



The Ecology Co-op

ENVIRONMENTAL CONSULTANTS

Unit 4, Langham Stables, Langham Lane, Lodsworth, Petworth, West Sussex, GU28 9BU

Tel: 01798 861 800 – E-Mail: info@ecologyco-op.co.uk – www.ecologyco-op.co.uk

Ecological Impact Assessment

Land North of Tile Barn Farm

Author: Sophie Bradfield BSc

Reviewed by: Sam Lunn MSc ACIEEM

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The Ecology Co-operation Ltd
Registered Office: Greens Court, West Street, Midhurst, West Sussex, GU29 9NQ
Company number: 8905527

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Report Summary

1. The Ecology Co-op has been commissioned by Appleton Town Planning to undertake a Preliminary Ecological Appraisal at land north of Tile Barn Farm. A site walkover survey visit was carried out on the 8th of April 2020, to evaluate the site for notable habitats and their potential to support EU and UK protected/notable species. The purpose of this report is to record the findings of the survey and identify potential ecological constraints to a proposed new residential dwelling and access road.
2. This survey was undertaken by Sophie Bradfield BSc.
3. The site contains the northern section of a garden associated with the Tile Barn Farm property. Habitats present include tall improved grassland, a mature species-rich hedgerow, semi-mature scattered trees, priority habitat traditional orchard trees, and a single leaf-litter pile. The house and garden site is surrounded by sheep-grazed pasture, with the hedgerow continuing around the boundaries of the arable field. A pond lies 130m north-west of the site which is confirmed to have 'below average' suitability to support great crested newts, based on a survey conducted in 2018 with respect to another application. Access to conduct an updated Habitat Suitability Index assessment was denied due to the current restrictions associated with COVID-19.
4. As the grassland, hedgerow and leaf-litter pile will be directly impacted by the development a reptile presence/absence survey will be required to determine whether reptiles are using the site.
5. Additionally, precautionary mitigation must be applied for great crested newts, dormice, breeding birds, hedgehogs and stag beetles. Details of this will be provided in a separate Method Statement.
6. The plans include a new hedgerow, this must comprise of at least six native woody species to compensate for the loss of existing hedge, and the edges sown with a herbaceous border which will be informed by the reptile survey. All removed trees must be replaced at a ratio of 2:1 with native fruiting or flowering trees. To compensate for immediate losses to nesting bird habitat, six bird boxes must be placed on the retained trees.
7. The addition of a new hedgerow to the east of the site has been recommended to create wildlife corridors to other hedgerows currently proposed upon the site boundaries and to prevent fragmentation.

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.

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1 INTRODUCTION

1.1 Purpose of the Report

The Ecology Co-op has been commissioned to undertake an Ecological Appraisal of land North of Tile Barn Farm, Barnham, Bognor Regis by Appleton Town Planning. This report presents the findings of a walkover survey undertaken by Sophie Bradfield BSc on the 8th of April 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 to the development of a residential dwelling and access drive within the garden space of a residential site upon Tile Barn Farm. 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 north of Tile Barn Farm in Barnham, Bognor Regis PO22 0BL. The central grid reference for the site is SU 96455 03806.

This is a small site measuring 0.1 Ha comprising priority habitat traditional orchard trees, scattered semi-mature trees, non-native shrubs, tall grassland, a leaf-litter pile, and a species-rich mature hedgerow. Figure 1 shows the boundary of the site.

The proposed project includes development of the site to support a new residential dwelling and a new access with a visibility splay, alongside two new hedgerows to the north and east, see Figures 2-5.



Figure 1. An aerial image showing the location of the site. The approximate site boundary is outlined in red, whilst the nearest pond is identified with a blue arrow. Image produced courtesy of Google maps (map data ©2020 Google)

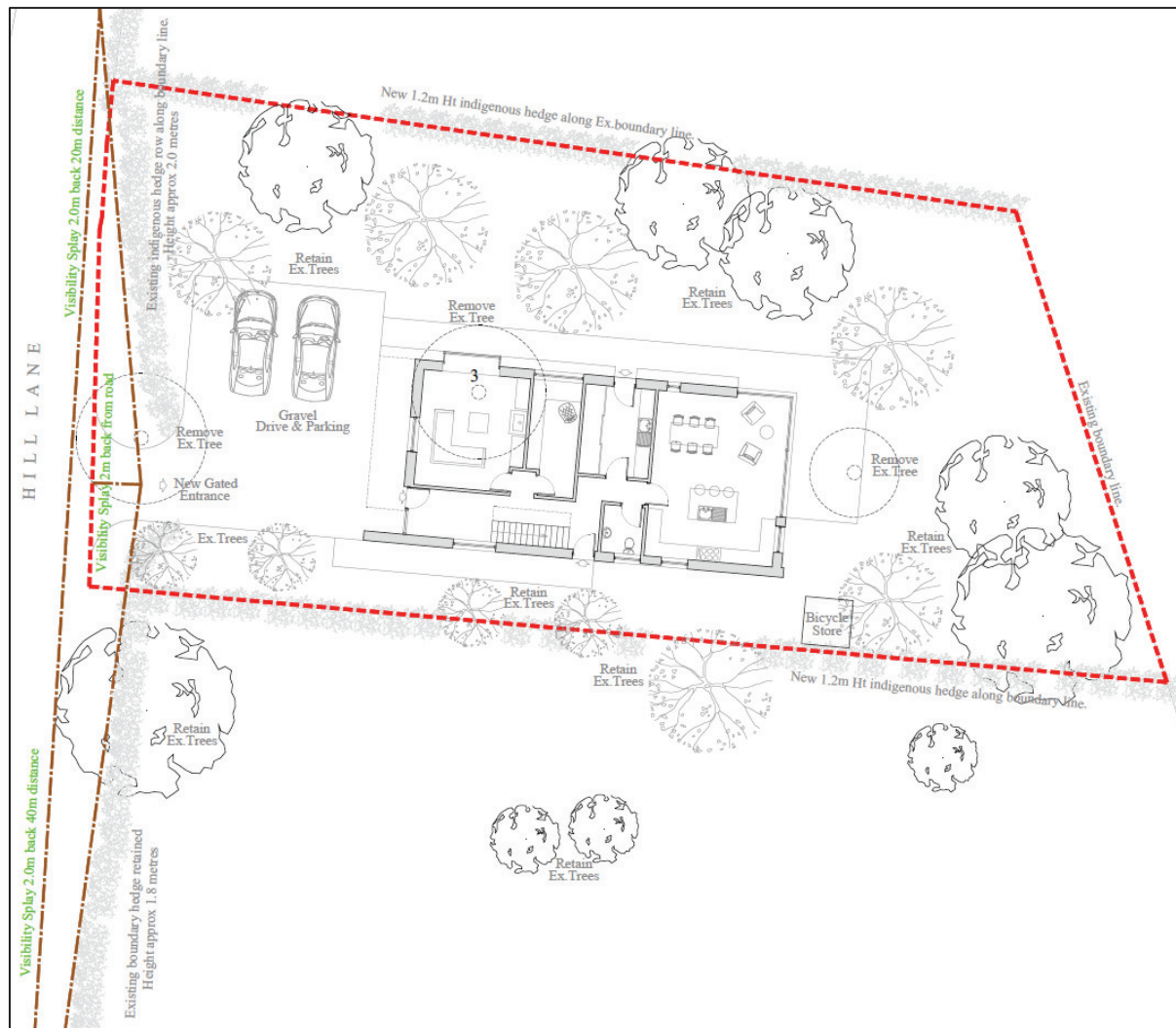


Figure 2. Proposed elevation plan, with the red line boundary highlighted in red. Three trees for removal are indicated by the dashed circles, whilst the visibility splay can be identified by the brown lines. Two new hedgerows are proposed along the northern and southern boundaries. Drawing no. 06 dated December 2019 produced courtesy of Pullen Architecture.

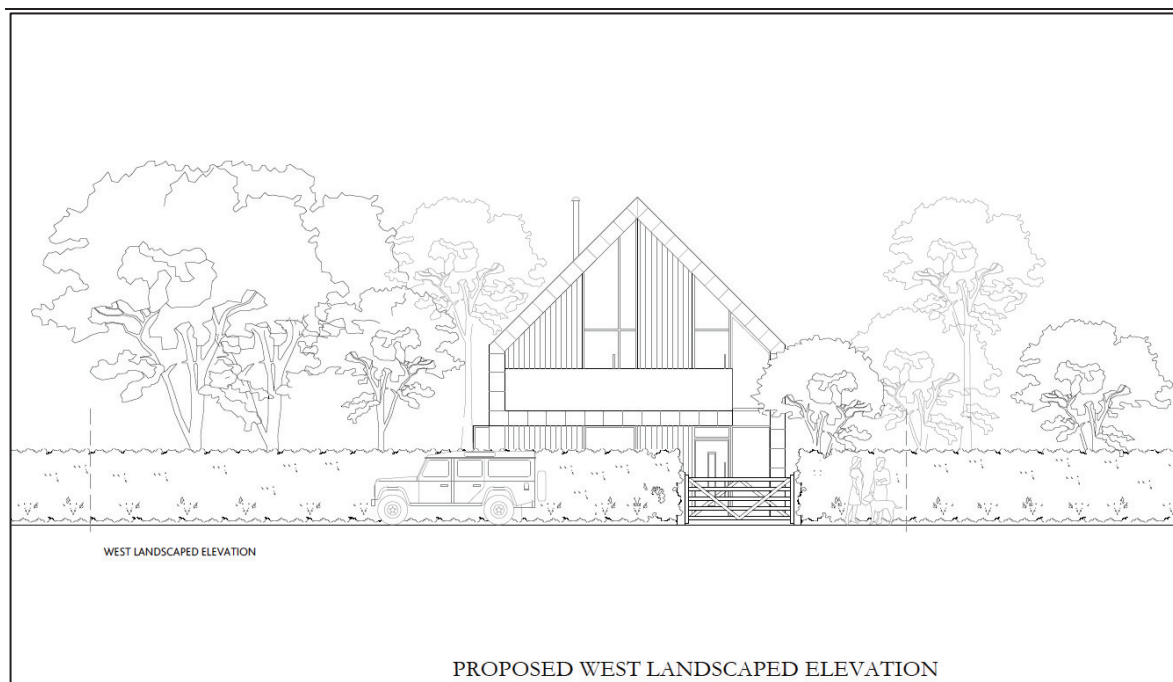


Figure 3. Proposed western elevation along existing hedgerow. Drawing no. 08, dated February 2020, courtesy of Pullen Architecture.

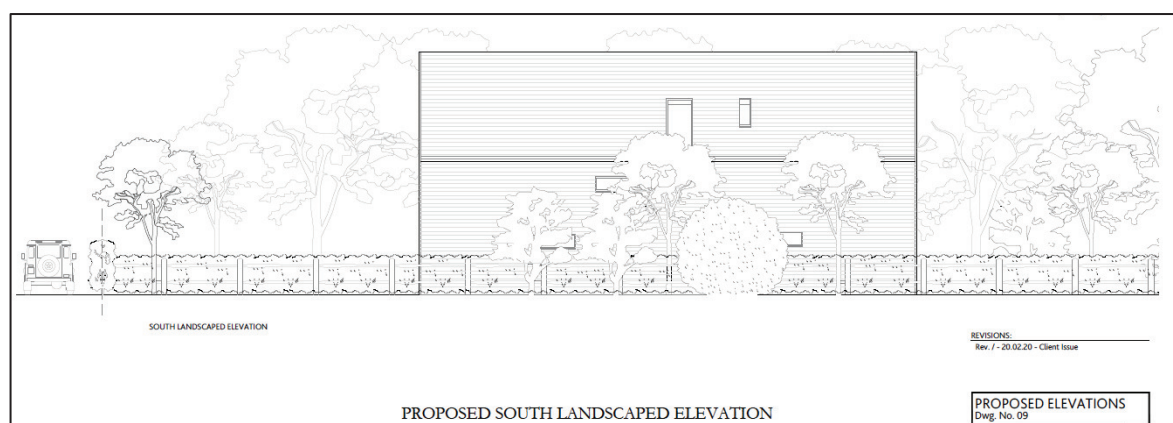


Figure 4. Proposed southern elevation, highlighting the proposed new hedgerow, Drawing no. 09, dated February 2020, courtesy of Pullen Architecture.

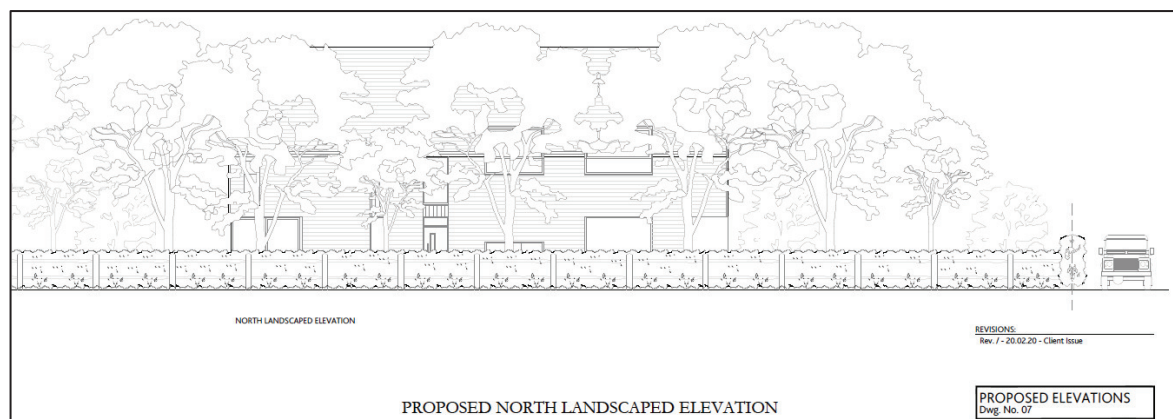


Figure 5. Proposed northern elevation, with the new hedgerow. Drawing no. 07, dated February 2020, courtesy of Pullen Architecture.



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.

Where possible this report has provided guidance on how the proposal can be designed to meet the requirements of both local planning policy and the National Planning Policy Framework (NPPF). Details of the NPPF can be found in Appendix 1 and relevant local planning policy by Chichester District Council is provided in Appendix 4.

2 METHODOLOGY

The methodologies used for this survey are in accordance with the Guidelines for Preliminary Ecological Appraisal (CIEEM 2017)¹, but also considers the Guidelines for Ecological Report Writing, Second Edition (CIEEM 2017)² and the Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM 2018)³.

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 Record Centre within a radius of 1km of the site.

A search of on-line 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.

¹ CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal, 2nd edition*. Chartered Institute of Ecology and Environmental Management, Winchester.

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

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.



2.2 Field Survey

A site walkover survey was undertaken on the 8th of April 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 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 3.11.

2.3 Badgers

The walkover survey included a comprehensive search for evidence of badger activity, for example setts, footprints, latrines, well-worn paths, and foraging marks. Special attention was paid to boundary features such as hedgerows, woodland edge, earth banks, and fence lines, where signs of badger activity is often concentrated. The methodology follows that of Harris et al 1989⁴.

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.

⁴ Harris, S, Cresswell, P. and Jefferies, D. (1989). *Surveying Badgers*. Mammal Society.

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



2.5 Breeding Birds

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

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.



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 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 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 dead-wood, wet flushes, bare earth banks and botanically rich areas.

3 BASELINE CONDITIONS

3.1 Designated Sites and Granted EPS Licences

There are no designated sites within 2km of the site and therefore sites designated for nature conservation are unlikely to be a consideration for the proposed development. No priority habitats exist upon or adjacent to the application site.

There are no granted EPS licenses for mitigation projects within 1km of the site boundary. The closest EPS licence to the site concerns a license to allow the destruction of a resting place for common pipistrelle bat(s) 1.4km north-west of the application site, see Figure 6.

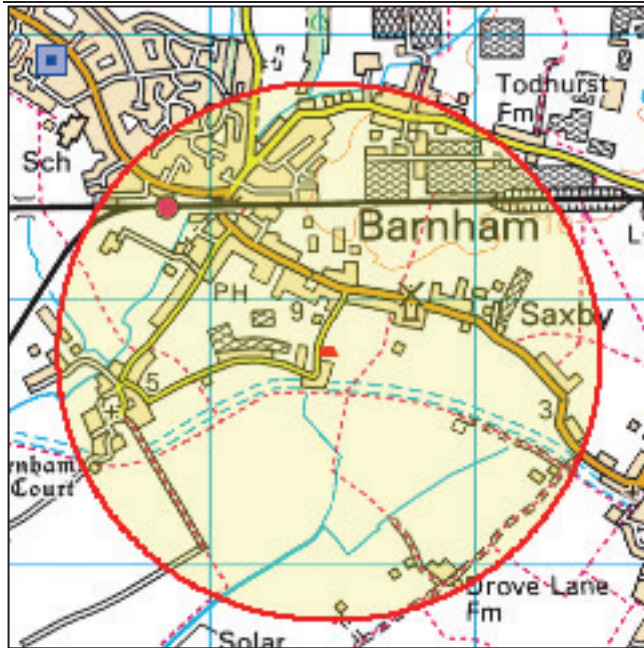


Figure 6. Granted EPS licences within 1km of the application site. Note the red dot indicates the railway station, and is not to be confused with a record. Image produced courtesy of Magic maps (<http://www.magic.gov.uk/>), contains public sector information licensed under the Open Government Licence v3.0).

3.2 Habitats

Species- rich Hedgerow

A topped and trimmed species-rich hedgerow exists along the western boundary, adjacent to Hill Lane. The hedge measured approximately 1.5m wide by 2m high, however some areas of the hedge appeared thicker than others, and several gaps were present, see Photographs 1-2.

Several woody species were noted including Hawthorn *Crataegus monogyna*, ash *Fraxinus excelsior*, elder *Sambucus nigra* and holly *Ilex aquifolium*, although hawthorn dominated. Stands of deadwood were frequently recorded, with woodworm *Anobium punctatum* and witches butter fungus *Exidia glandulosa* growing upon them, see Photograph 3. Ivy *Hedera helix* and bramble *Rubus fruticosus* were also recorded.

Several herbaceous plants were recorded at the base, including cleavers *Galium aparine*, nettle *Urtica dioica*, cow parsley *Anthriscus sylvestris*, creeping buttercup *Ranunculus repens*, red dead-nettle *Lamium purpureum*, dandelion *Teraxacum officinale* hogweed *Heracleum sphondylium*. In addition, Yorkshire fog *Holcus lanatus* was recorded.

Traditional Orchard

Approximately 7 young fruit trees were identified within the construction zone, with a further 4 which appear to be outside of the site boundary, see Photograph 4. These include fruit pear *Pyrus communis*, bird cherry *Prunus padus*, Gean cherry *Prunus avium*, and fruit apple *Malus domestica*. The number of trees present, and the density of the trees means the orchard classifies as Traditional Orchard BAP habitat. It should be noted that one of the trees had mistletoe *Viscum Album* parasitizing one of the branches. Despite this, mistletoe is a keystone species and provides additional nesting habitat and food



source for wildlife.

Scattered Trees

Approximately two ash trees, four silver birch *Betula Pendula*, two beech *Fagus sylvatica*, one oak *Quercus sp.* and one whitebeam *Sorbus aria* was identified on site, all of which were semi-mature, with no rot holes or splits present. In addition, several non-native and ornamental species were recorded including cherry laurel *Prunus laurocerasus*. See Photograph 5.

Improved Grassland

The grassland comprised of species recognised in grasslands impacted by heavy grazing, or high doses of manure. These include: daisy *Bellis perennis*, mouse-ear *Cerastium fontanum*, creeping buttercup, nettle, perennial rye *Lolium perenne*, barren strawberry *waldsteinia fragarioides*, common bent *Agrostis capillaris*, brome sp *Bromus sp.*, common dandelion *Taraxacum officinale*, thistle sp. *Cirsium vulgare*, hairy bittercress *Cardamine hirsuta*, white clover *trifolium repens*, and cocks-foot *Dactylis Glomerata*.



Photograph 1. Species-rich hedgerow where the new access road will be, looking west from within the site boundary.



Photograph 2. Species-rich hedgerow where the new access road will be, looking east from Hill lane.



Photograph 3. Standing deadwood within the hedgerow with woodworm and fungus present.



Photograph 4. Traditional orchard, with 11 fruiting trees in total within or adjacent to the site.



Photograph 5. Scattered trees including ornamental and non-native specimens to the east.



3.3 Badgers

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 the Sussex Biodiversity Record Centre, due to the sensitive nature of this information.

3.4 Bats

There are no buildings within the application site and all trees were semi-mature and lacked features suitable for roosting bats.

The species-rich hedgerow is likely to be used by foraging and commuting bats. The standing deadwood present within the hedge is likely to attract a variety of invertebrates suitable as food source and the scattered trees, in particular the oaks and the orchard trees are likely to be valuable to bats. Overall the site has moderate value for foraging bats.

The Sussex Record Centre provided 16 bat records in the search area comprising eight identified species within the search area which are detailed in Table 2 below.

Table 2. Bat records returned within a 1km radius of the site.

Species	No. of records
Common pipistrelle <i>Pipistrellus pipistrellus</i>	3
Soprano pipistrelle <i>Pipistrelle pygmaeus</i>	1
Nathusius pipistrelle <i>Pipistrellus nathusii</i>	1
Brown long-eared <i>Plecotus auritus</i>	1
Long-eared sp <i>Plecotus</i>	2
Serotine <i>Eptesicus serotinus</i>	1
Noctule <i>Nyctalus noctula</i>	1
Western Barbastelle <i>Barbastella Barbastellus</i>	6

The closest recorded location for bats lies 330m north-west of the application site and includes the following species: Nathusius pipistrelle, common pipistrelle, brown long eared and long-eared sp. which were recorded commuting and foraging approximately 330m north-west of the application site, dated 2015. Western Barbastelle have also been recorded foraging and commuting 470m west of the site, also dated 2015.

3.5 Breeding Birds

The species-rich hedgerow, the scattered trees and the orchard has the potential to support a variety of common nesting birds. Several nests were identified within the hedge and a couple of nests were found in the scattered semi-mature trees. Starlings *Sternus vulgaris* were recorded adjacent to the



site and are red listed birds of conservation concern.

The Sussex Biodiversity Record Centre provided numerous bird records for the search area concerning a total of 153 species. A high proportion of the records are non-breeding visitors or require habitat types which are not relevant to the application site.

However, the following S41 species could potentially breed on the site: The yellowhammer *Emberiza citrinella*, dunnoek *Prunella modularis*, song thrush *Turdus philomelos*, house sparrow *Passer domesticus*, and whitethroat *Sylvia communis*.

3.6 Dormice

The hedgerow bordering the western boundary has a low potential to support common dormouse. Whilst there are no woodland habitats which is favoured by this species, there is some hedgerow connectivity in the adjacent field margins. The hedgerow on-site is mature and well connected in some areas but also thin with gaps in others, see Photograph 6. The absence of hazel and other fruiting species lowers the chances of finding dormice within the hedge.

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



Photograph 6. Species-rich hedgerow along the western boundary, with thin areas and gaps.



3.7 Great Crested Newts and other Amphibians

The application site supports cover suitable for terrestrial great crested newts, such as leaf-litter piles, hedgerow and tall grassland habitats.

There is one single pond approximately 130m north of the application site, with a further two small ponds situated within a residential garden 270m north of the site, on the northern side of the B223, Yapton road. Yapton road is a busy main road with curbed pathways, presenting a substantial physical barrier to the site, see Figure 7.

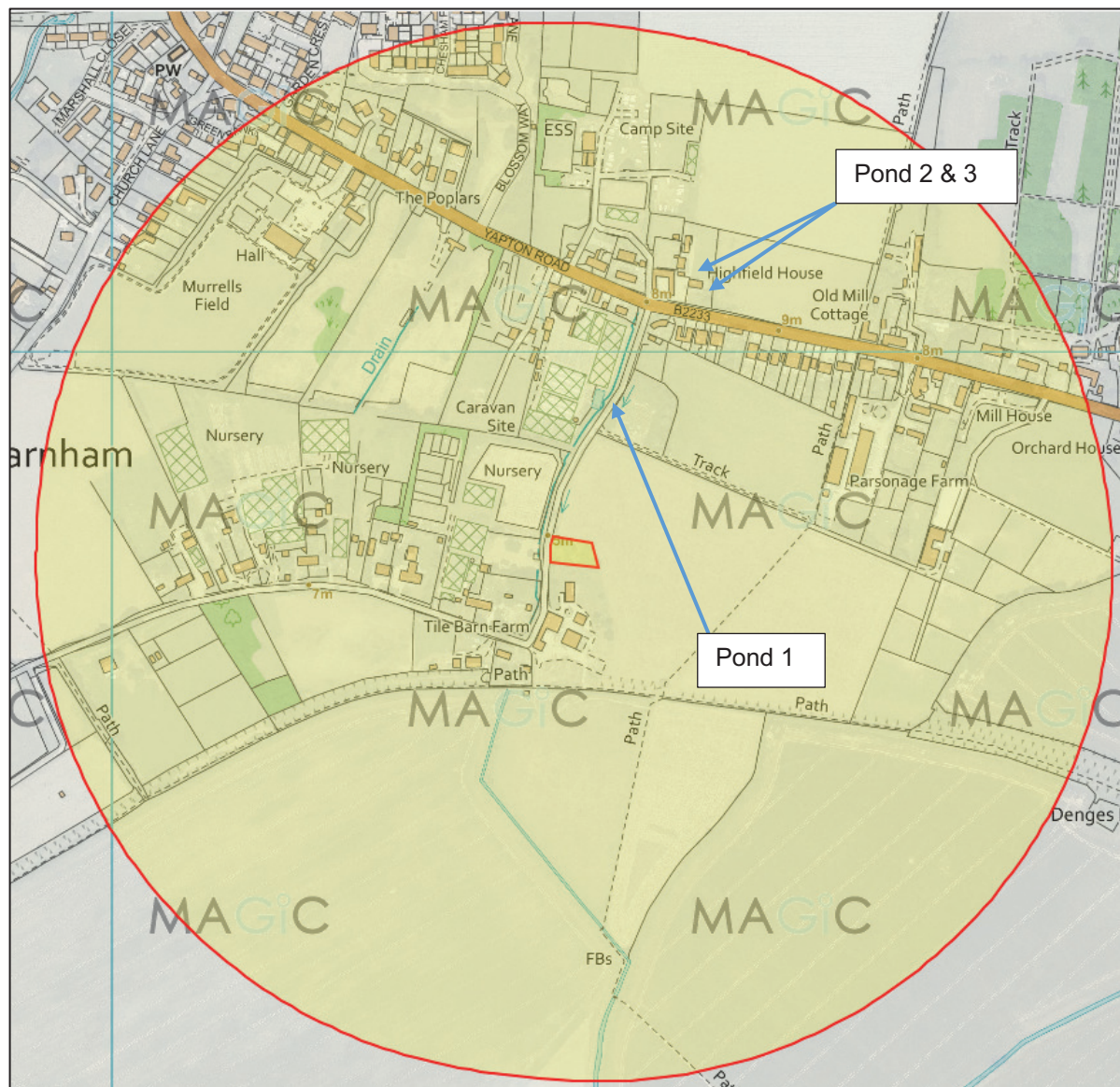


Figure 7. Location of ponds within 500m of the application site, indicated by the red square. Image produced courtesy of Magic maps (<http://www.magic.gov.uk/>, contains public sector information licensed under the Open Government Licence v3.0).

Pond 1 lies on the western side of hill lane within a nursery, with a running stream within a steep ditch along the eastern edge. Whilst access to pond 1 to conduct a H.S.I could not be obtained, a site visit conducted in 2018 to support a separate application concluded that this pond is of 'below average'



suitability for great crested newts with a score of 0.55¹⁰. The full H.S.I assessment can be found in appendix 2 of this report whilst the pond description is detailed below:

The pond was surrounded by grass, gravel pathways, a disused greenhouse, a hedgerow, scattered trees and a small area of scrub. The pond was lined with butyl and is used to collect rainwater which pools off of the greenhouse roof. The area surrounding this pond was a mesh wire fence and dense bramble. The banks included common nettle, rosebay willowherb *Chamaenerion angustifolium* and young ornamental trees. The water contained mares-tail *Hippuris-vulgaris*. The pond contained leaf litter detritus and rubbish and was of poor quality.

The Sussex Biodiversity Record Centre provided four amphibian records in the search area. This included two records for great crested newt *Triturus cristatus*, one record for smooth newt *Lissotriton vulgaris*, three records for common frog *Rana temporaria* and three records for common toad *Bufo bufo*. The closest of these was a common toad record at 310m north-west from the boundary of the site, dated 2019. The great crested newt records lie north of the railway line, 500m away from the site.

Whilst pond 1 was assessed as having 'below average' suitability great crested newts have been known to use lower-value ponds for breeding sites. Whilst it is unlikely that they would travel across a ditch and road system to the site, their presence cannot be completely ruled out.

3.8 Reptiles

The grassland habitat present within the proposed development site is potentially suitable for common reptile species. The tussocky sward structure and deep thatch layer provide suitable refuges and an abundance of invertebrate food while areas of mown grassland and pasture adjacent to it provide basking opportunities. The bordering hedgerow and ruderal understory provide additional cover, whilst the leaf-litter pile with vegetation growing upon it provides a suitable hibernaculum for breeding activity and hibernation in the winter (see Photograph 7).

The Sussex Biodiversity Record Centre provided 92 reptile records in the search area. The closest of these were records lie approximately 120m west of the application site and include the following species: adder *Vipera berus*, grass snake *Natrix helvetica* and slow worm *Anguis fragilis*, however these were recorded in 1998 and should be treated with caution. The second closest area for recorded species lies 200m north-west of the application site and include slow-worm and common lizards *Zootoca vivipara*, dated 2015.

¹⁰ The Ecology Co-op. (2018) *Preliminary Ecological Appraisal Land north of Sunnyside Cottages, Barnham*. P18, p33.



Photograph 7. Leaf-litter and stick detritus hibernacula, with plants growing over the top.

3.9 Invasive Non-native Species

Cherry laurel *Prunus laurocerasus* was identified within the site boundaries. Cherry laurel out-competes and kills off native species.

The Sussex Biodiversity Record Centre provided one record of cherry laurel in Barnham near Walberton, dated 2006 although an exact grid reference was not provided.

3.10 Other Notable Species

West European Hedgehog

Hedgehogs *Erinaceus europaeus* utilise hedgerows to commute, and they forage on pastures used for livestock. Hedgehogs nest within leaf-litter and debris, and therefore the habitats on the application site and adjacent would be of value to this species.

The Sussex Biodiversity Record Centre provided 21 records of hedgehog in within the search area. The closest record is of a dead hedgehog 200m north of the application site dated 2003.

Stag beetle

Stag beetles *Lucanus cervus* live within hedgerows and orchards, and females lay their eggs within partially buried rotting wood which they also use as their food source. As the site supports these features



there is potential for stag beetles to exist within the site's boundaries.

The Sussex Biodiversity Record Centre provided 3 records of Stag beetle in within the search area. The closest record lies 360m north-west of the application site, dated 2015.

3.11 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.

Access was denied for pond 1 and therefore an up-to-date assessment of the ponds suitability for great crested newts could not be obtained.

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.

4.2 Habitats

In the absence of protected species using the grassland, the amount of agricultural species in the sward suggests it is of low ecological value.

The species-rich hedge is of moderate value, whilst it is mature and therefore is a reliable nesting source and food source for wildlife, it is species and has been intensively managed. The scattered trees are also of moderate ecological value, whilst they provide a valuable food source and nesting site, they are still quite young, and don't support rotting wood or broken limbs which are of higher value.

The traditional orchard is considered to be of high value, with many scarce or vulnerable invertebrates potentially living solely upon orchard trees.

The development will result in the direct loss of improved grassland, some scattered trees will be lost and in total 60m of hedgerow will be gradually thinned, and a gap created for access.

The impact to the loss of the grassland cannot be accurately assessed without a reptile survey as detailed in 4.8.



In the absence of mitigation, the loss of the hedgerow and scattered trees will cause a **negative** impact significant at **site** level. The loss of the traditional orchard would cause a **negative** impact at a **local** level given the small amount of this habitat in the local surrounding area.

Prior to construction works, heras fencing must be erected at least 1m from the canopy edge to protect the hedgerow, hedgerow understory, retained scattered trees and its roots from disturbance or accidental loss.

The current proposal includes a native 1.2m high hedgerow along the northern and southern boundary. To fully compensate for losses to the mature species-rich hedge, the new hedgerow must comprise of at least 6 woody species and the base of the hedge planted with a wildflower composition, which will be informed by the results of the reptile survey as detailed in 4.8.

To avoid negative impacts to traditional orchard habitat, trees selected for removal should ideally be non-native trees, or immature scattered trees and not the fruiting specimens which are important to the traditional orchard priority habitat designation.

If a tree cannot be retained, the same species must be replaced elsewhere within the site (if it is non-native it must be replaced with native trees) at a ratio of 2:1. Orchard trees must be replaced at a ratio of 3:1 and must be planted at least 5m from other trees, in good sunlight. Figure 8 indicates the best way to plant a big orchard tree. Stakes should not be removed until the second year.

New trees and hedgerows should be planted with adequate guards, with weed management around the edges to protect them from competition. To secure these habitats for wildlife, planting schemes must take place before removing any habitats.

Should the above mitigation and compensation measures be implemented the development is likely to have a **positive** impact at the **site** level.

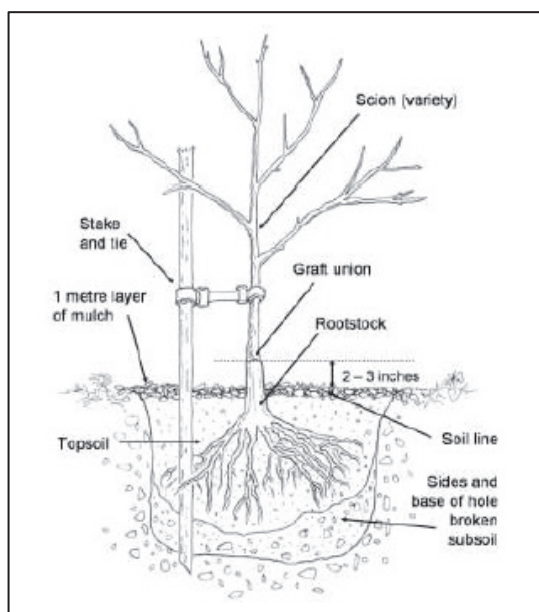


Figure 8. Diagram detailing the method for planting an orchard tree



4.3 Badgers

No signs of badger activity were identified during the assessment and no badger setts are situated on or near of 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.

4.4 Bats

The hedgerow along the west of the site, the scattered trees and the orchard are likely to be valuable to foraging and commuting bats.

As the loss of trees and hedge is small in comparison to the amount of suitable foraging habitat being retained, the loss of these features is likely to cause a significant **negative** impact at **site** level only.

As specified in section 4.2, orchard trees should be avoided when selecting trees for removal. In addition, all retained features should be protected by heras fencing.

As the site may be used by foraging and commuting bats, 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 3). This lighting scheme will include a 'dark corridor' along the western hedgerow boundary.

All compensation planting detailed in 4.2 must be implemented. In addition, to maintain connectivity, a species-rich native hedge must be planted along the eastern aspect, connecting the northern and southern proposed hedgerows.

Refer to section 4.10 regarding mitigation for stag beetles, as supporting invertebrates will create additional invertebrate food sources for bats.

Should the above mitigation and enhancement measures be implemented the proposed development is likely to have a **positive** impact at the **site** level.

4.5 Breeding Birds

All of the hedgerow, scattered trees and orchard contained in the site has a high potential to support a variety of common nesting birds. In the absence of mitigation, there will be a **negative** impact significant at **site** level.

It will be essential for any future development to consider the nesting bird season and any vegetation removal and/or building demolition should 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.



All retained features must be protected by heras fencing. In addition, it is advisable that the mistletoe which has parasitized upon an orchard tree is maintained as it is known to provide value to nesting birds.

To replace habitats provided by lost trees, a variety of at least six bird boxes must be erected upon retained trees prior to construction. The following is recommended, based on the survey findings and the biodiversity record search:

3S Schwegler starling nest box, Viviara Pro Woodstone Small Open Nest Box, the Cedar Plus Tripple Sparrow House could be placed upon trees with large stumps, see Figure's 9-10.

These boxes should be placed at a height of at least 1.5m and a maximum height of 3m, close to vegetation. The open nest box must be placed in an area with vegetation which can cover it such as ivy or other climbers.

The planting scheme detailed in 4.2 must be implemented. This includes the replacement of two trees for each tree lost, and the planting of 6 native woody species within the hedge, with an herbaceous border to be confirmed post reptile survey.



Figure 9 Left: 3S Schwegler starling nest box, right: Viviara Pro Woodstone Small Open Nest Box



Figure 10. Cedar Plus Tripple Sparrow House

4.6 Dormice

It is unlikely that hazel dormice are occupying the hedgerow given the lack of nearby woodland and the limited amount of connective hedgerow surrounding the site. However, the absence of individual dormice from the site cannot be ruled out. The small size of the site and small amount of available suitable habitat present means that a standard presence /absence survey is impractical in this instance.

Instead, precautionary mitigation is recommended whereby the small amount of hedgerow removal and hedgerow thinning for visibility splays is supervised by a suitably qualified ecologist following a thorough fingertip search of the whole west boundary hedgerow for signs or evidence of dormice to be present or individual dormice themselves. In the unlikely event that an individual dormice or evidence of their presence be found during the hand-search, then **no work** can commence **until** a European Protected Species Dormouse Licence was put in place.

This can only occur following implementation of a reptile presence/absence survey and details will be provided in a separate Mitigation Statement.

The new native species-rich hedgerows that will be planted along the northern, southern and eastern boundaries will provide an increase in nesting and foraging habitat for dormice and keep the site connected, ensuring that no fragmentation takes place. Hazel should be one of the six species within the species-rich hedgerow and honeysuckle should be included in addition to the six woody species.

In the absence of mitigation, the proposed impact from the development is considered to be a **possible negative** impact at the **site** level. However, should all of the mitigation, compensation and enhancement measures be implemented, the proposal will have a **likely positive** impact at the **site** level for dormice.



4.7 *Great Crested Newts*

Ponds 2 and 3 have been ruled out due to physical barriers between them and the proposed site. Whilst a 2018 survey identified a low HSI score for pond 1. It is therefore considered unlikely that newts are using terrestrial features on the application site, although the odd individual cannot be ruled out. As a result, the impacts are considered to be **negligible**.

No further surveys are recommended with respect to great crested newts, as access could not be granted for pond 1 this time around.

As a result, precautionary mitigation must be put in place. This will include a two phase strim, thorough handsearch and watching brief of removal of the hedgerow. This can only occur following implementation of a reptile presence/absence survey and details of all mitigation measures will be provided in full in a separate Mitigation Statement.

4.8 *Reptiles*

The proposed development would result in the loss of suitable reptile habitat at the site, including the leaf-litter pile, grassland and hedgerow. This is highly likely to impact on reptiles and a survey is therefore 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, a reptile mitigation strategy is likely to be required by the planning authority. This may involve the capture and translocation of reptiles to a suitable receptor site nearby.

4.9 *Invasive Non-native Species*

Whilst cherry laurel was identified within the site, it was limited to a single shrub and maintained so that it was not encroaching upon other native species. Therefore, the impact of non-native invasive species is considered to be negligible and no further mitigation is needed. Should the cherry laurel be removed, the area should be planted with native species of a fruiting and flowering variety to provide an increase in biodiversity within the site.

4.10 *Other Notable Species*

Hedgehogs

The direct loss of the hedgerow and removal of leaf-litter piles suitable for nesting is likely to cause a **negative** impact at **site** level for this species.

The leaf-litter pile must be carefully translocated to another section of the site, or somewhere outside of the construction site boundaries where it will be undisturbed. This must take place under a watching



brief, the details of this will be specified in a separate mitigation statement.

The implementation of heras fencing will help protect hedgehogs from disturbance during construction, should they be using these features.

The planting of the two new hedgerows to the north and south of the site will provide additional habitat for this species. An extra hedgerow should be incorporated to the east to connect these boundaries up for commuting species, and the hedges should be planted with an herbaceous understory which will be confirmed following a reptile survey.

In addition, a hedgehog house should be installed within one of the new boundary hedgerows to provide additional shelter. Figure 11 highlights a Hedgehog House with predator protection, which can be found on the NHBS website. Should all of the mitigation, compensation and enhancement measures are implemented there will be a likely **positive** impact at the **site** level for hedgehog.

Stag beetle

The direct loss of a portion of the hedgerow which could support stag beetles has potential to cause a **negative** impact at **site** level.

Any removed deadwood and roots must be carefully taken from the ground and inspected by a suitably qualified ecologist for stag beetles or their eggs. These deadwood stools must be relocated elsewhere within the site, partially buried into the ground under cover following a watching brief. This could be in the same location as the relocated leaf-litter pile.

Should the above mitigation measures be implemented, the impact from the proposal on stage beetles will likely be **neutral**.



Figure 11. Hedgehog Nest Box.



5 CONCLUSIONS

The land north of Tile Barn Farm has some habitats of moderate to significant value, notably the traditional orchard and the mature species-rich hedgerow. The construction of a new dwelling as set out in Figure 2 of this report represents small-scale impacts which account for less than a third of the total habitat present, therefore these impacts are significant at site level only.

A reptile survey must be conducted to establish whether reptiles are occupying suitable habitat present within the site boundaries. This will be used to inform a Mitigation Statement which will detail the approach required to offset impacts and improve biodiversity at the site.

This Mitigation Statement will also detail the precautionary mitigation measures required for other protected species which have potential to exist on the site, to ensure that there is not a breach of the Wildlife and Countryside Act.

If the avoidance, mitigation and compensation measures are followed in full, then there is potential for a positive impact overall at site level for wildlife.

If any protected species are found during the proposed work, work should be stopped immediately and an ecologist must be contacted immediately for advice.

Should you need any further advice on the information provided above, please do not hesitate to contact The Ecology Co-op, info@ecologyco-op.co.uk, www.ecologyco-op.co.uk, Office: 01798 861800.



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 licence, 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 *Satyrion 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) 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 2019)¹¹ 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)¹². 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,

¹¹ ¹¹ HM Government (2019). 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.

¹² 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

Protection of Badgers Act (1992). HMSO London. Available at:
<http://www.legislation.gov.uk/ukpga/1992/51/contents>

Circular 06/2005 (2005). Government Circular: Biodiversity and geological conservation – statutory obligations and their impact within the planning system. Office of the Deputy Prime Minister, London. Available at:
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7692/147570.pdf

Council Directive 79/409/EEC on the Conservation of Wild Birds ("the Birds Directive"). Available at:
<http://jncc.defra.gov.uk/page-1373>

Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the "Habitats Directive"). Available at: <http://jncc.defra.gov.uk/page-1374>

The Conservation of Habitats and Species Regulations 2017 (the Habitats Regulations"). Available at:
<http://jncc.defra.gov.uk/page-1379>

Countryside and Rights of Way (CROW) Act (2000). HMSO London. Available at:
<http://www.legislation.gov.uk/ukpga/2000/37/contents>

Defra (2011) Biodiversity 2020: A strategy for England's wildlife and ecosystem services. Available at:
www.gov.uk/government/publications/biodiversity-2020-a-strategy-for-england-s-wildlife-and-ecosystem-services.



Defra (2013) Progress Update. Available at: www.gov.uk/government/publications/biodiversity-2020-simple-guide-and-progress-update-july-2013.

Eaton, M., Aebischer, N., Brown, A., Hearn, R., Lock, L., Musgrove, A., Noble, D., Stroud, D. and Gregory, R. (2015) Birds of Conservation Concern 4: the population status of birds in the UK, Channel Islands and Isle of Man. Available at: British Birds 108 • December 2015 • 708–746
<https://britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf>

Natural Environment and Rural Communities (NERC) Act (2006). HMSO London. Available at: http://www.legislation.gov.uk/ukpga/2006/16/pdfs/ukpga_20060016_en.pdf

National Planning Policy Framework (NPPF) (2018) Department for Communities and Local Government. Available at:
www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf

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



APPENDIX 2 Great Crested Newt 'Habitat Suitability Index' Values

Table 1. HSI calculation for pond 1, taken in 2018¹⁰

	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
Water-fowl	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 3 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 Trust¹³ 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.
- 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

¹³ 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/>



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:

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 (2011) *Guidance Notes for the Reduction of Obtrusive Light* GN01:2011. Available at: <https://www.theilp.org.uk/resources/free-resources/>



APPENDIX 4 – Chichester District Council - Chichester District Council Local Plan 2014-2029

Policy Number/Title	Policy Summary
Policy 40 (Sustainable design and construction)	The developer must evidence for dwellings and non-domestic buildings, that the development will protect and enhance the natural environment. The natural environment/biodiversity will be protected and where appropriate provisions should be made for green infrastructure and biodiversity areas.
Policy 44 (Development around the coast)	Development around the coast will be permitted outside of Settlement Boundaries as long as the following is considered: There are no harmful effects or net loss of nature conservation or areas of geological importance within the Chichester and Pagham Harbours and Medmerry Realignment.
Policy 45(Development in the countryside)	Outside Settlement Boundaries, development will be granted if it is small-scale and locally needed or cannot be added to existing settlements.
Policy 49 (Biodiversity)	Planning permission will be granted where it is demonstrated that: the biodiversity of the site is safeguarded, damage to protected species and habitats is mitigated, the proposal has incorporated features that enhance biodiversity as part of a good design and sustainable development, it enhances and manages the District's network of ecology, biodiversity and geological sites and the corridors which connect them.
Policy 50 (Development and disturbance of birds in Chichester and Langstone Harbours Special Protection Areas) AND Policy 51 (Development and disturbance of birds in Pagham Harbour Special Protection Area.)	Net increases in residential development which incorporates appropriate avoidance/mitigation measures will not require an appropriate assessment. These mitigation measures will include: • A contribution in accordance with the joint mitigation strategy outlined in Phase 3 of the Solent Disturbance and Mitigation Project, a developer provides package of measures associated with the proposed development designed to avoid any significant effects to the SPA or a combination of these measures. • These measures need to be phased with development and managed continually. Some developments will require further examination and assessment.