regard to Natural England's standing advice for protected species.
W SP1 (Water)	Arun District Council will encourage water efficiency measures in order to protect the District's water resources and enhance the quality of the water environment which supports a range of habitats and ecosystems. Development will be encouraged to make active use of surface water as a design feature and permitted where it identifies measures to improve and enhance waterbodies, coastal habitats or provides additional flood relief. The Council will also support development that: a. is appropriately located, taking account of flood risk and promotes the incorporation of appropriate mitigation measures into new development, particularly Sustainable Drainage Systems that reduces the creation and flow of surface water and improves water quality; 63 Water stressed areas - final classification (July 2013) b. reduces the risk to homes and places of work from flooding whilst increasing biodiversity; c. delivers a range of community benefits including enhancing the quality of life and providing greater resistance to the impact of climate change.



APPENDIX 3 – Great crested newt ‘Habitat Suitability Index’ values

Table 3. HSI calculation for pond assessed during the survey.

	Pond 1	
NGR	SU 96472 03954	
SI attribute	SI value	Notes
Location	1.00	SE England
Pond area	0.10	384m ²
Pond drying	0.50	Rarely
Water quality	0.33	Poor
Shade cover	0.80	100
Waterfowl	1.00	Minor
Fish presence	1.00	Absent
No. ponds	1.00	7
Terrestrial habitat	0.67	Good
Macrophytes	0.31	0%
H.S.I. value	0.55	‘Below Average’ suitability



APPENDIX 4 – Reducing Impacts of Artificial Light

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 on 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 Trust¹² should be considered while designing the lighting scheme. A simple process which should be followed where the impact on bats is being considered as part of a proposed lighting scheme. It contains techniques which 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 on 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
- Consider 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. Consider 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 cat's 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.

¹² Bat Conservation Trust and Institute for Lighting Professionals (2018) Guidance note 8. Bats and Artificial Lighting. <https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/>



- 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.

Further reading:

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APPENDIX 5 – Wildflower Meadow Management

A wildflower meadow should be established across the southern area of the site which will remain undeveloped. This will increase the value of this area as foraging habitat for bats, birds, reptiles and amphibians as well as pollinating insects. To establish this as a wildflower area a process of light rotavating and seeding should be employed with good ground preparation essential to the success of the wildflower meadow. The sowing process is best undertaken between late August and the end of September during mild and wet weather best suited to seedling establishment or during mid-March to mid-May when the ground has sufficient moisture and there is very little risk of frosts. The rotavating process is to create an area of largely bare ground to allow the wildflower seed mix to establish. Immediately following rotavating, a suitable seed mixture containing not less than 20 wildflower and grass species should be sown across the ground at a density of four grams per square metre. The species included must all be of native British origin. A recommended seed mixture is EM5 meadow mixture for loamy soils, which is available from Emorsgate seeds (www.wildseed.co.uk). Table 1 in section 4.11 details the composition of this mixture.

As part of on-going management, the sward should be cut and gathered to a height of approximately 5cm at least three times in its first year of establishment to control the flush of annual weeds which will grow during the first growing season. Thereafter the sward should be cut (with all cuttings removed and composted) between mid-August and late September every year. Cutting in the spring (March/April) should be included if the sward grows too vigorously. Cutting the grass sward very short prior to rotavating the ground will also help to prepare a more suitable growing base.