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Ecological Assessment

**Spindlewood, Yapton Lane,
Walberton, Arundel, West Sussex, BN18 0AS**

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Report Summary

- 1. The Ecology Co-op has been commissioned by Mr Andrew Davis to undertake a Preliminary Ecological Appraisal at Spindlewood. A site walkover survey visit was carried out on the 20th April 2020 by Natural England Class 2 Bat Licence holder Xenia Snowman BSc. (Hons), 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 for a proposal to demolish the existing bungalow, sheds and garage, to allow for the construction of eight units, consisting of two semi-detached cottages and two semi-detached barns and their associated garages, along with the creation of a new access route and associated soft and hard landscaping.**
- 2. The site is situated to the west of Yapton Lane, just south of Walberton village centre in West Sussex. It currently comprises the Spindlewood property, a garage and small shed situated within an amenity grassland garden. The site is located within a semi-rural area, bordered by allotments, Walberton Nursery, arable fields, tree lines and small woodland parcels. Three ponds were identified within 500m of the site boundaries.**
- 3. Overall, there are very low numbers of identified external bat roosting features present on the property and these are of negligible value to bats. As such, precautionary measures prior to the commencement of construction are considered appropriate in this case. Therefore, prior to demolition of the building, two Schwegler or similar woodcrete bat boxes should be installed close to the property on mature trees within the site due to be retained and protected. The raised tile and gaps in the weatherboarding will also be inspected using an endoscope by a suitably licensed surveyor prior to any works affecting the existing dwelling.**
- 4. Given that great crested newts and reptiles may be present within certain areas of the site, reasonable avoidance measures, as outlined within section 4.7 and 4.8, will be necessary. Additionally, the amenity grassland which dominates the garden space should be maintained in the same way to below a height of 5cm to prevent further suitable habitat for great crested newts and reptiles from forming prior to construction commencing.**
- 5. The site can be enhanced using the recommendations made within section 5 of this report, which includes the installation of bird and bat boxes on the new properties.**

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 Spindlewood, Yapton Lane, Walberton, Arundel, West Sussex, BN18 0AS by Mr Andrew Davis. This report presents the findings of a walkover survey undertaken by Natural England Class 2 Bat Licence holder Xenia Snowman BSc. (Hons) on the 20th 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 for the proposals. 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 within a semi-rural area west of Yapton Lane, just south of the village centre of Walberton, in West Sussex. The central grid reference for the site is SU976053.

The site measures approximately 0.43 hectares (Ha) and comprises the Spindlewood property, detached garage and two small wooden sheds, situated within a garden space, predominantly consisting of tightly-mown amenity grassland. It is bordered by allotments, Walberton Nursery, arable fields, tree lines and small woodland parcels. Three ponds were identified within 500m of the site boundaries. Figure 1 shows the boundary of the site.

The proposed development includes the demolition of the existing buildings to facilitate the construction of eight units, consisting of two semi-detached cottages and two semi-detached barns and their associated garages. Proposals also include the creation of new access and associated soft and hard landscaping, such as planting of scattered trees and new hedgerows. The plans for the site are displayed within Figure 2 below.



Figure 1. An aerial image showing the location of the site and the four buildings contained by the site (white arrows and text). The approximate site boundary is outlined in red. Image produced courtesy of Google maps (map data ©2020 Google).



Figure 2. Drawing showing the proposed plans for Spindlewood, provided by Chelsey Carter on 17.04.2020 (dwg no: DPA 02).



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 Arun District Council is provided in Appendix 2.

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 Sussex Biodiversity Records Centre (SxBRC) 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 20th April 2020, during which the habitats contained within the site were described and evaluated. Since this site is relatively small in 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 3.12.

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.

A detailed external building inspection was carried out, looking for any evidence indicating the presence of bats using buildings or trees, such as rub marks, staining or droppings outside any potential roost sites. Due to the 2020 Covid-19 pandemic, no internal inspections are being undertaken of occupied properties or utilised spaces.

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)⁴. Any evidence confirming the presence of bats that was found was clearly recorded including photos and samples (e.g. droppings), where appropriate.

⁴ Collins, J.(ed.) (2016). *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn). The Bat Conservation Trust, London.



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, 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)⁵ 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)⁶.

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)⁷. 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

5 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.

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

7 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.



Nature 2001)⁸.

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 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 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 statutory designated sites within 2km of the site, therefore sites designated for nature conservation are unlikely to be a consideration for the proposed development. The closest designated site is Arundel Park Site of Special Scientific Interest (SSSI) which is 4.3km from the site boundaries. This has been designated for its important biological assemblages within the boundaries of park which have resisted modern land management pressures over hundreds of years, such as rare and notable invertebrates and numerous differing grassland communities.

⁸ English Nature (2001). *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.



However, a large area of wood pasture which is listed as habitat of principal importance for nature conservation (Section 41 NERC Act 2006) was identified immediately adjacent to the site to the north (Figure 3). However, on reviewing aerial imagery, the neighbouring land is more widely identifiable as agricultural land. There are two small areas of secondary woodland which are recorded as approximately 130m west from the site boundaries and another further remnant of wood pasture is 470m to the north west in Walberton Park. One broadleaved woodland which is a listed habitat of principal importance for nature conservation (Section 41 NERC Act 2006) is 468m west of the site boundaries.

There are no granted European Protected Species (EPS) licenses for mitigation projects within 1km of the site boundary. The closest EPS license to the site concerns the destruction of a known resting place of common pipistrelle *Pipistrellus pipistrellus* 2.3km south west of the site.

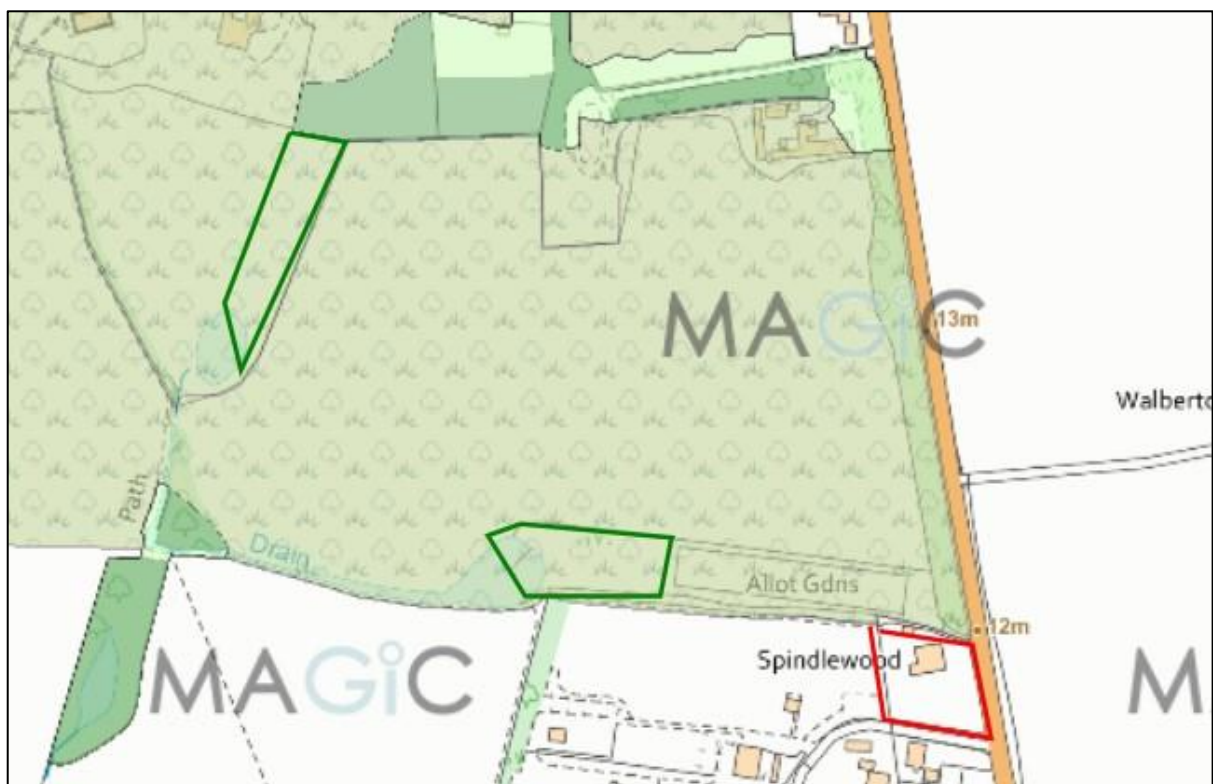


Figure 3. Map of Priority Habitats nearby to the site. The dark green shapes denote the areas of secondary woodland as aerial imagery mapping shows agricultural fields. The red line boundary denotes the site location. Images produced courtesy of Magic maps (<http://www.magic.gov.uk/>, contains public sector information licensed under the Open Government Licence v3.0).

3.2 Habitats

The site is dominated by tightly-mown amenity grassland (see Photograph 1) with a very small area of longer grassland along the western site boundary. There are some scattered shrubs within the garden space such as cypress *Cupressus* sp. and hawthorn *Crataegus monogyna* bushes, as well as a pollarded willow *Salix* sp. tree and ash *Fraxinus excelsior* tree (see Photograph 2). Within the garden space is the Spindlewood property, accessed via a tarmacked driveway and surrounded by hardstanding. There is also a garage and a small adjoining shed, along with a separate wooden shed. These four buildings are described in detail within section 3.3 below. Just south-east of the Spindlewood



property is some well-maintained cherry laurel *Prunus laurocerasus* shrubs (see Photograph 3). To the north of the garage are some small rubble and grass piles (see Photograph 4).

The eastern site boundary includes a post and rail fence with a grassland verge to the east of this, which runs either side of the site entrance. This verge comprises Yorkshire fog *Holcus lanatus*, common nettle *Urtica dioica*, bluebell *Hyacinthoides* sp., dandelion *Taraxacum officinales*, cleavers *Galium aparine*, ground ivy *Glechoma hederacea*, daffodils and lords and ladies *Arum maculatum* and well-maintained cypress bushes (see Photograph 5).

The western site boundary includes both wooden and chain link fencing. There is also a length of mature cypress hedge with longer grassland, log piles, rubble, grass piles and cut willow piles in front (see Photograph 6). Within this boundary there are also some scattered shrubs including elder *Sambucus nigra* blackthorn *Prunus spinosa* and hawthorn, as well as a mature pine *Pinus* sp. species tree. Along this boundary are a number of dead tree stumps. There are further dead tree stumps scattered within the grassland of the garden space (see Photograph 7).

The northern boundary includes a wooden fence and at the north-western end, a length of mature hawthorn hedgerow. In the north-western corner of the site is green alkanet *Pentaglottis sempervirens*, daisy *Bellis perrenis*, ground ivy, thistle species, ivy-leaved speedwell *Veronica hederifolia*, scarlet pimpernel *Angallis arvensis*, forget-me-not *Myosotis* sp., bristly oxetongue *Helminthotheca echioides*, lord and ladies, lesser celandine *Ficaria verna* and rosebay willowherb *Chamaenerion angustifolium*. The southern site boundary includes wooden panel fencing with some small scattered shrubs (see Photograph 8).



Photograph 1. View south-eastwards across the amenity grassland predominating the garden space.



Photograph 2. A pollarded willow and an ash tree within the garden space of the Spindlewood property.



Photograph 3. View north-eastwards of the introduced shrubs south-east of the Spindlewood property.



Photograph 4. Grass piles and rubble to the west of the garage, along the northern boundary.



Photograph 5. Left image: View towards the eastern site boundary with a post and rail fence, taken from the south-western corner of the site. Right image: View southwards along Yapton Lane along the grass verge forming part of the eastern site boundary.



Photograph 6. Left image: view westwards towards the western site boundary including cypress hedgerow. Right image: longer grass and piles of vegetation along the western site boundary.



Photograph 7. Left image: dead tree stump with fungi present along the western site boundary. Right image: tree stumps present within the garden space.



Photograph 8. View towards the south-eastern corner of the site including wooden panel fencing and small scattered shrubs, taken from the western boundary.

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 SxBRC due to the sensitive nature of this information.

3.4 *Bats*

There are four buildings contained by the site (see Figure 1) including the Spindlewood property (see Photograph 9), detached garage and adjoining shed (see Photograph 10) and a small detached shed (see Photograph 11). The Spindlewood property is a seven bedroom bungalow with a complicated roof structure and multiple extensions, including a summer room and a conservatory (see Photograph 9). It is in a generally good condition and has been well-maintained. No trees contained by the site were identified to have bat roosting potential. These buildings and the features present in relation to bat roosting potential are described in detail in Table 1 below.

The site itself is dominated by tightly-mown grassland, which is of little foraging value to bats. However, they may commute along the mature cypress hedgerow forming the western site boundary as this has



connectivity to further tree lines within the wider landscape.

SxBRC provided 41 bat records in the search area, comprising ten identified species, detailed in Table 2 below. The closest record returned is situated 670m north-east and concerns barbastelle *Barbastella barbastellus*, nathusius pipistrelle *Pipistrellus nathusii*, common pipistrelle, soprano pipistrelle *Pipistrellus pygmaeus*, serotine *Eptesicus serotinus*, noctule *Nyctalus noctula*, a myotis species *Myotis* sp. bat and greater horseshoe bat *Rhinopholus ferrumequinum*, all recorded during transects and static logger deployments undertaken in Spring and Summer 2019.

Table 1. Potential roost features for bats.

Building / Section of building	Description of features	Assessment of potential
Spindlewood – walls	Predominantly brick, with some areas of weatherboarding (see Photograph 12). There is a small area of unmaintained weatherboarding on the northern face of the property, which has multiple gaps present and is therefore accessible (see Photograph 13). There is also a small gap in the mortar on the eastern face (see Photograph 13).	Negligible to low bat roost potential
Spindlewood - roof	Complicated structure, which is a mixture of sloping roof, flat roof and valleys. There is an area of solar panels on the north-western corner of the roof (see Photograph 14). The tiles comprise of a mix of predominantly clay barrel tiles, with some factory formed tiles. There is one raised tile just to the east of the chimney on the larger chimney on the eastern face of the property (see Photograph 15).	Negligible to low bat roost potential
Garage and adjoining shed	North of the main property is a garage of modern brick construction with a bitumen roof which is tightly-sealed. Directly adjoining to the southern aspect is a small wooden shiplap shed with a bitumen covered roof.	Negligible bat roost potential
Shed	In the north-western corner of the site is a wooden shiplap shed with a bitumen roof and a window.	Negligible bat roost potential

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

Species	No. of records
Pipistrelle species	3
Common pipistrelle	3
Soprano pipistrelle	16
Nathusius pipistrelle	1
Brown long-eared <i>Plecotus auritus</i>	3
Serotine	1
Noctule	2
Myotis species	2
Daubenton's Myotis <i>Myotis daubentonii</i>	1
Brandt's Myotis <i>Myotis brandtii</i>	1
Barbastelle	4
Greater Horseshoe	1
Bat species <i>Chiroptera</i> sp.	3



Photograph 9. Left image: eastern face of the Spindlewood property. Right image: southern face of the Spindlewood property.



Photograph 10. Left image: eastern face of the garage. Right image: southern face of the garage with small adjoining shiplap shed.



Photograph 11. View westwards of the small shed situated on the western site boundary.



Photograph 12. Mix of brick and weatherboarding walls on the northern face of the property.



Photograph 13. Left image: gaps in unmaintained weatherboarding on the northern section of the house. Right image: gap in the mortar on the eastern face of the property (see white arrow).



Photograph 14. Solar panels covering a portion of the western roof face of the property.



Photograph 15. A single raised tile east of the chimney on the eastern roof face of the property (white arrow).



3.5 Breeding Birds

The hedgerows, scattered shrubs and trees have the potential to support a variety of common nesting birds. During the site survey, the following species were observed: blackbird *Turdus merula*, long-tailed tit *Aegithalos caudatus*, house sparrow *Passer domesticus*, magpie *Pica pica* and blue tit *Cyanistes caeruleus*. SxBRC returned records for all these bird species.

SxBRC provided numerous bird records for the search area concerning a total of 144 species. Most of these species are relatively common and widespread, but the list includes 27 species of principle importance for conservation (S41 NERC Act 2007), and 19 species listed on Schedule 1 of the Wildlife and Countryside Act. In addition, 33 species are red listed on the Birds of Conservation Concern.

A high proportion of the records are not relevant to the application site. However, the following S41 species could potentially breed on the site: dunnock *Prunella modularis* and *schoeniclus*, house sparrow, especially as the latter was observed on the site.

3.6 Dormice

Much of the site is tightly-mown amenity grassland and is not suitable for hazel dormice. The hedgerows at the site are defunct and have poor-connectivity both on site and within the context of the wider landscape. There is some limited connectivity between the cypress hedgerow forming part of the western boundary and a scattered tree line to the north-west, but cypress is not considered a valuable species for dormice and, given the relative isolation of this feature, it is therefore unlikely to support them.

SxBRC provided one dormouse record in the search area, which is located 480m north east of the site on the opposite side of Yapton Lane, dated 2004.

3.7 Great Crested Newts and other Amphibians

There are 3 waterbodies within 500m of the site boundaries (see Figure 4), including Pond 1, which was identified 250m to the west and Pond 2, which is similar but larger, pond 450m to the north west. Pond 3 was identified 480m to the south of the site using mapping software. However, aerial imagery identified this as an underground reservoir associated with the local production horticulture facility, and so was discounted from the following assessment.

Pond 1 (see Photograph 16) contained approximately 150m² of surface water with marginal bankside vegetation such as water mint *Mentha aquatica*, reedmace *Typha latifolia* and hemp agrimony *Eupatorium cannabinum*. The total surface area of the pond had a high density of macrophyte cover from duckweed *Lemna* sp, and it was therefore difficult to assess the water clarity, turbidity, and the level of detritus. The pond had a low percentage of shading (25%) from nearby trees over the pond, although trees east and west of the pond will provide shade throughout the day. The pond appeared to be fed by a small, steep-sided ditch with a shallow and slow flow of water. The habitat surrounding this pond was assessed as 'good' including secondary woodland, allotments, and an arable margin with longer grassland. The HSI score of the pond was returned as 0.64 which is classed as



'average' suitability for great crested newts. The raw results of the HSI are provided in Appendix 3.

Pond 2 is separated from the site boundaries by a large, open agricultural field that appears to be in current use. The pond was not able to be accessed during the walkover survey as it is located within private land. This pond appears from aerial imagery to be larger than Pond A and more heavily shaded from nearby trees. It is over 250m from the site boundaries, which is outside the accepted terrestrial range of this species from a breeding pond[1].

The site itself is dominated by tightly-mown amenity grassland which is not considered suitable for terrestrial newt activity. However, the land to the immediate north within secondary woodland and allotments is likely to be used as terrestrial habitat by great crested newts should they be present in Pond 1. The rubble/vegetation piles across the site and the small area of longer grassland (see Photograph 4 and 6) may be used as hibernacula. Amphibians may also commute along the short lengths of hedgerows present within the site. Though great crested newts are highly unlikely to be present within much of the site, they may shelter within the aforementioned hibernacula, and their presence on the site cannot be confidently discounted.

SxBRC provided 27 amphibian records in the search area. This included three records for great crested newt *Triturus cristatus*, six records for smooth newt *Lissotriton vulgaris*, three records for palmate newt *Lissotriton helvetica*, 11 records for common frog *Rana temporaria* and four records for common toad *Bufo bufo*. The closest record is within a pond 265m north-west of the site, dated 2005 and includes great crested newt, palmate newt and smooth newt.

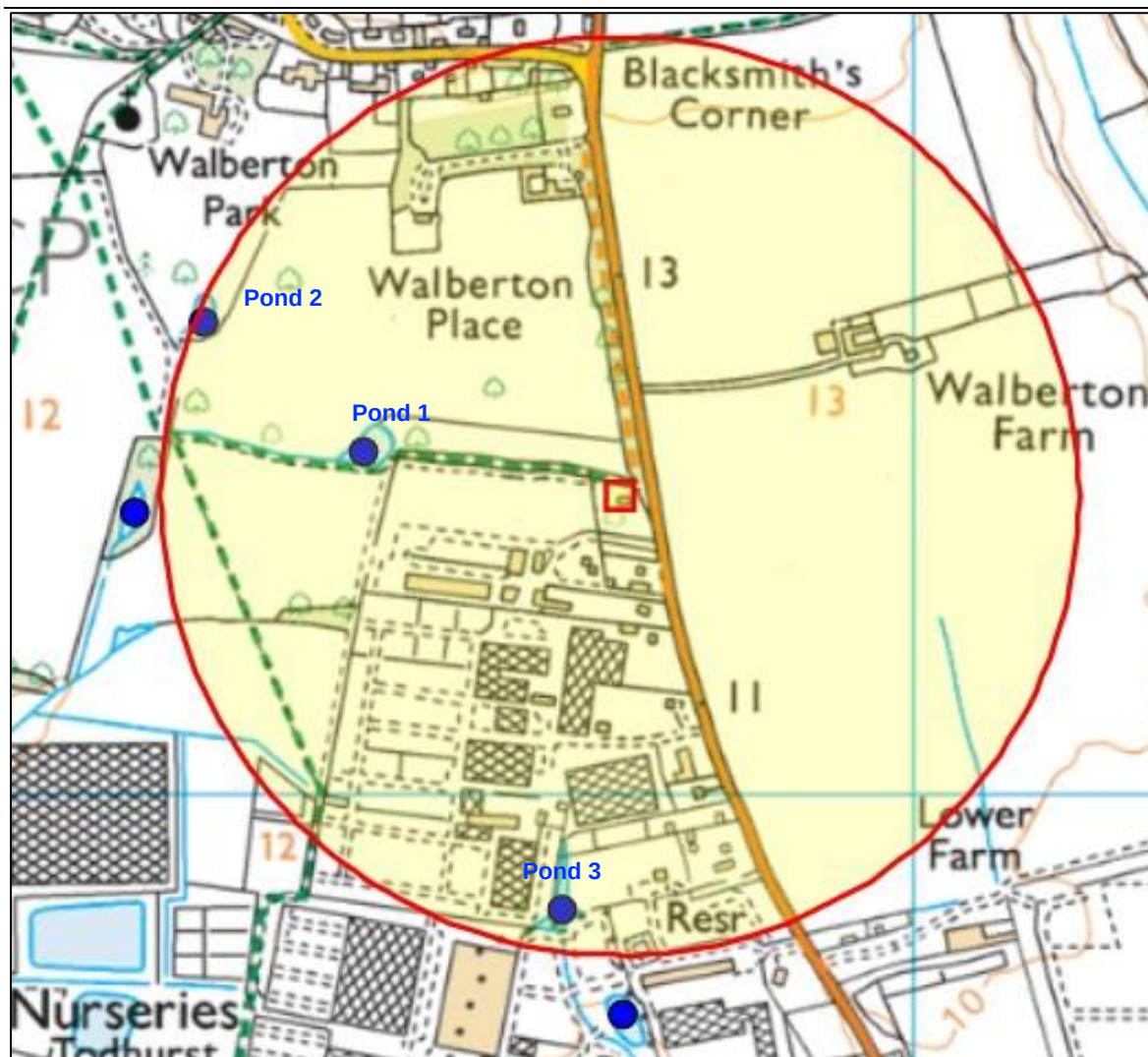


Figure 4. Map showing the location of known waterbodies within 500m of the site boundaries. The waterbodies are denoted with blue circles and text. Image produced courtesy of Magic maps (<http://www.magic.gov.uk/> , contains public sector information licensed under the Open Government Licence v3.0).



Photograph 16. View of Pond 1 during the walkover survey looking north from the public footpath.

3.8 Reptiles

Much of the site comprises hard-standing and tightly-mown amenity grassland, which provides no cover or foraging value for reptiles. However, the grass piles, vegetation piles and rubble piles within the site may be used as hibernacula. Given the suitability of the habitat bordering the site, such as secondary woodland and allotments, reptiles may commute along the lengths of hedgerow at the site and use these features to shelter.

SxBRC provided records for grass snake, common lizard, adder and slow worm in the search area. The closest record is for a grass snake, 265m north-west of the site, dated 2005.

3.9 Riparian Wildlife

There are no watercourses passing through or within 500m of the site boundaries. However, SxBRC returned a record for signs of present water vole 730m east of the site within Binstead Chalk Stream, dated 2015.

3.10 Invasive Non-native Species

A cherry laurel shrub was identified adjacent to the Spindlewood property. This is not a Schedule 9 species, but is considered invasive and of low ecological value. Records of cherry laurel were returned



by SxBRC.

3.11 Other Notable Species

The scattered dead wood in the form of stumps across the site may support invertebrates, in particular stag beetles *Lucanus cervus*. Seven records of this species were returned by SxBRC, with the closest located 720m north of the site, dated 2019.

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.

Given current government guidelines regarding Covid-19, an internal inspection of the property was not possible. However, a thorough and detailed inspection of the external featured was undertaken, which in this case is considered sufficient for accurately assessing the bat roosting potential of the building.

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

The development will result in the demolition of the Spindlewood property, garage and two small sheds, as well as the removal of the amenity grassland garden, the hedgerows bordering the site and the scattered trees and shrubs across the site. Though these habitats are of fairly low ecological value, unmitigated, this will lead to a **likely negative** effect on habitats at the **site level**.

However, the proposed development will include the creation of two new native-species hedgerows (see Figure 2) which will replace lost habitat potentially used by commuting bats and nesting birds. To increase the connectivity of these features, and to replace removed shrubs and trees within the garden space, a further native-species hedgerow should be created along the western boundary, as this will also have connectivity to woodland in the wider landscape, as well as higher value foraging habitat for bats. This hedgerow should contain 50% thorny species such as blackthorn and hawthorn, with the rest to comprise the species listed below. Given the arrival of ash dieback, this species should not be



included within the planting scheme for the proposed development.

- guelder rose *Viburnum opulus*
- field maple *Acer campestre*
- common dogwood *Cornus sanguinea*
- hornbeam *Carpinus betulus*
- English oak *Quercus robur*

As detailed within section 5 of this report, new features for breeding birds and roosting bats should be incorporated into the development which will increase habitat available within the site for bats and nesting birds. Any new trees planted across the site (see Figure 2) should be native-species only. With this mitigation and suggested enhancements, the proposed development will have a **likely positive** effect on habitats at the **site level**.

It has been concluded in section 3.1 that much of the land north of the site is not wood pasture, but agricultural land. Though there is a small area of secondary woodland 130m west from the site, given the fairly small scale of the development, it is unlikely that it will impact on this habitat. Therefore, the development will have a **neutral** effect on the wood pasture and secondary woodland habitat.

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. The proposed development will have a **neutral** effect on badgers.

4.4 Bats

The external assessment revealed that there are very low numbers of identified potential bat roosting features present on the property which are of negligible value to roosting bats. Spindlewood has therefore been assessed to have 'negligible' bat roosting potential overall. However, the presence of roosting bats cannot be entirely discounted and as such, demolition of the building may result in harm to bats and the removal of suitable roosting habitat. This would have a **possible negative** effect on commuting and foraging bats at the **site level**.

To prevent this, precautionary measures prior to the commencement of construction are considered sufficient in this case. Therefore, prior to demolition of the building, two Schwegler, or similar, woodcrete bat boxes should be installed nearby within the site on mature trees due to be retained and the raised tile and gaps in the weatherboarding should be inspected using an endoscoped by a suitably licensed Ecologist. If bats are found at any time, works must cease immediately and demolition will not be able to proceed until surveys are completed and a European Protected Species (EPS) licence is obtained from Natural England.

Though the site is of fairly low value to commuting and foraging bats, they may commute along the eastern and western hedgerows and forage over the small area of longer grassland within the site.



Therefore, unmitigated, the development will result in the removal of these features used by bats, reducing the available commuting and foraging habitat, as well as potentially causing disturbance from artificial lights. This would have a **possible negative** effect on commuting and foraging bats at the **site level**.

As such, proposed development should include an 'ecologically sensitive lighting scheme' in accordance with guidance produced by the Bat Conservation Trust (summarised in Appendix 4).

With the mitigation for roosting, commuting and foraging bats, as outlined above, as well as the creation of new native-species hedgerows (see Figure 2) and enhancements outlined in section 5, the development will have a **likely positive** effect on bats at the **site level**.

4.5 *Breeding Birds*

Much of the vegetation within and bordering the site is proposed to be removed as part of the development. Unmitigated, the development may cause harm to birds or their young, as well as reduce suitable nesting habitat within the site. There may also be dust and noise disturbance during construction which will have a **likely negative** effect on breeding birds at the **site level**.

As such, the development must consider the nesting bird season and any vegetation removal 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. If other site works are to be carried out during the nesting bird season, Heras fencing should be erected around the retained hedgerows, trees and shrubs, to prevent construction vehicles from coming too close and reducing disturbance.

With this mitigation in place, the creation of new native-species hedgerows (see Figure 2) and enhancements outlined in section 5, the development will have a **likely positive** effect on nesting birds at the **site level**.

4.6 *Dormice*

As the site is considered to be largely unsuitable for this species and they are highly unlikely to be present, the development will not impact on hazel dormouse and therefore will have a **neutral** effect on this species.

4.7 *Great Crested Newts*

Great crested newts could be using the terrestrial habitat north of the site, they may traverse the hedgerow on the western boundary and use the small areas of longer grassland, as well as scattered hibernacula along the western and northern boundaries. Therefore, their presence on the site cannot be confidently discounted, and the removal of these features could harm great crested newts, in the unlikely event of they are to be present within the site. Therefore, unmitigated, the proposed development will have a **possible negative** effect on great crested newts at the **site level**.



Therefore, the tightly-mown amenity grassland dominating the site should be maintained in the same way, and kept below a height of 5cm prior to construction, to prevent further suitable habitat for great crested newts from forming. Additionally, a hand search of the longer grassland area, length of cypress hedgerow and eastern boundary hedgerow, as well as vegetation and rubble piles should be undertaken prior to the commencement of any construction works on the site.

In the unlikely event that a great crested newt is found, all work should cease until an EPS licence can be obtained from Natural England. Any deep excavations that are made during the construction phases of the proposed development should have the provision of a ramp if excavations are left open overnight to ensure any trapped amphibians are able to exit safely.

With the above measures in place, the proposed development will have a **neutral** effect on great crested newts.

4.8 Reptiles

As reptiles could be using the terrestrial habitat north of the site, they might also commute along the eastern and western boundary hedgerows, use the longer grassland for foraging and shelter in the scattered hibernacula across the site. Therefore, the removal of these features could harm reptiles. As such, unmitigated, the proposed development will have a **possible negative** effect on reptiles at the **site level**.

Therefore, precautionary measures will be necessary for the development to proceed. The tightly-mown amenity grassland predominating the site should be maintained in the same way, and kept below a height of 5cm prior to construction, to prevent further suitable habitat for great crested newts from forming. Additionally, the hand search for great crested newts (see section 4.7) should also cover reptiles.

If reptiles are found at any time, works must stop immediately and the reptile moved to safety in an area away from the construction zone. Further surveys or mitigation measures with regards to reptiles may be necessary.

With the above measures in place, the proposed development will have a **neutral** effect on reptiles.

4.9 Invasive Non-native Species

The cherry laurel identified east of the property will be removed as part of the development. It must be removed cautiously and taken away from the site to prevent it suckering and creating new growth, to be disposed of correctly. No further cherry laurel or other non-native species should be included within the planting scheme for the development.



4.10 Other Notable Species

The tree stumps which may provide suitable habitat for stag beetles and other invertebrates are likely to be removed as part of the proposed development. This has the potential to impact on stag beetles or their larvae, and therefore, the stumps should only be removed under the supervision of an ecologist, which can be undertaken at the same time as the hand search for great crested newts and reptiles (see section 4.7 and 4.8 above). The dead wood habitat should be replaced elsewhere on the site using log piles, preferably somewhere sheltered, such as under a hedgerow.

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 bats may commute and forage at the site, new roosting opportunities can be incorporated into the proposed development. These can be placed upon/within the building fabric of the new residential units, as well as affixed to mature trees due to be retained and protected across the site. Incorporating integral bat roosting opportunities into new buildings will be necessary to provide a gain in roosting opportunities for bats. The creation of no less than five new roosting features are recommended across the development. This should include a mixture of the following features: bat access tiles, Schwegler 2FR bat tubes and 2FE Schwegler wall-mounted bat shelters (see Figure 6). These features should be positioned on south and east-facing elevations of the new buildings. Where bat access tiles are used, bitumen must be used instead of Tyvec type linings, which over time fray and entangle bats. Lighting must not face towards these new bat roosting features. 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.

To replace and create further nesting bird habitat within the proposed development, bird boxes can be placed upon the new residential units. Three Sparrow Terrace Nest Boxes (see Figure 5) can be attached to an external wall of the proposed new buildings to create further habitat for house sparrows, which are a declining species in the UK. These can be fitted either perpendicular or horizontally to fit the building shape, as well as under the eaves. These boxes must be fitted at least 2m to 4m above the ground level with a clear flight path on the southern or eastern face of the buildings, facing away from prevailing winds.

Two Vivara Pro Seville 32mm WoodStone Nest Boxes (see Figure 6) can be affixed either to the buildings or a mature tree. Schwegler 1B Nest Boxes can be affixed to mature trees across the site, this should include a mixture of those with a 'round hole' and an 'oval hole' (see Figure 15) to encourage coal tit *Periparus ater*, great tit *Parus major*, blue tit and nuthatch *Sitta europea*. These boxes should be placed facing south or east, at least 3m above the ground and facing away from prevailing winds, with a clear flight path.



Figure 5. Left to right image: Bat Access Tile Set, 2FR Schwegler Bat Tube, 2FE Schwegler Wall-Mounted bat shelters.



Figure 6. Left to right image: Sparrow Terrace Nest Box, Vivara Pro Seville 32mm Woodstone Nest Box.

6 CONCLUSIONS

Unmitigated, the proposed development has the potential to impact on bats, breeding birds, great crested newts, reptiles and stag beetles.

Therefore, to prevent harm to roosting bats, precautionary measures will be necessary. Prior to demolition of the building, two Schwegler or other woodcrete bat boxes should be installed nearby within the site on mature trees due to be retained and protected throughout the development, and the raised tile and gaps in the weatherboarding should be inspected using an endoscope by a suitably licensed Ecologist.

Given that great crested newts and reptiles may be present within the site boundaries and within suitable hibernacula and small areas of longer grassland contained by the site, reasonable avoidance measures, as outlined within section 4.7 and 4.8 will be necessary. Additionally, the amenity grassland predominating the garden space should be maintained in the same way to below a height of 5cm to prevent further suitable habitat for great crested newts and reptiles from forming prior to construction.

The stumps within the site which may be used by stag beetles and other invertebrates should only be removed under supervision of an ecologist, which can be undertaken at the same time as the hand search for great crested newts and reptiles. The dead wood habitat should be replaced elsewhere on the site using log piles, preferably somewhere sheltered, such as under a hedgerow.



The enhancement opportunities identified in Section 5 of this document, such as the creation of new native-species hedgerow and installation of bat and bird boxes within the development will result in new opportunities for nesting birds and roosting bats and will improve the ecological value of the site overall.

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 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 *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)⁹ 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)¹⁰. 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,

⁹ 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.

¹⁰ 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.

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APPENDIX 2 –Local Planning Information

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.
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APPENDIX 3 – Great crested newt 'Habitat Suitability Index' values

Table 1. HSI calculation for ponds assessed during the survey.

	Pond A	
NGR	SU97410537	
SI attribute	SI value	Notes
Location	1	SE England
Pond area	0.2	200m ²
Pond drying	0.9	Rarely
Water quality	0.67	Moderate
Shade cover	1	10%
Water-fowl	0.67	Minor
Fish presence	0.67	Possible
No. ponds	0.67	2
Terrestrial habitat	0.63	Moderate
Macrophytes	0.67	70%
H.S.I. value	0.64	'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 Trust¹¹ 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 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

¹¹ 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/>