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# **Preliminary Ecological Assessment**

# Land at Former Pease Pottage Nurseries

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# 5<sup>th</sup> August 2020

Project No: P3788

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

Issue No	Author	Reviewer	Issue Date	Additions/alterations	Notes
Original	KB	PW	05.08.20	N/A	



# <u>Report Summary</u>

1. The Ecology Co-op has been commissioned by Fluid Planning Ltd to undertake an updated Ecological Appraisal on land at the former Pease Pottage Nurseries on Brighton Road, Pease Pottage. A site walkover survey visit was carried out by Kelly Brown GradCIEEM on the 15<sup>th</sup> July 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 for the allocation of the site into the Mid Sussex District Council's Strategic Housing and Economic Land Availability Assessment (SHELAA).

2. The site is a former nursery comprising a collection of derelict buildings in the west of the site surrounded by hardstanding which has been colonised by ephemeral short perennial and tall ruderal vegetation, scattered semi-mature trees and shrubs, a field of semi-improved grassland bordered by tall ruderal, a small parcel of mixed plantation woodland in the east of the site and a stream with an intact species-rich hedgerow along the southern boundary.

3. The site lies outside the zone of influence from all designated sites within 2km and therefore impacts to designated sites are unlikely to be a consideration for any future development within the site boundary.

4. The Bensonshill Wood ancient woodland which lies adjacent to the eastern boundary has potential to be indirectly affected by the development. Mitigation and compensation measures include a minimum of a 15m buffer between the ancient woodland and the development which should be protected by a permanent fence to protect the woodland from disturbance. An ecotone habitat could be created within the buffer to provide compensation. The woodland could be subject to a long-term management plan and monitoring to improve the existing condition of the woodland and to remediate the dense rhododendron which has spread west into the site from the woodland allowing or causing the spread of this plan is offence under the WCA 1981. The woodland should be protected by screening barriers during the construction phase to protect the habitats from dust and noise. A SuDS could be incorporated into the design of the scheme to protect the woodland habitats from hydrological impacts of the development. Further mitigation and compensation recommendations for the construction and operational phases of the development are detailed in Section 4.2 below. A Construction Ecological Management Plan (CEMP) could be produced as part of the development proposals to demonstrate how the development can be appropriately mitigated.

5. The area of semi-improved grassland in the centre of the site is relatively speciesrich however due to the condition of the grassland, which had been mown at the time of survey, a full botanical survey could not be undertaken to robustly assess its true value. The ephemeral short perennial vegetation within the west of the site, which had been



subject to spraying and cutting at the time of survey, contained frequent common centaury. The habitat fits criteria 1 and 3 for Open Habitat on Previously Developed Land HPI. The mixed plantation woodland, the stream, the scattered semi-mature trees and the hedgerows in the north-western corner and along the southern boundary, which provide some ecological value, should be retained and protected from any future development on the site and enhanced post-development, where possible. Two non-native invasive species listed on Schedule 9 of the WCA 1981 (as amended) and three species with invasive tendencies were identified within the site and should be removed as part of the ecological enhancements. A lighting scheme should be created for the site in relation to nocturnal wildlife including bats and dormice as recommended in Sections 4.4 and 4.6.

6. Further surveys are recommended for NVC of the semi-improved neutral grassland within the centre of the site and on the ephemeral short perennial vegetation within the west of the site to assess the floristic communities present to robustly assess the impacts of the any future development on these habitats. Further bat inspections on the buildings and trees which have been assessed as having potential roosting features should be undertaken. Additionally, activity transect and static monitoring surveys are recommended for bats. Further population estimate surveys are recommended for reptiles, due to their known presence within the site, and presence/ absence surveys are recommended for dormice and great crested newts within the optimal survey seasons.

7. The precautionary mitigation set out in section 4.5 to avoid the removal of vegetation during the nesting birds season must be followed to ensure that there is not a breach of the Wildlife and Countryside Act. The surveys detailed within this document and precautionary approach to the development of this site and protection of features of ecological interest illustrate a pathway for an appropriate planning application to be made.

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

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

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

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# **1** INTRODUCTION

# 1.1 Purpose of the Report

The Ecology Co-op has been commissioned to undertake an Ecological Appraisal of land at the former Pease Pottage Nurseries, Brighton Road, Crawley RH11 9AE by Fluid Planning. This report presents the findings of a walkover survey undertaken by Kelly Brown , a Graduate member of the Chartered Institute for Ecology and Environmental Management (GradCIEEM), a botanist (BSBI Level 4) and Natural England and Natural Resources Wales Level 1 great crested newt and dormouse Survey Class Licence holder on 15th July 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 site allocation. Recommendations for further surveys that are likely to be required to inform a future planning application and Ecological Impact Assessment (EcIA) of the proposal are provided where necessary, and measures to avoid, mitigate and/or compensate for adverse impacts and effects are outlined.

# 1.2 Background

The site is located to the south of Pease Pottage on Brighton Road, Crawley, West Sussex. The central grid reference for the site is TQ26123235.

This site comprises a former nursery and measures approximately 1.90 hectares in area. It includes a collection of derelict buildings in the west of the site surrounded by hardstanding which has become colonised by ephemeral short perennial and tall ruderal vegetation, a field of semi-improved grassland bordered by tall ruderal, scattered semi-mature trees and shrubs, a small parcel of mixed plantation woodland in the east of the site and a stream with an intact species-rich hedgerow running along the southern boundary. Figure 1 shows the boundary of the site.

The purpose of this report is for the allocation of the site into the Strategic Housing and Economic Land Availability Assessment (SHELAA) which is a technical study that will form part of the evidence base for inclusion into the Mid Sussex District Council Site Allocations Documents.





Figure 1. An aerial image showing the location of the site. The approximate site boundary is outlined in red. Image produced courtesy of Google maps (map data ©2020 Google)



Figure 2. A proposed concept plan for the development proposal provided courtesy of Fluid Planning.

# 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 [Crawley Borough 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)<sup>1</sup>, but also considers the Guidelines for Ecological Report Writing, Second Edition (CIEEM 2017)<sup>2</sup> and the Guidelines for Ecological Impact Assessment in the UK and Ireland (CIEEM 2018)<sup>3</sup>.

# 2.1 Desk Study

A search for existing records of protected species, species of conservation concern and invasive nonnative species was requested from the 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 avellanrius*) 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 (<u>www.magic.gov.uk</u>) 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.

# 2.2 Field Survey

A site walkover survey was undertaken on 15<sup>th</sup> July 2020 during which the habitats contained within the site were described and evaluated. Since this site is relatively small scale and contains limited seminatural 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.

<sup>&</sup>lt;sup>1</sup> CIEEM (2017). *Guidelines for Preliminary Ecological Appraisal, 2nd edition.* Chartered Institute of Ecology and Environmental Management, Winchester.

<sup>&</sup>lt;sup>2</sup> CIEEM (2017). *Guidelines for Ecological Report Writing, 2<sup>nd</sup> edition.* Chartered Institute of Ecology and Environmental Management, Winchester.

<sup>&</sup>lt;sup>3</sup> 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.



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

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 1989<sup>4</sup>. Further surveys were recommended as appropriate.

### 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 best practice. Any evidence confirming the presence of bats that was found was clearly recorded including photos and samples taken (e.g. droppings) where appropriate. Further surveys were [recommended as appropriate.

The habitats surrounding the site and wider landscape were broadly assessed for their potential to support foraging and commuting bats. Further surveys were recommended as appropriate.

# 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

<sup>&</sup>lt;sup>4</sup> Harris, S, Cresswell, P. and Jefferies, D. (1989). *Surveying Badgers*. Mammal Society.



such as red-listed Birds of Conservation Concern (Eaton *et al.* 2015)<sup>5</sup> and those species afforded special protection on Schedule 1 of the Wildlife and Countryside Act (1981).

#### 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 online 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)<sup>6</sup>.

# 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)<sup>7</sup>. 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)<sup>8</sup>.

# 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. Further surveys were recommended as appropriate.

<sup>&</sup>lt;sup>5</sup> 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.

<sup>&</sup>lt;sup>6</sup> Bright, P., Morris, P. and Mitchell-Jones, T. (2006). *The dormouse conservation handbook 2nd Ed.* English Nature, Peterborough.

<sup>&</sup>lt;sup>7</sup> 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.

<sup>&</sup>lt;sup>8</sup> English Nature (2001). *Great Crested Newt Mitigation Guidelines*. English Nature, Peterborough.



Any existing refuge objects (e.g. logs and metal sheets) were searched for presence of reptiles and any observations of reptiles recorded.

# 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

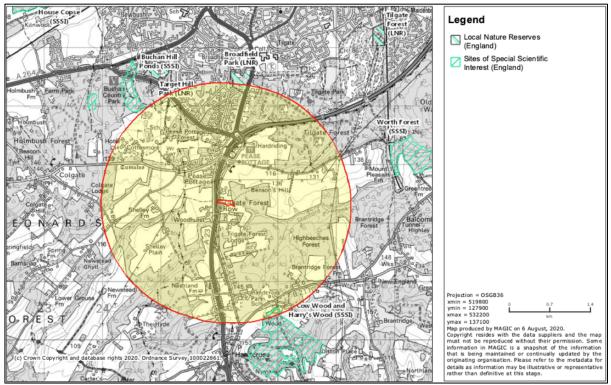
A search on MAGIC shows that Cow Wood and Harry's Wood Site of Special Scientific Interest (SSSI) is situated just within the zone of influence from the site at the eastern end only, with this site situated approximately 1.9km from the site boundary (see Figure 3). Cow Wood and Harry's Wood SSSI is designated as an ancient woodland site featuring several steep sided stream valleys (ghylls) which contain plants with an Atlantic distribution and has a rich community of breeding birds.

A search by SxBRC shows that there are no non-statutorily designated sites within 2km of the site boundary. There is a designated road verge approximately 500m north along the western verge of Brighton Road, however no details are given for its designation.

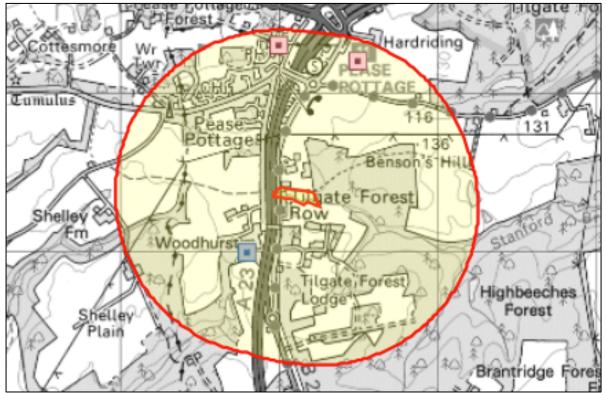
There are three granted EPS licences for mitigation projects within 1km of the site boundary. The closest EPS licence (EPSM2011-2739) to the site concerns the damage and destruction of a breeding and resting place of brown long-eared and common pipistrelle bats approximately 379m south-west of the site, granted in 2012. The second licence (2017-32325-EPS-MIT) concerns the damage and destruction of a resting place of dormice approximately 880m north-east of the site, granted in 2017. The third licence is granted for the destruction of a brown long-eared resting place (EPSM2015-5948) and the damage and destruction of a dormouse breeding place (2016-20928-EPS-MIT) approximately 902 m north west of the site, granted in 2015 and 2016.



A search on MAGIC and SxBRC shows that the site is mapped as broadleaved woodland and wood parkland and pasture Habitats of Principal Importance under the NERC Act 2006.



**Figure 3.** Designated sites within a radius of 2km of the application site. Image produced courtesy of Magic maps (<u>http://www.magic.gov.uk/</u>, contains public sector information licensed under the Open Government Licence v3.0).



**Figure 4.** Granted EPS licences within 1km of the application site, with bat licenses shown as blue squares and dormouse licenses shown as pink squares. Image produced courtesy of Magic maps (<u>http://www.magic.gov.uk/</u>, contains public sector information licensed under the Open Government Licence v3.0).



# 3.2 Habitats

The habitats recorded within the site included a collection of derelict buildings in the west of the site surrounded by hardstanding which has become colonised by ephemeral short perennial and tall ruderal vegetation, a field of semi-improved grassland bordered by tall ruderal, a small parcel of mixed plantation woodland with dense stands of bracken in the east of the site and a stream with an intact species-rich hedgerow along the southern boundary. The off-site habitats include ancient semi-natural broadleaved woodland on the eastern boundary. The habitats are listed in the order found within the Extended Phase 1 Habitat Handbook (JNCC, 2010).

Habitat type	JNCC	Area(Ha)/	Target note including general
	Code	Length (meters)	species composition
On-site habitate	5		
Mixed	A1.3.2	0.41 Ha	There was a small parcel of mixed plantation woodland dominated
plantation			by Norway spruce Picia abies in the east of the site. The woodland
woodland			was in poor condition with large gaps in the canopy from previous
			felling activity. The ground flora comprised a mosaic of semi-
			improved neutral grassland, tall ruderal vegetation and dense
			stands of bracken Pteridium aquilinum (approximately 0.10Ha).
			The boundary between the site and the off-site ancient semi-
			natural broadleaved woodland (Bensonshill Wood) was denoted
			by a dry ditch (approximately 120m in length). The off-site
			woodland shrub layer was dominated by rhododendron
			Rhododendron ponticum which has self-seeded into the site
			spreading west through the woodland habitat (TN05). Other
			species present within the canopy included pedunculate oak
			Quercus robur, goat willow Salix capreae, sycamore Acer
			pseudoplatanus, beech fagus sylvatica, silver birch Betula
			pendula and alder Alnus glutinosa. The understorey was very
			sparse with rare elder sambucus nigra and rowan Sorbus
			aucuparia. The ground flora comprised a mosaic of tall ruderal
			and semi-improved neutral grassland species which are
			associated with damp conditions including creeping bent Agrostis
			stolonifera, pendulous sedge Carex pendula, marsh thistle
			Cirsium palustre, creeping thistle Cirsium arvense, ground ivy
			Glechoma hederaceae, hogweed Heracleum sphondylium,
			Yorkshire-fog Holcus lanatus, imperforate St John's wort
			Hypericum maculatum small balsam Impatiens parviflora, soft
			rush Juncus effusus, greater bird's-foot trefoil Lotus
			pedunculatus, silverweed Potentilla anserina, selfheal Prunella
			vulgaris, black currant Ribes nigra, red currant Ribes rubra,
			bramble Rubus fruticosus agg, nettle Urtica dioica, hemp
			agrimony Eupatorium cannabinum, garlic mustard Allaria
			petiolata, chervil Anthiscus cerefolium, foxglove Digitalis purpurea
			and hedge woundwort Stachys sylvestris. There was a pile of
			asbestos concrete in the south-eastern corner of the woodland,
			along the boundary with the waterworks (TN08).
Scattered semi-	A3.1	N/A	There were scattered semi-mature trees and shrubs across the

Table 1. Habitats present within the site boundary



moturo tracco			aits and on the western and northern beinderics in the
mature trees			site and on the western and northern boundaries including sycamore, butterfly bush <i>Buddleja davidii</i> , willow, silver birch, cherry laurel <i>Prunus laurocerasus</i> and pedunculate oak.
Semi-improved neutral Grassland	B2.2	0.81 Ha	The grassland was present within the centre of the site and comprised semi-improved neutral species. The grassland had been recently cut prior to survey and the arisings had been left on top which made botanical assessment of the habitat very difficult. However some species were visible during the survey including Yorkshire-fog, broadleaved dock <i>Rumex obtusifolius</i> , pendulous sedge, greater bird's-foot trefoil, creeping buttercup <i>Ranunculus repens</i> , white clover <i>Trifolium repens</i> , creeping thistle, self-heal, wild basil <i>Clinopodium vulgare</i> and agrimony <i>Agrimonia eupatoria</i> .
Tall ruderal/dense scrub mosaic	C3.1	0.36 Ha	The semi-improved neutral grassland was bounded by tall ruderal vegetation/dense scrub mosaic on the northern, western and southern boundaries. The hardstanding/ephemeral short perennial vegetation within the west of the site was bounded by tall ruderal vegetation/dense scrub mosaic on the eastern boundary. The vegetation was left unmanaged and was relatively species-rich and contained some interesting species typically associated with wet conditions. The species present within the habitat included Yorkshire-fog, white clover, creeping bent, false oat-grass <i>Arrhenatherum elatius</i> , hedge bindweed <i>Calystegia sepium</i> , pendulous sedge, rosebay willowherb <i>Chamerion angustifolium</i> , creeping thistle, hogweed, imperforate St john's wort, greater bird's-foot trefoil, self-heal, bracken, bramble, germander speedwell <i>Veronica chamaedrys</i> , tufted vetch <i>Vicia cracca</i> , smooth tare <i>Vicia tetrasperma</i> , wood dock <i>Rumex sanguinea</i> , false-brome <i>Brachypodium sylvaticum</i> , common knapweed <i>Centaurea nigra</i> , cock's-foot <i>Dactylis glomerate</i> , wood avens <i>Geum urbanum</i> , ground ivy, clustered rush <i>Juncus conglomeratum</i> , soft rush, hard rush <i>Juncus inflexus</i> , perennial rye-grass <i>Lolium perenne</i> , Japanese knotweed <i>fallopia japonica</i> , black currant, figwort <i>Scrophularia nodosa</i> , hedge woundwort, coltsfoot <i>tussilago farfara</i> , foxglove, ragwort <i>Senecio jacobaea</i> , gorse <i>Ulex europaeus</i> , evening primrose <i>Oenothera biennis</i> , male fern <i>Dryopteris filix-mas</i> , common centaury <i>Centaurium erythraea</i> , curled dock <i>Rumex crispus</i> and broadleaved dock.
Stream	G2.2	258m	There was a shallow stream running along the southern boundary of the site flowing west to east. The channel was densely vegetation in the west of the site with tall ruderal vegetation and areas of hemlock water dropwort <i>Oenanthe crocrata</i> within the channel. The eastern section of the stream which flowed through the mixed plantation woodland was unvegetated with very shallow sides.
Derelict buildings with hardstanding/e phemeral short perennial vegetation	J1.3	0.25 Ha	There was an area of hardstanding in the west of the site which formed the former nursery buildings and yard (TN01). The buildings were all derelict and in different states of decay including the main building which had signs of fire damage and which stood without a roof or a majority of the walls. There were three buildings which were constructed of brick with flat roofs covered by



			asbestos concrete (cyrysotile) and tin sheeting. The buildings were surrounded by hard standing which was colonised by ephemeral short perennial and tall ruderal vegetation. There were several patches of Japanese knotweed along the western boundaries of the building and throughout the habitat in the west of the site and along the southern boundary (TN02). There were signs of recent management by spraying and cutting the vegetation prior to the survey. There were scattered semi-mature sycamore trees and butterfly bush shrubs amongst the buildings. There was a large patch of dense ivy <i>Hedera helix</i> along the western face of one of the buildings which contained an active wasps nest at TQ2994 32355. The species present within the habitat included Yorkshire-fog, lesser hop trefoil <i>Trifolium dubium</i> , creeping bent, false oat-grass, creeping thistle, imperforate St John's wort, bird's-foot trefoil <i>Lotus corniculatus</i> , selfheal, nettle, germander speedwell, bristly oxtongue <i>Helminthotheca echioides</i> , spear thistle <i>Cirsium vulgare</i> , smooth hawksbeard <i>Crepis capillaris</i> , cleavers <i>Galium aparine</i> , cut leaved cranesbill <i>Geranium dissectum</i> , ground ivy, hogweed, field forget-me-not <i>Myosotis arvensis</i> , greater plantain <i>Plantago majus</i> , creeping buttercup, bramble, hedge woundwort, Wilson's honeysuckle <i>Lonicera nitida</i> , figwort, bittersweet <i>Solanum dulcamara</i> , common centuary and musk mallow <i>malvus moschata</i> .
Intact species-	J2.1.1	43m	There was a small section of species-rich intact hedgerow in the
rich hedge			north-western corner of the site. The species present included
			field maple Acer campestre, hazel Corylus avellane, dogwood
			Cornus sanguinea, wild cherry Prunus avium, cotoneaster sp and
			holly <i>llex aquifolium.</i>
Hedge with	J2.3.1	180m	The stream along the southern boundary of the site was bounded
trees – native species rich			on both banks by a hedgerow with mature trees. The species
species rich			present included hazel, pedunculate oak, alder, sycamore, silver birch, hawthorn Crataegus monogyna, holly, Norway spruce, goat
			willow, rowan and cotoneaster sp. The ground flora was
			dominated by tall ruderal/ dense scrub mosaic which is described
			above.
Off-site Habitat			
Ancient semi-	A1.1.1		This describes a 50m section of The Bensonshill Wood ancient
natural			semi-natural woodland which lies adjacent to the eastern
broadleaved			boundary of the site. The woodland comprises pedunculate oak
woodland			with ash Fraxinus excelsior with a hazel coppice understorey in
			places. The understorey is dominated by rhododendron with no
			ground flora present within the 50m.



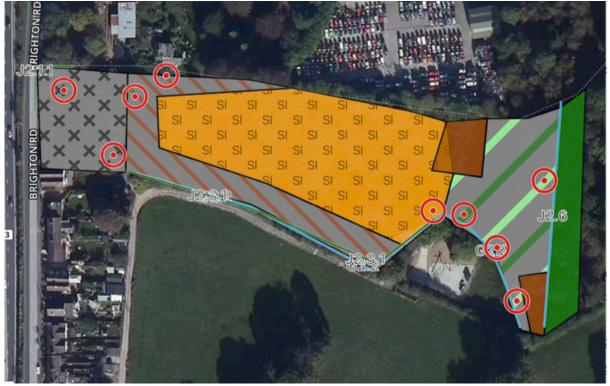


Figure 5. The Phase 1 Habitat Map of the Site.

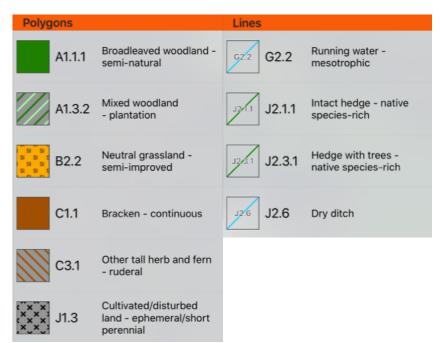


Figure 6. Map Key





Photograph 1. Tall ruderal vegetation within the west of the site



Photograph 2. Ephermeral short perennial vegetation in the west of the site





**Photograph 3.** Mown semi-improved grassland, tall ruderal vegetation, hedgerow with trees and mixed plantation woodland habitats in the southern aspect



Photograph 4. Mown semi-improved grassland, tall ruderal vegetation and scattered trees in the northern aspect.





Photograph 5. Japanese knotweed along the southern boundary in the west of the site.





Photograph 6. Dense rhododendron within the off-site Bensonshill Wood.



Photograph 7. Rhododendron spreading west into the site boundary.





Photograph 8. Stream along the southern 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 were several features, including the buildings and mature trees, within the site boundary which had potential to support roosting bats which are described in Table 3 below.

The habitats within the site provide foraging and commuting habitat for bats largely confined to boundary features and the small parcel of mixed plantation woodland within the east of the site. The stream and hedgerow with mature trees along the southern boundary has potential to be an important commuting and foraging corridor within the site. However, there is potential that the G.W & G Bridges Ltd car breakers yard adjacent to the northern boundary of the site may use artificial lighting which may illuminate the site at night which has the potential to affect any bat species utilising the habitats within the site boundary. The site has good habitat connectivity to high quality habitat in the form of the Bensonshill Wood ancient woodland adjacent to the eastern boundary and to wood pasture and

parkland HPI adjacent to the southern boundary which have potential to be important habitats for the local bat population.

The SxBRC provided 20 bat records in the search area comprising six identified species within the search area which are detailed in Table 2 below.

<b>Table 2.</b> Bat records returned within a 1km radius	of the site.
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Species	No. of records
Common pipistrelle Pipistrellus pipistrellus	6
Soprano pipistrelle Pipistrelle pygmaeus	2
Brown long-eared Plecotus auritus	6
Serotine Eptesicus serotinus	1
Noctule Nyctalus noctule	1
Lesser noctule Nyctalus leisleri	1
Unidentified bat species	3

The closest of these was a brown long-eared bat roost record approximately 280m south of the site within Home Farm, dated 1993.

Duilding /	Decerimtics	Assessment	Dhatawanha
Building /	Description of	Assessment	Photographs
Section	features	of potential	
of			
building			
Building 1	Small derelict single storey brick built shed with a flat roof covered with wood and felt. The building was in a dangerous state with warning signs stating 'danger-do not enter'.	The building should be subject to further inspection.	

#### Table 3. Potential roost features for bats



	1	r	
Building 2	Small derelict single storey brick built shed with a flat roof covered by asbestos concrete sheeting. The building was in a dangerous state with warning signs stating 'danger- do not enter'. There was a pile of asbestos concrete sheeting in the north-western corner of the building. There was Japanese knotweed along the western boundary of the building (TN01).	The building should be subject to further inspection.	
Building 3	Large derelict single storey brick built shed which was partially demolished and had signs of a previous fire. The building was in a dangerous state with warning signs stating 'danger-do not enter'. There were piles of rubble within the centre of the building with scattered semi- mature sycamore trees and butterfly bush shrubs.	Negligible	
Building 4	Small derelict single storey brick built shed with no roof. The western wall was covered in dense ivy. The building was in a dangerous state with warning signs stating 'danger-do not enter'.	The building should be subject to further inspection.	
Building 5	Small derelict single storey brick built shed with a pitched roof. The building was in a	The building should be subject to further	N/A



		increation	
	dangerous state with	inspection.	
	warning signs stating		
	'danger-do not enter'.		
Τ1	There were two pollarded alder trees in the south-eastern corner of the site, along the northern bank of the stream (TN06). The trees had tear-outs on multiple stems.	Moderate	
Τ2	There was a mature pedunculate oak on the northern boundary of the stream along the southern boundary of the site (TN07). The tree had a large tear- out at approximately 5m.	Moderate	



ТЗ	There was a mature pedunculate oak on the northern boundary of the stream along the southern boundary of the site (TN09). The tree had no visible PRFs but has potential for bats due to its age and condition.	The should subject further inspection	tree be to	

# 3.5 Breeding Birds

The mixed plantation woodland within the east of the site and all of the mature and semi-mature trees and hedgerows have the potential to support a variety of common nesting birds.

SxBRC provided numerous bird records for the search area concerning a total of 103 species. Most of these species are relatively common and widespread, but the list includes 21 species of principle importance for conservation (S41 NERC Act 2007), and 12 species listed on Schedule 1 of the Wildlife and Countryside Act. In addition, 23 species are red listed on the Birds of Conservation Concern

A high proportion of the records are associated with the ancient woodland habitats adjacent to the eastern boundary of the site and the arable habitats within the wider landscape to the north and west. However, the following species on S41 could potentially use the mixed plantation woodland, hedgerows and scattered mature trees within the site to breed: dunnock *Prunella modularis*, house sparrow *Passer domesticus*, starling *Sturnus vulgaris*, song thrush *Turdus philomelos* and lesser spotted woodpecker *Dendrocopos minor*. The following Schedule 1 WCA species could potentially use the site for hunting and foraging: red kite *Milvus milvus*, goshawk *Accipiter gentilis* and fieldfare *Turdus pilaris*.

# 3.6 Dormice

The species-rich hedgerow with trees bordering the site to the south has high potential to support common dormouse due to the presence of fruit and nut producing species which are favored by dormice including hazel, pedunculate oak and sycamore with bramble in the understorey. The mixed plantation woodland within the east of the site is much disturbed and provides limited habitat opportunities to support dormice. The woodland is dominated by coniferous trees with a sparse understorey however, there is occasional pedunculate oak and sycamore. However, dormice are known to inhabit coniferous



woodland<sup>9</sup> and these habitats are ecologically well connected to an extensive network of high-quality habitats across the local landscape. Additionally, West Sussex is known to be a stronghold for dormice populations, and they are known to be present within the local area.

SxBRC provided eight dormouse records in the search area. There was one dormouse record within habitat on the eastern embankment of the A23 approximately 800m north of the site in 2013. The other records pertain to a parcel of woodland approximately 500m north-west of the site from 2013-2015. This parcel of woodland is divided from the site by the A23 and is likely to be a barrier to dormouse movement.

# 3.7 Great Crested Newts and other Amphibians

There are no waterbodies present within or adjacent to the site boundary. Four ponds were identified within 500m of the site boundary on MAGIC.

P1 lies approximately 225m west of the site within the land of Woodhurst Farm House. The pond is separated from the site by the A23, which forms a significant barrier between the pond and the site. P2, which lies approximately 260m north-east, and P3, which lies approximately 296m east of the site, lie within the Bensonshill Wood ancient semi-natural woodland complex adjacent to the eastern boundary of the site. P4 lies approximately 407m south-east of the site within the land of Home farm on the edge of Bensonshill Wood. The pond is separated from the site by the stream, which runs from west to east along the southern boundary of the site, through Bensonshill Wood which may form a barrier to great crested newt movement.

The habitats present within the site provide optimal terrestrial habitat in the form of the mixed plantation woodland, stands of dense bracken, tall ruderal vegetation and hedgerow bases on the southern boundary of the site. The semi-improved neutral grassland within the east of the site was unsuitable to support great crested newts due to the lack of ground cover as a consequence of recent mowing at the time of the survey, however if the grassland is left undisturbed the habitats will be considered suitable to support terrestrial great crested newts. The habitats present within the west of the site offer sub-optimal terrestrial habitat due to the dominance of hard standing and lack of ground cover. However, there were several large rubble piles within the west of the site and along the northern boundary which have potential to be used as refugia and hibernacula. P2, P3 and P4 are located within the off-site Bensonshill Wood ancient semi-natural broadleaved woodland provides high quality terrestrial habitat for any populations within the ponds however there is good habitat connectivity between the ponds and the site.

SxBRC provided two records for common toad *Bufo buffo*. The closest of these was at 902m northwest of the boundary of the site, dated 2013. No records were received for great crested newts.

<sup>9</sup> https://ptes.org/dormouse-papers/brunt-and-bousfield-2002-dormice-in-planted-ancient-woodlands/



Pond	NGR	Description	H.S.I	Interpretation	Survey
			value		recommendations
1	TQ 2574 3230	Medium sized farm pond located within a field of pasture	N/A	Could not be accessed	No further action due to significant barriers to movement between this pond and the site.
2	TQ 2637 3261	Medium sized woodland pond within Bensonshill Wood	N/A	Was not accessed during survey. Bensonshill Wood was very difficult to navigate due to the domination of rhododendron within the understorey.	eDNA sampling
3	TQ 2655 3220	Medium sized woodland pond within Bensonshill Wood	N/A	Was not accessed during survey. Bensonshill Wood was very difficult to navigate due to the domination of rhododendron within the understorey.	eDNA sampling
4	TQ 2639 3189	Medium sized farm pond located within Bensonshill Wood	N/A	Was not accessed during survey. Bensonshill Wood was very difficult to navigate due to the domination of rhododendron within the understorey.	eDNA sampling

#### Table 4. Pond descriptions

# 3.8 Reptiles

During the survey a collection of tins from the collapsed roof of B3 were identified in the west of the site, within the tall ruderal vegetation to the eastern boundary of B3 (TN03), which were inspected for the presence of reptiles. During the search two adult female and one adult male slow worms and an adult female common lizard were identified under one tin. Two adult grass snakes and between 30-40 adult male, adult female and juvenile slow worms were identified under another tin adjacent to the first. Therefore, the site likely supports a high population of breeding slow worms and at least low or moderate populations of grass snake and common lizard. The site provides suitable breeding habitat for these species. Additionally, there are several large rubble piles within the west of the site surrounding the derelict buildings and along the northern boundary which provide suitable refugia, hibernation and basking opportunities.





Photographs 9 & 10. Reptiles identified underneath refugia at the site.

SxBRC provided 10 reptile records in the search area. There was one record from Home Wood which lies approximately 600m south of the site boundary for a grass snake which was recorded in 2001. All other records pertain to land separated from the site by the A23 which is likely to be a barrier to reptile movement.

#### 3.9 Riparian Wildlife

There is a stream which runs along the southern boundary of the site which continues into the adjacent BensonsHill Wood ancient semi-natural woodland. The western section of the stream is densely vegetated with steep sides which were not possible to thoroughly check for signs of riparian wildlife during the survey. The eastern section, which runs through the plantation woodland, was unvegetated and shallow sided. The water level was very low at the time of survey and it is therefore unlikely to support water voles or white clawed crayfish, however there is some limited potential for it to support otters commuting through the site into higher quality habitat within the wider landscape.

SxBRC did not provide any records of water voles or white clawed crayfish for the search area. Records of otters are not provided by the SxBRC, due to the sensitive nature of this information.

#### 3.10 Invasive Non-native Species

Two non-native invasive species listed on Schedule 9 of the Wildlife and Countryside Act (WCA) 1981 (as amended) were recorded within the site. These species were Japanese knotweed (TN01 and TN02) and Rhododendron (TN05).

Three other non-native species with invasive tendencies which are not listed on Schedule 9 were recorded from the west of the site and along the northern boundary including butterfly bush, cherry laurel and cotoneaster sp.

SxBRC provided 33 records of 12 species in the search area. A majority of the grid references provided



were a six-figure or eight-figure which relates to a 1km or 10km grid square around this point and therefore the accuracy of the records is not precise.

#### 3.11 Other Notable Species

There is potential for habitats contained in the development area to support hedgehog. SxBRC provided 10 records of hedgehogs in the search area. The closest of these was approximately 625m north of the boundary of the site, dated 2015.

SxBRC provided one invertebrate record for the search area concerning a notable species of beetle *Mycetoporus despectus* which is rare in Sussex.

The SxBRC provided numerous vascular plant records for the search area concerning a total of 27 species. Most of these species are rare or notable species nationally and within Sussex and the list includes bluebell *Hyacinthoides non-scripta* which is listed on Schedule 8 of the Wildlife and Countryside Act which is protected from sale only. Two notable plant species include two species of hawkweed *Hieracium aggregatum* and yellow-glandular hawkweed *Hieracium sabaudum*.

### 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.

Access was not possible along the southern or eastern boundaries of the site. The understorey of the Bensonshill Wood along the eastern boundary was dense with rhododendron which made surveying the woodland very difficult. There was no access to the land along the southern boundary to survey 30m outside of the site boundary.



# 4 IMPACT APPRAISAL

The purpose of this report is for the site's allocation into the Mid Sussex District Council SHELAA. At this time a design for the proposed layout of any future development is unknown however a robust assessment of the potential impacts of future development of the site on the ecological features can be made.

# 4.1 Designated Sites

The site is outside the zone of influence from all designated sites therefore there are no identified mechanisms of impact on designated sites as a result of the site allocation. Therefore, impacts to designated sites are unlikely to be a consideration for any future development within the site boundary.

# 4.2 Habitats

The Bensonshill Wood ancient semi-natural broadleaved woodland adjacent to the eastern boundary of the site has the potential to be indirectly impacted by the development. Therefore, standing advice from Natural England and the Forestry Commission in relation to ancient woodland should be followed<sup>10</sup>.

The development should be kept as far as possible from the ancient woodland, with a buffer area maintained between the wood and any development boundary that should comprise of woodland or woodland edge habitat planting only. An appropriate buffer between the woodland and the development is a minimum of 15m to avoid root damage to mature trees and conserve woodland edge habitat. Additionally, the woodland should be separated from the development by a secure permanent fence along the eastern boundary to avoid new users of the site using the woodland to discard garden waste or allow non-native herbaceous species escaping into the woodland which may damage the ancient woodland features. A wildflower meadow mix could be planted within the 15m buffer to create an 'ecotone'<sup>11</sup> habitat buffer along the eastern boundary to protect Bensonshill Wood. The buffer could be planted with a seed mix suitable for the local soil conditions and geology of the site which are '*Freely draining slightly acid loamy soils*<sup>12</sup>. A custom seed mixture could be created for the site based on the species present and on the results of the further botanical survey findings.

The measures to mitigate the construction of any new development within the site could include a longterm woodland management plan of the adjacent Bensonshill Wood incorporating good woodland management such as, but not limited to non-native invasive species removal and vegetation monitoring to improve the existing condition of the woodland. During the survey it was noted that dense stands of rhododendron were present long the entire eastern boundary within Bensonshill Wood (TN05) spreading west within the site over the boundary ditch which was dry at the time of survey. It is an offence under the WCA 1981 to allow the spread of species listed on Schedule 9 into the wild. The remediation of this species should be incorporated into the long-term management plan to avoid the

<sup>&</sup>lt;sup>10</sup> <u>https://www.gov.uk/guidance/ancient-woodland-and-veteran-trees-protection-surveys-licences</u>

<sup>&</sup>lt;sup>11</sup> https://en.wikipedia.org/wiki/Ecotone

<sup>&</sup>lt;sup>12</sup> http://www.landis.org.uk/soilscapes/



species spreading into the any future development on the site. This species should be removed as part of the ecological enhancements for the site. These enhancements and remediation works should be conditioned as part of the planning permission through consultation with the LPA.

Screening barriers should be installed to protect the woodland from dust and pollution during the construction phase of the development. These should be a permanent feature post-development along eastern boundary of the site to reduced the risk of additional pollution from the operation phase of any development and litter into the woodland once operational. Any car-parking areas should be designed within the west of the site to reduce the impact of additional pollution from vehicular movement on site. Any development of the site should remain unlit by artificial light on the eastern boundary to mitigate the effect on nocturnal wildlife as given in Appendix 3.

A Sustainable Drainage System (SuDS) could be incorporated into the design of the scheme to mitigate potential hydrological impacts to the Bensonshill Wood and the mixed plantation woodland within the east of the site due to the topography of the site which slopes south. The SuDS could be in the form of a pond which could be situated in the south-eastern corner of the site or linear swales along the eastern and southern boundaries of the site. The features could be planted with common reed *Phragmites australis* and other aquatic species which would benefit the local amphibian and riparian mammal populations.

A Construction Ecological Management Plan (CEMP) could be produced as part of the planning conditions for the site detailing the roles, responsibilities and ecological constraints during the construction phase in relation to the potential impacts on the ancient semi-natural broadleaved woodland habitat and protected and notable species.

The habitats which are likely to be removed to facilitate future development of the site include the mixed plantation woodland, semi-improved neutral grassland, tall ruderal vegetation and the derelict buildings in the west of the site which are surrounded by hardstanding which has become colonized by ephemeral short perennial, tall ruderal vegetation and scattered semi-mature trees and shrubs.

A search on MAGIC and from the data received from SxBRC shows that the site is mapped as broadleaved woodland and wood parkland and pasture HPI however these habitats have been removed through past land use of the site as a plant nursery. No ancient or veteran trees were present within the semi-improved grassland within the centre of the site therefore it is likely that the habitats present within the site boundary are no longer afforded protection under S41 of the NERC Act 2006.

The area of semi-improved grassland in the centre of the site is relatively species-rich however due to the condition of the grassland at the time of survey, which had been recently mown, a full botanical survey could not be undertaken to robustly assess the importance of the grassland. However, indicator species of lowland meadows were identified within the habitat, and within unmanaged boundary tall ruderal vegetation during the survey. This included sweet vernal grass, clustered rush, imperforate St John's wort, common knapweed, greater bird's-foot trefoil, wild basil and agrimony.

A further botanical survey is recommended within the grassland prior to making a planning application. A National Vegetation Classification (NVC) survey should be carried out within the optimal survey season (June-August) to robustly assess the impact of any future development on this habitat.

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The area of ephemeral short perennial vegetation to the west of the site had frequent common centaury, which is a stress tolerant ruderal species, which is short in stature and suited to low nutrient availability. A majority of the habitat had been subject to recent management through spraying and cutting however the habitat fits criteria 1 and 3 for the Open Mosaic Habitat on Previously Developed Land HPI<sup>13</sup>. Therefore, a further botanical survey is also recommended within this habitat.

The mixed plantation woodland within the east of the site was much disturbed through previous felling and was in a poor condition at the time of survey. However, the woodland provides intrinsic nature conservation value as a supporting habitat to the adjacent Bensonshill Wood on the eastern boundary. The habitat should be retained and protected from the development, through measures discussed above, and enhanced through additional native species rich tree and shrub planting with known benefit to wildlife which would provide a demonstratable net benefit for biodiversity post development. Ideally, the species used within the scheme should reflect the species found within Bensonhill Wood to ensure that non-native or species which may damage the ancient woodland features of the site do not selfseed into the woodland habitat.

The stream, the species-rich hedgerow with trees along the southern boundary, the intact species-rich hedgerow in the north-western corner of the site and the scattered trees, which provide some ecological value, should be retained and protected during the construction phase and enhanced post-development.

All of the other habitats which will be removed to facilitate the development are of low ecological value and are of importance to the site level only.

#### 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

A total of four buildings and three trees were concluded as having bat roosting potential across the site. All of the trees within hedgerows and the woodland parcels in the east of the site have the potential to be impacted by artificial light, disturbance or could potentially be lost through the development of the land. In line with Bat Conservation Trust guidelines, it is recommended that further inspection surveys are undertaken on the buildings (B1, B2, B4 and B5) and a tree climbing assessment of the trees (T1, T2 and T3) with potential roosting features is made using an endoscope where necessary to investigate the suitability of these features for roosting bats as well as looking for direct evidence of use.

The site provides high quality foraging and commuting habitat for bats in the form of the semi-improved

<sup>&</sup>lt;sup>13</sup> <u>http://data.jncc.gov.uk/data/a81bf2a7-b637-4497-a8be-03bd50d4290d/UKBAP-BAPHabitats-40-OMH-2010.pdf</u>

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neutral grassland, the broadleaved woodland and the mixed plantation woodland in the east of the site and adjacent to the eastern boundary and the hedgerow with trees and stream on the southern boundary. However, the site may be affected by light pollution from the car breakers yard adjacent to the northern boundary and from the residential properties and road street lighting from Brighton Road and the A23 along the western boundary. Overall the site has been assessed as providing moderate suitability foraging and commuting habitat for bats.

One activity survey will need to be undertaken per month (April to October) by two surveyors in appropriate weather conditions for bats. Additionally, bat loggers must be deployed within the site for a week at a time for three separate weeks spread across these seasons. This information will establish the value of any habitats present for foraging bats, whilst the importance of commuting features, such as hedgerows and woodland can also be identified.

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).

# 4.5 Breeding Birds

The mixed plantation woodland within the east of the site and all of the mature and semi-mature trees and hedgerows contained within the site have a high potential to support a variety of common nesting birds. 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 1<sup>st</sup> March to 31<sup>st</sup> August), unless features are first searched by a suitably qualified ecologist and no active nests are found.

As no habitats of notable likely value to ground-nesting birds has been identified and the site does not represent habitat likely to be of value for declining farmland birds, breeding bird surveys are not considered necessary.

#### 4.6 Dormice

The species-rich hedgerow with trees bordering the site to the south has high potential to support dormice and the mixed plantation woodland in the east of the site has moderate potential to support dormice however it is anticipated that these habitats are likely to be retained as part of the development therefore no direct impact are anticipated. Indirect impacts on this European Protected Species could also result from the development, such as artificial light spill into the woodland.

It is recommended that a survey is undertaken in accordance with current best practice guidelines to determine presence/absence by dormice in the even that any suitable habitats for this species would be directly or indirectly impacted in. away that might impact any population resent. The survey should be focused on the habitats described above. Dormouse surveys involve fixing purpose-made nest tubes or boxes onto trees and checking for signs of occupation during the active period from April to October.



The mixed plantation woodland and hedgerow habitats should be retained wherever possible Where direct impacts on habitat used by dormice cannot be avoided, a European Protected Species (EPS) licence would be necessary to allow the development to proceed legally, should dormice be identified as present. Mitigation and compensation measures would be required under such a licence, for example careful timing of activities and planting of native species hedgerows and scrub where appropriate.

As dormice are nocturnal, it is important that the potential for disturbance from artificial lights is considered, as for bats (see Appendix 3).

# 4.7 Great Crested Newts

No ponds were identified on the site during the survey process. Using aerial background mapping, four ponds were identified within 500m from the nearest site boundary (see Figure 7). P1 has been scoped out for the need for further survey due to the presence of the urban areas and the A23 to the west of the site which is likely to form a significant barrier to great crested newt movement. P2, P3 and P4 are located within the adjacent Bensonshill Wood ancient woodland. The site provides suitable terrestrial habitat for great crested newts in the form of mixed plantation woodland, stands of dense bracken and the tall ruderal vegetation, hedgerow bases on the boundaries of the site and rubble piles within the west of the site and along the northern boundary which could be used for resting and hibernation. The semi-improved neutral grassland within the east of the site was unsuitable to support great crested newts due to the lack of ground cover as a consequence of recent mowing at the time of survey, however if the grassland is left undisturbed the habitats will also be considered suitable to support terrestrial great crested newts.

It is recommended that further surveys are undertaken on P2, P3 and P4 in accordance with current best practice guidelines to determine presence/absence by great crested newts.

The ponds should be subject to eDNA survey to establish the presence/absence of great crested newts in these waterbodies. eDNA is a method approved by Natural England for great crested newt presence/absence detection in waterbodies. A single visit in the daytime, during the period when the newts are likely to be present (15th April to 30th June) is required by a licensed great crested newt surveyor. The eDNA samples will be collected following the specified protocol and then sent to a suitably equipped laboratory for analysis. Further mitigation under licence from Natural England may be required if great crested newts presence is confirmed within the wider area.

# 4.8 Reptiles

During the survey a likely high population of breeding slow worm and at least low or medium populations of common lizard and grass snake were identified within the west of the site. Any future development on the site would result in the loss of high-quality reptile habitat. This is highly likely to impact on reptiles therefore further surveys to gather data of the breeding status and population density of the species using the site are recommended. The standard approach to reptile population estimate 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.

Once population estimate data has been gathered mitigation and compensation measures are likely to be required by the planning authority. This is likely to comprise a reptile mitigation strategy involving the capture and translocation of reptiles to a suitable receptor site on or adjacent to the site and the implementation of ecological enhancements including suitable refugia and hibernacula within the scheme.

### 4.9 Riparian wildlife

There is a stream which runs along the southern boundary of the site and continues into the adjacent Bensons Hill Wood ancient semi-natural woodland. Due to the size and shallow nature of the waterbody it is unlikely to be an important feature for riparian wildlife. The terrestrial habitat is sub-optimal to support breeding water voles or otters or to be used as an important foraging resource by these species due to the unsuitable terrestrial habitats present within the site. However, the site may be used by otters occasionally commuting through the landscape. Therefore, no further surveys are recommended due to the scale of the anticipated impact on riparian species

# 4.10 Invasive Non-native Species

The Japanese knotweed and rhododendron should be removed from the site and the adjacent Bensonshill Wood ancient woodland parcel by a professional clearance team who are trained in the removal and disposal of schedule 9 species.

The butterfly bush, cherry laurel and cotoneaster sp could be removed as part of the ecological enhancements of the site.

#### 4.11 Other Notable Species

The development of the site will also result in the loss of potential habitat for hedgehogs. It is recommended that the landscape design for the proposed development should incorporate some compensatory habitats for foraging and resting hedgehogs and allow the unrestricted movement of hedgehogs through residential gardens by leaving gaps at the bottom of garden fences.

# 5 CONCLUSIONS

The development proposals for the land at Pease Pottage Nurseries is extremely unlikely to impact upon any designated sites and there is no specific mitigation required for the development to proceed in order to ensure statutory or non statutory designated sites are not harmed through this proposal.

The site lies adjacent to the Bensonshill Wood which contains ancient woodland habitats. The development would be anticipated to have an indirect impact on this Habitat of Principal Importance in the absence of appropriate mitigation. Mitigation and compensation measures include a minimum of a 15m buffer between the Bensonshill Wood and the development which should be protected by a

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permanent fence to protect the woodland from disturbance. An ecotone habitat could be created within the buffer to provide compensation. The woodland should be subject to a long-term management plan to improve the existing condition of the woodland and to remediate the dense rhododendron which has spread west into the site from the woodland which is an offence under the WCA 1981. The woodland should be protected by screening barriers during the construction phase to protect the habitats from dust and noise.

A SuDS could be incorporated into the design of the scheme to protect the woodland habitats from hydrological impacts of the development. Further mitigation and compensation measures are detailed within Section 4.2. A Construction Ecological Management Plan (CEMP) should be produced as part of the planning conditions for the site detailing the, roles and responsibilities and ecological constraints during the construction phase in relation to the potential impacts on the ancient woodland features and protected and notable species.

The mixed plantation woodland, the stream, the scattered semi-mature trees and the hedgerows in the north-western corner and along the southern boundary, which provide some ecological value, should be retained and protected from any future development on the site and enhanced post-development. Two non-native invasive species listed on Schedule 9 of the WCA 1981 (as amended) and three species with invasive tendencies were identified within the site and should be removed as part of the ecological enhancements for the site.

Further surveys are recommended for NVC of the semi-improved neutral grassland within the centre of the site and the ephemeral short perennial vegetation within the west of the site to assess the floristic communities present to robustly assess the impacts of the any future development on these habitats. Further inspection surveys are recommended to be undertaken on B1, B2, B4 and B5 and a tree climbing assessment of T1, T2 and T3 with potential roosting features, activity transect and static monitoring surveys are recommended for bats. Further population estimate surveys are recommended for reptiles, due to their known presence within the site, and presence/ absence survey are recommended for dormice and great crested newts within the optimal survey seasons.

A lighting scheme should be created for the site in relation to nocturnal wildlife including bats and dormice as recommended in Sections 4.4 and 4.6.

The precautionary mitigation set out in section 4.5 to avoid the removal of vegetation during the nesting birds season must be followed to ensure that there is not a breach of the Wildlife and Countryside Act.

The surveys detailed within this document and precautionary approach to the development of this site and protection of features of ecological interest illustrate a pathway for an appropriate planning application to be made.

#### 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, <u>info@ecologyco-op.co.uk</u>, <u>www.ecologyco-op.co.uk</u>, 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 *Satyrium w-album*.

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

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

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

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

The NERC Act (2006) created the statutory nature conservation body Natural England, and places a

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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)<sup>14</sup> 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) <sup>15</sup>. 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,

<sup>1414</sup>HM Government (2019). National Planning Policy Framework. Department for Communities and Local<br/>Government.Government.Availableonlinehttps://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/728643/Revis<br/>edNPPF 2018.pdf.

<sup>&</sup>lt;sup>15</sup> 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: <u>https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\_data/file/7692/147570.pdf</u>.



• 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:

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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.

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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 - Local Planning Information**

The relevant policies from the Mid Sussex District Plan 2013-2031, adopted March 2018<sup>16</sup>

<sup>(</sup>DP37: Trees, Woodland and Hedgerows Strategic Objectives:

3) To protect valued landscapes for their visual, historical and biodiversity qualities;

4) To protect valued characteristics of the built environment for their historical and visual qualities; and 5) To create and maintain easily accessible green infrastructure, green corridors and spaces around and within the towns and villages to act as wildlife corridors, sustainable transport links and leisure and recreational routes.

Evidence Base: Green Infrastructure mapping; Mid Sussex Ancient Woodland Survey, Tree and Woodland Management Guidelines, Tree Preservation Order records.

The District Council will support the protection and enhancement of trees, woodland and hedgerows, and encourage new planting. In particular, ancient woodland and aged or veteran trees will be protected.

Development that will damage or lead to the loss of trees, woodland or hedgerows that contribute, either individually or as part of a group, to the visual amenity value or character of an area, and/ or that have landscape, historic or wildlife importance, will not normally be permitted.

Proposals for new trees, woodland and hedgerows should be of suitable species, usually native, and where required for visual, noise or light screening purposes, trees, woodland and hedgerows should be of a size and species that will achieve this purpose.

Trees, woodland and hedgerows will be protected and enhanced by ensuring development:

- incorporates existing important trees, woodland and hedgerows into the design of new development and its landscape scheme; and
- prevents damage to root systems and takes account of expected future growth; and
- where possible, incorporates retained trees, woodland and hedgerows within public open space rather than private space to safeguard their long-term management; and
- has appropriate protection measures throughout the development process; and
- takes opportunities to plant new trees, woodland and hedgerows within the new development to enhance on-site green infrastructure and increase resilience to the effects of climate change; and
- does not sever ecological corridors created by these assets.

Proposals for works to trees will be considered taking into account:

- the condition and health of the trees; and
- the contribution of the trees to the character and visual amenity of the local area; and

<sup>&</sup>lt;sup>16</sup> <u>https://www.midsussex.gov.uk/media/3406/mid-sussex-district-plan.pdf</u>



- the amenity and nature conservation value of the trees; and
- the extent and impact of the works; and
- any replanting proposals.

The felling of protected trees will only be permitted if there is no appropriate alternative. Where a protected tree or group of trees is felled, a replacement tree or group of trees, on a minimum of a 1:1 basis and of an appropriate size and type, will normally be required. The replanting should take place as close to the felled tree or trees as possible having regard to the proximity of adjacent properties.

Development should be positioned as far as possible from ancient woodland with a minimum buffer of 15 metres maintained between ancient woodland and the development boundary'.

#### <sup>•</sup>DP38: Biodiversity

Strategic Objectives:

3) To protect valued landscapes for their visual, historical and biodiversity qualities; and

5) To create and maintain easily accessible green infrastructure, green corridors and spaces around and within the towns and villages to act as wildlife corridors, sustainable transport links and leisure and recreational routes.

Evidence Base: Biodiversity 2020; Biodiversity Action Plan; Biodiversity Opportunity Areas; Green Infrastructure mapping; Habitats and Species Records; Mid Sussex Ancient Woodland Survey; Mid Sussex Infrastructure Delivery Plan; The Natural Choice: Securing the Value of Nature; West Sussex SNCI Register

Biodiversity will be protected and enhanced by ensuring development:

- Contributes and takes opportunities to improve, enhance, manage and restore biodiversity and green infrastructure, so that there is a net gain in biodiversity, including through creating new designated sites and locally relevant habitats, and incorporating biodiversity features within developments; and
- Protects existing biodiversity, so that there is no net loss of biodiversity. Appropriate measures should be taken to avoid and reduce disturbance to sensitive habitats and species. Unavoidable damage to biodiversity must be offset through ecological enhancements and mitigation measures (or compensation measures in exceptional circumstances); and
- Minimises habitat and species fragmentation and maximises opportunities to enhance and restore ecological corridors to connect natural habitats and increase coherence and resilience; and
- Promotes the restoration, management and expansion of priority habitats in the District; and
- Avoids damage to, protects and enhances the special characteristics of internationally designated Special Protection Areas, Special Areas of Conservation; nationally designated Sites of Special Scientific Interest, Areas of Outstanding Natural Beauty; and locally designated Sites of Nature Conservation Importance, Local Nature Reserves and Ancient Woodland or to other areas identified as being of nature conservation or geological interest, including wildlife corridors, aged or veteran trees, Biodiversity Opportunity Areas, and Nature Improvement



Areas.

Designated sites will be given protection and appropriate weight according to their importance and the contribution they make to wider ecological networks.

Valued soils will be protected and enhanced, including the best and most versatile agricultural land, and development should not contribute to unacceptable levels of soil pollution.

Geodiversity will be protected by ensuring development prevents harm to geological conservation interests, and where possible, enhances such interests. Geological conservation interests include Regionally Important Geological and Geomorphological Sites'.



# **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 Trust<sup>17</sup> 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 cats eyes. For example, light only high-risk stretches of roads, such as crossings and junctions, allowing headlights to provide any necessary illumination at other times.
- Screening, whereby light spill can be successfully screened through soft landscaping and the installation of walls, fences and bunding
- Glazing treatments, whereby glazing should be restricted or redesigned wherever the ecologist and lighting professional determine there is a likely significant effect upon key bat habitat and features.

<sup>&</sup>lt;sup>17</sup> Bat Conservation Trust and Institute for Lighting Professionals (2018) Guidance note 8. Bats and Artificial Lighting. https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/



- Creation of alternative valuable bat habitat on site, whereby additional or alternative bat flightpaths, commuting habitat or foraging habitat could result in appropriate compensation for any such habitat being lost to the development.
- Dimming and part-night lighting. Depending on the pattern of bat activity across the key features identified on site it may be appropriate for an element of on-site lighting to be controlled either diurnally, seasonally or according to human activity. A control management system can be used to dim (typically to 25% or less) or turn off groups of lights when not in use.

#### Demonstrate compliance with illuminance limits and buffers

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

#### Further reading:

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End.