



Land west of Arundel Road,
Angmering

Ecological Impact Assessment

Prepared by
CSA Environmental

on behalf of
Gladman Developments

Report No: CSA/3467/01

December 2017

Report Reference	Date	Revision	Prepared by	Approved by	Comments
CSA/3467/01	19/12/17	-	JT	CC	Draft for comment
CSA/3467/01	04/01/17	A	JT	CC	Minor updates after comments
CSA/3467/01	22/02/18	B	JT	CC	Updated for scheme change



CONTENTS

Page

Executive Summary	1
1.0 Introduction	2
2.0 Legislation, Planning Policy & Standing Advice	4
Legislation	4
National Planning Policy	4
Local Planning Policy	4
Standing Advice	4
3.0 Methods	5
Desk Study	5
Field Survey	5
Limitations	6
Evaluation and Assessment	6
4.0 Baseline Ecological Conditions	7
Designations	7
Habitats and Flora	10
Fauna	12
Summary of Ecological Features	21
5.0 Assessment of Effects	22
Assessment of Likely Significant Effects	22
Cumulative Effects	31
Compensation	35
Enhancement	35
Monitoring	36
6.0 Conclusions	37
7.0 References	38

Appendices

Appendix A: Habitats Plan & Photosheet

Appendix B: Legislation, Planning Policy and Standing Advice

Appendix C: Desk Study Information

Appendix D: Habitats and Flora Species List

Appendix E: Evaluation and Assessment Methods

Appendix F: Bat Survey Report, Photosheet & Plans

Appendix G: GCN Survey Report & Plans

EXECUTIVE SUMMARY

Residential development is proposed at Land west of Arundel Road, Angmering, for which outline planning permission will be sought.

CSA Environmental was instructed by Gladman Developments to undertake an Ecological Impact Assessment (EcIA) of the Site to identify important ecological features that could potentially be affected by the proposed development. To inform this assessment, the following surveys have been undertaken:

- Desk study (September 2017)
- Extended Phase 1 Habitat survey (September 2017)
- Building inspection for bats (September 2017)
- Bat activity transects (September 2017)
- Bat remote monitoring (September 2017)
- GCN pond habitat suitability assessment (December 2017)

The following important ecological features are considered to have potential to be subject to adverse effects and/or breaches of legislation as a result of the proposed development, in the absence of mitigation:

- Hedgerows and Trees
- Bats
- Nesting birds
- Badgers
- Dormice
- Other Mammals
- Reptiles
- Amphibians

In the absence of any mitigation measures, the proposed development is anticipated to result in, at most, adverse effects significant at the Local level. However, with the implementation of some straightforward mitigation measures as proposed with this scheme, the development is not anticipated to result in any residual significant adverse effects to important ecological features. The Development Framework Plan will deliver net benefits for wild life in the form of additional habitats, with the opportunity to provide additional biodiversity enhancement measures alongside the new housing.

Based on successful implementation of mitigation, compensation and enhancement, as set out within the Ecology Mitigation and Enhance Strategy (CSA/3467/03), the scheme has the scope to accord with all relevant nature conservation legislation, as well as with the provisions of the Arun District Council Local Plan 2003, Draft Local Plan 2014 and Angmering Neighbourhood Plan 2014.

This page has been left intentionally blank

1.0 INTRODUCTION

- 1.1 This report has been prepared by CSA Environmental on behalf of Gladman Developments. It sets out the findings of an Ecological Impact Assessment (EcIA) of proposed development at Land west of Arundel Road, Angmering (hereafter 'the Site'). Residential/mixed development is proposed at the Site, for which outline planning permission will be sought, with all matters reserved apart from access.
- 1.2 The scope of this assessment has been determined with due consideration for best-practice guidance provided by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2016) and the Biodiversity: Code of practice for planning and development published by the British Standards Institute (BS 42020:2013).
- 1.3 The Site occupies an area of c. 9.1ha and is located around central grid reference TQ 065 053, to the north of Angmering. It consists of an arable field with an area of semi-improved grassland, bounded by mature hedgerows and woodland, and developed land to the east (both a residential plot and commercial units) (see Habitats Plan in Appendix A).
- 1.4 An initial desk study and extended Phase 1 Habitat survey were undertaken for the Site in September 2017, the findings of which are presented herein. In addition, the following further survey work was undertaken in September 2017:
- Extended Phase 1 Habitat survey (September 2017)
 - Building inspection for bats (September 2017)
 - Bat activity transects (September 2017)
 - Bat remote monitoring (September 2017)
 - GCN pond habitat suitability assessment (December 2017)
- 1.5 This EcIA aims to:
- Establish baseline ecological conditions at the Site.
 - Identify any likely significant effects of the proposed development, in the absence of mitigation, including cumulative impacts.
 - Set out any ecological measures necessary to effectively avoid or mitigate likely significant effects, and identify residual impacts.
 - Identify any compensation measures required to offset residual impacts.
 - Set out potential ecological enhancement measures that may be delivered by the proposed scheme.
 - Confirm how proposed mitigation, compensation and enhancement measures will be secured.
 - Provide sufficient information to determine whether the project accords with relevant nature conservation policies and legislation,

and where appropriate, to allow conditions or obligations to be proposed by the relevant authority.

- 1.6 An Ec IA can be used for the appraisal of projects of any scale. This is a best practice evaluation process, recommended by CIEEM (2016). It is intended that the evaluation of findings presented here-in will aid the Arun District Council in their review of the outline application.

2.0 LEGISLATION, PLANNING POLICY & STANDING ADVICE

Legislation

- 2.1 Legislation relating to wildlife and biodiversity of particular relevance to this EcIA includes:
- The Conservation of Habitats and Species Regulations 2010 (as amended)
 - The Wildlife and Countryside Act 1981 (as amended)
 - The Natural Environment and Rural Communities (NERC) Act 2006
 - The Protection of Badgers Act 1992
- 2.2 This above legislation has been addressed, as appropriate, in the production of this report. Further information on the above legislation is provided in Appendix B.

National Planning Policy

- 2.3 The National Planning Policy Framework (NPPF) (Department for Communities and Local Government, 2012) sets out the government planning policies for England and how they should be applied. Chapter 11: Conserving and Enhancing the Natural Environment, is of particular relevance to this report as it relates to ecology and biodiversity. Further details are provided in Appendix B.
- 2.4 The Government Circular 06/2005, which is referred to by the NPPF, provides further guidance in respect of statutory obligations for biodiversity and geological conservation and their impact within the planning system.

Local Planning Policy

- 2.5 A number of local planning policies relate to ecology, biodiversity and/or nature conservation. These are summarised in Table B.1 of Appendix B. These policies have been addressed, as appropriate, in the production of this report.

Standing Advice

- 2.6 Natural England Standing Advice regarding protected species aims to support local authorities and forms a material consideration in determining applications in the same way as any individual response received from Natural England following consultation. Standing advice has therefore been given due consideration, alongside other detailed guidance documents, in the scoping of ecological surveys and production of this report.

3.0 METHODS

Desk Study

3.1 The Multi-Agency Geographic Information for the Countryside (MAGIC) online database was reviewed in September 2017 to identify the following ecological features (based on the likely 'zone of influence' of such features):

- Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites within 10km of the Site
- Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Local Nature Reserves (LNR) within 3km of the Site
- Other relevant data e.g. Ancient Woodland Inventory within 1km of the Site

3.2 Sussex Biological Records Centre (SxBRC) was contacted for details of any non-statutory designated wildlife sites and records of protected/notable habitats and species. This information was requested for an area encompassing the Site and adjacent land within c. 3km of its central grid reference. This search area was selected to include the likely zone of influence of effects upon non-statutory designations and protected or notable habitats and species.

3.3 In accordance with Natural England's Great Crested Newt (GCN) Mitigation Guidelines (2001), a desktop search was undertaken to identify ponds within 500m of the Site which may have potential to support breeding GCN *Triturus cristatus*, using Ordnance Survey (OS) mapping, the MAGIC database and aerial photography.

3.4 All relevant desk study data are presented in Appendix C.

Field Survey

Extended Phase 1 Habitat Survey

3.5 An extended Phase 1 habitat survey was carried out in fine and dry weather conditions on 06 September 2017 by Clare Caudwell MCIEEM and Jessica Tait GradCIEEM, encompassing the Site and immediately adjacent habitats that could be viewed.

3.6 Phase 1 Habitat survey is a method of classification and mapping wildlife habitats in Great Britain. It was originally intended to provide "...relatively rapidly, a record of the semi-natural vegetation and wildlife habitat over large areas of countryside." The Phase 1 Habitat Survey method has been widely 'extended' beyond its original purpose to allow the capture of information at an intermediate level between Phase 1 and Phase 2 Habitat surveys. Here, the standard survey method has been 'extended' in this report to include the following:

- More detailed floral species lists for each identified habitat
- Descriptions of habitat structure, the evidence of management and a broad assessment of habitat condition
- Mapping of additional habitat types (e.g. hard standing)
- Identification of Priority Habitats under Section 41 of the NERC Act (S41 habitats)
- Identification of Habitats Directive Annex I habitat types
- Evidence of, or potential for, European Protected Species (EPS) (including bats, GCN, dormouse and otter)
- Evidence of, or potential for, other protected species (including birds, reptiles, water vole, badger and certain invertebrates)
- Evidence of, or potential for, other notable species (including S41 Species of Principle Importance as well as notable, rare, protected or controlled plants and invertebrates)

3.7 Results of the extended Phase 1 Habitat survey are presented on the Habitats Plan in Appendix A. Appendix D provides a list of floral species recorded in each habitat.

Further Survey Work

3.8 The following detailed field survey work was carried out between September and December 2017, with full methods and results provided in the relevant Appendices:

- Bat building inspection and activity survey (Appendix F)
- GCN habitat suitability index (HSI) assessment (Appendix G)

Limitations

3.9 There were no specific limitations to the desktop study or extended Phase 1 habitat survey, which was conducted at an optimum time of year and in good conditions. Limitations to bat and GCN surveys are addressed in the relevant appendices.

Evaluation and Assessment

3.10 Ecological features are identified, evaluated and assessed with due consideration for the CIEEM Guidelines for Ecological Impact Assessment (2016).

4.0 BASELINE ECOLOGICAL CONDITIONS

Designations

Statutory

- 4.1 There are no statutory nature conservation designations covering any part of the Site.
- 4.2 One statutory European wildlife site was identified within 10km of the Site; Arun Valley Special Area of Conservation (SAC), Special Protection Area (SPA) and wetland of international importance (Ramsar) located c. 8.5km north-west of the Site. Given the legislative frameworks underpinning the designation of European sites, this is considered to be important at the International level.
- 4.3 No national or local statutory nature conservation designations were identified within 3km of the Site.
- 4.4 These statutory designations are described in Table 1 below.

Non-Statutory

- 4.5 Five local non-statutory nature conservation designations were identified within 3km of the Site; the closest sites are Polling Copse Local Wildlife Site (LWS) c. 2km west-north-west of the Site, which is a large semi-natural ancient woodland parcel, and Highdown Hill & the Miller's Tomb LWS c. 2km east-south-east, which is an area of chalk grassland that supports several uncommon plants and animals. These non-statutory sites are described in Table 1 below.
- 4.6 As LWS's are designated according to criteria applied in a county context, these sites are considered to be ecologically important at the County level.

Ancient Woodland

- 4.7 There is no designated Ancient Woodland covering any part of the Site or immediately adjacent land.

Table 1. Statutory and non-statutory nature conservation designations within search radii

Site Name & Designation	Distance & Direction from Survey Area	Brief Description of Designated Site
European Designations within 10km		
Arun Valley Special Area of Conservation (SAC), Special Protection Area (SPA) and wetland of international importance (Ramsar)	c. 8.5km north-west	The site consists of low-lying grazing marsh with an area of peat derived from a relict raised bog. Variation in soils and water supply lead to a wide range of ecological conditions and hence a rich flora and fauna. The ditches and margins between grazing marsh fields have an outstanding aquatic flora and invertebrate fauna. The Arun Valley supports important numbers of wintering waterbirds, which feed in the wetter, low-lying fields and along ditches. <u>SAC reasons for designation</u> Annex II species that are a primary reason for selection of this site: 4056 Ramshorn snail <i>Anisus vorticulus</i> The Arun valley is one of the three main population centres for this species in the UK. This proposed site includes two of its core sites in the wash lands of the Arun floodplain (Pulborough Brooks and Amberley Wild Brooks SSSIs). <u>SPA reasons for designation</u> Over winter the site supports Bewick's Swan <i>Cygnus columbianus bewickii</i>, 115 individuals representing at least 1.6% of the wintering population in Great Britain (5 year peak mean for 1992/93 to 1996/7). The area qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl. <u>Ramsar reasons for designation</u> Ramsar criterion 2: The site holds seven wetland invertebrate species listed in the British Red Data Book as threatened. One of these, <i>Pseudamnicola confusa</i>, is considered to be endangered. The site also supports four nationally rare and four nationally scarce plant species. Ramsar criterion 3: In addition to the Red Data Book invertebrate and plant species, the ditches intersecting the site have a particularly diverse and rich flora. All five British duckweed <i>Lemna</i> species, all five water-cress <i>Rorippa</i> species, and all three British water milfoils <i>Myriophyllum</i> species, all but one of the seven British water dropworts <i>Oenanthe</i> species, and two-thirds of the British pondweeds <i>Potamogeton</i> species can be found on site. Ramsar criterion 5: Assemblages of international importance: Species with peak counts in winter: 13774 waterfowl (5 year peak mean 1998/99-2002/2003).

National Designations within 3km		
N/A	-	-
Local Designations within 3km		
N/A	-	-
Non-statutory Designations within 3km		
Poling Copse Local Wildlife Site (LWS)	c. 2.0km west-north-west	A large (51ha) block of ancient, semi-natural woodland. Ancient sections consist mostly of Hazel coppice <i>Corylus avellana</i> with Ash <i>Fraxinus excelsior</i> and Oak <i>Quercus robur</i> standards; more recent woodland is dominated by Sycamore <i>Acer pseudoplatanus</i> with some Hazel, Oak and Ash.
Highdown Hill & the Miller's Tomb LWS	c. 2.0km east-south-east	A 22.9ha chalk grassland site, mostly unimproved with some species-rich areas. Although heavily used for informal recreation, the site supports several uncommon plants and animals. A mosaic of short turf, taller herbs and scrub makes the site a valuable habitat for invertebrates, including Carthusian snail <i>Monacha cartusiana</i> (Red Data Book species), Long-winged Cone-head <i>Conocephalus discolor</i> , Common Lizard <i>Zootoca vivipara</i> , Glow-worm <i>Lampyris noctiluca</i> , the scarce Chalkhill Blue <i>Polyommatus coridon</i> and 17 commoner butterfly species; and a range of birds, including occasional Nightingales <i>Luscinia megarhynchos</i> .
Warningcamp Hill and New Down LWS	c. 2.5km north-west	Designated for its herb-rich chalk grassland, including some extensive patches of Burnet Rose <i>Rosa pimpinellifolia</i> , an uncommon plant in West Sussex. The site also supports a remnant of ancient semi-natural woodland and areas of mixed scrub.
Titnore & Goring Woods Complex LWS	c. 2.5km east	Largest woodland complex in Worthing Borough (78.6ha), much of it ancient in origin, although its structure and species composition vary considerably due to management. The site is important as a large area of semi-natural habitat close to a heavily built-up area.
Clapham Wood LWS	c. 2.9km north-east	An extensive (155.8ha), ancient semi-natural woodland on the undulating dip slope of the South Downs. Its rich ground flora includes a number of notable species: Wood Anemone <i>Anemone nemorosa</i> (ancient woodland indicator species), Bluebells <i>Hyacinthoides non-scripta</i> and Early-purple Orchid <i>Orchis mascula</i> . Tuberous Comfrey <i>Symphytum tuberosum</i> , a very rare plant in West Sussex occurs along a track. Clapham Wood also has a moderately diverse range of breeding birds, including Goldcrest <i>Regulus regulus</i> , Chiffchaff <i>Phylloscopus collybita</i> , Blackcap <i>Sylvia atricapilla</i> , Treecreeper <i>Certhia familiaris</i> , Marsh Tit <i>Poecile palustris</i> , Nuthatch <i>Sitta europaea</i> , Cuckoo <i>Cuculus canorus</i> , Great Spotted Woodpecker <i>Dendrocopos major</i> and Green Woodpecker <i>Picus viridis</i> .

Habitats and Flora

Notable Flora Records

- 4.8 The SxBRC provided records of 27 notable plant species, one lichen and one moss species from within the search area. Those of potential relevance to the Site include the arable weeds corncockle *Agrostemma githago*, corn marigold *Glebionis segetum* and cornfield knotgrass *Polygonum rurivagum*, wild strawberry *Fragaria vesca* and calcareous-favouring species crosswort *Cruciatula levipes*.

Habitats

- 4.9 The following habitats were recorded on-site and classified in line with current Phase 1 habitat species guidance (JNCC, 1990), as illustrated in Appendix A. Photographs of the Site can be found in Appendix A, with photographs of buildings included within the bat report in Appendix F. An indicative botanical species lists for each habitat is provided in Appendix D.

Arable

- 4.10 Much of the Site comprises a large arable field, which was straw stubble at the time of survey. The field margins are c. 1m wide and comprise grass and arable weeds such as fumitory *Fumaria* spp. and sun spurge *Euphorbia helioscopia*.

Semi-improved grassland

- 4.11 The northern third of the main field comprises semi-improved grassland, which is mostly grass-rich with frequent Timothy *Phleum pratense* and cock's-foot *Dactylis glomerata* in the relatively short sward. Herb species included common species such as selfheal *Prunella vulgaris*, St. John's wort *Hypericum* sp. and locally abundant silverweed *Potentilla anserina*, common fleabane *Pulicaria dysenterica*, and rush *Juncus* sp. along the eastern woodland edge, indicating wetter conditions in this area.
- 4.12 There is semi-improved grassland along the banks either side of the access road, with species including tufted vetch *Vicia cracca*, agrimony *Agrimonia eupatoria*, wild strawberry *Fragaria vesca*, hedge bedstraw *Galium album*, greater stitchwort *Stellaria holostea*, and crosswort *Crucianella stylosa* which is characteristic of calcareous soils.

Buildings and hardstanding

- 4.13 As shown on the Habitats Plan (CSA/3467/102), there are a number of buildings on-site comprising a residential dwelling and associated out-buildings (B1, B15, B16), a camp site (B17), a small industrial estate (B2 to 12) and three derelict buildings (B8, 13 and 14). These are surrounded by hard-standing with a surfaced access road stretching to Arundel Road in the east.

- 4.14 The residential bungalow is a single storey building of brick construction with clay roof tiles, and a number of features were noted which are suitable for roosting bats, such as lifted tiles which could provide access between tiles and internal roof lining.
- 4.15 A small partially collapsed barn (B13) is present within the 'Severn Acre Plot' in the north-eastern part of the site overgrown by ivy and scrub, which could also be used by bats as a night roost / feed perch. A second derelict building (B8) is present along the southern boundary, which is overgrown with ivy, bramble scrub and a young ash tree.
- 4.16 The commercial buildings are of varying construction, many with corrugated asbestos roofing; some had features which are suitable for bats (e.g. lift facias / crevices in brickwork), and many were suitable for roosting birds, particularly for opportunistic species such as swallows *Hirundo rustica* and pigeons *Columba* spp.

Amenity grassland

- 4.17 There is a small area of amenity grassland at the Site comprising a private garden and adjacent area of grass used as a caravan/camp site. It is short mown and predominantly perennial rye grass *Lolium perenne* with a few herbs such as white clover *Trifolium repens*.

Colonising ground and tall ruderal

- 4.18 As identified on the Habitats Plan, colonising vegetation is present within the industrial estate and surrounding the northernmost derelict building (B13) where areas of bare ground have been left unmanaged. These areas are characterised by pioneering species such as bristly ox-tongue *Helminthotheca echioides*, bittercress *Cardamine* sp., ribwort and buckshorn plantain *Plantago major/coronopus*, black medick *Medicago lupulina*, scarlet pimpernel *Anagallis arvensis* and field mallow *Malva sylvestris*. The north-eastern plot contains more developed vegetation including common nettle *Urtica dioica*, ox-eye daisy *Leucanthemum vulgare*, ragwort *Senecio jacobaea*, greater willowherb *Epilobium hirsutum* and hemp agrimony *Eupatorium cannabinum*.

Hedgerows and trees

- 4.19 There are nine hedgerows across the Site, as identified on the Habitats Plan. Six of these are characterised as species rich by having five or more native woody species within them. The arable field is bounded by mature species-rich hedges to the east and west (H4 & H6), a deciduous woodland edge to the north and mature tree belt on top of a bank to the south (H5). There are also tall native hedgerows along the eastern Site boundary (H2, H3, H7, H8, and H9) and a pruned hedgerow south of the bungalow (H1). The Site is bounded to the north by a woodland edge, with mature trees overhanging the Site by c. 6m.

- 4.20 There is a mature apple tree *Malus* spp. and some conifers in the residential garden, in addition to a number of mature trees within the hedgerows which bound the Site.

Scrub

- 4.21 There is dense scrub dominated by bramble *Rubus fruticosus* agg. along the boundary between the arable field and commercial plot, and in the north-eastern corner of the Site, and scattered scrub along hedgerows in the south-western and north-eastern corners of the Site.

Pond

- 4.22 There is a small ornamental pond in the residential garden, which is plastic-lined and has a stone margin. Plant species include water lily *Nymphaea* spp. and waterweed *Elodea* spp. Although no fish were noted, they could be present.

Importance

- 4.23 Hedgerows are an S41 habitat, with high intrinsic ecological value, so are considered to be important at the Local level.
- 4.24 Both wild strawberry and crosswort were recorded on Site and are listed as near threatened on the IUCN Red List, so are of local importance. However, they were only present within a very limited patch of habitat along the side of the access road. Overall grassland habitat is not considered to be more important than Site level.
- 4.25 The remaining habitats onsite are not considered to be more important than Site level, so are not considered further in this report.

Fauna

Bats

- 4.26 SxBRC provided 13 bat records from within the search area, including the following species: common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and brown long-eared bats *Plecotus auritus*. The closest record is c. 245m south-east of the site and is of a garage which provides a feeding roost where an unspecified pipistrelle species was present in 2014.
- 4.27 The arable field, which dominates the site, is of generally low suitability for foraging bats. However, trees and hedgerows along the boundaries support foraging and dispersal opportunities, as do those in the residential garden. The garden pond further enhances foraging suitability by encouraging insects. Treeline / hedgerow borders also provide connectivity to habitats and resources in the wider landscape, including the adjoining parcels of mature deciduous woodland to the north and east of the site.

- 4.28 A number of the onsite buildings were noted to have features suitable to support roosting bats during the Phase 1 survey (e.g. features such as lifted tiles and gaps beneath cladding). A number of trees adjacent to northern and western Site boundaries were also noted to have features suitable for roosting bats.
- 4.29 Of the 17 buildings identified on-site, one building was assessed as having moderate potential to support roosting bats (B1), four as having low potential (B2, B3, B4 and B13), and two low to negligible potential (B8, B9), with the remainder having negligible potential. Internal inspection and emergence surveys undertaken in relation to B1 did not reveal any evidence of past or current use by roosting bats, with no bats were seen emerging during the dusk emergence survey.
- 4.30 At least seven species of bat were recorded at the site during transect and remote monitoring surveys. Bat activity was predominantly recorded along the Site boundaries, particularly along the northern Site boundary, which is a woodland edge with a stream and ponds to the north, and western hedgerow; species diversity was also greater at these locations. Activity was dominated by common pipistrelle and soprano pipistrelle calls (peak of 20.78 passes / hours at MP1 for soprano pipistrelle, and 22.08 passes / hours for common pipistrelle at MP3 during static monitoring), with a large number of *Myotis* species calls along the woodland edge (index of 19.64 passes / hour at MP1). During the remote monitoring surveys 96 barbastelle *Barbastellus barbastellus* calls (indices less than one pass / hour for barbastelle at MP1, 2 and 3.), 34 noctule *Nyctalus noctula* calls and 8 brown long-eared calls (all at less than one pass / hour at static monitoring points) were recorded; a single serotine *Eptesicus serotinus* call was recorded during the activity transect.
- 4.31 Full results are provided in Appendix E.
- 4.32 Further surveys are recommended to provide a more accurate picture of bat activity across the Site and determine the presence or likely absence of roosting bats, in line with BCT guidelines (2016). However, using these preliminary results, it is anticipated that overall roosting bats at the Site are considered to be important at the Local level.
- 4.33 Using the method provided by Wray et al. (2010) to evaluate the importance foraging and commuting habitats for bats (see Table 2), county value is assigned for common and some rarer species (common pipistrelle, soprano pipistrelle, *Myotis* species, noctule, *Nathusius pipistrelle*, and serotine), local for brown long-eared, and regional for barbastelle, due to its rarity.
- 4.34 Given the low level of activity recorded in relation to some of these species (i.e. less than one pass per hour for *Myotis* species, barbastelle, noctule, *Nathusius pipistrelle* and brown long-eared; serotine single pass only recorded during transect) across the majority of the Site, and the

large proportion of arable land, buildings and hardstanding at the Site which are likely to be of some limited value to bats, it is considered that a more accurate assessment of the importance of the Site for foraging and commuting bats is Local level importance for most bat species, and County importance for barbastelle, due to its rarity. Marginal woodland and hedgerow habitats to the north and west being of greatest importance for foraging, for all species including Myotis and barbastelle in particular.

This page has been left intentionally blank

Table 2: Valuation of bat foraging and commuting habitat at the Site (following Wray et al (2010) evaluation criteria)

Species	Rarity	No. of bats	Roosts/potential roosts nearby	Commuting habitat	Foraging habitat	Total score	Calculated Importance	Adjusted Importance
Common pipistrelle	Common (2)	Small number (10)	Moderate number (4) – 4 roost records within 1km from SxBRC, and 2 records of pipistrelle species roosts, including a maternity roost	Well-grown and well-connected hedgerows, small field sizes (4)	Larger, or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)	24	County	Local
Soprano pipistrelle	Common (2)	Small number (10)	Small number (3) – 2 roost records for pipistrelle species within 1km radius from SxBRC, including a maternity roost	Well-grown and well-connected hedgerows, small field sizes (4)	Larger, or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)	23	County	Local
Myotis species	Rare (5)	Small number (10)	Small number (3) – no roost records within 1km radius from SxBRC, and moderate amount of activity recorded during surveys	Well-grown and well-connected hedgerows, small field sizes (4)	Larger, or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)	26	County	Local
Noctule	Rare (5)	Individual (5)	Small number (3) – no roost records within 1km radius from SxBRC, and low amount of activity recorded during surveys	Well-grown and well-connected hedgerows, small field sizes (4)	Larger, or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)	21	County	Local
Na thusius pipistrelle	Rare (5)	Individual (5)	Small number (3) – 2 roost records for pipistrelle species within 1km radius from SxBRC, including a maternity roost, and low activity recorded during surveys	Well-grown and well-connected hedgerows, small field sizes (4)	Larger, or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)	21	County	Local
Brown long-eared	Common (2)	Individual (5)	Small number (3) – 3 roost records within 1km radius from	Well-grown and well-connected	Larger, or connected woodland blocks, mixed	18	Local	Local

			SxBRC, and low amount of activity recorded during surveys	hedgerows, small field sizes (4)	agriculture, and small villages/hamlets (4)			
Barbastelle	Rarest (20)	Individual (5)	Small number (3) – no roost records within 1km radius from SxBRC, and low amount of activity recorded during surveys	Well-grown and well-connected hedgerows, small field sizes (4)	Larger, or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)	36	Regional	County
Serotine	Rarer (5)	Individual (5)	Small number (3) – no roost records within 1km radius from SxBRC, and low amount of activity recorded during surveys	Well-grown and well-connected hedgerows, small field sizes (4)	Larger, or connected woodland blocks, mixed agriculture, and small villages/hamlets (4)	21	County	Local

Badgers

- 4.35 SxBRC do not provide records of badger *Meles meles* as this is considered sensitive information. Arable and grassland habitats onsite offer limited suitability for foraging. No signs of badger activity were noted during the survey, but the scrub, hedgerows and adjacent parcels of woodland provide suitable habitat which could support badger in the future.
- 4.36 The local badger population likely use the Site for foraging and dispersal. Badgers are common and widespread and of no local or national conservation concern. Their setts are strictly protected under the Protection of Badgers Act 1992. No setts were found to be present within the Site, therefore impacts upon badgers have been scoped out of the assessment, but mitigation measures to ensure adherence to legislation have been included.

Dormouse

- 4.37 SxBRC provided two records of dormouse *Muscardinus avellanius* within the search area. The most recent record was from 2015, from the Oval Racecourse c. 950m east of the Site, with little habitat connectivity to the Site. The second record was of feeding signs in Butler's Copse, a patch of Ancient Woodland c. 950m north of the Site across the A27, which may act as a barrier to dispersal for dormice.
- 4.38 Onsite habitats suitable for dormice comprise boundary hedgerows; it is possible dormice are present given the nearby parcels of mature woodland to the north and east and good habitat connectivity with the wider landscape provided by hedgerows. Although connectivity to known population to the north of the A27 is considered to be constrained. Should a dormouse population be present on-Site, as a European Protected Species the population will be of at least Local importance given their local distribution and conservation status.

Riparian Mammals

- 4.39 SxBRC provided 17 records of water vole *Arvicola amphibius* within the search area. All records are c. 900m south of the Site within Angmering itself, most associated with Black Ditch stream which runs through the woodland to the north of the Site, and the most recent is from 2016. While potentially suitable habitat for water voles may be provided by the stream within the woodland immediately north of the site (which is connected to Black Ditch), this habitat is outside of the Site boundary and not likely to be impacted by proposals. Water vole will therefore not be considered further.

Other Mammals

- 4.40 SxBRC provided 12 records of hedgehog *Erinaceus europaeus* from within the search area, the closest c. 30m east of the Site within the

woodland patch, recorded in 2015. Hedgehogs are a S41 priority species. Onsite opportunities for hedgehogs are provided by the hedgerow bases along the site borders and shrubs within the residential garden. However, the habitats present at the Site are common and widespread in the local context, and are considered unlikely to support an important population of this species, so will not be considered further.

Birds

- 4.41 SxBRC provided 2726 records of birds from within the search area, 306 of which were notable species. Those notable species which could be present onsite include birds of prey such as red kite *Milvus milvus*, generalists (e.g. herring gull *Larus argentatus*), species associated with woodland and trees (e.g. lesser spotted woodpecker *Dendrocopos minor*), with hedgerows (e.g. dunnock *Prunella modularis*), with grassland (e.g. skylark *Alauda arvensis*) and with buildings (e.g. swallow).
- 4.42 Trees, hedgerows and shrubs provide foraging habitat for small woodland and garden birds, while more open field habitat may provide hunting/scavenging opportunities for larger birds of prey and those which ground nest / feed over open land. All nesting birds are protected under the Wildlife and Countryside Act 1981.
- 4.43 A number of bird species were seen during the site visit, including swallow and feral pigeon *Columba livia domestica* nesting in the metal storage units north of B10, and blue tit *Cyanistes caeruleus* and blackbird *Turdus merula* within the hedgerows. Ground nesting birds such as skylark could utilise the parcel of semi-improved grassland at the north of the Site, although farming practices may limit its suitability.
- 4.44 The habitats present at the Site are common and widespread in the local context, and are considered unlikely to support an important assemblage of bird species. The bird assemblage of the Site is therefore considered to be of no more than Local value.

Reptiles

- 4.45 SxBRC provided seven records of grass snake *Natrix natrix* dating from 1990-2002, the closest being 550m north-east of the Site in 2002. SxBRC also provided one record of adder *Vipera berus* from 1991 in grid square TQ0605.
- 4.46 The arable field margins, area of colonising ground and scrub in the north-east corner of the Site and parcel of semi-improved grassland provide opportunities for reptiles.
- 4.47 Reptiles are protected under the Wildlife and Countryside Act (1981); should they be present on Site, the population will be of at least Local importance.

Amphibians

- 4.48 SxBRC provided 11 records of amphibians within the search area, including common frog *Rana temporaria*, common toad *Bufo bufo*, palmate newt *Lissotriton helveticus* and smooth newt *Lissotriton vulgaris*, dating from 1987-2016. No records of GCN *Triturus cristatus* were found within the search area.
- 4.49 The closest record is of 200 common toad in the large pond where the ditch in the adjacent northern woodland terminates, c. 145m north-west of the Site, recorded in 1992.
- 4.50 Onsite aquatic habitat for amphibians is limited to the small garden pond. However, the hedgerows and scrub provide suitable terrestrial habitat for amphibians.
- 4.51 Of the eight mapped ponds within a 500m radius of the Site, one was found to no longer exist (pond 7), five were assessed to have average suitability to support GCN (ponds 1, 2, 3, 5 and 6) one below average suitability (pond 4), and one poor suitability (pond 8). Results are summarised in Table 2 below, and full results are presented in Appendix G.

Table 2. Summary of the pond habitat suitability assessment for GCN within 500m of land to the west of Arundel Road, Angmering in December 2017

Pond number	Distance to Site	HSI Score	Suitability
1	On-Site	0.65	Average
2	95m east	0.66	Average
3	250m south-west	0.65	Average
4	130m north	0.57	Below average
5	85m north-west	0.61	Average
6	260m west	0.61	Average
7	435m north-west	Filled in	-
8	480m north-west	0.34	Poor

- 4.52 Common toads are a S41 priority species. As a large breeding population of toad have previously been recorded within Pond 5, it is likely that they are present within suitable terrestrial and aquatic habitat on-Site (largely restricted to the site margins). The on-Site pond is very small, so unlikely to support significant numbers of toads, and the terrestrial habitat on-Site is of lower quality to that provided within the woodland to the north. The on-Site toad population is anticipated to be of Site importance.
- 4.53 GCN are a European Protected Species, as well as a S41 priority species. Five ponds within a dispersible distance of the Site, have been assessed as being of average suitability for GCN. The potential for GCN, if present within these ponds, to disperse into and utilise suitable terrestrial habitat on-Site may be limited by the local road network and the presence of suitable terrestrial habitat present surrounding the ponds surveyed. Should GCN be present within the local landscape, the population will

be of at least Local importance, the importance of terrestrial habitat within the Site for this species will be dependent on the local population size and distribution in relation to the Site.

Invertebrates

- 4.54 SxBRC provided 26 records of notable invertebrates from within the search area, including: four species of butterfly (purple emperor *Apatura iris*, swallowtail *Papilio Machaon*, grizzled skipper *Pyrgus malvae*, and white admiral *Limenitis Camilla* – the closest of the butterfly records, in the woodland to the east of site in 2008); 11 species of moth (the closest record being ten sprawler moths *Asteroscopus sphinx* in the woodland to the east of site in 2007) and one true fly in 2015 (*Volucella zonaria*, which is considered rare in Sussex). SxBRC also provided six records of stag beetle *Lucanus cervus* (Habitats Directive Annex 2) from between 2002 and 2015, the closest c. 400m east-south-east of the site in 2015. A comma butterfly *Polygonia c-album* was also seen during the site visit.
- 4.55 The semi-improved grassland, garden and colonising ground / tall ruderal vegetation provide open flower-rich habitat for pollinators, the small pond provides a limited amount of aquatic habitat, and the hedgerows provide flower, fruit and deadwood resources. Overall, the range of habitats and resources across the Site could support a reasonable assemblage of common invertebrates, but it is unlikely that any rare species would be present. Overall, the invertebrate assemblage of the Site is likely to be of Site value, so is not considered further in this report.

Summary of Ecological Features

- 4.56 Table 3 below summarises all important or legally protected ecological features identified within their respective zones of influence, along with their geographic context of importance and/or protection status:

Table 3. Summary of important ecological features and their geographic context

Ecological Feature	Geographic Context of Importance and/or Protection Status (* = TBC on further surveys)
Hedgerows and trees	Local
Bats	Local to County*
Badger	Protected
Dormouse	At least local (if present)*
Birds	Local
Reptiles	Up to local (if present)*
Amphibians	Up to local (if present)*

5.0 ASSESSMENT OF EFFECTS

5.1 Outline planning permission is sought for residential development at the Site. The following impact assessment is based on the Development Framework Plan (DFP) prepared by CSA Environmental on behalf of Gladman Developments.

5.2 The construction phase of the proposed development will comprise the following:

- Cessation of arable cultivation
- Demolition of existing buildings
- Removal of hedgerows H1, H4, H7, H8 and H9 for vehicular and pedestrian access and to facilitate construction
- Clearance of semi-improved grassland, amenity grassland, scrub, tall ruderal/colonising ground vegetation, and a pond
- Construction of up to 200 residential dwellings
- Construction of associated gardens, parking, access infrastructure, and a full-size football pitch compliant with FA guidelines
- The establishment of formal and informal Public Open Space (POS) including new tree, thicket and meadow planting, as well as recreational routes
- Construction of a Sustainable Urban Drainage System (SUDS) including a large attenuation basin set within the POS to the south-west of the developed area, and pumping station to the north-west
- Strengthening of boundary vegetation with new native species planting

5.3 The operational phase of the proposed development will comprise the following:

- Occupation of new residential dwellings
- Increase in human activity, including use of vehicles and presence of domestic pets
- Increased artificial lighting and anthropogenic noise
- Management of habitats within POS

Assessment of Likely Significant Effects

5.4 Likely effects on ecological features as a result of the proposed development have been assessed in the absence of mitigation, but take account of mitigation by design measures incorporated into the DFP. Additional measures to avoid, mitigate and compensate these potential impacts are discussed within the following section of the report, and are detailed within the accompanying Ecological Mitigation and Enhancement Strategy (CSA/3467/03).

Hedgerows and trees

Predicted effects

- 5.5 The proposed development will result in the loss of hedgerows H1, H4, H7, H8 and H9, and several trees present within the residential garden and north-east corner of the Site. However, new planting proposals include a significant number of new trees and thicket planting to buffer retained hedgerows.

Mitigation

- 5.6 The majority of on-site hedgerows will be retained as part of the proposed development, as shown on the Tree Retention and Removal Plan (BHA_267_02); this is in line with saved policies GEN28 and GEN29, and draft policies ENV SP1 and ENV DM4.

Residual Effects

- 5.7 Overall, the proposed development is anticipated to have no significant effect on hedgerow and tree resources.

Bats

Predicted effects

- 5.8 During the construction phase, potential roosting habitat will be lost for some species of bat as the on-site buildings are demolished and a small number of trees removed. Although, at present no roosts have been confirmed by survey work undertaken to date.
- 5.9 During the construction phase, foraging and commuting habitat will be lost in the east and north-east of the Site as hedgerows, scrub, trees, grassland and the pond are removed. This will reduce habitat connectivity from Steyne Wood to the north, through the Site to the woodland across Arundel Road to the east. However, the POS will include a significant number of new trees along the edge of Steyne Wood strengthening this commuting route. In addition, new thicket and meadow planting and a SUDs basin will provide a variety of foraging habitats.
- 5.10 During the operational phase, ambient light levels could be increased due to artificial street lighting, although it should be noted that significant flood lighting is currently in place within the industrial park.
- 5.11 In the absence of mitigation, the proposed development could have an adverse impact on bats, through the potential for roost loss / disruption of foraging habitat. However, this effect is predicted to be limited to the Site level, given the lack of confirmed roosts and focus of bat activity within retained habitats to the north and west.

Mitigation Measures

- 5.12 Whilst current survey evidence does not indicate that any bat roosts are likely present, further survey work will be completed prior to demolition of any buildings (or trees) highlighted to support potential roosting opportunities, in line with best practice guidelines and to address EPS requirements. If any bat roost is confirmed to be present, demolition will take place under EPS licence with mitigation for roost loss being implemented as appropriate to ensure direct impacts are avoided and favourable conservation status is maintained.
- 5.13 By way of mitigation for any loss of potential bat roost locations, suitable replacement roosts will be provided. The location and design of replacement roosts (i.e. bat boxes / creation of new bat buildings) will be informed by further survey work and secured under any EPS licence required.
- 5.14 In line with saved policy GEN29 and draft policy ENV SP1, to maintain habitat suitability for bats a sensitive lighting strategy will be developed to minimise light spill onto retained and new vegetation through choice of products, positioning, and use of cowl, hoods and timers. New buffer planting along the woodland edge should also help to prevent light spill from affecting the woodland interior.

Residual Effects

- 5.15 Subject to mitigation measures being successfully implemented, the proposed development is anticipated to have no significant effect on roosting or foraging bats.

Badger

Mitigation Measures

- 5.16 As badgers are protected under the Protection of Badgers Act (1992), a pre-construction badger check will be completed to confirm the presence or likely absence of badger activity. If any setts are found onsite, they will be closed under EPS licence.
- 5.17 Precautionary working methods during construction will be employed during construction to prevent badgers from becoming trapped in excavations, and minimise their risk of injury, to be compliant with legislation.

Dormouse

Predicted Effects

- 5.18 The majority of hedgerows will be retained and buffered by a significant amount of new tree and thicket planting. However, the proposed development will result in the loss of five hedgerows and a parcel of scrub in the north-east corner of the Site. Should dormouse be present, these this could result in the loss of a proportion of the suitable nesting

and foraging habitat available and the potential for direct impacts to this species during the construction phase. During the operational phase, dormice may be at greater risk of predation due to domestic cats, and traffic collision.

- 5.19 Overall, in the absence of mitigation, the proposed development could have the potential for adverse impact on dormice significant at least at the Local level, should this species be present.

Mitigation Measures

- 5.20 It is considered that the proposed development has sufficient scope to provide mitigation for dormice to maintain their favourable conservation status, if required. The POS could accommodate new planting, include native species of benefit to dormice, such as hazel *Corylus avellana* and blackthorn *Prunus spinosa*; and significant areas of retained habitat will be able to accommodate a nest box scheme to increase availability of suitable nesting habitat. Strategic placement of thorny species should also deter domestic cats. As for bats, a sensitive lighting strategy will be developed to minimise light spill onto retained and new vegetation.
- 5.21 A dormouse survey will be completed to determine their presence / likely absence from the Site and inform mitigation measures. This information will be used to inform any required Mitigation Strategy to accompany a detailed / reserved matters planning submission. Should dormice be present, mitigation and development will need to be subject to an EPS licence from Natural England.

Residual Effects

- 5.22 Should dormice be found to be present on-site, it is considered that the scheme offers sufficient scope to ensure that impacts are avoided and that habitat compensation and enhancement measures can be delivered. Subject to a suitable Mitigation Strategy being agreed, and delivery under EPS licence, it is considered that the proposed development has the capacity to ensure no significant effect on dormice.

Birds

Predicted Effects

- 5.23 The proposed development will result in an initial loss of nesting bird habitat through vegetation clearance and demolition of buildings, and risks killing or injuring any birds nesting during habitat clearance. New planting proposed will include a significant number of new trees, thicket planting and meadow planting. Until this new planting matures, the proposed development is anticipated to have a temporary adverse effect on nesting birds, but due to the habitat availability in the surrounding landscape this effect will not be significant.

- 5.24 During the operational phase, nesting birds will experience increased levels of disturbance due to walkers and dogs, with ground nesting / foraging species particularly affected. As the habitat currently present on Site is sub-optimal for ground nesting birds, it is unlikely this will result in a significant adverse effect.
- 5.25 In the absence of mitigation, the proposed development is anticipated to have the potential for an adverse impact on birds significant at the Site level.

Mitigation Measures

- 5.26 New planting within the POS (including tree, thicket and meadow planting, and SuDS basin creation) will provide a significant habitat resource for foraging and nesting birds; and shall provide mitigation for that removed to facilitate development. Access routes and planting in the POS will be sensitively designed with an aim to minimise disturbance of nesting birds from walkers and dogs, in line with saved policy GEN29 and draft policy ENV SP1.
- 5.27 As all wild birds and their nests are protected under the Wildlife and Countryside Act (1981, as amended), all clearance of nesting bird habitat will be undertaken outside of nesting bird season (March to September) or immediately following a check by a suitably qualified ecologist to confirm the absence of any active nests.

Residual Effects

- 5.28 Overall, the proposed development is anticipated to have no significant effect on the bird population on site.

Reptiles

Predicted Effects

- 5.29 The proposed development will result in a loss of habitat suitable for use by reptiles; with the majority of semi-improved grassland and tall ruderal / colonising ground vegetation in the north of the Site, scrub and five hedgerows will be removed. However, the new POS will include widened field boundaries which include new meadow and thicket planting, maintain some existing habitat and creating new opportunities suitable for widespread reptile species which could be using the Site.
- 5.30 Should reptiles be present within suitable habitat to be cleared, they are at risk of killing / injury during construction works.
- 5.31 Reptiles could experience an increased level of disturbance in the operational phase due to walkers and dogs.
- 5.32 In the absence of mitigation, the proposed development is anticipated to have potential for an adverse impact on reptiles significant at the Site level.

Mitigation Measures

- 5.33 The POS shall include new habitats of value to reptiles. The functionality of this habitat for reptile species will be maintained through appropriate management, to through implementation of a low-intensity cutting regime to create a dense and tussocky sward. Meadow and thicket habitat will be enhanced for reptiles and other wildlife through creation of log piles and hibernacula to increase refuge and hibernation opportunities. In line with saved policy GEN29 and draft policy ENV SP1, access routes and planting in the POS will be sensitively designed with an aim to minimise disturbance to reptiles from walkers and dogs.
- 5.34 The final design and management of the POS shall be informed by further survey, to confirm the presence / likely absence of reptile species. A suitable Mitigation Strategy shall be secured as part of any detailed / reserved matters planning consent as appropriate. In addition to habitat provision, mitigation will need to ensure that potential impacts of killing and injury are avoided during the construction phase, and trapping and on-site translocation / displacement may be required.

Residual Effects

- 5.35 Subject to the implementation of suitable mitigation measures as appropriate, the proposed development is anticipated to have no significant effect on reptile species.

Amphibians

Predicted Effects

- 5.36 The proposed development will result in a loss of some habitat suitable for use by amphibians during their terrestrial life phase, and a small garden pond. If present, there could be direct impacts (killing / injury) of amphibians during habitat clearance works.
- 5.37 However, the new POS will include widened field boundaries which include new meadow and thicket planting, likely to be value to amphibian species (e.g. common toad known to be present within woodland to the north of the Site), in the longer term.
- 5.38 The new SuDS attenuation basin will provide some wetland habitat, including wet meadow grassland and marginal planting. Dependent upon ground investigation and hydrology results, the attenuation basin may include a permanently wet core, which will provide aquatic habitat. New aquatic habitat provision could be beneficial to amphibian species which could use the Site.
- 5.39 In the absence of mitigation, the proposed development is anticipated to have an adverse impact on amphibians significant at least at the Site level, including GCN if present locally.

Mitigation Measures

- 5.40 In line with current guidelines and EPS legal requirements, further survey will be undertaken to confirm the presence / likely absence of GCN within suitable ponds within dispersal distance from the Site. The results of this work will inform detailed development proposals, design and management of POS to ensure that legal obligations to ensure that favourable conservation status of this species is maintained.
- 5.41 Should GCN be present the dispersal onto areas of the site to be cleared of vegetation are considered likely, a suitable Mitigation Strategy will need to be secured as part of detailed planning / reserved matters to ensure that direct impacts (e.g. killing and injury) are avoided and that suitable habitat provision and connectivity is maintained. Mitigation and development would need to be delivered under an EPS licence from Natural England as appropriate.
- 5.42 It is considered that subject to appropriate management of the POS the proposed development allows for sufficient habitat to be available such that the conservation status of GCN and other amphibian species can be maintained, in line with legislation and policy requirements (e.g. policy GEN29 and draft policy ENV SP1).

Residual Effects

- 5.43 Subject to the implementation of mitigation as required, the proposed development is anticipated to have no significant effect on the GCN population on site.

Summary of Effects

- 5.44 Table 4 below summarises the assessment of effects, including any mitigation and subsequent residual effects.

This page has been left intentionally blank

Table 4. Summary of effects

Important Ecological Feature	Potential Likely Significant Effect and/or Legal Implication (before mitigation)	Avoidance & Mitigation Measures	Mechanism by which Mitigation is Secured	Residual Effects (after mitigation)
Hedgerows and trees	- Loss of hedgerows H1, H4, H7, H8, H9 - Loss of small number of trees - New tree and buffer planting	- Retention of majority of hedgerows	Ecological Mitigation and Enhancement Strategy (EMES)	No significant effect
Bats	- Loss of potential roosting habitat - Temporary loss of foraging habitat (until new planting matures) - Creation of SUDs basin - Increase in ambient lighting	- Update survey work to confirm presence / absence of roosts prior to development - Mitigation to be delivered under EPS licence, if required (including provision of replacement roost locations) - Sensitive lighting strategy; delivery of POS to buffer woodland to north	EMES & EPS licence (if required)	No significant effect
Badger	- Temporary loss of habitat (until new planting matures) - Risk of falling into open excavations - Increased risk of traffic collisions	- Pre-construction badger check - Mitigation as required if should set closure be necessary - Precautionary working methods	EMES	No significant effect
Dormouse	- Temporary loss of nesting/foraging habitat (until new planting matures) - Loss of dispersal route - Greater risk of predation from domestic cats, and traffic collision - Increase in ambient light	- Further survey work to confirm presence / absence and inform mitigation - Mitigation to be delivered under EPS licence, if required - New native planting including thorny species to deter predators	EMES & EPS licence (if required)	No significant effect
Birds	- Temporary loss of habitat (until new planting matures) - Increased disturbance	- Timing of clearance works - Sensitive design of POS access routes and planting to limit disturbance	EMES	No significant effect

Important Ecological Feature	Potential Likely Significant Effect and/or Legal Implication (before mitigation)	Avoidance & Mitigation Measures	Mechanism by which Mitigation is Secured	Residual Effects (after mitigation)
Reptiles	- Minor net loss of suitable terrestrial habitat - Risk of killing/injury during construction works - Increased disturbance	- Further survey work to inform mitigation requirements - Sensitive design of POS access routes and planting to limit disturbance - Low intensity cutting regime of grassland to provide suitable habitat long-term	EMES	No significant effect
Amphibians	- Minor net loss of terrestrial habitat - Loss of aquatic habitat (if SuDS attenuation basin can't have permanently wet core) - Risk of killing/injury during construction works - Increased disturbance - Risk of falling down drains	- Further survey work inform mitigation requirements - Mitigation to be delivered under EPS licence, if required - Sensitive design of POS access routes and planting to limit disturbance - Low intensity cutting regime of grassland to ensure suitable habitat long-term - Off-set gully pots	EMES	No significant effect

Cumulative Effects

- 5.45 Other nearby plans and projects that could potentially give rise to a significant cumulative effect on the ecological features identified in Table 3 above have been assessed as much as possible using publicly available information. The plans and projects and their confirmed / likely effects on ecological features are summarised in Table 5 and detailed below.

Strategic Housing Allocation in the east of Angmering

- 5.46 Within the Arun Local Plan 2011 – 2031, the draft Policy H SP1 Strategic Housing Allocation sets out a strategic allocation for 800 homes in north Angmering and 250 homes in south and east Angmering.
- 5.47 Within the Angmering Neighbourhood Plan 2014 – 2029, policy HD2: Parish Housing Allocation sets out a strategic allocation for at least 66 dwellings on land at Bramley Green South (Mayflower Way), at least 16 dwellings on the Field in Mayflower Way, at least 20 dwellings on the Chandlers site in the centre of the village.
- 5.48 The majority of landowners within this strategic land allocation have submitted planning applications, and are currently under construction:
- A/82/12: Land to east of Roundstone Lane. Residential development comprising 138 dwellings.
 - A/144/15/PL: Land at West End Nursery. Residential development comprising 246 residential dwellings.
 - A/154/14/OUT: Pound Place, Roundstone Lane. Residential development comprising 18 dwellings.

Other Developments in Angmering

- 5.49 Other developments proposed in Angmering included in the assessment are as follows:
- A/132/17/OUT: Quiet Waters, Roundstone Lane (Undecided). Residential development comprising 30 dwellings.
 - A/131/16/OUT: Land between New Place Bungalow & Arundel Road (Conditioned with S106) Residential development comprising 9 dwellings.
 - A/113/15/PL: Premier Inn Spinney and Burberry House Roundstone Lane / Roundstone Road East Preston (Approved Conditionally). Commercial development comprising construction of hotel annexe.

A/178/17/OUT: Create Nursery Dappers Lane (Undecided). Residential development comprising retention of 1 dwelling & the erection of 7 dwellings.

- A/142/16/OUT: Merry England Nursery Dappers Lane (Conditioned with S106). Residential development comprising 18 dwellings.

5.50 The majority of nearby developments, both proposed and under construction, include adequate avoidance, mitigation and compensation measures to result in no significant adverse effects to IEFs. Most of the developments retain much of their boundary vegetation, with the exception of access breaks. Many of the developments, particularly the larger schemes, include significant new native planting and habitat creation which will benefit a range of wildlife.

5.51 Development at Land at West End Nursery and Premier Inn Spinney and Burberry House is anticipated to overall have a beneficial impact on a number of IEFs through ecological enhancement measures. Development at Pound Place is anticipated to have an adverse effect on nesting birds through habitat removal.

5.52 Cumulatively, the nearby developments in combination with the proposed development are anticipated to have a temporary adverse impact on nesting birds significant at the local level, as there will be a reduction in available nesting and foraging habitat through vegetation clearance. This effect will be relatively short term (c. 5 years) and only last until new planting matures.

Table 5. Summary of cumulative effects

Ecological Feature	Description of Potential Residual Effects Inclusive of Mitigation (if applicable)								Geographic Scale of Cumulative Effect with Proposed Development
	A/82/12	A/144/15/PL	A/154/14/OUT	A/132/17/OUT	A/131/16/OUT	A/113/15/PL	A/178/17/OUT	A/142/16/OUT	
Hedge rows and trees	No significant impact	Positive impact significant at Site level	Adverse impact significant at Site level	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact
Bats	No significant impact	Positive impact significant at Site level	Adverse impact significant at Site level	No significant impact	No significant impact	Positive impact significant at Site level	No significant impact	No significant impact	No significant impact
Badger	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact
Dormouse	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact
Birds	No significant impact	No significant impact	Adverse impact significant at Site level	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	Temporary adverse impact significant at local level until new planting matures
Reptiles	No significant impact	Positive impact significant at Site level	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact
Amphibians	No significant impact	Positive impact significant at Site level	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact	No significant impact

This page has been left intentionally blank

Compensation

- 5.53 To compensate for the temporary loss of bird nesting habitat until new planting matures, 15 nest boxes will be installed on retained mature trees and integrated into new buildings. A mix of nest boxes will be selected which are suitable for the species of conservation concern present locally, including swallow terraces to compensate for lost opportunities within the buildings.
- 5.54 The need for additional compensation measures shall be informed by the results of further survey work, as identified within this report.

Enhancement

- 5.55 The Development Framework Plan includes landscape planting enhancements which will make positive contributions to on-site biodiversity. New habitat creation will provide opportunities for species confirmed to be present on-site at baseline, such as nesting birds. In addition to these enhancements which are embedded into development proposals, a range of additional ecological enhancement measures will be delivered as part of the proposed development, as identified below. Further details can be found in the EMES, and will be set out in full in a Landscape and Ecology Management Plan (LEMP) at the detailed design stage, however as an indicative guide:

- Inclusion of plant species of known wildlife value within the landscaping scheme, including night-scented varieties to benefit bats, and species of known benefit to dormice such as honeysuckle *Lonicera periclymenum* and hazel.
- Provision of new bat roosting opportunities: At least 20 bat boxes will be erected on mature trees or new builds. These will be a purpose-built, durable and long-lasting variety such as available from Schwegler or Habitat. Where possible, these will be incorporated into the fabric of new builds.
- Provision of new bird nesting opportunities: At least 15 bird nesting boxes will be provided in new/retained planting to benefit generalist bird species.
- Creation of log piles: Timber generated from tree clearance works at the Site will be used to make at least X log piles for wildlife benefit. These will be sited within boundary vegetation where they will be least disturbed. New material can be added as required following any future management works.

Monitoring

- 5.56 Ongoing monitoring of newly established and enhanced habitats as part of the POS will be completed. This commitment will be made, and further detail provided, within the LEMP to be prepared at the detailed design stage.
- 5.57 Should further survey work confirm that EPS (bats, dormice, GCN) are present on Site and will be impacted by the proposed development, monitoring measures will be described and secured within the EPS licence in line with current mitigation guidelines. Any records of protected species will be submitted to the Sussex Biodiversity Records Centre annually, and records of bat roost will be provided to Sussex Bat Group who will also be encouraged to continue monitoring in the longer term. These commitments will be made, and further detail provided, within the LEMP to be prepared at the detailed design stage.

6.0 CONCLUSIONS

- 6.1 In the absence of any mitigation measures, the proposed development would be anticipated to have, at most, adverse effects significant at the Local level. However, with the implementation of some straightforward mitigation and precautionary measures as proposed with this scheme, the development is not anticipated to result in any significant adverse residual effects to important ecological features.
- 6.2 Based on successful implementation of avoidance, mitigation and enhancement measures to be informed by further survey work as set out herein, the development proposals have the scope to accord with relevant nature conservation legislation, as well as with the provisions of the Arun District Council Local Plan 2003, Draft Local Plan 2014 and Angmering Neighbourhood Plan 2014.
- 6.3 The Development Framework Plan will deliver net benefits for wild life in the form of additional habitats, with the opportunity to provide additional biodiversity enhancement measures alongside the new housing. The measures set out herein can be secured through appropriate conditions imposed upon any planning consent, and the development may therefore be delivered without harm to nature conservation interests.

7.0 REFERENCES

Angmering Parish Council (2012) Angmering Neighbourhood Plan 2014 – 2029: Version 4.06

Arun District Council (2003) Adopted 2003 Local Plan. Available at: <http://www.arunlocalplan.net/> [Accessed November 2017].

Arun District Council (2014) Local Plan 2011-2019, Publication version. Available at: <https://www.arun.gov.uk/emerging-local-plan> [Accessed November 2017].

Arun District Council (2013) Angmering Visioning Brief, Final report. Available at: <https://www.arun.gov.uk/download.cfm?doc=docm93jmm4n1612.pdf&ver=1254> [Accessed November 2017].

British Standards Institution, 2013. BS 42020:2013 Biodiversity – Code of practice for planning and development. London: BSI.

Chartered Institute of Ecology and Environmental Management, 2015. Guidelines for Ecological Report Writing. Winchester: CIEEM.

Chartered Institute of Ecology and Environmental Management, 2016. Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater and Coastal, 2nd edition. Winchester: CIEEM.

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

DEFRA (2011) Biodiversity 2020: A strategy for England's wildlife and ecosystem services. Defra, London.

Department for Communities and Local Government, 2012. National Planning Policy Framework. London: Department for Communities and Local Government.

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

English Nature, 2001. Great crested newt mitigation guidelines. Peterborough: EN.

Joint Nature Conservation Committee, 1990. Handbook for Phase 1 habitat survey – a technique for environmental audit. Revised reprint, 2010. Peterborough: JNCC.

JNCC and Defra (2012) UK Post-2010 Biodiversity Framework (on behalf of the Four Countries' Biodiversity Group). July 2012.

Langton, T.E.S., Beckett, C.L., and Foster, J.P. (2001), Great Crested Newt Conservation Handbook, Froglife, Halesworth.

Multi-Agency Geographic Information for the Countryside (MAGIC), 2013. Interactive Map. [online] Available at: <<http://www.magic.gov.uk/MagicMap.aspx>> [Accessed November 2017].

Natural England and Department for Environment, Food & Rural Affairs, 2014. Protected species and sites: how to review planning proposals. [online, last updated August 2016] Available at: <<https://www.gov.uk/protected-species-and-sites-how-to-review-planning-proposals>> [Accessed November 2017].

Oldham R.S., Keeble J., Swan M.J.S. & Jeffcote M. (2000). Evaluating the suitability of habitat for the Great Crested Newt (*Triturus cristatus*). Herpetological Journal 10 (4), 143-155.

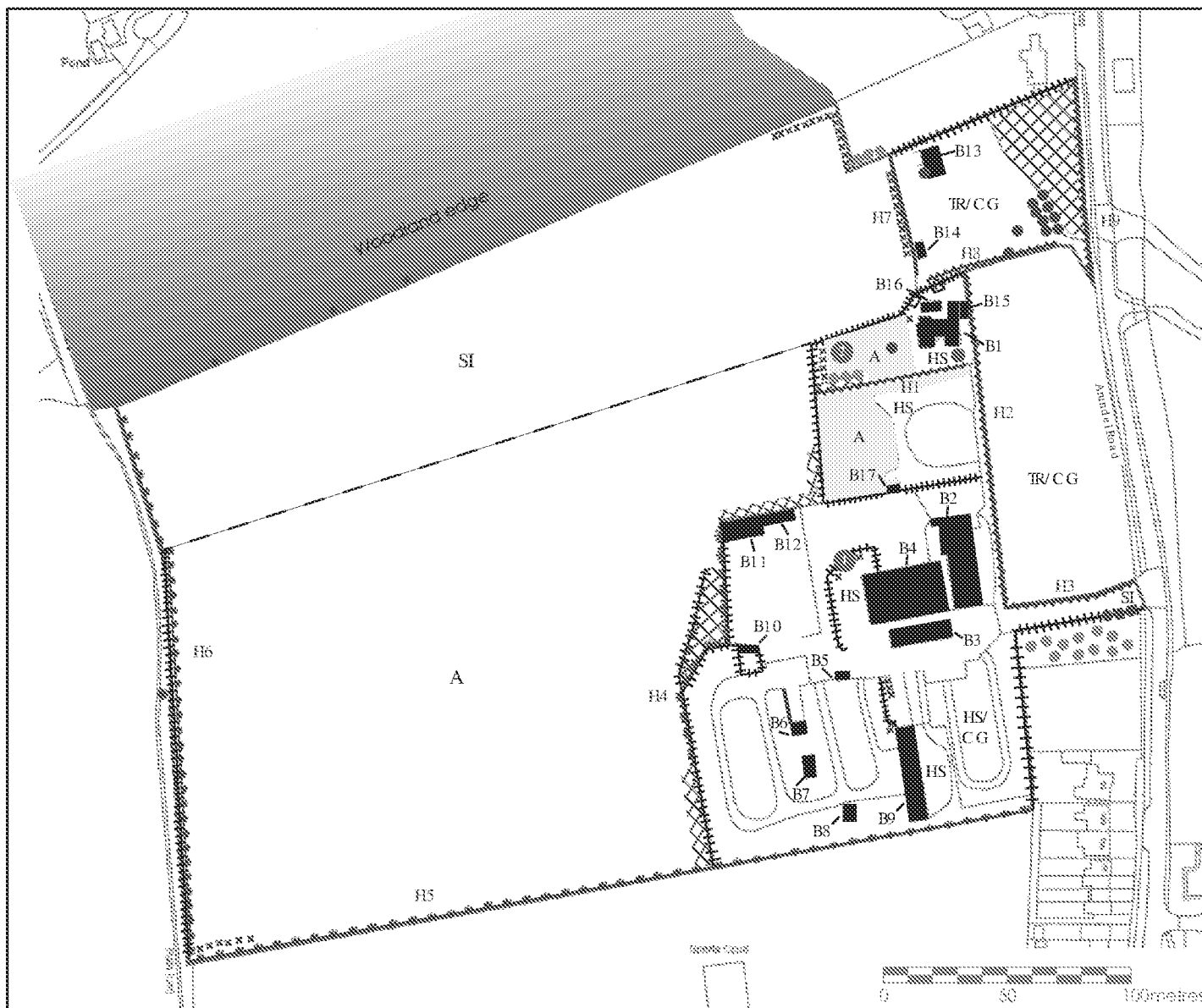
Wray S, Wells D, Long E, Mitchell-Jones T (December 2010) Valuing Bats in Ecological Impact Assessment, IEEM In-Practice p 23-25

This page has been left intentionally blank

Appendix A

Habitats Plan (CSA/3467/102)
Photosheet

This page has been left intentionally blank



	Site Boundary
	Species-rich hedge with trees (H4-6)
	Species-rich hedge (H1-3 & 8-9)
	Species-poor hedge (H7)
	Fence
	Arable
	Semi-improved grassland
	Amenity grassland
	Dense scrub
	Scattered scrub
	Colonising ground
	Hard standing
	Tall ruderal
	Buildings (B1-13)
	Wall
	Individual trees - deciduous
	Individual trees - coniferous
	Pond
	Trees with features suitable for roosting bats
	1 - Brash pile; 2 - Garden, amenity grassland with ornamental planting, mature trees & shrubs, chestnut post & rail fencing



CSA
environmental

Office 20, Gillingate, 93 Offchurch Road,
Brighton BN1 4ST

T: 01273 573871
E: brighton@csa-environmental.co.uk
W: csa-environmental.co.uk

Project Land West of Arundel Road, Angmering

Drawing Title Habitats Plan

Client Gladman Developments Ltd.

Date: January 2017

Drawing No. CSA/3467/102

Scale: 1:1000

See scale bar

Rev. A

Drawn: KW/JT

Checked: JT

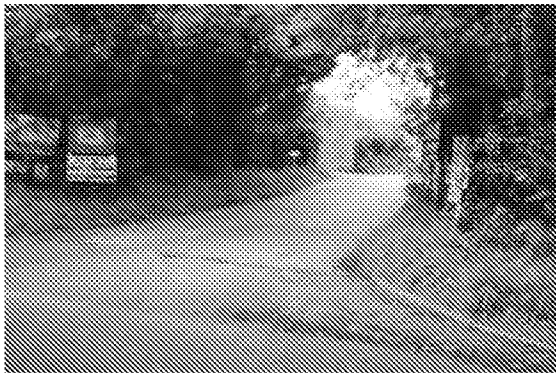


Plate 1. Site entrance from Arundel Road



Plate 2. Caravans park with amenity grassland and hardstanding in north-east of Site



Plate 3. Pond in garden of bungalow



Plate 4. Tall ruderaland colonising ground in north-east of Site



Plate 5. Arable stubble and mature boundary vegetation



Plate 6. Arable stubble and mature boundary vegetation and scrub



Photo 7. Arable on left, semi-improved grassland and woodland edge to right



Photo 8. Mature oak tree along western boundary

Appendix B

Legislation and Planning Policy

This page has been left intentionally blank

The Conservation of Habitats and Species Regulations 2010 (as amended) enacts the Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora, and Council Directive 79/409/EEC on the Conservation of Wild Birds, into UK law. The Regulations allow for the designation of Statutory Nature Conservation-sites (SACs and SPAs) and European Protected Species ('EPS' including all UK bat species, great crested newt, hazel dormouse and otter) which are assigned a greater level of protection than under national legislation.

The Wildlife and Countryside Act 1981 (as amended) forms the primary piece of UK legislation relating to the protection of habitats and species (including nesting birds, reptiles and water vole). Additionally, badgers are protected under the Protection of Badgers Act, 1992.

Section 40(1) of the Natural Environment and Rural Communities (NERC) Act 2006 states that each public authority "must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity". This legislation makes it clear that planning authorities should consider impacts to biodiversity when determining planning applications, with particular regard to the Section 41 list of 56 habitats and 943 species of principal importance, irrespective of whether they are covered by other legislation. The S41 list was taken forward for action under the UK BAP (first published in 1994). The UK BAP has now been superseded by the Biodiversity 2020 Strategy¹, which continues to prioritise the S41 list, setting national targets for the period to 2020, and the UK Post-2010 Biodiversity Framework², which shows how these contribute to targets at the European level. Whilst BAPs are therefore no longer formally recognised, many of the tools and resources originally developed for the BAP remain in use, such as the background information which still forms the basis of work at national level.

National Planning Policy Framework (2012)³ (NPPF) sets out the government planning policies for England and how they should be applied. With regards to ecology and biodiversity, Chapter 11: Conserving and Enhancing the Natural Environment, paragraph 109, states that the planning system and planning policies should:

- Minimise impacts on, and provide net gains in, biodiversity where possible, "contributing to the Government's commitment to halt the overall decline in biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures".
- Recognise the wider benefits of ecosystem services.

¹ De fra (2011) *Biodiversity 2020: A strategy for England's wildlife and ecosystem services*. De fra, London

² JNCC and De fra (2012) UK Post-2010 Biodiversity Framework (on behalf of the Four Countries' Biodiversity Group). July 2012.

³ Department for Communities and Local Government (2012) National Planning Policy Framework

Under these aims, paragraph 117 states the need to plan for biodiversity at a landscape scale, linked to national and local targets. Paragraph 118 sets out the principles that local planning authorities should apply when determining planning applications:

- Refuse planning permission if significant harm cannot be avoided, adequately mitigated, or, as a last resort, compensated for.
- Encourage opportunities to incorporate biodiversity in and around developments.
- Permission should not normally be permitted where an adverse effect on a nationally designated Site of Special Scientific Interest is likely, either individually or in combination with other developments.
- Refuse planning permission if development will result in the loss or deterioration of irreplaceable habitats, such as ancient woodland and the aged or veteran trees, unless the need for, and benefits of, the development in that location clearly outweigh the loss.

The Government Circular 06/2005, which is referred to within the NPPF, defines statutory nature conservation sites and protected species as a material consideration in the planning process.

Local planning policies of relevance to ecology, biodiversity and/or nature conservation have been set out in Table B.1 below.

Table B.1. Summary of regional and local planning policy relating to ecology

Policy	Summary
Arun District Local Plan 2003	
POLICY GEN28 Trees and Woodlands	Development will not be permitted if it would damage or destroy one or more trees protected by a tree preservation order, identified as ancient woodland or in a conservation area unless: - the removal of one or more trees would be in the interests of good arboricultural practice; or - the benefits of the proposed development outweigh the amenity value of the protected trees. Conditions may be used to ensure that, for any trees which are removed as part of a development, an equivalent number are planted on the site.
POLICY GEN29 Nature Conservation Across the District	Development will only be permitted on sites which contain semi-natural habitats, features of nature conservation interest, or within wildlife corridors, where these can be largely retained and sympathetically incorporated into the scheme. Legal agreements may be used to offset the loss of, or impact on, any nature conservation resource present on the site prior to development.
Arun District Local Plan 2011-2031 (Publication version)	
Policy ENV SP1: Natural Environment	Arun District Council will encourage and promote the preservation, restoration and enhancement of biodiversity and the natural environment through the development process and particularly through policies for the protection of both designated and non-designated sites. Where possible it shall also promote the creation of new areas for habitats and species. In relation to designated sites, development will be

Policy	Summary
	permitted where it protects sites listed in Tables 17.1-17.6 that are recognised for the species and habitats contained within them.
Policy ENV DM4: Protection of trees	Development will be permitted where it can be demonstrated that trees protected by a Tree Preservation Order(s), (TPO) identified as Ancient Woodland, in a Conservation Area or contributing to local amenity, will not be damaged or destroyed now and as they reach maturity, unless: a. Would result in the removal of one or more trees in the interests of good arboricultural practice. This shall be demonstrated by the developer following the advice of a suitably qualified person which shall be guided by BS 5837 (2012). Details of any advice received having regard to BS 5837 (2012) shall be submitted, in writing, as part of a planning application; or b. Would enhance the survival and growth prospects of other protected trees; c. The benefits of the proposed development in a particular location outweigh the loss of trees or woodland, especially ancient woodland. Where planning permission is granted in any of the above instances, conditions shall be used to ensure that, for any trees which are removed as part of a development, at least an equivalent number of a similar species and age (where practical) are planted on the proposed development site. Sufficient space for replacement trees to mature without causing future nuisance or damage shall be provided. The planting of new trees shall form an integral part of the design of any development scheme. Proper provision must be made for the protection and management of trees or areas of woodland on-site when undertaking development. A management plan shall be provided as part of a planning application in accordance with BS 5837 (2012) in order to ensure that trees are adequately protected during development and appropriately maintained in the future. Conditions for the continued protection of trees on sites shall be included in any planning permission given. Where there are existing trees on or adjacent to a development site, developers shall be required to provide: d. Land and tree surveys e. A tree constraints plan f. An arboricultural impact assessment to include a tree protection plan and arboricultural method statement These will ensure that development is planned to take a comprehensive view of tree issues at an early stage in the design process and that development works do not have a negative impact on existing trees. Developments shall also be consistent with all other Local Plan policies.
Policy ENV DM5 Development and biodiversity	Development schemes shall, in the first instance, seek to achieve a net gain in biodiversity and protect existing habitats on site. They shall also however incorporate elements of biodiversity including green walls, roofs, bat and bird boxes as well as landscape features minimising adverse impacts on existing habitats (whether designated or not). Development schemes shall also be appropriately designed to facilitate the

Policy	Summary
	emergence of new habitats through the creation of links between habitat areas and open spaces. Together, these provide a network of green spaces which serve to reconnect isolated sites and facilitate species movement. Where there is evidence of a protected species on a proposed development site, planning applications shall include a detailed survey of the subject species, with details of measures to be incorporated into the development scheme to avoid loss of the species. This involves consideration of any impacts that will affect the species directly or indirectly, whether within the application site or in an area outside of the site, which may be indirectly affected by the proposals. All surveys shall be carried out at an appropriate time of year and shall be undertaken by a qualified and, where appropriate, suitably licensed person. All developments shall have regard to Natural England's standing advice for protected species. Developments shall also be consistent with all other Local Plan policies.

Appendix C

Desk Study Information

This page has been left intentionally blank

SSSI Impact Risk Zones - to assess planning applications for likely impacts on SSSIs/SACs/SP As & Ramsar sites (England)

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT THE CATEGORIES BELOW? NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications

Infrastructure

Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals.

Wind & Solar Energy

Minerals, Oil & Gas

Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.

Rural Non Residential

Residential

Rural Residential

Air Pollution

Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, pig & poultry units, slurry lagoons > 200m² & manure stores > 250t).

Combustion

General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

Waste

Composting

Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.

Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.

Discharges

Water Supply

Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.

Notes

GUIDANCE – How to use the Impact Risk Zones

[/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf](#)

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT THE CATEGORIES BELOW? NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications

Infrastructure

Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals.

Wind & Solar Energy

Minerals, Oil & Gas

Wind turbines.

Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.

Rural Non Residential

Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha.

Residential

Residential development of 50 units or more.

Rural Residential

Any residential development of 10 or more houses outside existing settlements/urban areas.

Air Pollution

Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, pig & poultry units, slurry lagoons > 200m² & manure stores > 250t).

Combustion

General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

Waste

Composting

Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.

Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.

Discharges

Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location).

Water Supply

Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.

Notes

GUIDANCE – How to use the Impact Risk Zones

[/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf](#)

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT THE CATEGORIES BELOW? NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications

Infrastructure

Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals.

Wind & Solar Energy

Minerals, Oil & Gas

Wind turbines.

Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.

Rural Non Residential

Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha.

Residential

Residential development of 50 units or more.

Rural Residential

Any residential development of 10 or more houses outside existing settlements/urban areas.

Air Pollution

Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, pig & poultry units, slurry lagoons > 200m² & manure stores > 250t).

Combustion

General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

Waste

Composting

Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.

Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.

Discharges

Water Supply	Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf
1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?	2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
All Planning Applications	
Infrastructure	Pipelines, pylons and overhead cables. Any transport proposal including road, rail and by water (excluding routine maintenance). Airports, helipads and other aviation proposals.
Wind & Solar Energy	
Minerals, Oil & Gas	Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.
Rural Non Residential	Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha.
Residential	
Rural Residential	Any residential development of 100 or more houses outside existing settlements/urban areas.
Air Pollution	Any industrial/agricultural development that could cause AIR POLLUTION (incl: industrial processes, pig & poultry units, slurry lagoons > 200m² & manure stores > 250t).
Combustion	General combustion processes >20MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
Waste	Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.
Composting	Any composting proposal with more than 75000 tonnes maximum annual operational throughput. Incl: open windrow composting, in-vessel composting, anaerobic digestion, other waste management.
Discharges	Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location).
Water Supply	Large infrastructure such as warehousing / industry where total net additional gross internal floorspace following development is 1,000m² or more.
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf
1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?	2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
All Planning Applications	
Infrastructure	Pylons and overhead cables. Airports, helipads and other aviation proposals.
Wind & Solar Energy	Wind turbines.
Minerals, Oil & Gas	Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.
Rural Non Residential	Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha.
Residential	Residential development of 50 units or more.
Rural Residential	Any residential development of 10 or more houses outside existing settlements/urban areas.
Air Pollution	Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.
Combustion	General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
Waste	Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.
Composting	
Discharges	
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf
1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?	2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
All Planning Applications	
Infrastructure	Pylons and overhead cables. Airports, helipads and other aviation proposals.
Wind & Solar Energy	Wind turbines.
Minerals, Oil & Gas	
Rural Non Residential	Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha.
Residential	Residential development of 50 units or more.
Rural Residential	Any residential development of 10 or more houses outside existing settlements/urban areas.
Air Pollution	Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.
Combustion	General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
Waste	Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.
Composting	
Discharges	
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf
1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?	2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
All Planning Applications	
Infrastructure	Pylons and overhead cables. Airports, helipads and other aviation proposals.

Wind & Solar Energy	Wind turbines.
Minerals, Oil & Gas	
Rural Non Residential	Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha.
Residential	Residential development of 50 units or more.
Rural Residential	Any residential development of 10 or more houses outside existing settlements/urban areas.
Air Pollution	Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.
Combustion	
Waste	Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.
Composting	
Discharges	
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW? 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications	
Infrastructure	Pylons and overhead cables. Airports, helipads and other aviation proposals.
Wind & Solar Energy	Wind turbines.
Minerals, Oil & Gas	
Rural Non Residential	Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha.
Residential	Residential development of 50 units or more.
Rural Residential	Any residential development of 10 or more houses outside existing settlements/urban areas.
Air Pollution	Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.
Combustion	General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
Waste	Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.
Composting	
Discharges	
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW? 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications	
Infrastructure	Pylons and overhead cables. Airports, helipads and other aviation proposals.
Wind & Solar Energy	Wind turbines.
Minerals, Oil & Gas	Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.
Rural Non Residential	Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha.
Residential	Residential development of 50 units or more.
Rural Residential	Any residential development of 10 or more houses outside existing settlements/urban areas.
Air Pollution	Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.
Combustion	General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
Waste	Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.
Composting	
Discharges	Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location).
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW? 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications	
Infrastructure	Pylons and overhead cables. Airports, helipads and other aviation proposals.
Wind & Solar Energy	Wind turbines.
Minerals, Oil & Gas	
Rural Non Residential	Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha.
Residential	Residential development of 50 units or more.
Rural Residential	Any residential development of 10 or more houses outside existing settlements/urban areas.
Air Pollution	Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.
Combustion	
Waste	Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.
Composting	
Discharges	
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW? 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications

Infrastructure

Wind & Solar Energy

Minerals, Oil & Gas

Rural Non Residential

Residential

Rural Residential

Air Pollution

Combustion

Waste

Composting

Discharges

Water Supply

Notes

GUIDANCE – How to use the Impact Risk Zones

Pylons and overhead cables. Airports, helipads and other aviation proposals.

Wind turbines.

Large non residential developments outside existing settlements/urban areas where footprint exceeds 1ha.

Residential development of 50 units or more.

Any residential development of 10 or more houses outside existing settlements/urban areas.

Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.

[/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf](#)

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW? 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications

Infrastructure

Wind & Solar Energy

Minerals, Oil & Gas

Rural Non Residential

Residential

Rural Residential

Air Pollution

Combustion

Waste

Composting

Discharges

Water Supply

Notes

GUIDANCE – How to use the Impact Risk Zones

Airports, helipads and other aviation proposals.

Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.

Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.

General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location).

[/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf](#)

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW? 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications

Infrastructure

Wind & Solar Energy

Minerals, Oil & Gas

Rural Non Residential

Residential

Rural Residential

Air Pollution

Combustion

Waste

Composting

Discharges

Water Supply

Notes

GUIDANCE – How to use the Impact Risk Zones

Airports, helipads and other aviation proposals.

Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.

General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location).

[/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf](#)

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW? 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications

Infrastructure

Wind & Solar Energy

Minerals, Oil & Gas

Rural Non Residential

Residential

Rural Residential

Air Pollution

Combustion

Waste

Composting

Discharges

Water Supply

Airports, helipads and other aviation proposals.

Wind turbines.

Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.

Landfill. Incl: inert landfill, non-hazardous landfill, hazardous landfill.

Notes

GUIDANCE – How to use the Impact Risk Zones

[/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf](#)

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW? 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications

Infrastructure

Airports, helipads and other aviation proposals.

Wind & Solar Energy

Minerals, Oil & Gas

Rural Non Residential

Residential

Rural Residential

Air Pollution

Combustion

Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.

General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

Waste

Composting

Discharges

Any discharge of water or liquid waste of more than 20m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location).

Water Supply

Notes

GUIDANCE – How to use the Impact Risk Zones

[/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf](#)

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW? 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications

Infrastructure

Airports, helipads and other aviation proposals.

Wind & Solar Energy

Minerals, Oil & Gas

Rural Non Residential

Residential

Rural Residential

Air Pollution

Combustion

Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.

Waste

Composting

Discharges

Water Supply

Notes

GUIDANCE – How to use the Impact Risk Zones

[/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf](#)

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW? 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications

Infrastructure

Airports, helipads and other aviation proposals.

Wind & Solar Energy

Minerals, Oil & Gas

Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.

Rural Non Residential

Residential

Rural Residential

Air Pollution

Combustion

Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.

General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

Waste

Composting

Discharges

Any discharge of water or liquid waste of more than 5m³/day to ground (ie to seep away) or to surface water, such as a beck or stream (NB This does not include discharges to mains sewer which are unlikely to pose a risk at this location).

Water Supply

Notes

GUIDANCE – How to use the Impact Risk Zones

[/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf](#)

1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW? 2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:

All Planning Applications

Infrastructure

Airports, helipads and other aviation proposals.

Wind & Solar Energy

Minerals, Oil & Gas

Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.

Rural Non Residential

Residential

Rural Residential

Air Pollution

Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.

Combustion	General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
Waste	
Composting	
Discharges	
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf
1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?	2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
All Planning Applications	
Infrastructure	Airports, helipads and other aviation proposals.
Wind & Solar Energy	
Minerals, Oil & Gas	
Rural Non Residential	
Residential	
Rural Residential	
Air Pollution	Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.
Combustion	
Waste	
Composting	
Discharges	
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf
1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?	2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
All Planning Applications	
Infrastructure	Airports, helipads and other aviation proposals.
Wind & Solar Energy	
Minerals, Oil & Gas	Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.
Rural Non Residential	
Residential	
Rural Residential	
Air Pollution	Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.
Combustion	General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
Waste	
Composting	
Discharges	
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf
1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?	2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
All Planning Applications	
Infrastructure	Airports, helipads and other aviation proposals.
Wind & Solar Energy	
Minerals, Oil & Gas	
Rural Non Residential	
Residential	
Rural Residential	
Air Pollution	Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.
Combustion	
Waste	
Composting	
Discharges	
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf
1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?	2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
All Planning Applications	
Infrastructure	Airports, helipads and other aviation proposals.
Wind & Solar Energy	
Minerals, Oil & Gas	Planning applications for quarries, including: new proposals, Review of Minerals Permissions (ROMP), extensions, variations to conditions etc. Oil & gas exploration/extraction.
Rural Non Residential	
Residential	
Rural Residential	
Air Pollution	Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t.

Combustion	General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
Waste	
Composting	
Discharges	
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf
1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?	2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
All Planning Applications	
Infrastructure	Airports, helipads and other aviation proposals.
Wind & Solar Energy	
Minerals, Oil & Gas	
Rural Non Residential	
Residential	
Rural Residential	
Air Pollution	
Combustion	
Waste	
Composting	
Discharges	
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf
1. DOES PLANNING PROPOSAL FALL INTO ONE OR MORE OF THE CATEGORIES BELOW?	2. IF YES, CHECK THE CORRESPONDING DESCRIPTION(S) BELOW. LPA SHOULD CONSULT NATURAL ENGLAND ON LIKELY RISKS FROM THE FOLLOWING:
All Planning Applications	
Infrastructure	Airports, helipads and other aviation proposals.
Wind & Solar Energy	
Minerals, Oil & Gas	
Rural Non Residential	
Residential	
Rural Residential	
Air Pollution	
Combustion	Pig & poultry units, slurry lagoons > 750m² & manure stores > 3500t. General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.
Waste	
Composting	
Discharges	
Water Supply	
Notes	
GUIDANCE – How to use the Impact Risk Zones	/Metadata_for_magic/SSSI IRZ User Guidance MAGIC.pdf
Local Nature Reserves (England)	
No Features found	
National Nature Reserves (England)	
No Features found	
Sites of Special Scientific Interest (England)	
No Features found	

Site Check Report Report generated on Thu Oct 26 2017
You selected the location: Centroid Grid Ref: TQ065053
The following features have been found in your search area:

Ramsar Sites (England)

Name	ARUN VALLEY
Reference	UK11004
Hectares	530.42

Special Areas of Conservation (England)

Name	ARUN VALLEY
Reference	UK0030366
Hectares	487.48
Hyperlink	http://inco.defra.gov.uk/protectedsites/sacselection/sac.asp?euocode=UK0030366

Special Protection Areas (England)

Name	ARUN VALLEY
Reference	UK9020281
Hectares	530.42



Legend

-  Local Nature Reserves (England)
-  National Nature Reserves (England)
-  Sites of Special Scientific Interest (England)
-  SSSI Impact Risk Zones - to assess planning applications for likely impacts on SSSIs/SACs/SPAs & Ramsar sites (England)

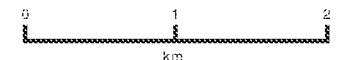
Projection = OSGB36

xmin = 494000

ymin = 99150

xmax = 519100

ymax = 111700



Map produced by MAGiC on 26 October, 2017.
Copyright resides with the data suppliers and the map must not be reproduced without their permission. Some information in MAGiC is a snapshot of the information that is being maintained or continually updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.



Legend

-  Ramsar Sites (England)
-  Special Areas of Conservation (England)
-  Special Protection Areas (England)

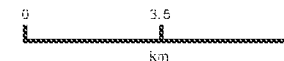
Projection = OSGB36

xmin = 459600

ymin = 82600

xmax = 557400

ymax = 128800



Map produced by MAGiC on 26 October, 2017.
Copyright resides with the data suppliers and the map must not be reproduced without their permission. Some information in MAGiC is a snapshot of the information that is being maintained or continually updated by the originating organisation. Please refer to the metadata for details as information may be illustrative or representative rather than definitive at this stage.

Appendix D

Habitats and Flora Species List

This page has been left intentionally blank

Table D1. Indicative botanical species list for habitats present in land to the west of Arundel Road, Angmering collected during the Phase 1 habitat survey September 2017

Latin name	Common name	Garden (introduced shrub planting and amenity grassland)	Semi-improved grassland	Hard standing with colonising ground	Arable field margins	Hedge rows
Herb species						
<i>Achillea millefolium</i>	Yarrow					✓
<i>Agrimonia</i> spp.	Agrimony					✓
<i>Anagallis arvensis</i>	Scarlett pimpernel			✓		
<i>Arcium</i> spp.	Burdock sp.			✓		
<i>Argentina anserina</i>	Silverweed		✓ (east margins)	✓		
<i>Aster</i> spp.	Aster sp.			✓		
<i>Belis perennis</i>	Daivy			✓		
<i>Calystegia sepium</i>	Hedge bindweed				✓	✓
<i>Capsella bursa-pastoris</i>	Shepherd's purse			✓		
<i>Cardamine hirsuta</i>	Bittercress			✓		
<i>Centaurea nigra</i>	Common knapweed					✓
<i>Centranthus ruber</i>	Red valerian			✓		
<i>Cerastium fontanum</i>	Common mouse-ear		✓			
<i>Chenopodium</i> spp.	Goosefoot				✓	
<i>Cirsium arvense</i>	Creeping thistle		✓	✓		
<i>Cirsium</i> spp.	Thistles			✓	✓	
<i>Cirsium vulgare</i>	Spear thistle		✓	✓		
<i>Clematis</i> spp.	Clematis					✓
<i>Convolvulus arvensis</i>	Field bindweed		✓			
<i>Crucifera laevipes</i>	Crosswort					✓
<i>Dahlia</i> spp.	Dahlia	✓				
<i>Dipsacus</i> spp.	Teasel	✓	✓	✓	✓	
<i>Epilobium</i> spp.	Willow herb			✓		
<i>Erigeron</i> spp.	Fleabane	✓	✓	✓	✓	✓
<i>Eupatorium cannabinum</i>	Hemp agrimony			✓		
<i>Euphorbia helioscopia</i>	Sun spurge				✓	
<i>Euphorbia</i> spp.	Spurge sp.			✓		
<i>Fragaria vesca</i>	Wild strawberry					✓
<i>Fumaria officinalis</i>	Fumitory				✓	
<i>Galium</i> spp.	Bedstraw					✓
<i>Geranium molle</i>	Doves foot				✓	
<i>Geranium</i> spp.	Cranebill		✓			
<i>Glechoma hederacea</i>	Ground ivy			✓		
<i>Helianthus</i> spp.	Sunflower	✓				
<i>Heraclum</i> spp.	Hogweed	✓				
<i>Hibiscus syriacus</i>	Rose of Sharon	✓				
<i>Hypericum perforatum</i>	St John's wort	✓	✓			✓
<i>Jacobaea vulgaris</i>	Ragwort		✓	✓		
<i>Lamium purpureum</i>	Red dead nettle			✓		
<i>Leucanthemum vulgare</i>	Oxeye daisy			✓		
<i>Malva neglecta</i>	Field mallow			✓		

Matricaria chamomilla	Scented mayweed			✓		
Medicago lupulina	Black medick			✓		
Myosotis spp.	Forget-me-not			✓		
Ononis repens	Rest harrow		✓			
Picris echinoides	Bristly ox tongue		✓	✓		
Plantago coronopus	Buckhorn plantain			✓		
Plantago lanceolata	Ribwort plantain			✓		
Plantago major	Greater plantain			✓		
Potentilla reptans	Creeeping cinquefoil			✓		
Prunella vulgaris	Selfheal	✓		✓		
Pteridium spp.	Bracken					✓
Ranunculus spp.	Buttercup	✓	✓			
Rumex spp.	Dock	✓	✓	✓	✓	
Solanaceae spp.	Nightshade sp.			✓		
Sonchus spp.	Sow thistles			✓		
Stachysylvatica	Hedge woundwort		✓ (margins)			
Stellaria holostea	Greater stitchwort					✓
Taraxacum spp.	Dandelion			✓		
Tifolium repens	White clover		✓	✓		
Tifolium spp.	Clover		✓	✓	✓	
Tripleurospermum inodorum	Scentless mayweed			✓		
Urtica spp.	Nettles		✓	✓	✓	
-	Various ornamental shrubs	✓				
Vicia cracca	Tufted vetch		✓			
Grasses, rushes and sedges						
Bromus hordeaceus	Soft-brome		✓			
Dactylis glomerata	Cock's-foot		✓		✓	✓
Festuca rubra	Red fescue	✓				
Holcus lanatus	Yorkshire fog		✓	✓		
Lolium perenne	Perennial rye grass	✓	✓	✓		
Phleum pratense	Timothy		✓			
Poa annua	Annual meadow-grass	✓		✓		
Arrhenatherum elatius	False oat grass					✓
Brachypodium sylvaticum	False brome					✓
Juncus inflexus	Hard rush					✓
Woody species						
Acer campestre	Field maple					✓
Acer pseudoplatanus	Sycamore					✓
Aesculus hippocastanum	Horse chestnut					✓
Alnus glutinosa	Common Alder					✓
Buddleja spp.	Buddleia	✓				
Buddleja spp.	Buddleia					✓
Clematis vitalba	Traveler's joy					✓
Cornus spp.	Dogwood	✓				
Corylus avellana	Hazel					✓

Cotoneaster spp.	Cotoneaster					✓
Crataegus monogyna	Hawthorn					✓
Cupressus × leylandii	Leylandii					✓
Euonymus europaeus	Spindle					✓
Fagus sylvatica	Beech					✓
Fraxinus excelsior	Ash			✓		✓
Hedera spp.	Ivy					✓
Ligustrum vulgare	Wild privet					✓
Malus spp.	Apple tree	✓				
Populus spp.	Poplar spp.					✓
Populus tremula	Aspen					✓
Prunus avium	Cherry					✓
Prunus spinosa	Blackthorn					✓
Prunus spp.	Prunus (domesticated)	✓				✓
Quercus spp.	Oak spp.					✓
Rosa arvensis	Field rose					✓
Rosa canina spp.	Dog rose					✓
Rubus fruticosus agg.	Bramble					✓
Salix spp.	Willow					✓
Sambucus nigra	Elder					✓
Tilia platyphyllos	Large-leaved lime					✓
Ulmus spp.	Elm					✓

This page has been left intentionally blank

Table D2. Indicative botanical species list for hedgerows present in land to the west of Arundel Road, Angmering collected during the Phase 1 habitat survey September 2017

Hedgerow Number		H1	H2	H3	H4	H5	H6	H7	H8	H9
Common name	Latin name	Managed garden hedge	Mature c.4m tall	Mature c.4m tall	Mature c.5m tall	Tall tree belt	Wide & scrubby, outgrown with mature trees	Dense c.5m tall	Dense, mature, c.5m tall	Dense, outgrown, c.4m tall
Woody species										
Acer campestre	Field maple				✓	✓				
Acer pseudoplatanus	Sycamore									
Aesculus hippocastanum	Horse chestnut									
Alnus glutinosa	Common Alder					✓				
Buddleja spp.	Buddleia									✓
Clematis vitalba	Traveler's joy						✓			
Corylus avellana	Hazel								✓	
Crataegus monogyna	Hawthorn		✓	✓	✓		✓		✓	
Cupressus × leylandii	Leylandii		✓ (dominant to north)							
Euonymus europaeus	Spindle			✓						
Fagus sylvatica	Beech	✓	✓							
Fraxinus excelsior	Ash		✓	✓		✓ (dominant)				
Hedera spp.	Ivy	✓		✓	✓	✓			✓	
Ligustrum vulgare	Wild privet			✓						

Populus sp.	Poplar spp.					✓				
Populus tremula	Aspen					✓				
Prunus avium	Cherry					✓				
Prunus spinosa	Blackthorn		✓	✓			✓ (dominant)	✓	✓	✓
Prunus spp.	Prunus (domesticated)				✓					
Quercus sp.	Oak sp.					✓	✓			
Rosa arvensis	Field rose			✓						
Rosa canina spp.	Dog rose		✓		✓		✓			
Rubus fruticosus agg.	Bramble	✓	✓							
Salix spp.	Willow (saplings)				✓		✓			✓
Sambucus nigra	Elder	✓				✓			✓	✓
Tilia platyphyllos	Large-leaved lime					✓				
Ulmus spp.	Elm			✓	✓		✓		✓	✓
Cotoneaster sp.	Cotoneaster	✓								
Herb species										
Achillea millefolium	Yarrow			✓						
Agrimonia sp.	Agrimony			✓						
Calystegia sepium	Hedge bindweed									✓
Centaurea nigra	Common knapsweed			✓						
Clematis sp.	Clematis			✓						
Crucifera levis	Crosswort			✓						

Erigeron sp.	Fleabane			✓						
Fragaria vesca	Wild strawberry			✓						
Galium sp.	Bedstraw			✓						
Hypericum perforatum	St John's wort			✓						
Pteridium sp.	Bracken			✓						
Stellaria holostea	Greater stitchwort			✓						
Grasses, rushes and sedges										
Arrhenatherum elatius	False oat grass			✓						
Brachypodium sylvaticum	False brome			✓						
Dactylis glomerata	Cock's-foot			✓						
Juncus inflexus	Hard rush									

This page has been left intentionally blank

Appendix E

Evaluation & Assessment Methods

This page has been left intentionally blank

Ecological features are evaluated and assessed with due consideration for the Chartered Institute of Ecology and Environmental Management (CIEEM) 2016 Guidelines for Ecological Impact Assessment (EcIA). For clarity, the evaluation and assessment process adopted within this EcIA is set out below.

Establishing Potentially Important Ecological Features

Ecological features are assessed where they are considered to be important, and where they may be impacted by a proposed development. A feature may be considered important for a variety of reasons, such as quality, extent, rarity and/or statutory protection. Table E.1 below sets out a non-exhaustive list of ecological features that are typically considered, along with key examples:

Table E.1. Potentially important ecological features (adapted from CIEEM 2016)

Potentially Important Ecological Features	Typical examples
Statutory designated sites under international conventions or European Legislation	Wetlands of International Importance (Ramsar sites), Special Areas of Conservation (SAC), Special Protection Areas (SPA)
Statutory designated sites under national legislation	Sites of Special Scientific Interest (SSSI), National Nature Reserves (NNR), Local Nature Reserves (LNR)
Non-statutory, locally designated wildlife sites	Local Wildlife Sites (LWS), County Wildlife Sites (CWSs), Sites of Importance for Nature Conservation (SINC)s
Country biodiversity lists	Habitats or Species of Principle Importance for the Conservation of Biodiversity (Section 41, NERC Act 2006)
Local biodiversity lists	Local Biodiversity Action Plan (BAP) priority species or habitats
Red Listed / Rare Species	Species of conservation concern, Red Data Book (RDB) species, Birds of Conservation Concern, nationally rare and nationally scarce species
Legally Protected Species	E.g. species listed under Sch.5 of the W&C Act 1981, or Sch.2 of the Hag. Regs. 2010
Legally Controlled Species	E.g. species listed under Sch.9 of the W&C Act 1981

It should also be noted that the social, community, economic or multi-functional importance attributed to ecological features are not assessed as they fall outwith the scope of this assessment.

Geographic Context

The importance of ecological features, as well as the significance of any likely impacts and their effects, are considered here within a defined geographic context:

- International
- National
- Regional (e.g. East Anglia)
- County
- Local

The size, conservation status and the quality of features are all relevant in determining their importance and assigning this to the geographic scale.

Establishing Likely Zone of Influence

The 'zone of influence' for a project is the area over which ecological features may be subject to significant effects as a result of the project and associated activities. The project's zone of influence varies across different ecological features, which have different vulnerabilities and sensitivities. For the purposes of this assessment, the following zones were considered:

- International statutory nature conservation designations up to 10km from the Site
- National and local statutory nature conservation designations up to 3km from the Site
- Non-statutory locally designated wildlife sites up to 1km from the Site

These arbitrary distances are considered sufficient for identifying the nature conservation designations which could be subject to significant effects. However, it is acknowledged that in certain circumstances effects beyond these distances are possible and should be considered as far as is reasonably practicable to do so.

For other ecological features, such as habitats and species, the appropriate zone of influence is described and justified as appropriate within the report, depending on their respective sensitivity to an environmental change.

The results of professionally accredited or published scientific studies have been used and referenced, where available, to establish the spatial and temporal limits of the biophysical changes likely to be caused by specific activities, and to justify decisions about the zone of influence.

Characterising Ecological Impacts and their Effects

Where likely ecological impacts are identified in connection with the proposed project, these are considered and described with reference to the following characteristics (where this is helpful in accurately portraying the ecological effect and determining the significance):

- Positive or negative (i.e. does the anticipated change accord with nature conservation policies and objectives?)
- Extent (i.e. the spatial area over which the impact or effect may occur)
- Magnitude (i.e. the quantified size, amount, intensity or volume)
- Duration (i.e. the time frame over which the impact or effect may occur, in both human and ecological terms)
- Frequency and timing (i.e. the number of times an activity occurs, where this is likely to influence the effect)
- Reversibility (i.e. is spontaneous recovery possible or may the effect be counteracted by mitigation?)

An effect is considered to be significant where this either supports or undermines biodiversity conservation objectives for an important ecological feature.

This page has been left intentionally blank

Appendix F

Bat survey report

Building inspection photosheet

Bat activity transect survey routes plan (CSA/3467/109)

Bat habitat utilisation plan (CSA/3467/110)

This page has been left intentionally blank

Introduction

Survey design, data analysis and interpretation set out herein has been undertaken with due consideration for the Bat Conservation Trust (BCT) guidelines 3rd Edition (BCT, 2016).

Legislation

All species of British bats are legally protected under part 3 (Section 41) of the Conservation of Habitats and Species Regulations 2010. These Regulations make it an offence to:

- Deliberately capture, injure, or kill a bat;
- Deliberately disturb bats, impairing their ability to survive, breed, reproduce or rear/nurture their young;
- Damage or destroy a breeding site or resting place used by bats; or
- Be in possession of, transport, sell, exchange or offer to sell/exchange a bat (dead or alive) or any part of a bat.

All bats and their roosts in England, Scotland and Wales were originally protected under the Wildlife & Countryside Act 1981. Subsequent amendments to the legislation for England and Wales has removed bats from most of the provisions of the Act, however it remains an offence to:

- Intentionally or recklessly disturb a bat while it is occupying a structure or place which it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any structure or place that a bat uses for shelter or protection.

Disturbance of bats is covered by both the 2010 Regulations and the 1981 Act, with the magnitude of disturbance critical. Disturbance that impairs survival or successful reproduction would be covered by the Regulations with no legal defence existing. Less significant acts of disturbance may only be covered by the Wildlife & Countryside Act 1981, which includes some legal defences that may be applied in certain circumstances.

It is important to note that bat roosts are protected throughout the year, regardless of whether or not bats are present at the time. Under the Conservation of Habitats and Species Regulations the offence of damaging or destroying a breeding site or resting place of bats is not subject to any legal defence, i.e. an offence will have been committed even if the damage or destruction occurs accidentally.

Licensing

Where development is proposed that would result in an offence under the Habitats and Species Regulations a European Protected Species (EPS) licence needs to be granted by Natural England to permit an act that would otherwise be unlawful. This provides for a specific derogation from the legislation, to prevent a legal infringement occurring. To obtain an EPS

licence for development it must be demonstrated that the purpose of the act to be licensed is for:

“preserving public health or public safety or other imperative reasons of overriding public interest including those of social or economic nature and beneficial consequences of primary importance for the environment” (Regulation 53(2)(e)).

In addition Natural England will not grant an EPS licence unless they are satisfied that:

*“There is no satisfactory alternative” (Regulation 53(9)(a)); and
“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” (Regulation 53(9)(b)).*

Methods

Preliminary Roost Assessment

The aim of the preliminary roost assessment is completed to determine the suitability of the building for roosting bats. Where significant potential for, or evidence of, roosting bats is identified, further bat roost surveys are generally necessary to determine the presence or likely absence of a roost, and to characterise any roost present. The method described below has been followed with due consideration of the current guidelines (BCT, 2016).

A detailed inspection of the exterior of structures at the Site and interior of the bungalow (B1) was undertaken to (i) identify any Potential Roost Features (PRFs) and potential bat ingress / egress points, and (ii) locate any evidence of bats such as live or dead specimens, droppings, urine splashes, fur-oil staining, feeding remains (e.g. moth wings) and/or squeaking noises. Equipment used included ladders, high-powered torches and close-focusing binoculars, as appropriate. The external and internal inspection of the on-site structures was carried out by Clare Caudwell MCIEEM (Natural England Bat Class Licence Ref: 2015-15070-CLS-CLS) and Jessica Taft GradCIEEM on 06 September 2017.

Evaluation

Following the assessments, each structure was assigned one of the following categories in respect of its potential to support roosting bats (adapted from Collins, 2016):

- Negligible: no obvious PRFs
- Low: a structure with one or more PRFs that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis by large numbers of bats.

- Moderate – a structure with one or more PRFs that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat; but unlikely to support a roost of high conservation status.
- High – a structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Dusk Emergence Survey

During the survey, surveyors were positioned strategically to maximise their visual coverage of the building, with one surveyor to the north-west and another to the south-east of the building to cover all four sides. Emergence surveys began prior to British Summer Time (BST) sunset and continued for approximately 1.5 hours after sunset with due consideration for the BCT good practice guidelines. The survey work was led by Jessica Taft GradCIEEM, an experienced bat surveyor. The survey was undertaken in suitable weather conditions on 20 September 2017 (see Table F1 below).

Table F1. Weather conditions during emergence survey, 20 September 2017

Survey Date	Sunset/Sunrise	Start Time	End Time	Temperature (°C)		Precipitation	Cloud Cover (Oktas)		Wind (Beaufort Scale)	
				Min	Max		Min	Max	Min	Max
20/09/17	19:04	19:04	20:34	15	15	Dry	46	46	23	23

During the survey, the surveyors, each equipped with a hand-held Wildlife Acoustics EM3 bat detector or Eikon BatLogger M, watched for any bats emerging from/entering parts of the buildings/trees and using key flight lines. A note was made of all bat passes, along with the time, species and any information regarding behaviour, including direction of flight, and activity e.g. foraging/commuting. A Wildlife Acoustics EM3 bat detector was affixed to the camera rig to record bat calls and thereby assist with identifying the species of any bats filmed emerging from/returning to roost in association with the buildings.

Following the survey all bat calls were downloaded from the EM3 detectors and BatLoggers and analysed using AnalookW v.4.1z and BatExplorer Software, respectively, to enable species identification, where possible, and quantitative analysis of the data.

Remote Monitoring

Remote monitoring was undertaken to provide additional data to inform the assessment of bat activity across the Site. The extended time period covered by this type of survey allows for a more accurate assessment of bat species diversity and activity levels to be made.

Two Wildlife Acoustics SM2 detectors were installed on-site on two occasions during the bat active period and left to record automatically for the hours between half an hour before sunset and half an hour after sunrise, for several consecutive days. The locations of each Monitoring Point (MP) are shown in Figure 1 below. MP4 was installed at the entrance to B13, a dilapidated outbuilding. Whilst this building was not considered to provide good opportunities for use as a day roost, bat activity at the building entrance was monitored to provide any indication of use as a night roost / feeding perch.

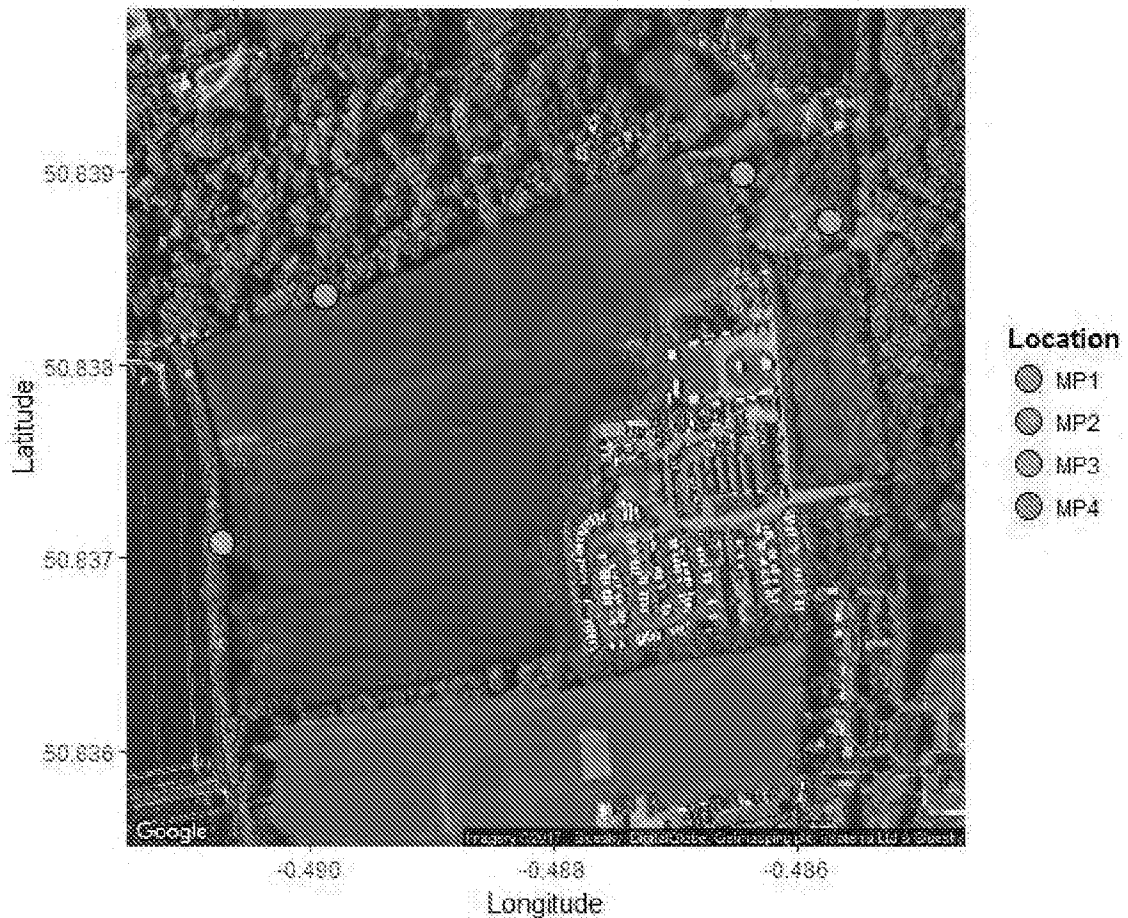


Figure 1. Map to show the locations of each Monitoring Point (MP) surveyed during static monitoring surveys in September

The detectors were installed on-site and setup to record bat activity automatically for the period from half an hour before sunset until half an hour after sunrise each night. Each monitoring period spanned at least five consecutive nights.

Weather conditions were obtained for each night surveyed using historic weather data from the World Weather Online website, with weather observations taken from the nearest weather station in Shoreham Airport. The five nights showing the most optimal weather conditions (in terms of

temperature, precipitation and wind speed) were taken forward for analysis.

Recorded bat calls were analysed using the specialist software AnaLookW to identify the species present. Each recorded file is considered to represent a single bat 'pass'. Quantitative analysis of bat activity levels is then undertaken by calculating the mean number of bat passes per hour.

Static data analysis and graphics were also produced in the statistical computing and graphics software R and this report has been written and generated using the authoring format R Markdown through R-Studio.

Bat Activity Transect Survey

One transect survey was undertaken at the Site to assess general levels of bat foraging/commuting activity in association with the habitats present on-site, and to identify bat species making use of the Site. The transect survey took place on 06 September 2017 in suitable weather conditions.

Surveys were undertaken by two teams of two surveyors equipped with an Eikon Batlogger M bat detector, to record bat calls in 16-bit full spectrum. In addition to recording bat calls, the Batlogger M also records the transect route walked by surveyors and the GPS coordinates for every bat call recorded. Surveyors walked a random route across the Site to avoid any bias in sampling particular habitats. Each survey commenced at sunset and continued for a total of two hours, in line with the BCT guidelines 3rd edition (BCT, 2016).

Bat data analysis and graphics have been produced in the statistical computing and graphics software R and this report has been written and generated using the authoring format R Markdown through R-Studio.

Limitations

Due to access constraints, only the bungalow (B1) underwent a detailed internal building inspection. Any information on the building interiors which could be collected during the external inspection has been recorded.

Due to seasonal limitations, only one transect survey and two remote monitoring periods could be completed in 2017. Further survey work is recommended for 2018 to ensure survey effort is in line with best practice guidelines.

Batlogger M detectors automatically assign a GPS location to each bat contact, allowing distribution maps to be plotted (see Results section of this report). The accuracy of the GPS locations provided for each contact is variable and may depend on the number of satellites available and the strength of the signal received. This in turn is affected by environmental

conditions such as cloud or tree canopy cover. The accuracy of GPS coordinates may vary between 5-15m during a transect survey and, as a result, this must be taken into account when viewing the distribution maps within this report.

It should be noted that the findings described herein for static monitoring surveys are based on the bat activity recorded at the location immediate to each static detector, and therefore only describe localised activity at the Site. Detectors were moved around the Site between monitoring periods to sample different areas and reduce the effect of this limitation, however caution should be used when applying results to the wider area.

A fifth static detector was deployed for the second monitoring period along the southern Site boundary to increase coverage. Unfortunately due to microphone issues, it did not record properly. No static recording data is therefore available for this part of the site, although it was covered during the transect surveys undertaken.

Results

Preliminary Roost Assessment

Results of the assessment are detailed in Table F2 and summarised below. Photos can be in the photosheet to the rear.

Of the eleven buildings surveyed, one building has moderate potential to support roosting bats (B1), four have low potential (B2, B3, B4), and two have low to negligible potential (B8, B9), with the remainder having negligible potential.

B1 was inspected both internally and externally. The external inspection revealed a number of features suitable for use by roosting bats, including lifted tiles, missing mortar and a missing brick. The internal inspection found the loft void was generally well sealed, in regular use, and very clean and light in places due to the presence of a Velux window, with no signs of roosting bats. Although roosting bats are likely absent from the loft void, the external features noted are suitable for crevice-dwelling species of bat, such as pipistrelle species *Pipistrellus* sp.

B2, B3 and B4 have external features suitable for roosting bats, including gaps beneath weatherboarding and cladding. B8 and B9 have external features which are sub-optimal but could still be used by roosting bats. A full internal inspection of buildings B2-10 was not completed, although any observations made during the site visit have been noted.

An internal inspection of B13 was internal from the doorway, as this building is collapsing and is not considered safe to enter. No evidence of roosting bats being present was observed, although vegetation colonising the floor of the building would have made it difficult to have seen any droppings. This building does not have an enclosed roof space and is being overgrown by ivy *Hedera helix*.

This page has been left intentionally blank

Table F2. Results of Building Inspection Survey

Building Ref.	Building Description	External features/ evidence	Internal features/ evidence	Bat roost potential
B1	Residential bungalow in current use. Constructed in 1960s with a hipped roof and wooden soffit box. Flat roofed sections with bitumen felt on top of bay windows and small extension to north on western side, and south on eastern side.	On most faces there is a gap under the roof tiles c. 2 tiles down from the ridge. Under a line of lifted tiles below the ridge on the eastern side there is visibly less moss cover beneath. Missing mortar under hip tiles on south-eastern corner and north-western corner. Gaps under roof tiles around the chimney on the western side. Some lifted tiles around window and in valley near window. Missing brick at the top of the wall on the western side.	Rough sawn timber beams with purlin. Open loft void with no trusses. Loft is generally well sealed and has recently been re-insulated, and is in regular use. The roof line laps over the top of the ridge beam, forming a seal. There are two tears in the bitumen roof liner in the south-east section of the roof which provide access to the tiles and space under the ridge beam. The section with the window is very bright, but elsewhere is dark. Good ventilation gaps to soffit. No signs of droppings, feeding debris or urine signs.	Moderate
B2	Breeze block construction with corrugated asbestos pitched roof. The building is split into two sections, a two storey section to the north (B2a) and a single storey section to the south (B2b).	Gap at apex of B2a at northern end. Gap under metal cladding and asbestos insulation a long wall between B2a and B2b. Gaps at ridge and under subsided sections of roof on B2b.	N/A - Roof is boarded underneath, with no loft void. Gaps between asbestos and internal sarking boards.	Low
B3	Two storey building of brick construction with corrugated asbestos pitched roof.	Gappy plastic weatherboarding on the eastern side, and gappy metal flashing on the western side with large gaps at the top of the wall beneath the roof.	N/A	Low
B4	Single storey building comprised of five adjacent round-roofed sections (B4a-e west to east) of brick construction with corrugated asbestos roof. B4a and b are in use as workshops. B4e linked to B3 by conservatory.	No loft void, building is open to roof. Numerous gaps behind weatherboarding and at apex. Bricked up windows and doors on B4c and B4d (derelict / disused) with a 9inch wide gap at the top across the length of the window; the void leads up to the roof. Dropping found on ledge of B4c beneath gap which crumbled, so possibly from a bat. Gaps between the brickwork and corrugated asbestos roofing in the south-east corner of B4e.	N/A	Low

Building Ref.	Building Description	External features/ evidence	Internal features/ evidence	Bat roost potential
B5	Single storey building of brick construction with corrugated asbestos pitched roof.	Small gaps at apex and where roof panelling overlaps, but expandable foam can be seen at eaves.	N/A	Negligible
B6	Single storey building with corrugated metal cladding and corrugated asbestos pitched roof.	No internal roof lining, so temperature of building is likely to fluctuate a lot, making it unsuitable for roosting bats.	N/A	Negligible
B7	Single storey building of breeze block construction with corrugated asbestos pitched roof.	Building was open, so bats could enter through the doorway.	Half the roof is unlined, and half is lined in blue plastic. Some gaps are visible around the rotten rafters, but no evidence of roosting bats was seen.	Negligible
B8	Lean-to / shack with concrete walls and a corrugated metal roof. Lots of ivy and ash tree growing on southern side of building.	Gap between metal and bitumen liner draped over rafters c. 4 inches wide. No features for bats to hang off.	N/A	Low – negligible
B9	Single storey building of breeze block construction with corrugated asbestos pitched roof.	Gaps under eaves all along sides of building.	N/A – False ceiling, but unclear if lined.	Low – negligible
B10	Small single storey service building of breeze block construction with a corrugated asbestos roof.	Well sealed with no apparent gaps or potential roosting features.	N/A	Negligible
B11	Single storey, flat roofed storage containers / site office	N/A	N/A	Negligible
B12	Single storey, flat roofed storage containers / site office	N/A	N/A	Negligible
B13	Dilapidated single storey barn. Roof has partially collapsed and completely covered with dense ivy.	Open door provides potentially access point. No external features offering roosting opportunities noted.	No enclosed roof space; beams completely covered with encroaching ivy. No suitable day roosting opportunities noted. Full access not possible due to structural instability, but no evidence of roosting noted from inspection from	Low

Building Ref.	Building Description	External features/ evidence	Internal features/ evidence	Bat roost potential
			doorway. Limited potential for use as a night / feeding perch.	
B14	Brick out-building; mostly collapsed – roof no longer present.	None identified.	None identified.	Negligible
B15	Small single storey brick garage with flat roof with corrugated asbestos.	Well sealed with no apparent gaps or potential roosting features.	N/A	Negligible
B16	Glass greenhouse.	N/A	N/A	Negligible
B17	Campsite toilet block	N/A	N/A	Negligible

This page has been left intentionally blank

Dusk Emergence Survey

Activity recorded during the dusk emergence survey was generally low and common pipistrelle-dominated, with noctule *Nyctalus noctula* and a *Myotis* species also recorded. The majority of activity was recorded on the western side of the bungalow, as bats foraged in the garden, and along the hedgerow to the east. No emergences were observed.

Remote Monitoring

The weather conditions experienced during the five nights where data was analysed are provided in Table F3 below.

Table F3. Overnight weather conditions during static monitoring periods

Survey Month	Dates Sampled	Temperature (°C)		Precipitation	Cloud Cover (%)		Wind (mph)	
		Min	Max		Min	Max	Min	Max
September	06/09/17	15	17	Dry	0	74	12	13
September	07/09/17	12	17	Dry	84	100	8	21
September	08/09/17	15	17	Heavy rain at 21.00	16	100	13	24
September	09/09/17	11	12	Heavy rain at 00.00	0	25	18	22
September	10/09/17	9	13	Dry	0	39	7	24
September	11/09/17	11	11	Dry	26	39	23	28
September	20/09/17	15	15	Dry	46	46	23	23
September	21/09/17	14	15	Dry	0	58	21	25
September	22/09/17	11	12	Dry	0	0	8	12
September	23/09/17	11	15	Dry	0	54	10	14
September	24/09/17	14	17	Dry	0	78	9	14
September	25/09/17	17	16	Rain from 00.00-06.00	100	100	6	13

The total number of bat passes recorded across all monitoring locations for each bat species are provided in Figure 2 and Table F4 below. Figure 3 and Table F5 show the bat passes per hour recorded at each monitoring point surveyed.

The majority of calls were recorded at MP1 (northern boundary, woodland edge) and MP3 (western boundary, hedgerow). Activity at MP1 was dominated by soprano pipistrelle *Pipistrellus pygmaeus* and *Myotis* species calls, with common pipistrelle *Pipistrellus pipistrellus* dominating at MP3. The greatest levels of activity were recorded at MP1. Few calls were recorded at MP2 (tree in north-east of Site) or MP4 (building in north-east of Site).

Calls from common pipistrelle were the most frequently recorded, with activity from soprano pipistrelle and *Myotis* species making up the majority of the remaining bat calls recorded. *Myotis* activity was primarily recorded at MP1 adjacent to the large area of broadleaved woodland

to the north, with barbastelle *Barbastella barbastellus* activity recorded at MP1 and MP3. A small number of calls from noctule, *Nyctalus* species, pipistrelle species, brown long-eared *Plecotus auritus*, *Nathusius* pipistrelle and *Nyctalus/Epptesicus* species were also recorded during the static monitoring.

It should be noted that comparisons drawn of the number of passes by different species can only give an indication of relative species abundance at the Site, as detectability varies between species.

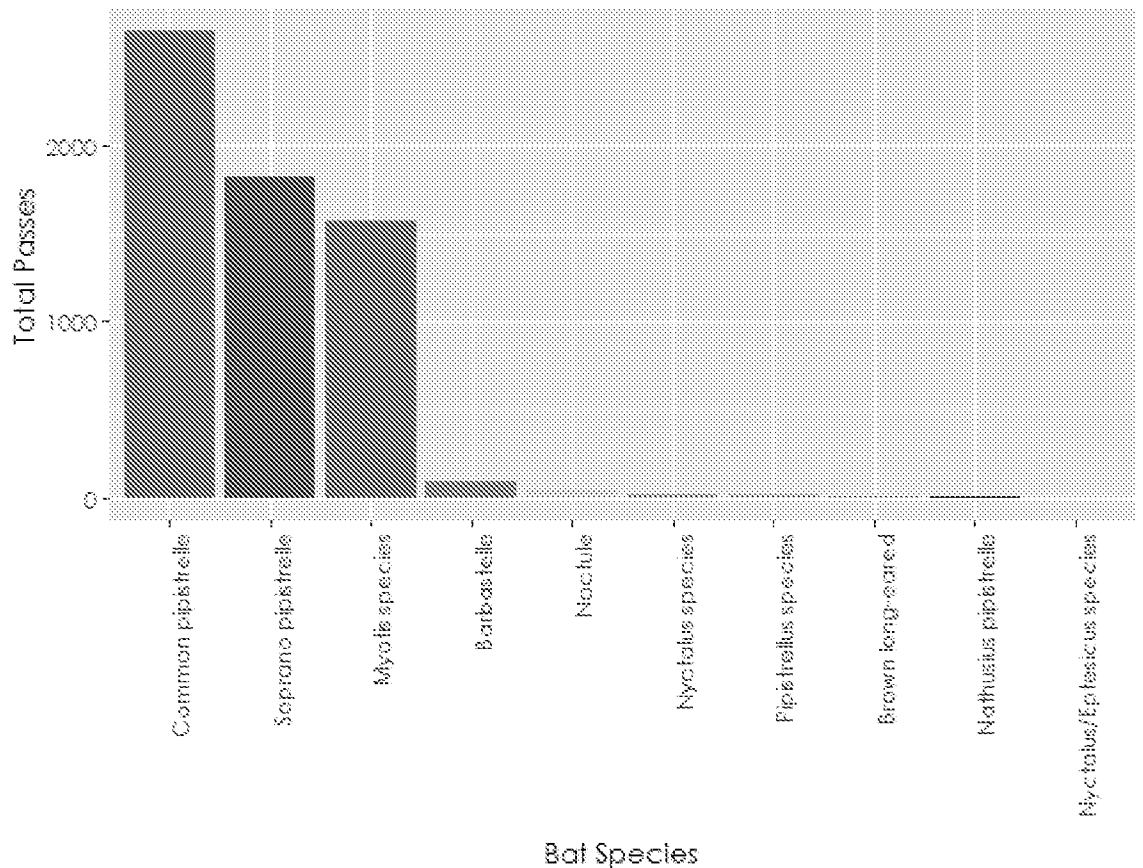


Figure 2. Bat passes per species recorded in total across all monitoring points during the static monitoring surveys.

Table F4. Bat passes per species recorded across all monitoring points during static monitoring periods.

Common pipistrelle	Soprano pipistrelle	Myotis species	Barbastelle	Noctule	Nyctalus species	Pipistrellus species	Brown long-eared	Nathusius pipistrelle	Nyctalus/Epptesicus species
2647	1820	1571	96	34	17	16	8	4	2

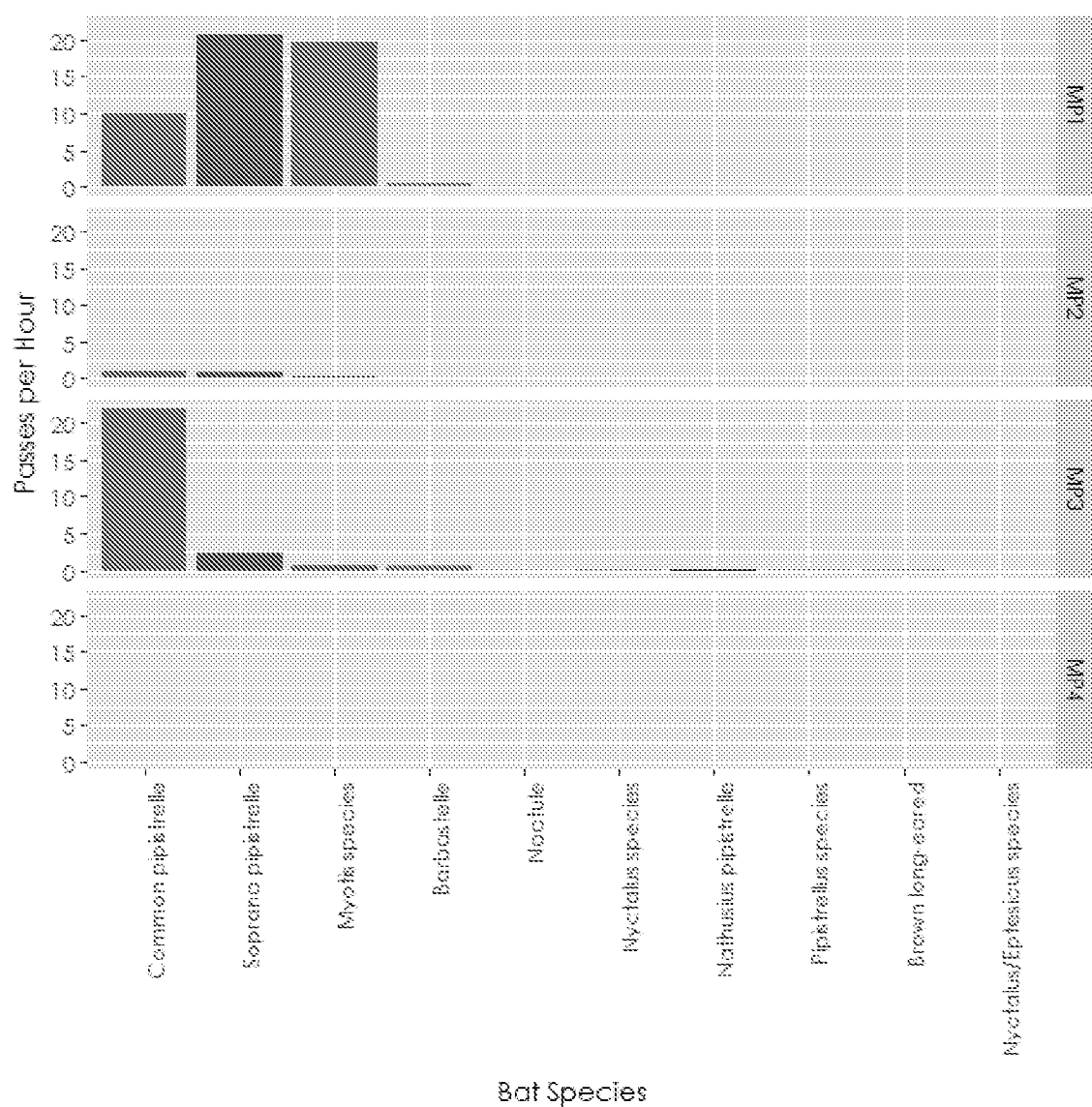


Figure 3. Bat passes per hour recorded for each bat species at each static monitoring point

Table F5. Bat passes per hour recorded for each bat species at each static monitoring point

Species	MP1	MP2	MP3	MP4
Common pipistrelle	9.99	1.15	22.08	0.06
Soprano pipistrelle	20.78	0.74	2.29	0.01
Myotis species	19.64	0.29	0.70	0.01
Barbastelle	0.53	0.01	0.68	0.00
Noctule	0.32	0.01	0.11	0.00
Nyctalus species	0.14	0.01	0.06	0.00
Nathusius pipistrelle	0.00	0.00	0.05	0.00
Pipistrellus species	0.01	0.12	0.05	0.02
Brown long-eared	0.04	0.01	0.05	0.00
Nyctalus/Eptesicus species	0.01	0.00	0.01	0.00

Bat Activity Transect Survey

The dates and weather conditions for each transect survey are provided in Table F6 below.

Table F6. Bat transect survey weather conditions, 06 September 2017

Survey Date	Sunset/ Sunrise	Start Time	End Time	Temperature (°C)		Precipitation	Cloud Cover (Okta's)		Wind (Beaufort Scale)	
				Min	Max		Min	Max	Min	Max
06/09/17	19:37	19:33	21:37	14	15	Dry	0	1	0	1

At least seven species of bat were recorded at the site during transect surveys undertaken in 2017, comprising common pipistrelle, soprano pipistrelle, noctule, serotine *Eptesicus serotinus*, *Myotis* species, brown long-eared and barbastelle. The number of bat contacts recorded for each species are summarised in Table F7 below. The locations of each bat contact and the overall distribution of activity across the Site are illustrated in Figures 4 and 5.

Bat activity was predominantly recorded along the Site boundaries, and was dominated by common and soprano pipistrelle calls. Some calls from *Myotis* species, noctule, pipistrelle species, serotine, brown long-eared and barbastelle were also recorded. Fewer calls were recorded along the southern Site boundary and around the commercial buildings, although there was activity recorded around the bungalow and garden. The greatest amount of bat activity was recorded along the northern Site boundary; *Myotis* species and barbastelle were only recorded here, and the majority of soprano pipistrelle were recorded here. The northern Site boundary comprises the edge of a parcel of woodland which extends north and includes a stream. Noctule and serotine were recorded in the more open habitats in the east and west of the Site. Common pipistrelle calls were relatively ubiquitous around the Site boundaries.

Table F7. Summary of bat contacts recorded during the transect surveys

Survey Date	Barbastelle	Brown long-eared	Common pipistrelle	<i>Myotis</i> species	Noctule	Pipistrellus species	Serotine	Soprano pipistrelle
07/09/17	1	1	129	39	12	1	1	87

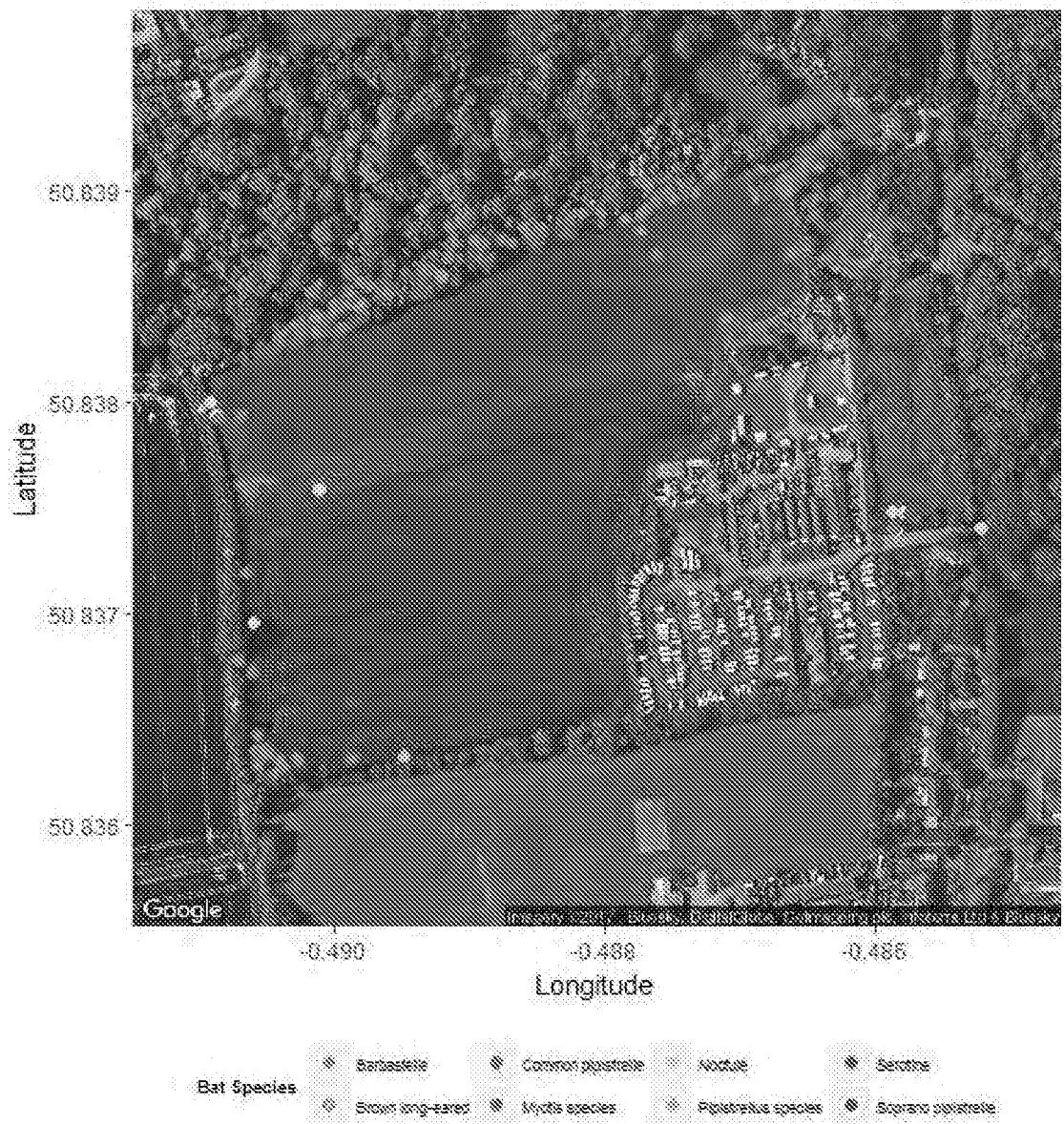


Figure 4. Map to show the locations of individual bat contacts recorded during transect surveys

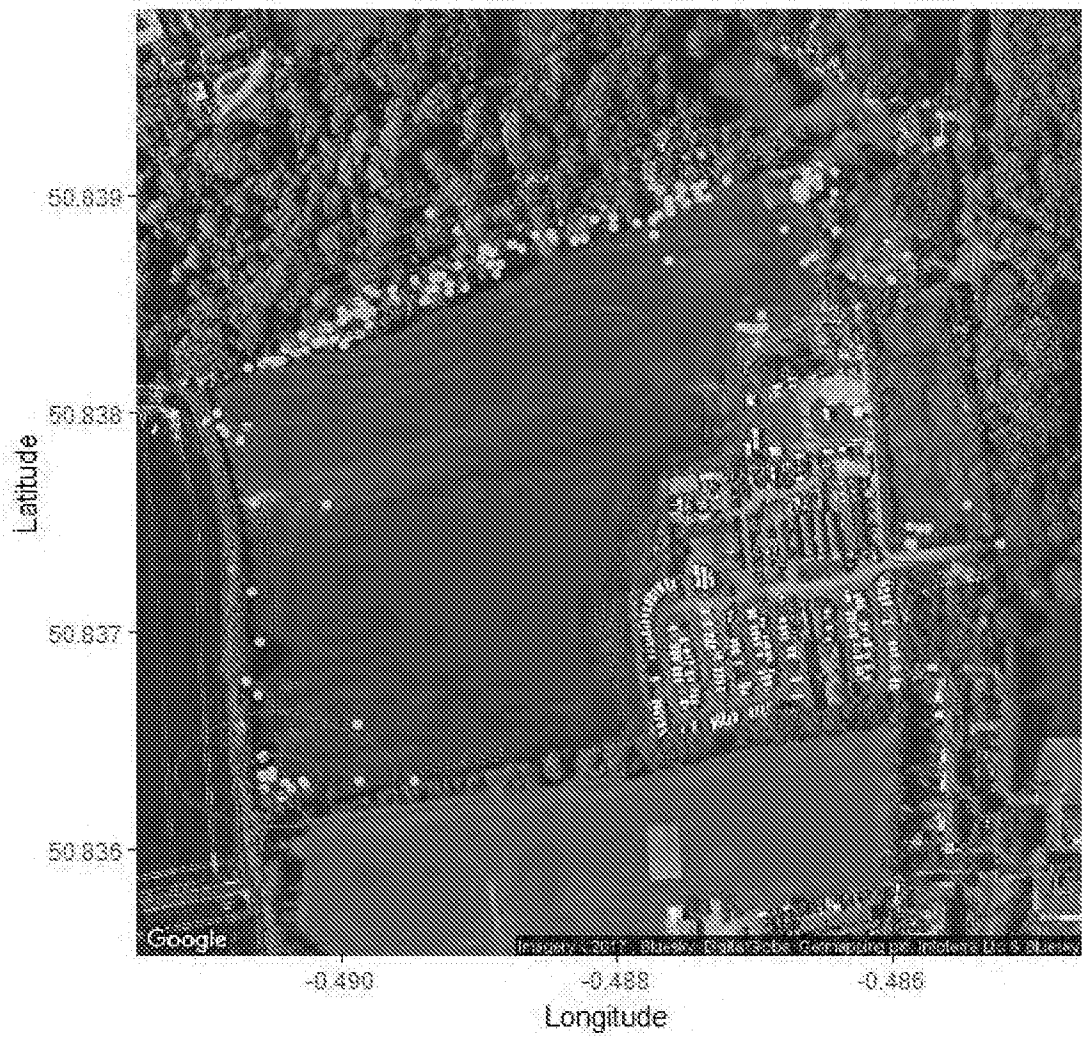


Figure 5. Map to show the location of each bat contact recorded during transect surveys, with contours indicating the density of contacts. Closer contours represent more concentrated bat activity.

Photosheet



Plate 1. Northern and western aspect of bungalow (B1)

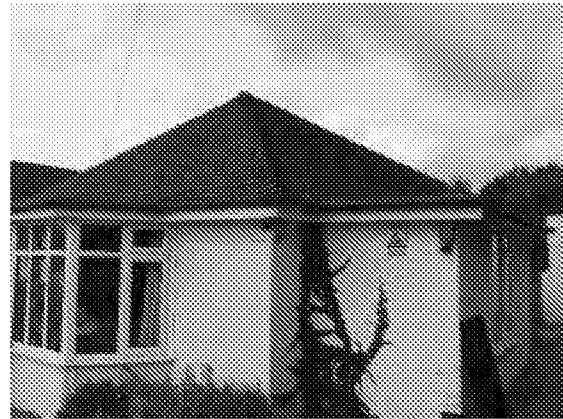


Plate 2. Southern and eastern aspect of bungalow (B1) with missing mortar under hip tiles.



Plate 3. Western aspect of extension section of bungalow (B1) with gaps under tiles around window and in valley.



Plate 4. Northern aspect of bungalow (B1) with gaps under tiles around chimney.



Plate 5. Loft of bungalow (B1)



Plate 6. B2a from the east



Plate 7. Wall between B2a and B2b showing gappy metal cladding.



Plate 8. B2b from the east

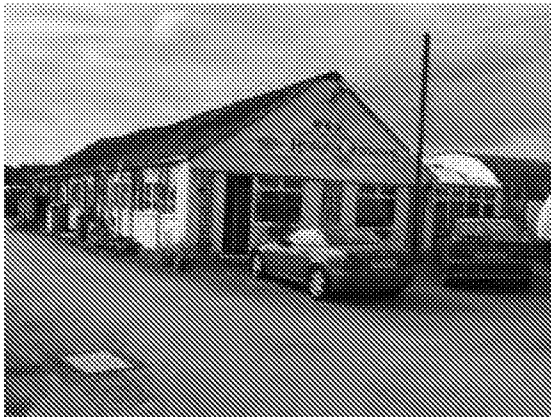


Plate 9. B3 from the east



Plate 10. B3 from the west

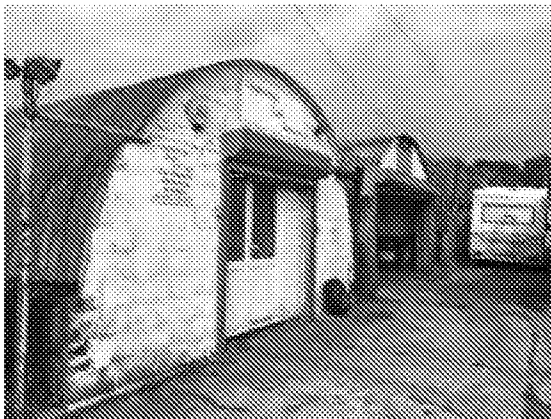


Plate 11. B4 from the west



Plate 12. B5

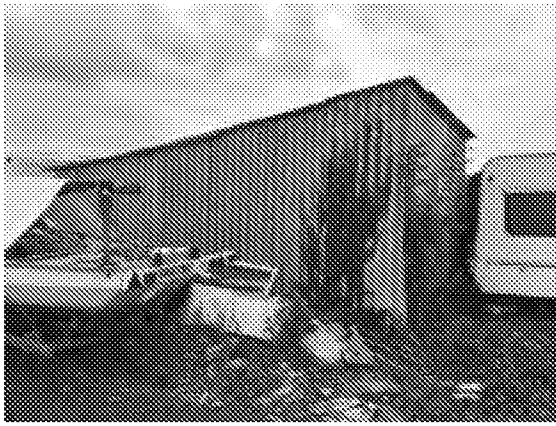


Plate 13. B6

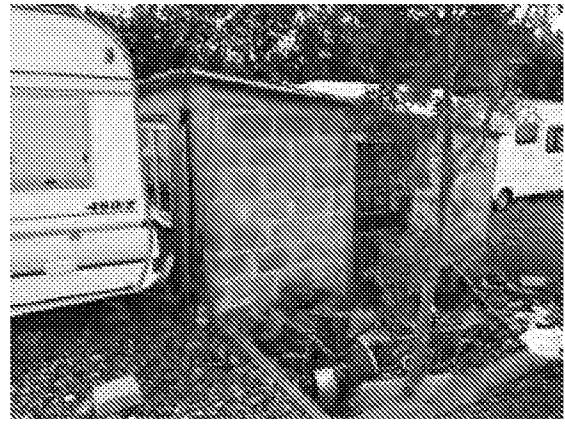


Plate 14. B7

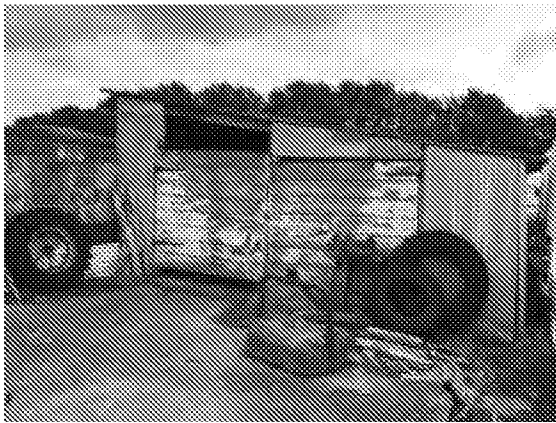


Plate 11. B8



Plate 12. B9



Plate 15. B15



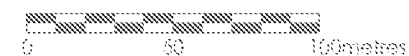
Plate 16. B13 – ivy covered dilapidated barn

This page has been left intentionally blank



Legend

-  Site boundary
-  Walked transect 1
-  Walked transect 2



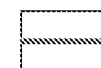
Office 20, Gillgate, 93 Ditchling Road,
Brighton BN1 4ST

t: 01273 573871
e: brighton@csaenvironmental.co.uk
w: csaenvironmental.co.uk

Project	Land West of Arundel Road, Angmering	Date	November 2017	Drawing No.	CSA/3467/109
Drawing Title	Bat Activity Survey Transect Routes Plan	Scale	A4 See scale bar	Rev.	-
Client	Gladman Developments Ltd.	Drawn	JT	Checked	CC



Legend



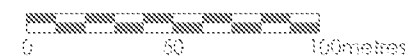
Site boundary



High levels of utilisation



Low levels of utilisation



Office 20, Gillgate, 93 Offchiling Road,
Brighton BN1 4ST

t: 01273 573871
e: brighton@csa-environmental.co.uk
w: csa-environmental.co.uk

Project Land West of Arundel Road, Angmering

Drawing Title Bat Habitat Utilisation Plan

Client Gladman Developments Ltd.

Date November 2017

Drawing No. CSA/3467/110

Scale: A4

See scale
bar

Rev. -

Drawn JT

Checked CC

Appendix G

GCN survey report
Pond plan (CSA/3467/112)

This page has been left intentionally blank

Legislation

Great crested newts are legally protected as European Protected Species (EPS) under Part 3 (Section 41) of the Conservation of Habitats and Species Regulations 2010. These Regulations make it an offence to:

- Deliberately capture, injure, kill or capture a great crested newt
- Deliberately disturb great crested newts, impairing their ability to survive, breed, reproduce or rear/nurture their young
- Damage or destroy a breeding site or resting place used by a great crested newt

Great crested newts are also fully protected under the Wildlife & Countryside Act 1981, making it an offence to:

- Intentionally or recklessly disturb a great crested newt while it is occupying a structure or place of shelter or protection
- Intentionally or recklessly obstruct access to any structure or place of shelter or protection

Disturbance of great crested newts is covered by both the 2010 Regulations and the 1981 Act. Disturbance that impairs survival or successful reproduction would be covered by the Regulations, while less significant acts of disturbance may only be covered by the Act.

It is important to note that great crested newts and their habitats (such as breeding ponds) are protected throughout the year, regardless of whether or not newts are present at the time.

Great crested newts are also listed as a species of principal importance for the conservation of biodiversity in England, under Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act 2006. The S41 species list is used to guide decision-makers, including planning authorities, in implementing their duty under Section 40 of the NERC Act to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Licensing

Where development is proposed that would result in an offence under the Habitats and Species Regulations, a statutory derogation licence may be granted by Natural England to permit an act that would otherwise be unlawful. To obtain an EPS licence for development, it must be demonstrated that the purpose of the act to be licensed is for:

“preserving public health or public safety or other imperative reasons of overriding public interest including those of social or economic nature and beneficial consequences of primary importance for the environment” (Regulation 53(2)(e))

In addition, Natural England will not grant an EPS licence unless they are satisfied that:

"There is no satisfactory alternative" (Regulation 53(9)(a))

"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" (Regulation 53(9)(b))

Methods

In accordance with Natural England's Great Crested Newt Mitigation Guidelines (2001), a desktop search was undertaken to identify ponds within 500m of the Site which may have potential to support breeding great crested newts *Triturus cristatus*, using Ordnance Survey (OS) mapping, the MAGIC database and aerial photography. 500m is the generally accepted typical maximum dispersal range of this species, with great crested newt most likely to use terrestrial habitat within 250m of breeding ponds.

The desk based search for ponds and subsequent site visits identified eight waterbodies occurring within 500m of the Site. These ponds are all identified on the Pond Plan (CSA/3467/112).

Habitat Suitability Index (HSI) Assessment

Where ponds were situated within a 500m radius and connected to the Site by traversable terrestrial habitats, access permission was requested to undertake a Habitat Suitability Index (HSI) assessment, using the standard approach set out by Oldham et al (2000). These assessments were undertaken by licensed surveyor Jessica Taft Grad CIEEM (Natural England GCN Licence Ref: 2016-26999-CLS-CLS) and Kate Wolstenholme.

Limitations

The pond assessments were undertaken outside of the optimum time period (May to September, inclusive) and so the aquatic vegetation coverage is unlikely to reflect that present during the GCN breeding season. For the HSI calculations, surveyors predicted the extent of vegetation cover in summer, based on the current extent and estimated growth rates of plant species.

Access permission was not granted for all ponds, however, some ponds could be viewed and assessed as best as possible from public footpaths. Pond 5 was viewed from a distance, and was assumed to be largely similar to pond 6.

Results

The results of the HSI assessments are provided on the proceeding pages.

Pond Assessment

GENERAL INFORMATION	
Pond Number: 1	Site description: Garden pond next to hedge, some amenity grassland and introduced shrub planting. Plastic liner and stone border. Plants include water lily and waterweed.
OS Grid Reference: TQ066053	

HABITAT SUITABILITY FACTORS	SI SCORE	
1. Map location A (optimal), B (marginal) or C (unsuitable)	A	1
2. Pond area in m ² Estimate	<50m ²	0.05
3. Number of years in 10 pond dries up Estimate or ask landowner	Never Dries	0.9
4. Water quality 1 = bad, 2 = poor, 3 = moderate, 4 = good	Moderate	0.67
5. Percentage perimeter shade to at least 1m from shore Estimate	0-60%	1
6. Waterfowl impact (excluding moorhen) 1 = major, 2 = minor, 4 = absent	Absent	1
7. Fish presence 1 = major, 2 = minor, 3 = possible 4 = absent	Absent	1
8. Number of ponds within 1km not separated by barriers	6	0.84
9. Terrestrial habitat 1 = none, 2 = poor, 3 = moderate, 4 = good	Moderate	0.67
10. Percentage of pond surface occupied by aquatic vegetation (March – May)	46-50%	0.8

PHOTOGRAPH		
	HSI SCORE	CATEGORY
		Poor (<0.5)
		Below average (0.5 – 0.59)
	0.65	Average (0.6 – 0.69)
		Good (0.7 – 0.79)
		Excellent (>0.8)

Pond Assessment

GENERAL INFORMATION	
Pond Number: 2	Site description: Pond in campsite on edge of woodland / amenity grassland. Island in the middle. Steep earth banks, ditch and scrubby margins. Plants include iris and sedge. Leaf litter.
OS Grid Reference: TQ068053	

HABITAT SUITABILITY FACTORS	SI SCORE	
1. Map location A (optimal), B (marginal) or C (unsuitable)	A	1
2. Pond area in m ² Estimate	125m ²	0.25
3. Number of years in 10 pond dries up Estimate or ask landowner	Sometimes Dries	0.5
4. Water quality 1 = bad, 2 = poor, 3 = moderate, 4 = good	Moderate	0.67
5. Percentage perimeter shade to at least 1m from shore Estimate	86-90%	0.4
6. Waterfowl impact (excluding moorhen) 1 = major, 2 = minor, 4 = absent	Absent	1
7. Fish presence 1 = major, 2 = minor, 3 = possible 4 = absent	Absent	1
8. Number of ponds within 1km not separated by barriers	7	0.85
9. Terrestrial habitat 1 = none, 2 = poor, 3 = moderate, 4 = good	Good	1
10. Percentage of pond surface occupied by aquatic vegetation (March – May)	21-25%	0.55

PHOTOGRAPH		
	HSI SCORE	CATEGORY
		Poor (<0.5)
		Below average (0.5 – 0.59)
	0.66	Average (0.6 – 0.69)
		Good (0.7 – 0.79)
		Excellent (>0.8)

Pond Assessment

GENERAL INFORMATION	
Pond Number: 3	Site description: Ditch-fed pond in corner of arable field, connected to wider landscape via hedge/ditch. Lots of typha, some bramble scrub, young willow trees. Grassy bank c. 2m tall.
OS Grid Reference: TQ062049	

HABITAT SUITABILITY FACTORS	SI SCORE	
1. Map location A (optimal), B (marginal) or C (unsuitable)	A	1
2. Pond area in m ² Estimate	50-100m ²	0.1
3. Number of years in 10 pond dries up Estimate or ask landowner	Sometimes Dries	0.5
4. Water quality 1 = bad, 2 = poor, 3 = moderate, 4 = good	Moderate	0.67
5. Percentage perimeter shade to at least 1m from shore Estimate	0-60%	1
6. Waterfowl impact (excluding moorhen) 1 = major, 2 = minor, 4 = absent	Minor	0.67
7. Fish presence 1 = major, 2 = minor, 3 = possible 4 = absent	Absent	1
8. Number of ponds within 1km not separated by barriers	11	0.975
9. Terrestrial habitat 1 = none, 2 = poor, 3 = moderate, 4 = good	Moderate	0.67
10. Percentage of pond surface occupied by aquatic vegetation (March – May)	86-90%	0.9

PHOTOGRAPH		
	HSI SCORE	CATEGORY
		Poor (<0.5)
		Below average (0.5 – 0.59)
	0.65	Average (0.6 – 0.69)
		Good (0.7 – 0.79)
		Excellent (>0.8)

Pond Assessment

GENERAL INFORMATION	
Pond Number: 4	Site description: Small, lined pond with several inlet pipes and no vegetation.
OS Grid Reference: TQ063055	

HABITAT SUITABILITY FACTORS	SI SCORE	
1. Map location A (optimal), B (marginal) or C (unsuitable)	A	1
2. Pond area in m ² Estimate	<50m ²	0.05
3. Number of years in 10 pond dries up Estimate or ask landowner	Never Dries	0.9
4. Water quality 1 = bad, 2 = poor, 3 = moderate, 4 = good	Poor	0.33
5. Percentage perimeter shade to at least 1m from shore Estimate	0-60%	1
6. Waterfowl impact (excluding moorhen) 1 = major, 2 = minor, 4 = absent	Absent	1
7. Fish presence 1 = major, 2 = minor, 3 = possible 4 = absent	Absent	1
8. Number of ponds within 1km not separated by barriers	6	0.84
9. Terrestrial habitat 1 = none, 2 = poor, 3 = moderate, 4 = good	Good	1
10. Percentage of pond surface occupied by aquatic vegetation (March – May)	<1%	0.3

PHOTOGRAPH		
Landowner could not be contacted. Pond was viewed from the driveway, so photograph is not shown here.	HSI SCORE	CATEGORY
		Poor (<0.5)
	0.57	Below average (0.5 – 0.59)
		Average (0.6 – 0.69)
		Good (0.7 – 0.79)
		Excellent (>0.8)

Pond Assessment

GENERAL INFORMATION	
Pond Number: 5	Site description: Large pond with sluice gate, mature trees at margins, surrounded by woodland on one side and grassland on other. Lots of leaf litter, little vegetation.
OS Grid Reference: TQ061053	

HABITAT SUITABILITY FACTORS	SI SCORE	
1. Map location A (optimal), B (marginal) or C (unsuitable)	A	1
2. Pond area in m ² Estimate	>2000m ²	1
3. Number of years in 10 pond dries up Estimate or ask landowner	Never Dries	0.9
4. Water quality 1 = bad, 2 = poor, 3 = moderate, 4 = good	Poor	0.33
5. Percentage perimeter shade to at least 1m from shore Estimate	86-90%	0.4
6. Waterfowl impact (excluding moorhen) 1 = major, 2 = minor, 4 = absent	Minor	0.67
7. Fish presence 1 = major, 2 = minor, 3 = possible 4 = absent	Minor	0.33
8. Number of ponds within 1km not separated by barriers	9	0.9
9. Terrestrial habitat 1 = none, 2 = poor, 3 = moderate, 4 = good	Good	1
10. Percentage of pond surface occupied by aquatic vegetation (March – May)	<1%	0.3

PHOTOGRAPH		
	HSI SCORE	CATEGORY
		Poor (<0.5)
		Below average (0.5 – 0.59)
	0.61	Average (0.6 – 0.69)
		Good (0.7 – 0.79)
		Excellent (>0.8)

Pond Assessment

GENERAL INFORMATION	
Pond Number: 6	Site description: Large pond with sluice gate, mature trees at margins, surrounded by woodland on one side and grassland on other. Lots of leaf litter, little vegetation.
OS Grid Reference: TQ059052	

HABITAT SUITABILITY FACTORS	SI SCORE	
1. Map location A (optimal), B (marginal) or C (unsuitable)	A	1
2. Pond area in m ² Estimate	>2000m ²	1
3. Number of years in 10 pond dries up Estimate or ask landowner	Never Dries	0.9
4. Water quality 1 = bad, 2 = poor, 3 = moderate, 4 = good	Poor	0.33
5. Percentage perimeter shade to at least 1m from shore Estimate	86-90%	0.4
6. Waterfowl impact (excluding moorhen) 1 = major, 2 = minor, 4 = absent	Minor	0.67
7. Fish presence 1 = major, 2 = minor, 3 = possible 4 = absent	Minor	0.33
8. Number of ponds within 1km not separated by barriers	10	0.95
9. Terrestrial habitat 1 = none, 2 = poor, 3 = moderate, 4 = good	Good	1
10. Percentage of pond surface occupied by aquatic vegetation (March – May)	<1%	0.3

PHOTOGRAPH		
	HSI SCORE	CATEGORY
		Poor (<0.5)
		Below average (0.5 – 0.59)
	0.61	Average (0.6 – 0.69)
		Good (0.7 – 0.79)
		Excellent (>0.8)

Pond Assessment

GENERAL INFORMATION	
Pond Number: 8	Site description: Large pond within pasture/improved grassland with mature trees. Plants include rushes, reeds, scrub, water lilies, sedge. Shallow earth banks.
OS Grid Reference: TQ061058	

HABITAT SUITABILITY FACTORS	SI SCORE	
1. Map location A (optimal), B (marginal) or C (unsuitable)	A	1
2. Pond area in m ² Estimate	1900m ²	0.81
3. Number of years in 10 pond dries up Estimate or ask landowner	Never Dries	0.9
4. Water quality 1 = bad, 2 = poor, 3 = moderate, 4 = good	Moderate	0.67
5. Percentage perimeter shade to at least 1m from shore Estimate	0-60%	1
6. Waterfowl impact (excluding moorhen) 1 = major, 2 = minor, 4 = absent	Major	0.01
7. Fish presence 1 = major, 2 = minor, 3 = possible 4 = absent	Major	0.01
8. Number of ponds within 1km not separated by barriers	2	0.6
9. Terrestrial habitat 1 = none, 2 = poor, 3 = moderate, 4 = good	Good	1
10. Percentage of pond surface occupied by aquatic vegetation (March – May)	46-50%	0.8

PHOTOGRAPH		
	HSI SCORE	CATEGORY
	0.34	Poor (<0.5)
		Below average (0.5 – 0.59)
		Average (0.6 – 0.69)
		Good (0.7 – 0.79)
		Excellent (>0.8)

This page has been left intentionally blank



Site Boundary



c. 500m radius from Site Boundary



Pond location and number

Pond number	Distance to Site	HSI Score	Suitability
1	On-site	0.65	Average
2	95m east	0.66	Average
3	260m south-west	0.65	Average
4	130m north	0.57	Below average
5	85m north-west	0.61	Average
6	260m west	0.61	Average
7	433m north-west	Filled in	-
8	480m north-west	0.34	Poor

CSA
environmental

Office 20, Gifford, 93 Offchilling Road,
Brighton BN1 4ST

T: 01273 573871
E: brighton@csa-environmental.co.uk
W: csa-environmental.co.uk

Project Land West of Arundel Road, Angmering

Drawing Title Pond Plan

Client Gladman Developments Ltd.

Date: Dec 2017

Drawing No. CSA/3467/112

Scale: A4 See scale bar

Rev: -

Drawn: JT

Checked: CC

This page has been left intentionally blank

This page has been left intentionally blank

CSA
environmental