



Wilmington,
Angmering

Ecological Impact Assessment

Prepared by
CSA Environmental

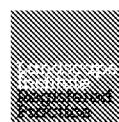
on behalf of
Mr & Mrs Parsons

Report No: CSA/5557/02

October 2021

This report may contain sensitive ecological information. It is the responsibility of the Local Authority to determine if this should be made publicly available.

Report Reference	Date	Revision	Prepared by	Approved by	Comments
CSA/5557/02	01/10/2021	-	JR	TF	Draft for comment
CSA/5557/02	08/10/2021	A	JR	TF	Updated following final bat survey
CSA/5557/02	27/10/2021	B	JR	TF	Minor amendment



	Executive Summary	
1.0	Introduction	1
2.0	Legislation, Planning Policy & Standing Advice	3
	Legislation	3
	National Planning Policy	3
	Local Planning Policy	3
	Standing Advice	3
3.0	Methods	5
	Desk Study	5
	Field Surveys	5
	Limitations	6
	Evaluation and Assessment	7
4.0	Baseline Ecological Conditions	8
	Nature Conservation Designations	8
	Habitats and Flora	8
	Fauna	11
	Future Baseline	16
	Summary of Ecological Features	16
5.0	Assessment of Effects	17
	Potential Impacts and Ecological Effects	18
	Mitigation by Design	21
	Additional Mitigation	22
	Residual Effects	24
	Cumulative Effects	26
	Compensation	26
	Enhancement	26
	Monitoring	27
6.0	Conclusions	28
7.0	References	30

Appendices

Appendix A: Habitats Plan & Photographs

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: HRA Screening

Appendix G: Bat Survey Report

Appendix H: Dormouse Survey Report

Appendix I: Reptile Survey Report

Appendix J: GCN Survey Report

EXECUTIVE SUMMARY

Residential development is proposed at Wilmington, Angmering, for which outline planning permission is sought.

CSA Environmental was instructed by Mr & Mrs Parsons to undertake an Ecological Impact Assessment (EclA) of the proposed development. To inform this assessment, a desktop study followed by a suite of targeted species (bats, dormice, reptiles, great crested newt (GCN)), and habitat surveys were undertaken. Dormouse surveys are still underway, and will be completed in May 2022.

The Site occupies an area of c. 0.8ha and is located around central grid reference TQ 06661 05516, to the north of Angmering. It consists of a semi-improved grassland paddock with hedgerows, a small area of broadleaved woodland, amenity grassland garden and a house and associated hardstanding (see Habitats Plan in Appendix A). The scheme seeks to retain woodland, scattered trees and grassland wherever practicable, with compensatory planting provided within retained open space areas.

Due to the Site's sheltered location between woodland parcels, it provides foraging habitat for a range of bat species. Dormice are known to be present locally, although have not been recorded during surveys completed to date. Nesting birds are likely to use the boundary vegetation, and grass snake and slow worm are present on-site. Mitigation has been proposed to address potential impacts on these protected species and ensure compliance with applicable legislation.

Opportunities for ecological enhancement may be secured by planning condition. Grassland retained around the Site boundaries is to be enhanced through over-seeding and favourable management. New habitat creation is proposed to include new tree planting and incorporation of wildlife features to provide sheltering opportunities for bats, birds, dormice and invertebrates.

Based on successful implementation of the proposed avoidance, mitigation and enhancement measures, the development is not anticipated to result in any significant residual negative effects on important ecological features. The scheme is considered to accord with all relevant nature conservation legislation, as well as with the provisions of the Arun Local Plan 2011-2031 (adopted 2018).

1.0 INTRODUCTION

- 1.1 This report has been prepared by CSA Environmental on behalf of Mr & Mrs Parsons. It sets out the findings of an Ecological Impact Assessment (EclA) of proposed development at Wilmington, Angmering (hereafter 'the Site'). Residential development is proposed at the Site, for which outline planning permission is sought.
- 1.2 The scope of this assessment has been determined with consideration of best-practice guidance provided by the Chartered Institute of Ecology and Environmental Management (CIEEM, 2018) 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. 0.8ha and is located around central grid reference TQ 06661 05516, to the north of Angmering. It consists of a semi-improved grassland paddock with hedgerows, a small area of broadleaved woodland, amenity grassland garden and a house and associated hardstanding (see Habitats Plan in Appendix A).
- 1.4 An initial desk study and extended Phase 1 Habitat survey were undertaken for the Site in June 2021 as part of a Preliminary Ecological Appraisal, the findings of which are presented herein. In addition, the following further survey work was undertaken between June and September 2021:
- Bat surveys (June-September 2021)
 - Dormouse surveys (June-September 2021; on-going, anticipated completion May 2022)
 - Reptile surveys (June-August 2021)
 - Great Crested Newt (GCN) surveys (June 2021)
- 1.5 This EclA aims to:
- Establish baseline ecological conditions at the Site.
 - Determine the importance of ecological features which could be affected by the proposed scheme.
 - Identify any likely significant impacts or effects of the proposed development on important ecological features, in the absence of mitigation, including cumulative impacts.
 - Set out any 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 secured by the proposed scheme.
 - Confirm how proposed mitigation, compensation and enhancement measures could 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 imposed by the relevant authority.

1.6 An EcIA can be used for the appraisal of projects of any scale. This is a best practice evaluation process, recommended by CIEEM (2018). It is intended that the evaluation of findings presented here-in will aid the Arun District Council in their review of the planning application.

2.0 LEGISLATION, PLANNING POLICY & STANDING ADVICE

Legislation

- 2.1 Legislation relating to wildlife and biodiversity of particular relevance to this EclA includes:
- The Conservation of Habitats and Species Regulations 2017 (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) (Ministry of Housing, Communities and Local Government, 2021) sets out the government planning policies for England and how they should be applied. Chapter 15: 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 Accompanying the NPPF, central government guidance on the implementation of planning policies is set out within online Planning Policy Guidance (PPG). The Natural Environment PPG addresses biodiversity conservation, from individual site and species protection through to the supporting of ecosystem services. Further guidance in respect of statutory obligations for biodiversity conservation within the planning system is provided by Government Circular 06/2005.

Local Planning Policy

- 2.5 A number of local planning policies relate to ecology, biodiversity and/or nature conservation. These are summarised in Table 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 June 2021 to identify the following ecological features (based on the Site's likely 'zone of influence' in respect of such features):
- Special Protection Areas (SPA), Special Areas of Conservation (SAC) and Ramsar sites within 10km of the Site (including possible/proposed sites)
 - 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 nature conservation designations and records of protected/notable habitats and species. This information was requested for an area encompassing the Site and adjacent land within c. 2km 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 Further online resources were reviewed for information which may aid the identification of important ecological features. The Woodland Trust's online Ancient Tree Inventory was reviewed for known ancient or veteran trees within the Site and adjacent land. Interactive online mapping provided by the charity 'Buglife' was used to determine whether the Site falls within an Important Invertebrate Area.
- 3.4 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.
- 3.5 Where possible under the terms of the data provider, relevant desk study data are presented in Appendix C.

Field Surveys

Extended Phase 1 Habitat Survey

- 3.6 An extended Phase 1 Habitat survey was carried out in fine and dry weather conditions on 25 June 2021 by Lydia Galbraith, reviewed and approved by Jessica Raynor ACIEEM, encompassing the Site and immediately adjacent habitats that could be viewed.

3.7 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. hardstanding)
- Identification of Habitats of Principal Importance in respect of Section 41 (S41) of the NERC Act 2006
- Identification of Habitats Directive Annex I habitat types
- Evidence of, or potential for, European Protected Species (EPS) (including bats, great crested newt, 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 Principal Importance as well as notable, rare, protected or controlled plants and invertebrates)

3.8 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

3.9 The following detailed field survey work was carried out between June and September 2021, with full methods and results provided in the relevant Appendices:

- Preliminary Roost Assessment - Trees (Appendix G)
- Bat Activity Surveys (Appendix G)
- Dormouse Survey (Appendix H)
- Reptile Survey (Appendix I)
- GCN Pond Scoping and HSI (Appendix J)
- GCN Pond eDNA sampling (Appendix J)
- Habitat Condition Assessment (Appendix K)

Limitations

3.10 There were no specific limitations to the desktop study or extended Phase 1 Habitat survey, which was conducted at a suitable time of year and in good weather conditions. Limitations to further surveys are addressed in the relevant appendices.

Evaluation and Assessment

- 3.11 Ecological features are identified, evaluated and assessed in accordance with the CIEEM Guidelines for Ecological Impact Assessment (2018), with detailed methods provided in Appendix E.
- 3.12 It is an established principle (CIEEM, 2018) that EcIA is an iterative process. Specialist advice on the avoidance and mitigation of the potential negative effects of the proposed development has been input from an early design stage.

4.0 BASELINE ECOLOGICAL CONDITIONS

Nature Conservation Designations

Statutory

- 4.1 There are no statutory designations covering any part of the Site.
- 4.2 Three international statutory designations were identified within 10km of the Site. These were Arun Valley Ramsar, SPA and SAC (c. 8.3km north of the Site).
- 4.3 No national or local statutory designations were identified within 3km of the Site.
- 4.4 These statutory designations are described in Table 1 below.

Non-Statutory

- 4.5 One non-statutory designation was identified within 3km of the Site. This was the Poling Copse LWS (c. 1.9km west of the Site), which is described in Table 1 below.

Table 1. Statutory and Non-Statutory Designations within search radii

Site Name & Designation	Distance & Direction from Survey Area	Special Interests or Qualifying Features
International Designations within 10km		
Arun Valley RAMSAR	c. 8.3km north	c. 530ha of wet meadows and neutral wet grassland with a network of ditches. Designated for rich terrestrial and aquatic invertebrate and plant species, including endangered and nationally scarce species, and a diverse assemblage of wintering waterfowl and breeding waders.
Arun Valley SPA	c. 8.3km north	c. 530 ha of wet meadows and neutral wet grassland dissected with a network of ditches. Designated for its assemblage of waterfowl and Bewick's swan.
Arun Valley SAC	c. 8.3km north	c. 530ha of wet meadows and neutral wet grassland, with a network of ditches. Designated for being one of the UK's best areas for <i>Anisus vorticulus</i> .
Non-Statutory Designations within 3km		
Poling Copse LWS	c. 1.9km west	c. 50ha of ancient and semi-natural woodland on the coastal plain

Habitats and Flora

Ancient Woodland

- 4.6 There is no ancient woodland covering any part of the Site or immediately adjacent land. There are eight parcels of ancient

woodland within 1km of the Site. The nearest parcel is Hammerpot Copse, c. 450m north of the Site. No trees on or adjacent to Site are listed on the Ancient Tree Inventory. However, a number of large mature oaks are present in the broadleaved woodland immediately north of the Site.

Notable Flora Records

- 4.7 The SxBRC provided 127 records of 54 notable plant species from within the search area. Those of potential relevance to the Site include wild strawberry *Fragaria vesca*, bluebell *Hyacinthoides non-scripta*, sanicle *Sanicula europaea* and ragged-robin *Silene flos-cuculi*. Habitats present on the Site may have the potential to support these species; however none were identified during the Phase 1 Habitat Survey.
- 4.8 The SxBRC also provided 77 records of 17 invasive non-native plants from within the search areas. Those of potential relevance to the Site include *Rhododendron ponticum*, which was noted on Site during the Phase 1 Habitat Survey, present in the southern tree line in the formal garden.

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. Detailed species lists for each habitat are provided in Appendix D.

Semi-improved grassland

- 4.10 The semi-improved grassland in the paddock was dominated by short-cut grass with relatively few herbs. Species are typical of damp neutral grassland, with the grassland dominated by Yorkshire fog *Holcus lanatus* and soft rush *Juncus effusus*. Herbaceous species include marsh thistle *Cirsium palustre*, creeping thistle *Cirsium arvense*, common fleabane *Pulicaria systerica*, creeping buttercup *Ranunculus repens*, dandelion *Taraxacum* sp., bristly oxtongue *Helminthotheca echioides*, white clover *Trifolium repens*, ragwort *Jacobaea vulgaris*, burdock *Arcium* sp., and common daisy *Bellis perennis*. The paddock area sloped gently towards the north, and the northern quarter of the Site was wetter, with a higher concentration of *Juncus* species.
- 4.11 Whilst the majority of the paddock was dominated by short grassland, localised areas of greater species and structural diversity are present along the southern paddock boundary, bordering the formal garden, and the lower end of the eastern formal garden, where vegetation is cut less frequently. The semi-improved grassland in the paddock supported a relatively long grass sward dominated by Yorkshire fog, as well as rough meadow grass *Poa trivialis* and hairy brome *Bromus ramosus*. Herb species included common nettle *Urtica dioica*, curled dock *Rumex crispus*, hogweed *Herculeum sphondylium*, creeping buttercup, wood avens *Geum urbanum*, forget-me-not *Myosotis arvensis* and ground ivy *Glechoma hederacea*. The east of the formal garden supported a

similar assemblage, with the addition of silverweed *Argentina anserina*, sow thistle *Sonchus* sp., cut-leaved cranesbill *Geranium dissectum* and cock's-foot *Dactylis glomerata*.

- 4.12 This habitat is relatively uncommon in the local landscape, which is dominated by woodland, arable and developed land. Its position between two parcels of woodland provides good connectivity for a range of fauna to utilise it. However, the plant species present are relatively common and not of conservation concern. Overall, the small area of habitat resource present is considered to be of less than Local importance, and is scoped out of further assessment.

Amenity grassland

- 4.13 The formal garden space of the property comprised largely of managed amenity grassland, split in two with a fence. The eastern half comprises short cut grass, ornamental planting, a pond and a water feature. The western half comprises short-cut grass and a bowls court. Few herbaceous species were recorded within the amenity grassland, such as common daisy.
- 4.14 This habitat is species-poor and of little ecological value, so is scoped out of further assessment.

Broadleaved woodland

- 4.15 The Site is bounded to the north, north-east and west by woodland. These boundaries were relatively diverse, dominated by hawthorn *Crataegus monogyna* and blackthorn *Prunus spinosa*, with other species including willow *Salix* sp., elder *Sambucus nigra*, horse chestnut *Aesculus hippocastanum*, sycamore *Acer pseudoplatanus*, downy birch *Betula pubescens*, ash *Fraxinus excelsior*, holly *Ilex aquifolium*, dog rose *Rosa canina*, bramble *Rubus* sp. and ivy *Hedera helix*.
- 4.16 The woodland interior consists of mature mixed broadleaved woodland with some large, mature oaks *Quercus robur* with veteran features, an understorey of hazel *Corylus avellana*, honeysuckle *Lonicera periclymenum*, and a ground flora of ivy, bramble and ferns.
- 4.17 Although relatively common in the surrounding landscape, broadleaved woodland has a high intrinsic value and can support a range of flora and fauna; it is a Habitat of Principal Importance listed on Schedule 41 of the NERC Act 2006 (S41 habitat). The small area of woodland on-site is connected to woodland to the north, east and west, and therefore is considered to be of Local importance.

Scattered trees

- 4.18 Two mature pendunculate oak *Quercus robur* trees are present in the centre of the paddock, and thirteen further oak trees are present in the north-west of the paddock.

- 4.19 Along the boundary between the paddock and garden are a line of mature crack willow *Salix fragilis* which have various veteran features, including rot hollows and hollow trunks.
- 4.20 Within the garden are a range of native and non-native trees, including young fruit trees, goat willow *Salix caprea*, sweetgum *Liquidambar styraciflua*, horse chestnut, a line of Cypress trees *Cupressus sempervirens* along the south-western boundary, and a line of eucalyptus *Eucalyptus* sp. along the southern boundary.
- 4.21 The native trees are of greatest ecological value, due to the greater number of fauna they support, in particular the mature oaks and willow trees. Overall, the scattered trees on-site are considered to be of less than Local importance, so are scoped out of further assessment.

Pond

- 4.22 There is a small ornamental pond in the garden, which supports fish, and includes non-native aquatic plant species. The pond is lined, and the banks are steep and paved around much of the perimeter. Amenity grassland and introduced shrub planting is present around the edges.
- 4.23 Although ponds have a high intrinsic value, this pond does not meet the criteria of a priority habitat. Overall, it is considered to be of less than Local importance, so is scoped out of further assessment.

Ornamental shrubs

- 4.24 The southern boundary of the eastern section of formal garden, and surrounding the main house consisted of ornamental non-native hedgerows and shrubs, including *Rhododendron ponticum* which is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) as an invasive species.
- 4.25 Although offering some opportunities for pollinators and foraging habitat for bats, birds and small mammals, this habitat is considered to be of less than Local importance, so is scoped out of further assessment.

Fauna

Bats

- 4.26 A total of 53 bat records were identified within the search area, dating from 1991 to 2020. These include the following species: common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula*, long-eared sp. *Plecotus* sp., brown long-eared *Plecotus auritus*, and Natterer's bat *Myotis nattereri*. The closest records are of long-eared sp. (c. 430m east of the Site). The closest record of a roost is c. 160m south in a building within the adjacent Site surveyed by CSA in 2018 (planning permission now granted for development, ref: A/122/19/OUT), and is a non-breeding common pipistrelle day roost.

There is a hedgerow which runs north-south between the Site and roost, which could provide good habitat connectivity.

Preliminary Roost Assessment - Trees

- 4.27 Of the trees inspected, one tree is considered to have features with 'High' potential for use by roosting bats, three with 'Low' potential and two with 'Negligible' potential. The full results of the tree inspection are provided in Appendix F, with the tree locations on the Preliminary Ground Level Tree Assessment Results Plan (CSA/5557/104).
- 4.28 The cavity within tree G20 D with "low" potential, and G20 C with "high" potential were inspected with an endoscope. No bats or evidence of bats was observed, but the cavity in G20 C extended upwards further than the length of the endoscope could reach, so the entire length could not be inspected. It therefore remains possible that bats were present in the uppermost section of the cavity which could not be observed. However, no bats were observed or recorded around the tree soon after sunset or before sunrise during the activity surveys.
- 4.29 During a static monitoring period, on 23 July 2021 soprano pipistrelle was recorded at 21:08, eight minutes after sunset, indicating that the bat was roosting very nearby. Soprano pipistrelle were also regularly recorded at less than 20 minutes after sunset. This could be indicative of a roost within tree G20 C, but is not conclusive.

Dusk Emergence Survey

- 4.30 During an emergence survey on 04 October 2021 of tree G20 C, no bats were seen emerging from the tree hollow.

Bat Activity Surveys

- 4.31 At least nine species of bat were recorded at the site during the transect surveys, comprising common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, Nathusius' pipistrelle *Pipistrellus nathusii*, noctule *Nyctalus noctula*, serotine *Eptesicus serotinus*, long-eared bat *Plecotus* species, Myotis species, and Western barbastelle *Barbastella barbastellus*. Activity recorded by the static detectors was dominated by soprano pipistrelle, with notable activity from common pipistrelle and *Nyctalus* bat species.
- 4.32 Bats were observed foraging along the woodland edges and within the sheltered paddock bordered by the woodland. Activity was concentrated to the north-west of the Site among the scattered trees. Common pipistrelle were predominantly recorded around the house and garden.
- 4.33 Guidance for the valuation of bats in EcIA is taken from Wray et al. (2010). Under these guidelines, the majority of Myotis species as well as Nathusius' pipistrelle, noctule and serotine are designated as rarer

(population 10,000 – 100,000) species in England, with some *Myotis* and *barbastelle* categorised as the rarest (population under 10,000) species; as such their presence on Site is of greater significance. Although bat activity at the Site was heavily dominated by soprano and common pipistrelle, there was a significant amount of activity from the 'rarer' species. The Site offers good foraging and commuting opportunities and supports a relatively high number of bat species, therefore overall the Site's bat community is considered to be important at the County level.

Badger

- 4.34 The SxBRC do not provide records for badger *Meles meles* as these are considered confidential due to the threat of persecution.
- 4.35 A number of mammal holes were identified in the woodland to the north of the Site, close to the boundary, however due to their size these were considered to be used by rabbit or fox.
- 4.36 No evidence of badger was found during the survey, however the Site as a whole provides suitable habitat for foraging and commuting badgers.
- 4.37 Badgers are not of conservation concern, but are protected from harm and their setts from damage / destruction under the Protection of Badgers Act 1992. This species are therefore protected by legislation, and mitigation measures have been recommended.

Dormouse

- 4.38 A total of five records of dormouse *Muscardinus avelinarius* were identified within the search area, dating from 2009 to 2018. The closest record is c. 260m south from the Site, in the site adjacent to the south, "Land off Arundel Road, Angmering", previously surveyed by CSA Environmental for development (planning ref: A/122/19/OUT).
- 4.39 The woodland to the north, north-east and north-west of the Site provides suitable habitat for dormice dispersal, nesting and foraging, with the scrubby woodland edges containing key food plants including hawthorn, oak, sycamore and bramble. The Site also has good connectivity to "Land off Arundel Road, Angmering".
- 4.40 No evidence of dormouse has been recorded during the surveys to date, although suitable habitat is present on-Site and they are known to be present locally. It is therefore likely that dormice do use the woodland edge habitats on-site.
- 4.41 Dormice are a European Protected Species afforded a high level of protection under the Conservation of Habitats and Species Regulations 2010. Although the amount of suitable habitat on-Site is small, if present, the population of dormice is considered to be of importance at the Local level.

Other Mammals

Hedgehog

- 4.42 A total of 49 records of hedgehog *Erinaceus europaeus* were identified within the search area, dating from 2005 to 2019. The closest record is c. 230m south east from the Site. The Site consists of some suitable habitat for hedgehog foraging and dispersing, including field margins and hedgerow bases.
- 4.43 Hedgehog are an S41 species. The small amount of habitat on-site is not considered to support a population large enough to be scoped into further assessment, but mitigation measures have been provided as a matter of best practice.

Birds

- 4.44 A total of 7,527 records of 132 bird species were identified within the search area, dating from 1980 to 2020. Of these records, 53 species were identified as notable. Those of potential relevance to the Site include mallard *Anas platyrhynchos* (evidence of ducks on garden pond), swift *Apus apus*, stock dove *Columba oenas*, turtle dove *Streptopelia turtur*, cuckoo *Cuculus canorus*, red kite *Milvus milvus*, kestrel *Falco tinnunculus*, yellowhammer *Emberiza citrinella*, house martin *Delichon urbicum*, swallow *Hirundo rustica*, house sparrow *Passer domesticus*, dunnoek *Prunella modularis*, common firecrest *Regulus ignicapilla*, starling *Sturnus vulgaris*, song thrush *Turdus philomelos*, mistle thrush *Turdus viscivorus*, European green woodpecker *Picus viridis* and tawny owl *Strix aluco*.
- 4.45 No evidence of any bird species of conservation concern was identified during the Phase 1 Habitat Survey. However, the habitats on-Site provide some suitable opportunities for nesting birds and are likely to support a range of common species typical of woodland and open habitats.
- 4.46 The woodland edges which bound the Site, scattered trees and grassland could support a breeding bird population of Local importance.

Reptiles

- 4.47 A total of 13 records of three reptile species were identified within the search area including slow worm *Anguis fragilis*, grass snake *Natrix natrix* (syn, *N. helvetica*) and adder *Vipera berus*. The closest record is of slow worm c. 220m south of the Site, which is connected via hedgerows and field margins.
- 4.48 Low populations of slow worm and grass snake (peak counts 1 adult and 1 juvenile, respectively) were recorded on-Site during the reptile survey, along the north-eastern boundary of the paddock.

- 4.49 All British reptiles are afforded protection from killing and injury under the Wildlife and Countryside Act 1981 (as amended). The low population on-Site is considered to be of Local importance.

Amphibians

- 4.50 A total of 19 records of 5 amphibian species were identified within the search area, including common toad *Bufo bufo*, common frog *Rana temporaria*, palmate newt *Lissolestes helveticus*, smooth newt *Lissolestes vulgaris* and great crested newt *Triturus cristatus*.
- 4.51 A more detailed appraisal of the Site in respect of great crested newt is provided below.

Great Crested Newt

- 4.52 A total of two records of great crested newts were identified within the search area. The closest recorded provided by SxBRC is from 1.5km west of the Site in 2013, between which there is some habitat connectivity provided by field margins, hedgerows and woodland.
- 4.53 Despite spending much of their annual lifecycle within the terrestrial environment, great crested newts are dependent upon the presence of suitable aquatic breeding habitat in order for a population to persist. One potential breeding pond was identified on-Site during the survey, whilst a further three appear to be present within a dispersible range of the Site, based on OS mapping.
- 4.54 Of the four ponds on and within a 500m radius of the Site, three were of below average suitability (Ponds 1, 3 and 4) and one of poor suitability (P2). Taking a precautionary approach, Ponds 1 and 3 were sampled for eDNA, both returning a negative result. GCN are therefore likely absent from the Site and scoped out of further assessment.

Invertebrates

- 4.55 A total of 65 records of 29 invertebrate species were identified within the search area. Those of potential relevance to the Site include cinnabar moth *Tyria jacobaeae*, cypress carpet *Theracupressata*, white admiral *Limenitis camilla* and stag beetle *Lucanus cervus*.
- 4.56 The Site falls within the South Downs Important Invertebrate Area (IIA), which are areas of nationally and significant places for the conservation of invertebrates and the habitats that support them.
- 4.57 Habitats within the survey area are considered to be common and widespread, and as such the potential for a notable invertebrate community to be present is considered low. The invertebrate population on-Site is therefore scoped out of further assessment.

Future Baseline

- 4.58 The Site is presently under active management by the residents, including the periodic cutting of fields and hedgerows. These management interventions maintain the on-Site conditions in a relatively stable state. There is no known intention to cease this management, other than to accommodate the proposed development should planning permission be granted. As such, the future baseline status of important ecological features is not anticipated to vary significantly from that at present.

Summary of Ecological Features

- 4.59 Table 2 below summarises all important ecological features identified within the respective zones of influence, together with the geographic context of their importance:

Table 2. Summary of important ecological features and their geographic context

Ecological Feature	Geographic Context of Importance and/or Protection Status
Arun Valley Ramsar, SPA and SAC	International
Broadleaved Woodland	Local
Rhododendron ponticum	Controlled (Wildlife and Countryside Act)
Bats	County
Dormice	Local (if present)
Badger	Protected (Protection of Badgers Act)
Reptiles	Local

5.0 ASSESSMENT OF EFFECTS

The Proposed Development

- 5.1 Detailed planning permission is sought for residential development at the Site. The following impact assessment is based on the Illustrative Site Plan prepared by ECE Architecture (MP/CW/WM 001 Rev D).
- 5.2 The construction phase of the proposed development will comprise the following:
- Removal of Trees T21, T22 and T41 and tree group G20 to provide room for residential development
 - Loss of the on-site pond
 - Loss of c. 0.39ha semi-improved grassland, c. 0.09ha amenity grassland and c. 0.001ha woodland
 - Construction of seven residential dwellings
 - Construction of associated gardens, parking, access infrastructure, and pump station
 - The establishment of c. 0.28ha of Public Open Space (POS) at the centre and north-western edge of the Site, comprising retained grassland and scattered trees, as well as new tree and shrub 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

Assumptions

- 5.4 The following assumptions have been made during the assessment of potential effects of the proposed development on important ecological features. Although 'assumed' and therefore taken as part of the pre-mitigation scenario, these measures are referenced in the proceeding sections where integral to the mitigation strategy.
- 5.5 In accordance with BS42020:2013, it is assumed that a Construction Environmental Management Plan (CEMP) will be secured by planning condition and prepared at the detailed design. In addition to the construction phase impact avoidance and mitigation measures identified in the following sections, the CEMP will detail standard environmental control measures, including though not limited to the following:
- Implementation of strict protection measures for the root protection areas of retained trees and hedgerows, in accordance with BS5837:2012

- Standard best practice construction phase pollution prevention and control measures
 - Sensitive working methods and timing to avoid direct impacts to nesting birds (generally vegetation removal outside nesting season of March through August)
 - All working measures needed to comply with the terms of EPS derogation licencing specific to the development phase or works activity
 - Updated ecological surveys, where necessary, to identify shifts in the baseline ecological condition (such as to support EPS derogation licence applications) in order that revised impact avoidance and mitigation measures can be adopted as required
- 5.6 In accordance with BS42020:2013, it is assumed that a Landscape and Ecology Management Plan (LEMP) will be secured by planning condition and prepared at the detailed design stage. The LEMP will set out measures for the establishment and long-term management of newly created and retained habitats to maximise benefits for biodiversity.

Potential Impacts and Ecological Effects

Arun Valley Ramsar, SPA and SAC

- 5.7 An HRA Screening has been undertaken (Appendix F) which has concluded that the proposed development will have no likely significant effect on the Arun Valley Ramsar, SPA or SAC.

Broadleaved Woodland

- 5.8 The proposed development will result in a loss of c. 0.001ha of broadleaved woodland to construct a pumping station. Additionally, there is the potential for woodland trees which overhang the Site to be damaged or the soil around them to be compacted during construction by machinery. However, the majority of woodland edges which abut the Site are either flailed at least annually, or are set back behind scattered trees which will form the future POS. Therefore, this impact is unlikely, with the exception of the small number of trees around the proposed pumping station.
- 5.9 During both construction and operation, in the absence of mitigation the proposed development may result in a change in environmental conditions (pH, humidity, and temperature) on the adjacent woodland. This change in conditions could lead to a change in the plant community and diversity, if ancient woodland specialists are lost and replaced by more generalist species.
- 5.10 During both construction and operation, the proposed development will result in an increase in noise and light pollution to the adjacent woodland. Light pollution has the potential to deter nocturnal and light-

sensitive animals such as bats, moths and certain species of birds which may act as pollinators. Noise pollution can also deter species intolerant to noise and negatively affect their reproductive success near to woodland edges. Therefore, both impacts could deter a range of animals from using the woodland close to the Site, such as birds which provide ecosystem services vital to the woodland's health.

- 5.11 In addition, the increased footfall of new residents throughout the POS could result in trampling and soil compaction around the root systems of retained trees during operation, as well as removal of deadwood beneath the trees to provide recreational space, which could reduce soil nutrient levels and impair tree health.
- 5.12 Overall, this is anticipated to result in an adverse effect on broadleaved woodland, significant at the Local level.

Bats

- 5.13 All species of British bats are European Protected Species, afforded a high level of protection against killing, injury or disturbance under the Conservation of Habitats and Species Regulations (2010).
- 5.14 The proposed development will result in a loss of semi-improved grassland and scattered trees (T21, T22 and G20) which provides sheltered foraging habitat for a range of species, due to the surrounding woodland. However, the gardens may provide some foraging habitat for bats in its place.
- 5.15 The proposed development will also result in an increase in artificial light, which could make habitats on and adjacent to the Site less suitable for use by bats, particularly the light-averse species such as *Myotis* species, either using habitats on-Site or moving between the parcels of woodland.
- 5.16 These impacts have the potential to result, in the absence of mitigation, in the fragmentation and degradation of habitats used by local bat populations, themselves determined to be important at the County level.
- 5.17 Although no conclusive evidence of roosting bats has been recorded, very early soprano pipistrelle passes were recorded which could indicate that bats are roosting on-Site, and if so it is most likely that they would be utilising the highly suitable features of tree G20 C. Should a roost be present, this would likely be limited to one of low conservation significance, but would nonetheless represent an offence under the Conservation of Habitats and Species Regulations 2017. There is good scope in the scheme to provide compensatory roosting opportunities, and precautionary mitigation has been provided below to avoid contravening legislation.

- 5.18 Overall, whilst individually unlikely to significantly undermine the conservation interests of local bat populations, the above potential impacts could, in combination, produce a negative effect significant at the Local level.

Dormice

- 5.19 Hazel dormice are a European Protected Species, afforded a high level of protection against killing, injury or disturbance under the Conservation of Habitats and Species Regulations (2010).
- 5.20 The proposed development will retain the vast majority of habitat on-site which is suitable for dormice, with only c. 0.001ha of woodland lost to construct a pumping station. The clearance of this habitat poses a risk of killing or injuring dormice, should any be present. However, good habitat connectivity will be maintained through the surrounding woodland.
- 5.21 This impact is unlikely to significantly affect the conservation status of the local dormouse population, but could contravene legislation. Therefore, mitigation measures are proposed herein.

Badger

- 5.22 No badger setts were present at the time of survey on-Site or within a 30m radius, therefore no direct impacts to badger tunnels are considered likely.
- 5.23 Semi-improved grassland on Site likely provides foraging habitat for badgers as well as a dispersal route between the two parcels of woodland. The proposed development will result in a loss of the majority of this foraging habitat, however woodland and grassland within the wider landscape will continue to provide resources in this respect. Development could however present a partial barrier to dispersal for badgers.
- 5.24 The likelihood that badgers cross the Site means that there is a risk of killing or injuring badgers during construction, for example through the animals falling into open excavations overnight.
- 5.25 Although badgers are not of conservation concern, and are not considered to be of importance at above the Site level, they are protected from harm under the Protection of Badgers Act 1992, so mitigation measures have been set out below.

Birds

- 5.26 The nests of all British birds are protected from disturbance whilst active under the Wildlife and Countryside Act 1981 (as amended).

- 5.27 The majority of habitat suitable to support nesting birds (woodland, trees) will be retained and protected by buffer zones within the proposed development. However, a small amount of woodland (c. 0.001ha) and a small number of trees which could support nesting birds will be removed.
- 5.28 During both construction and operation, the proposed development will result in an increase in noise and light pollution to the vegetation around the Site boundaries suitable to support nesting birds. This could deter some particularly sensitive species from using the Site, or reduce reproductive success, reducing the population size and diversity of birds on Site.
- 5.29 During operation, there will be an increased risk of killing, injury and disturbance to birds due to domestic pets.
- 5.30 Overall, in the absence of mitigation the proposed development has the potential to cause an adverse impact significant at the Local level for birds.

Reptiles

- 5.31 All native British reptile species afforded protection against killing and injury under the Wildlife and Countryside Act 1981 (as amended) and are S41 priority species in England.
- 5.32 Although some semi-improved grassland is to be retained around the Site boundaries, during construction the proposed development will result in a loss of c. 0.32ha semi-improved grassland, which provides foraging resources and habitat connectivity for slow worm and grass snake.
- 5.33 The proposed development will also result in a risk of killing or injury of slow worm and grass snake during Site clearance and during operation through pet predation.
- 5.34 Grass snake are generally considered to be a very mobile species, so the proposed development is not considered to pose a significant barrier. However, in the absence of mitigation the proposed development is expected to have an adverse impact significant at the Local level on reptiles.

Mitigation by Design

- 5.35 It is an established principle (CIEEM, 2018) that, wherever possible, potential negative effects should be avoided through 'Mitigation by Design', as this gives greater certainty over deliverability, demonstrates a well-designed scheme and ensures the correct application of the 'Mitigation Hierarchy' (as advocated by BS42020:2013, Defra 2019 and CIEEM, CIRIA & IEMA 2016).

- 5.36 The proposed development has sought to retain key ecological features on-Site, comprising the broadleaved woodland surrounding the paddock, scattered trees along the southern boundary, the mature oak trees in the centre and to the north of the paddock, semi-improved grassland beneath these trees, and along the north-eastern boundary where reptiles were recorded. These habitats will continue to provide foraging and sheltering opportunities for bats, dormice and reptiles, as well as a range of other fauna.

Additional Mitigation

Broadleaved woodland

- 5.37 Retained woodland and scattered trees will be protected during construction by appropriate fencing in line with BS 5837:2012 Trees in relation to design, demolition and construction – Recommendations (BSI, 2012). These measures will be detailed within a Tree Protection Plan (TPP), to be agreed with Arun District Council as part of detailed planning consent.
- 5.38 Measures to ensure prevention of contaminated surface water run-off, silt and airborne dust onto the woodland edged will be set out within a detailed Construction Environmental Management Plan (CEMP), to be conditioned. All construction will strictly adhere to the CEMP will ensure the impact to the woodland habitat is minimized.

Bats

- 5.39 Light spill onto habitat used by commuting and foraging bats will be minimised through design of a sensitive lighting scheme. Sensitive lighting will be implemented throughout the construction and operational phases, unless a different standard is required by Mid Sussex District Council as Highways Authority for adoptable roads.
- 5.40 Parameters of the lighting scheme are detailed in the Ecological Mitigation and Enhancement Strategy (EMES; CSA/5557/03); these measures accord with the Bat Conservation Trust and the Institution of Lighting Professionals Guidance Note on Artificial Lighting and Bats (2018).
- 5.41 It will not be possible to retain the tree alongside the future scheme; it will need to be felled to provide room for sufficient new dwellings, and for health and safety reasons due to the hollow trunk. It is recommended that further surveys be undertaken of tree G20 C to determine presence / likely absence of roosting bats, and inform any necessary mitigation measure prior to felling the tree. This will require three dusk emergence or pre-dawn return-to-roost surveys throughout the bat active season, in line with BCT (2016) guidelines.
- 5.42 In accordance with the prevailing guidelines, precautionary impact avoidance measures will further be adopted with respect to the removal

of trees exhibiting low bat roost potential (G20 A, B, D). These measures will be detailed within a CEMP at the detailed design stage.

Dormice

- 5.43 Clearance of the c. 0.001ha of broadleaved woodland to construct the pumping station will be undertaken under a European Protected Species licence from Natural England, if dormice are confirmed to be present.
- 5.44 Final mitigation and compensation measures will be agreed through the licence application process, but are likely to entail sensitive clearance of the woodland using single-stage clearance methods (as the area to be lost is less than 50m²) under watching brief. This clearance would be undertaken in late September or early October to avoid nesting bird season. This process is set out in more detail within the EMES (CSA/5557/03).
- 5.45 As for bats, an ecologically sensitive lighting strategy will be designed with the aim to minimise light spill onto retained vegetation suitable to support dormice.

Badger

- 5.46 As a precaution, a pre-construction check will be completed to confirm the absence of setts prior to the start of site clearance and construction works. Should any active setts be identified which would be impacted by the construction phase, appropriate mitigation (i.e. sett closure) would need to be undertaken under licence from Natural England before works could commence.
- 5.47 Standard precautionary measures will be implemented during the construction phase, to prevent any harm / injury to badgers which may cross the site, which are detailed in the EMES (CSA/5557/03).

Hedgehog

- 5.48 Semi-improved grassland and woodland edge habitat is to be retained around the boundaries of the Site, which will be reinforced by new planting to create additional habitat for hedgehogs and other species. Garden habitats are also likely to provide some foraging resources, dependent upon residents' activities.
- 5.49 To maintain habitat connectivity across the Site as much as possible, CD-sized gaps will be created in close-board garden fencing large enough to allow hedgehogs to still pass through (where finished ground levels allow).

Birds

- 5.50 Any clearance of vegetation suitable to support nesting birds will be undertaken outside of nesting bird season or following a pre-clearance

check to confirm absence of active nests. This has been detailed in the EMES (CSA/5557/03).

- 5.51 As for bats, an ecologically sensitive lighting strategy will be designed with the aim to minimise light spill onto retained vegetation suitable to support nesting birds.

Reptiles

- 5.52 Clearance of the c. 0.39ha semi-improved grassland and stumps of trees T21, 22 and G20 will be removed under watching brief by a suitably qualified ecologist. This has been detailed in the EMES (CSA/5557/03).

Residual Effects

- 5.53 Table 3 below summarises the assessment of potential impacts on each important ecological feature, proposed mitigation and the assessed residual effects.

Table 3. Summary of effects

Important Ecological Feature	Potential Impacts and Effects	Avoidance & Mitigation Measures	Mechanism by which Measures are Secured	Residual Effects
Broadleaved woodland	Potential physical damage during construction Removal of c. 0.001ha to construct pumping station	Retention of the majority of existing habitat Tree Protection fencing	Tree Protection Plan secured through Planning Condition CEMP	No significant effect
Bats	Potential development edge effects from artificial lighting causing disturbance of foraging bats Potential loss of roost in G20 C	Retention of boundary habitats Sensitive lighting strategy Sectional soft-felling of G20 C if required	Lighting Strategy secured through Planning Condition EPS licence if required	No significant effect
Dormice	Loss of c. 0.001ha woodland habitat Potential development edge effects from artificial lighting causing disturbance of foraging bats	Retention of the majority of existing habitat Sensitive lighting strategy	Lighting Strategy secured through Planning Condition EPS licence if required	No significant effect
Badger	Potential damage or destruction of setts Loss of habitat connectivity	Precautionary badger survey; impact avoidance measures under CEMP	CEMP secured through Planning Condition	No significant effect
Birds	Potential damage or destruction of nests and eggs Loss of habitat (c. 0.001ha woodland and trees T21, 22 and G20)	Retention of the majority of existing habitat Sensitive timing of works / nest checks by ecologist	CEMP secured through Planning Condition	No significant effect

- 5.54 Subject to the implementation of the above mitigation, no significant residual effects on any important ecological features are anticipated to result from the construction or operation of the proposed development.

Cumulative Effects

- 5.55 Due to the scale and nature of the proposed development, a detailed assessment of potential cumulative effects has not been undertaken.

Compensation

- 5.56 No significant residual negative effects on important ecological features are anticipated to result from the proposed development, following the inclusion of impact avoidance and mitigation measures described above. As such, no compensatory measures are proposed.
- 5.57 However, as a matter of best practice, once the pumping station along the eastern site boundary has been constructed, the working area around the building (where woodland will be cleared for plant access) will be re-planted with native thicket species of known benefit to dormice and other wildlife.

Enhancement

- 5.58 The Illustrative Site Plan includes landscape planting enhancements which will make positive contributions to on-site biodiversity.
- 5.59 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. Full details of the measures can be found in the EMES but are summarised below:
- Inclusion of plant species of known wildlife value within the landscaping scheme, including night-scented varieties to benefit bats.
 - Provision of new bat roosting opportunities: At least 6 no. 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 6 no. bird nesting boxes will be erected on mature trees or new builds to benefit generalist bird species. 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 dormouse nesting opportunities: At least 10 no. dormouse nest boxes will be erected on mature trees within the woodland.
- Creation of log piles: Timber generated from tree clearance works at the Site will be used to make at least 4 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.
- Provision of hedgehog gaps: Hedgehogs have been scoped out of detailed assessment and no specific mitigation is proposed, however it is important that opportunities for hedgehogs to move through the landscape are preserved. Although not strictly an 'enhancement' measure, provision of hedgehog-friendly gravel boards or equivalent, providing a minimum 5 x 5 inch gap, will be used to maintain permeability for hedgehogs across the development and associated gardens.

Monitoring

- 5.60 There will be ongoing monitoring of newly established and enhanced habitats as part of POS, to be undertaken by the future Management Company.

Bats

- 5.61 Following the installation of bat boxes, a monitoring visit will be made in Years 1 and 3 post-development to record any roosting bats. Records of bat roost will be provided to Sussex Bat Group who will also be encouraged to continue monitoring following the first five years.

Dormice

- 5.62 Monitoring requirements will be finalised in the EPS licence application, if required, but are likely to entail monitoring of the dormouse boxes on trees in Years 1, 3 and 5 post-development to record any dormice present. Records of dormice will be provided to Sussex Mammal Group who will also be encouraged to continue monitoring following the first five years.

6.0 CONCLUSIONS

- 6.1 In the absence of any mitigation measures, the proposed development would have the potential to result in negative effects significant at up to the Local level. However, with the implementation of some straightforward mitigation and precautionary measures as proposed here, the development is not anticipated to result in any significant residual negative effects on important ecological features.
- 6.2 The Illustrative Site Plan demonstrates the potential to deliver net benefits for wildlife in the form of additional habitats, with the opportunity to provide additional biodiversity enhancement measures alongside the new housing.
- 6.3 The measures set out herein can be secured through appropriate conditions attached to any planning consent, and the development may therefore be delivered without harm to nature conservation interests. Specifically, it is anticipated that planning conditions would be used to secure:
- Construction Environmental Management Plan (CEMP): In addition to wider environmental controls and best practice construction management, the CEMP will set out construction-phase impact avoidance measures with respect to nesting birds, badgers and reptiles.
 - Landscape and Ecology Management Plan (LEMP): The LEMP will detail the establishment and long term management of retained and newly created habitats to maximise benefits for wildlife. It will include a graphical Ecological Enhancement Plan, setting out the number, type and position of enhancement features.
 - Lighting Strategy: A sensitive lighting strategy will accompany the detailed layout, ensuring that dark corridors are maintained, and minimising light spill to retained and newly created habitats.
 - Bat mitigation strategy: Soft felling of trees G20 A, B and D, and further surveys to determine presence/likely absence of roosting bats within tree G20 C to inform any additional mitigation required.
 - Dormouse mitigation strategy: Clearance of woodland habitat under dormouse EPS licence, if required, using single stage clearance under watching brief.
 - Reptile mitigation strategy: Dispersal exercise using staged directional clearance of grassland habitat.
- 6.4 Measures to minimise impacts and avoid significant negative effects on dormice are further assured through the applicable legislative framework, which triggers statutory derogation licencing administered by Natural England.

- 6.5 Based on the successful implementation of avoidance, mitigation and enhancement measures set out herein, the scheme is considered to accord with all relevant nature conservation legislation, as well as with the provisions of Policies GI SP1, ENV SP1, ENV DM1, ENV DM3, ENV DM4 and ENV DM5 of the Arun District Local Plan 2011-2031 (adopted 2018).

7.0 REFERENCES

Baker, J., 2016. Biodiversity Net Gain: Good practice principles for development. CIEEM, CIRIA & IEMA.

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

British Standards Institution, 2012. BS 5837:2012 Trees in relation to design, demolition and construction: Recommendations. London: BSI.

Buglife, no date. Important Invertebrate Areas. [online] Available at: <<https://www.buglife.org.uk/resources/important-invertebrate-areas/>> [Accessed September 2021].

Chartered Institute of Ecology and Environmental Management, 2016. Guidelines for Assessing and Using Biodiversity Data. Winchester: CIEEM.

Chartered Institute of Ecology and Environmental Management, 2017. Guidelines for Ecological Report Writing. Winchester: CIEEM.

Chartered Institute of Ecology and Environmental Management, 2018. Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Version 1.1. Winchester: CIEEM.

Chartered Institute of Ecology and Environmental Management, 2020. Guidance on Ecological Survey and Assessment in the UK During the Covid-19 Outbreak. Version 2, published 9 June 2020. Winchester: CIEEM.

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

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

Defra, 2019. Natural Environment Planning Policy Guidance: Biodiversity, geodiversity and ecosystems. [online, last updated July 2019] Available at: <<https://www.gov.uk/guidance/natural-environment#biodiversity-geodiversity-and-ecosystems>> [Accessed September 2021].

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, pp.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 (on behalf of the Four Countries' Biodiversity Group), 2012. *UK Post-2010 Biodiversity Framework*. [pdf] Peterborough: JNCC. Available at: <<http://jncc.defra.gov.uk/page-6189>> [Accessed September 2021].

Ministry of Housing, Communities and Local Government, 2021. *National Planning Policy Framework (NPPF)*. London: Ministry of Housing, Communities and Local Government.

Multi-Agency Geographic Information for the Countryside (MAGIC), 2013. *Interactive Map*. [online] Available at: <<http://www.magic.gov.uk/MagicMap.aspx>> [Accessed September 2021].

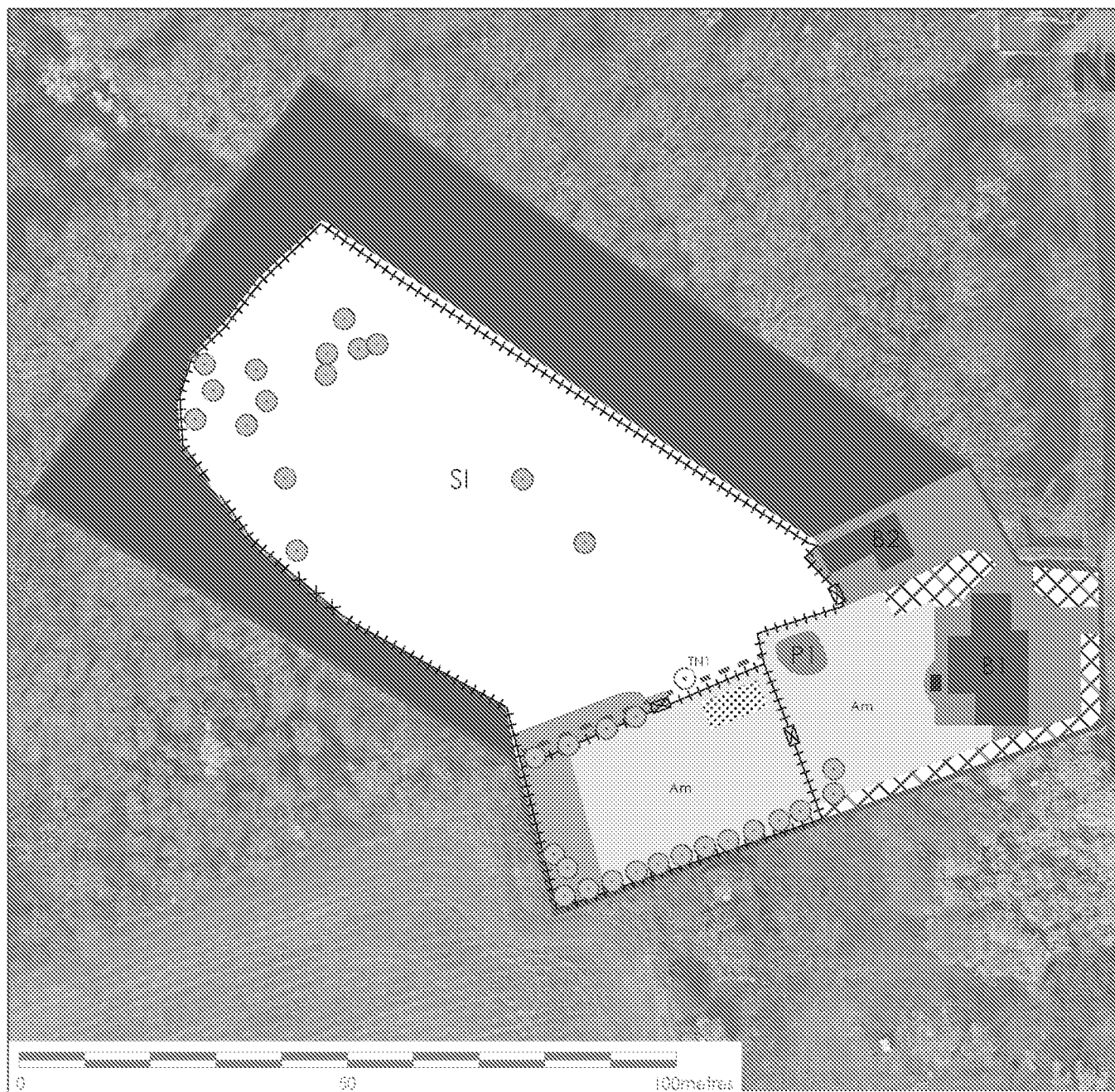
Natural England and Department for Environment, Food & Rural Affairs, 2014. *Protected species and development: advice for local planning authorities*. [online, last updated January 2021] Available at: <<https://www.gov.uk/protected-species-and-sites-how-to-review-planning-proposals>> [Accessed September 2021].

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), pp.143-155.

Wray, S., Wells, D., Long, E. and Mitchell-Jones, T., 2010. *Valuing Bats in Ecological Impact Assessment*. In *Practice*, 70, pp.23-25.

The Woodland Trust, no date. *Ancient Tree Inventory*. [online] Available at: <<https://ati.woodlandtrust.org.uk/>> [Accessed September 2021].

Appendix A
Habitats Plan & Photographs



	Site boundary		Building		Indicative location of mixed scattered trees
	Amenity grassland		Bare ground		Fence
	Poor semi-improved grassland		Pond		Broken fence
	Semi-improved grassland		Water feature		Gate
	Ornamental planting		Broadleaved woodland		Target note: TN1- large hollow tree stump
	Hardstanding		Dry ditch		

CSA
environmental

Office 210, CRbase, 95 Cleeching
Road, Brighton BN1 4ST
t: 01273 573871
e: brighton@csaenvironmental.co.uk
w: csaenvironmental.co.uk

Project: Wilmington, Angmering

Drawing
Title: Habitats Plan

Client: Mr & Mrs Parsons

Drawing Ref:
CSA/5557/100

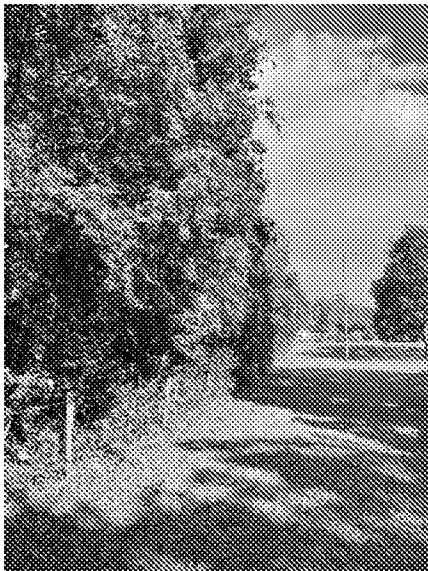
Scale:
Refer to scale

Date:
Oct 2021

Rev:
A

Drawn:
LG/JR

Checked:
CC



Photograph 1. Eastern boundary species-rich hedgerow



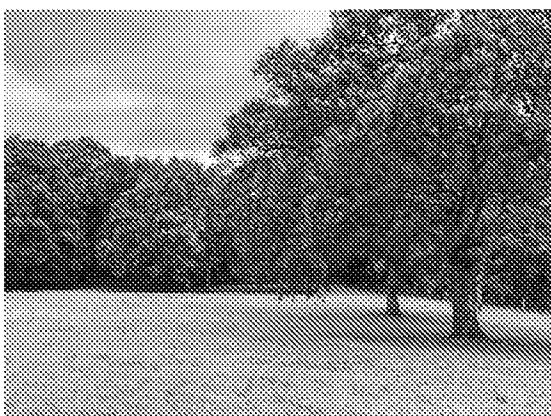
Photograph 2. Pond in amenity grassland garden



Photograph 3. Target note 1, large hollow Tree stump.



Photograph 4. Poor semi-improved grassland with scattered trees.



Photograph 5. Poor semi-improved grassland paddock with scattered trees



Photograph 6. Amenity grassland with bowls court in garden

Appendix B

Legislation and Planning Policy

The Conservation of Habitats and Species Regulations 2017 (as amended) make prescriptions for the designation and protection of Sites of Community Importance ('European sites', i.e. Special Areas of Conservation and Special Protection Areas) and European Protected Species (EPS). The latter include all native bats, great crested newts, dormice, otters and certain reptiles, listed under Annex II of the Regulations. Following the UK's departure from the European Union, the provisions of the Regulations have been retained through enactment of the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, which came into force on 31 December 2020.

The Wildlife and Countryside Act 1981 (as amended, principally by the Countryside and Rights of Way Act 2000) forms the basis for protection of statutory designated sites of national importance (e.g. Sites of Special Scientific Interest; SSSIs) and native species that are rare and vulnerable in a national context. 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 (S41) lists of 56 habitats and 943 species of principal importance. The UK Biodiversity Action Plan (BAP) has been superseded by the Biodiversity 2020 Strategy, however Local BAPs continue to influence biodiversity management and conservation effort, including through the spatial planning system, at the local scale.

The National Planning Policy Framework (2021) (NPPF) sets out the government planning policies for England and how they should be applied. With regards to ecology and biodiversity, Chapter 15: Conserving and Enhancing the Natural Environment, paragraph 174, states that the planning system and planning policies should minimise impacts on and provide net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

Paragraph 180 sets out the principles that local planning authorities should apply when determining planning applications:

- If significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts).
- Development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the

development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest.

- Development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists.
- Development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.

Accompanying the NPPF, central government guidance on the implementation of planning policies is set out within online Planning Policy Guidance (PPG). That relating to the protection and enhancement of the Natural Environment was most recently updated in August 2021. The Natural Environment PPG addresses principles across a broad spectrum of topics targeting biodiversity conservation, from individual site and species protection through to the supporting of ecosystem services, and the use of local ecological networks to support the national Nature Recovery Network. In particular the PPG promotes the delivery of measurable Biodiversity Net Gain through the creation and enhancement of habitats alongside development.

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 1 below.

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

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

Policy	Summary
The Arun Local Plan 2011- 2031 (adopted 2018)	
Policy GISP1: Green infrastructure and development	"The existing Green Infrastructure Network, as shown on the Green Network Maps for each parish and town, must be considered at an early stage of the design process for all major development proposals. All major development must be designed to protect and enhance existing Green Infrastructure assets, and the connections between them, in order to ensure a joined up Green Infrastructure Network. The Green Infrastructure Network must be protected from light pollution to ensure that areas

Policy	Summary
	defined by their tranquillity are protected from the negative effects of light in development. Where compatible with nature conservation objectives, development proposals must identify opportunities to connect existing Green Infrastructure assets with the coast, the South Downs National Park or to the District's inland villages. Opportunities to enhance the network should take account of the multiple functions of Green Infrastructure assets and should be based upon those opportunities set out in the supporting text."
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 permitted where it protects sites listed in Tables 17.1-17.7 that are recognised for the species and habitats contained within them."
Policy ENV DM1: Designated Sites of biodiversity or geological importance	"A. Proposed development likely to have an adverse effect on land with the designated features of any Site of Biodiversity or Geological Importance as listed in Tables 17.1 - 17.7 or any subsequently designated sites (either individually or in combination with other developments), will not normally be permitted. Consideration will be given to the exact designated features present on the site, their scarcity/rarity and recognition of the protection offered by their existing status. Development on wildlife sites with the highest value will only be permitted exceptionally where the following can be demonstrated: i. There is no alternative solution (which shall be adequately demonstrated by the developer). ii. There are reasons of public health or public safety or iii. There are benefits of primary importance to the environment or iv. There are imperative reasons of overriding public interest. Notwithstanding the above however, the presumption in favour of sustainable development does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined. B. In determining any planning application affecting Sites of Biodiversity or Geological Importance the Council will ensure that the intrinsic natural features of particular interest are safeguarded or enhanced having regard to; i. The European, National or Local status and designation of the site; ii. The nature and quality of the site's features, including its rarity value; iii. The extent of any adverse impacts on the notified features of interest; iv. The need for compensatory measures in order to re-create remaining features of habitats on or off the site.

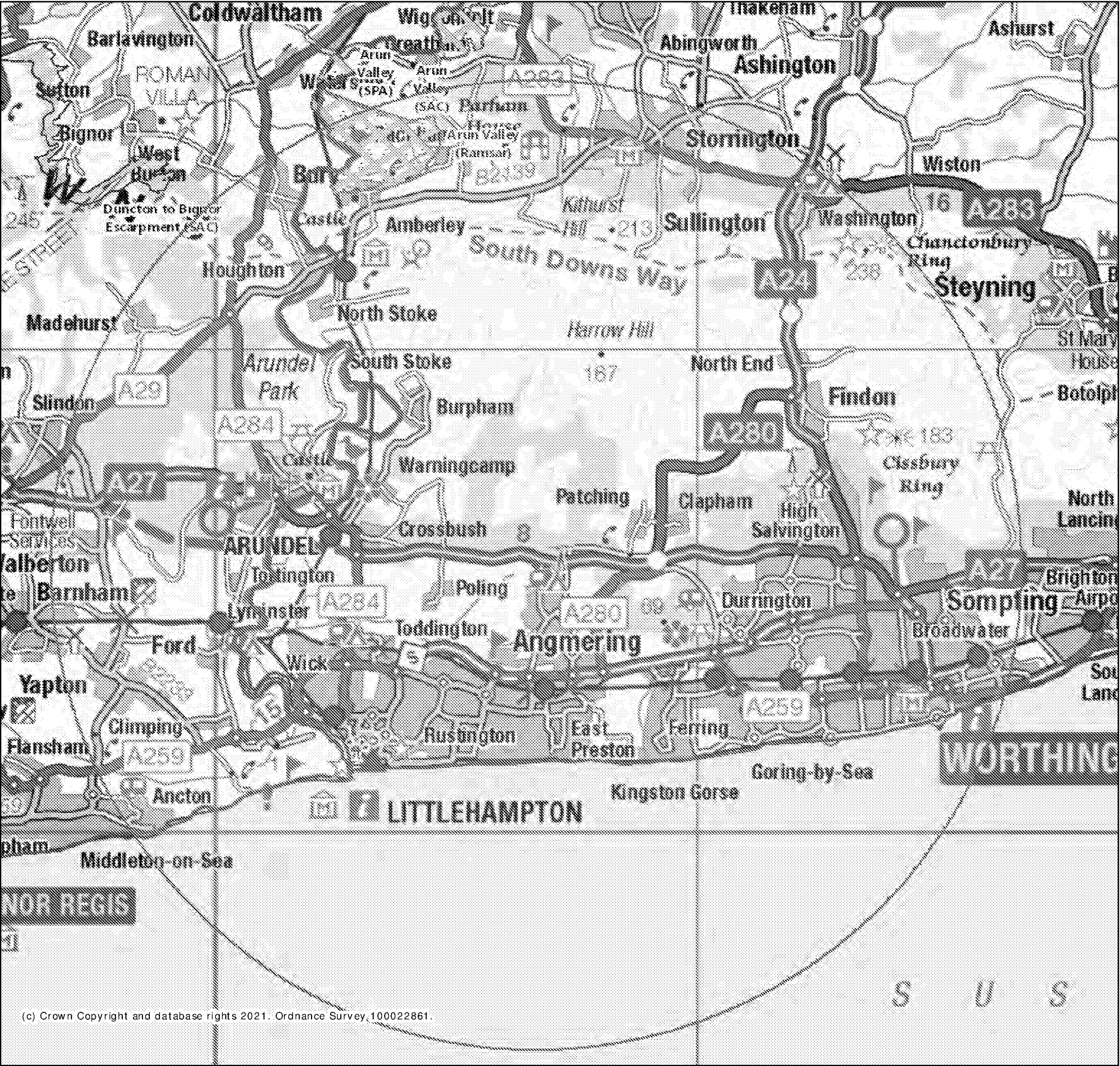
Policy	Summary
	C. Where appropriate the Council will ensure the effective management of designated sites through the imposition of planning conditions or Section 106 agreements as appropriate."
Policy ENV DM3: Biodiversity Opportunity Areas	"Development shall: a. Retain and sympathetically incorporate locally valued and important habitats, including wildlife corridors and stepping stones b. Be designed in order to minimise disturbance to habitats Development proposals that do not reasonably address opportunities for enhancing these through their design, layout and landscaping or access/management shall not be permitted. Where a development scheme would result in a habitat loss, mitigation measures will be proposed as part of the proposed scheme and such measures agreed with the Local Planning Authority prior to the determination of any planning application. Within Biodiversity Opportunity Areas (BOAs) identified on the Policies Maps or where likely to have an impact on species or habitats within the BOAs, any application for planning permission shall include a properly conducted survey of the presence of that species and habitat and impact(s) that development may have on the BOA."
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 development: a. Would result in the removal of one or more trees in the interests of good arboricultural practice. This shall be demonstrated by the developer following the advice of a suitably qualified person which shall be guided by BS 5837 (2012). Details of any advice received having regard to BS 5837 (2012) shall be submitted, in writing, as part of a planning application; or b. Would enhance the survival and growth prospects of other protected trees; c. The benefits of the proposed development in a particular location outweigh the loss of trees or woodland, especially ancient woodland. Where planning permission is granted in any of the above instances, conditions shall be used to ensure that, for any trees which are removed as part of a development, at least an equivalent number of a similar species and age (where practical) are planted on the proposed development site. Sufficient space for replacement trees to mature without causing future nuisance or damage shall be provided. The planting of new trees shall form an integral part of the design of any development scheme. Proper provision must be made for the protection and management of trees or areas of woodland on-site when undertaking development. A management plan shall be provided as part of a planning application in accordance with

Policy	Summary
	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."

Policy	Summary
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 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."

Appendix C

Desk Study Information



Legend

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

Projection = OSGB36
xmin = 484900
ymin = 94870
xmax = 529400
ymax = 117500
0 1.5 3
km

Map produced by MAGiC on 30 June, 2021.
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

Table D. Habitats and Flora Species List

Site name		Wilmington, Angmering				
Survey date and surveyor		25/06/2021 LG				
Scientific name	Common name	Habitat type				
		Poor semi-improved grassland	Semi-improved grassland	Hedgerows	Amenity grassland	Broadleaved woodland
Fern						
<i>Pteridium aquilinum</i>	Bracken					
Herb species						
<i>Achillea</i> sp.	Burdock					
<i>Bellis perennis</i>	Daisy					
<i>Circaea lutetiana</i>	Enchanter's-nightshade					
<i>Cirsium arvense</i>	Creeping thistle					
<i>Cirsium palustre</i>	Marsh thistle					
<i>Elymus</i> sp.	Tare					
<i>Filipendula ulmaria</i>	Meadowsweet					
<i>Geranium molle</i>	Dove's-foot crane's-bill					
<i>Geranium robertianum</i>	Herb Robert					
<i>Geum urbanum</i>	Wood avens					
<i>Glechoma hederacea</i>	Ground ivy					
<i>Helminthotheca echioides</i>	Brittle ox-tongue					
<i>Heracleum sphondylium</i>	Hogweed					
<i>Hypericum</i> sp.	St John's-wort					
<i>Isis foetidissima</i>	Sinking iris					
<i>Jacobaea vulgaris</i>	Common ragwort					
<i>Lotus corniculatus</i>	Common bird's-foot-trefoil					
<i>Myosotis arvensis</i>	Field forget-me-not					
<i>Potentilla anserina</i>	Silverweed					
<i>Potentilla reptans</i>	Creeping cinquefoil					
<i>Prunella vulgaris</i>	Selfheal					
<i>Pulsaria dysenterica</i>	Common fleabane					
<i>Ranunculus repens</i>	Creeping buttercup					
<i>Rhododendron</i> sp.	Rhododendron					
<i>Rumex crispus</i>	Curled dock					
<i>Sonchus</i> sp.	Sow-thistle					
<i>Taraxacum officinale</i> agg.	Dandelion					
<i>Trifolium repens</i>	White clover					
Sedges and rushes						
<i>Carex flacca</i>	Glaucous sedge					
<i>Juncus articulatus</i>	Jointed rush					
<i>Juncus effusus</i>	Soft rush					
Grasses						
<i>Dactylis glomerata</i>	Cock's-foot					
<i>Deschampsia cespitosa</i>	Tufted hair-grass					
<i>Holcus lanatus</i>	Yorkshire fog					
<i>Poa</i> spp.	Meadow grass					
Woody species						
Coniferous						
<i>Cupressus</i> sp.	Cypress					
Broadleaved						
<i>Acer pseudoplatanus</i>	Sycamore					
<i>Betula pendula</i>	Silver birch					
<i>Corylus avellana</i>	Hazel					
<i>Crataegus monogyna</i>	Hawthorn					
<i>Fraxinus excelsior</i>	Ash					
<i>Hedera helix</i>	Ivy					
<i>Ilex aquifolium</i>	Holly					
<i>Lonicera periclymenum</i>	Honeysuckle					
<i>Prunus spinosa</i>	Blackthorn					

Appendix E

Evaluation & Assessment Methods

- 1.1. Ecological features are evaluated and assessed in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) 2018 Guidelines for Ecological Impact Assessment (EclA). For clarity, the evaluation and assessment process adopted within this EclA is set out below.

Establishing Potentially Important Ecological Features

- 1.2. 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 1 below sets out a non-exhaustive list of ecological features that are typically considered, along with key examples:

Table 1. Potentially important ecological features (adapted from CIEEM 2018)

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 (SINCs)
National biodiversity lists	Habitats or Species of Principal Importance for the Conservation of Biodiversity (Section 41, NERC Act 2006), Ancient Woodland Inventory
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. 2017
Legally Controlled Species	E.g. species listed under Sch.9 of the W&C Act 1981

- 1.3. 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.

Establishing Likely Zone of Influence

- 1.4. 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
- 1.5. 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.
- 1.6. 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.
- 1.7. 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.

Geographic Context and Significance Criteria

- 1.8. 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
 - County
 - Local
- 1.9. The size, conservation status and the quality of features are all relevant in determining their importance and assigning this to the geographic scale. Where the importance of a feature is considered to fall below the Local scale, they are scoped out of detailed assessment.
- 1.10. Impacts and their effects are taken to be significant where they support or undermine biodiversity conservation objectives, with the scale of significance defined according to the above geographic context. Where an impact or effect is unlikely to be perceptible at a Local scale, this is taken to be not significant.

Characterising Ecological Impacts and their Effects

1.11. Where likely significant ecological impacts and effects 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 scale of 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 timeframe 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?)

Appendix F
HRA Screening

Habitats Regulations Assessment: Screening Information Note

Wilmington, Angmering

September 2021

This briefing note has been prepared by CSA Environmental on behalf of *Mr & Mrs Parsons*, in relation to land at Wilmington, Angmering (hereafter referred to as 'the Site') where residential development is proposed. It provides information to assist the Arun District Council, as competent authority, in their consideration of whether the proposed development will have likely significant effects¹ on internationally designated sites, as required under Regulation 63 of the Conservation of Habitats and Species Regulations 2017.

Project Description

Construction of seven new dwellings with associated gardens, access roads and a pumping station, is proposed within the garden of an existing house and adjacent paddock of semi-improved grassland.

Exemption, Exclusion and Elimination

If the answer to any of Questions 1-3 below is Yes, then no further screening for likely significant effects under the Habitats Regulations is required.

Preliminary Screening		
Q1. Is the whole proposed development directly connected with or necessary to the management of an Internationally designated site for nature conservation purposes?	No	If yes, project is exempt
Q2. Is the proposed development the continuation, without material change, of ongoing activities not subject to any form of authorisation?	No	If yes, project is excluded
Q3. In light of the nature, scale, duration and location of the proposed development, is it obvious that it could not have any conceivable effect on any Internationally designated site?	No	If yes, project is eliminated

If the answer to Question 3 is No, which internationally designated sites could conceivably be affected by the proposed development?

- Arun Valley Ramsar

¹ In the context of Habitats Regulations Assessment, 'Likely' is taken to refer to there being any real (rather than hypothetical) risk of a stated outcome, and 'Significant Effect' is taken to refer to any effect with the capability of undermining the published conservation objectives of an Internationally designated site. These interpretations are consistent with the applicable case law.

- Arun Valley Special Protection Area (SPA)
- Arun Valley Special Area of Conservation (SAC)

Arun Valley Ramsar: Screening

The following table provides a description of the character of the Arun Valley Ramsar site, and its relationship with the Site.

Site Characteristics	
Distance and direction from Site	c. 8.3km north
Size	528.62ha
Grid reference	TQ024151
Component SSSIs	Pullborough Brooks SSSI, Amberley Wild Brooks SSSI, Waltham Brooks SSSI
Qualifying features	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) Species/populations identified subsequent to designation for possible future consideration under criterion 6. Species with peak counts in winter: Northern pintail, <i>Anas acuta</i>, NW Europe 641 individuals, representing an average of 1% of the population (5 year peak mean 1998/9-2002/3)
Published Conservation Objectives	Conservation objectives are not provided for Ramsar sites, thus these are taken from the SPA Conservation Objectives Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving

	the aims of the Wild Birds Directive, by maintaining or restoring; • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • - The distribution of the qualifying features within the site.
Known vulnerabilities	Inappropriate water levels due to abstraction for Public Water Supply from off-Site, water pollution and inappropriate ditch management. ²

In the context of the above information, the below table presents a review of the potential impact pathways between the Site and the Arun Valley Ramsar site.

Pathways are considered on the basis of the development as proposed, including any facets which may, in addition to their primary purpose, act to mitigate potential effects on internationally designated sites (such as standard pollution prevention controls). However, in accordance with the 'People Over Wind' ruling of the Court of Justice for the European Union Case 323/17, screening for likely significant effects takes place in the absence of measures specifically adopted to avoid or reduce effects on internationally designated sites.

Screening for Likely Significant Effects	
Describe any likely changes to the site or its qualifying features arising as a result of the following impact pathways:	
Land take by development within Internationally designated site	None
Fragmentation of Internationally designated site habitats	None
Increased mortality of key species	None
Disturbance to key species / deterioration of habitats	The proposed development will accommodate an increase of c. 17 people (based on 2.4 per dwelling) within 8.3km of the Ramsar site. This has potential to increase recreational pressure on the Ramsar habitats, contributing to disturbance of plant, invertebrate and bird species which are reasons for designation.
Damage or deterioration of supporting habitats,	None (habitats within the Site are not suitable to support the plant, invertebrate and bird species which

² Site Improvement Plan for Arun Valley (SIP004)

Available online: <http://publications.naturalengland.org.uk/publication/5353882309885952>

outside Internationally designated site	are reasons for designation)
Atmospheric pollution/air quality	None
Changes to soil chemistry	None
Hydrological regime change	None
Pollution of surface/ground water	None (the Site does not share direct hydrological connectivity with the Arun Valley Ramsar)
Describe from the above those facets of the proposed development, or combination of facets, where the above effects have the potential to be significant, or where the scale or magnitude of effects is not known.	
The proposed development will accommodate an increase of c. 17 people (based on 2.4 per dwelling) within 8.3km of the Ramsar site. This could result in an increase in recreational pressure at the Ramsar site. Recreational activity could result in the disturbance of the Annex I birds, invertebrate and plant species which are the reason for designation of the Ramsar site. For the birds, this could occur at a level which may significantly affect their behaviour, and consequently impact on the long-term viability of their population. Such disturbing effects can for example result in changes to feeding or roosting behaviour, increased energy expenditure due to more frequent flights, disrupted incubation of eggs and desertion of supporting habitat (both within or outside the designated site boundary where appropriate). However, the Ramsar site is predominantly wet meadows, ditch and wetland habitat which is largely inaccessible. Access is restricted to board walks and paths, which limits disturbance levels. Furthermore, the habitats are actively managed by the RSPB for the benefit of the bird populations. Therefore, overall this very small increase in the local population and therefore recreational pressure on the Ramsar site would not result in any likely significant effects on the reasons for designation.	

Outcome of Screening (proposed development alone)	
Will there be any effect on the Internationally designated site? (proposed development alone) If no, proposed development is screened out	NO
Will there be likely significant effects on the Internationally designated site, or does uncertainty remain over the potential for significant effects? (proposed development alone) If yes, proposed development is screened in If no, a ssess in combination with other plans or projects below	NO

Outcome of Screening (proposed development in combination with other plans or projects)	
Outline any other plans or projects with likely significant effects when considered in combination with the proposed development:	
The emerging Local Plan for Arun District Council includes a housing target of 20,768 in the period 2011 – 2031 (525 per annum). Further housing will come forward in their neighbouring boroughs and districts.	
Describe any potential impact pathways and characterise any likely significant effects on the Internationally designated site:	
The minor contribution to an increase in the local population brought about by the proposed development may act in combination with general provision of new housing within Arun district and the surrounding boroughs and districts to produce an increase in visitor pressure on the Arun Valley SPA. However, the designated features of the Arun Valley SPA are not vulnerable to recreational disturbance due to limited pedestrian access into the key habitats and favourable management practices.	
Are significant effects likely when considered in combination with other plans or projects? If yes, proposed development is screened in	NO

Arun Valley SAC: Screening

The following table provides a description of the character of the Arun Valley SAC, and its relationship with the Site.

Site Characteristics	
Distance and direction from Site	c. 8.3km north
Size	487.48ha
Grid reference	TQ035143
Component SSSIs	Amberley Wild Brooks SSSI & Pulborough Brooks SSSI
Qualifying features	Little whirlpool ram's-horn snail <i>Anisus vorticulus</i> listed in Article II of Directive 92/463/EEC.
Published Conservation Objectives	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its Qualifying Features, by maintaining or restoring; • The extent and distribution of the habitats of qualifying species • The structure and function of the habitats of qualifying species • The supporting processes on which the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.
Known vulnerabilities	Inappropriate water levels due to abstraction for Public Water Supply from off-Site, water pollution and inappropriate ditch management. ³

In the context of the above information, the below table presents a review of the potential impact pathways between the Site and the Arun Valley SAC.

Pathways are considered on the basis of the development as proposed, including any facets which may, in addition to their primary purpose, act to mitigate potential effects on internationally designated sites (such as standard pollution prevention controls). However, in accordance with the 'People Over Wind' ruling of the Court of Justice for the European Union Case 323/17, screening for likely significant effects takes place in the absence of measures specifically adopted to avoid or reduce effects on internationally designated sites.

³ Site Improvement Plan for Arun Valley (SIP004)

Available online: <http://publications.naturalengland.org.uk/publication/5353882309885952>

Screening for Likely Significant Effects	
Describe any likely changes to the site or its qualifying features arising as a result of the following impact pathways:	
Land take by development within Internationally designated site	None
Fragmentation of Internationally designated site habitats	None
Increased mortality of key species	None
Disturbance to key species / deterioration of habitats	The proposed development will accommodate an increase of c. 17 people (based on 2.4 per dwelling) within 8.3km of the SPA. This has potential to increase recreational pressure on the SAC habitats, contributing to disturbance of little whirlpool ram's horn snail populations.
Damage or deterioration of supporting habitats, outside Internationally designated site	None (habitats within the Site are not suitable to support little whirlpool ram's horn snail)
Atmospheric pollution/air quality	None
Changes to soil chemistry	None
Hydrological regime change	None
Pollution of surface/ground water	None (the Site does not share direct hydrological connectivity with the Arun Valley SAC)
Describe from the above those facets of the proposed development, or combination of facets, where the above effects have the potential to be significant, or where the scale or magnitude of effects is not known.	
The proposed development will accommodate an increase of c. 17 people (based on 2.4 per dwelling) within 8.3km of the SPA. This could result in an increase in recreational pressure at the SAC. However, the SAC is predominantly wet meadows, ditch and wetland habitat which is largely inaccessible. Access is restricted to board walks and paths, which limits disturbance levels. Therefore, an increase in recreational pressure is not anticipated to result in any likely significant effect on the Little whirlpool ram's-horn snail population which is the reason for designation.	

Outcome of Screening (proposed development alone)	
Will there be any effect on the internationally designated site? (proposed development alone) If no, proposed development is screened out	NO
Will there be likely significant effects on the Internationally designated site, or does uncertainty remain over the potential for significant effects? (proposed development alone) If yes, proposed development is screened in If no, assess in combination with other plans or projects below	NO

Outcome of Screening (proposed development in combination with other plans or projects)	
Outline any other plans or projects with likely significant effects when considered in combination with the proposed development:	
The emerging Local Plan for Arun District Council includes a housing target of 20,768 in the period 2011 – 2031 (525 per annum). Further housing will come forward in their neighbouring boroughs and districts.	
Describe any potential impact pathways and characterise any likely significant effects on the Internationally designated site:	
As discussed for the Ramsar, the designated features of the Arun Valley SAC are not vulnerable to recreational disturbance due to limited pedestrian access into the key habitats and favourable management practices.	
Are significant effects likely when considered in combination with other plans or projects? If yes, proposed development is screened in	NO

The following table provides a description of the character of the Arun Valley SPA, and its relationship with the Site.

Site Characteristics	
Distance and direction from Site	c. 8.3km north
Size	528.62ha
Grid reference	TQ024151
Component SSSIs	Pullborough Brooks SSSI, Amberley Wild Brooks SSSI, Waltham Brooks SSSI
Qualifying features (Directive 92/43/EEC Annex I habitats / Annex II species)	The site qualifies under Article 4.1 of the Birds Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain population of a species listed on Annex I in any season: 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 1992/3 to 1996/7). The site also qualifies under Article 4.2 of the Directive (79/409/EEC) by regularly supporting at least 20,000 waterfowl Over winter regularly supports 27,241 individual waterfowl (5 year peak mean for 1992/93 to 1996/97) including: Shoveler <i>Anas clypeata</i>, Teal <i>Anas crecca</i>, Wigeon <i>Anas penelope</i>, Bewick's Swan <i>Cygnus columbianus bewickii</i>.
Published Conservation Objectives	Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring; • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.
Known vulnerabilities	• High risk of pollution to groundwater (point sources and diffuse sources) from both inside and outside the designations.

	• High risk of human induced changes in hydraulic conditions from both inside and outside the designation • High risk of improved access to the site from inside the designation • High risk of modification of cultivation practices from inside the designation • High risk of grazing from inside the designation from inside the designation • High risk of interpretative centres from inside the designation • High risk of forest plantation management and use from inside the designation
--	---

In the context of the above information, the below table presents a review of the potential impact pathways between the Site and the Arun Valley SPA.

Pathways are considered on the basis of the development as proposed, including any facets which may, in addition to their primary purpose, act to mitigate potential effects on internationally designated sites (such as standard pollution prevention controls). However, in accordance with the 'People Over Wind' ruling of the Court of Justice for the European Union Case 323/17, screening for likely significant effects takes place in the absence of measures specifically adopted to avoid or reduce effects on internationally designated sites.

Screening for Likely Significant Effects	
Describe any likely changes to the site or its qualifying features arising as a result of the following impact pathways:	
Land take by development within Internationally designated site	None
Fragmentation of Internationally designated site habitats	None
Increased mortality of key species	None
Disturbance to key species / deterioration of habitats	The proposed development will accommodate an increase of c. 17 people (based on 2.4 per dwelling) within 8.3km of the SPA. This has potential to increase recreational pressure on the SPA habitats, contributing to disturbance of the Annex I bird species which they support.
Damage or deterioration of supporting habitats, outside Internationally designated site	None (habitats within the Site are not suitable to support the Annex I bird species which are reasons for designation)

Atmospheric pollution/air quality	None
Changes to soil chemistry	None
Hydrological regime change	None
Pollution of surface/ground water	None (the Site does not share direct hydrological connectivity with the Arun Valley SPA)
Describe from the above those facets of the proposed development, or combination of facets, where the above effects have the potential to be significant, or where the scale or magnitude of effects is not known.	
As discussed for the Arun Valley Ramsar site, the very small increase in the local population and therefore recreational pressure on the SPA would not result in any likely significant effects on the designated features.	

Outcome of Screening (proposed development alone)	
Will there be any effect on the Internationally designated site? (proposed development alone) If no, proposed development is screened out	NO
Will there be likely significant effects on the Internationally designated site, or does uncertainty remain over the potential for significant effects? (proposed development alone) If yes, proposed development is screened in If no, assess in combination with other plans or projects below	NO

Outcome of Screening (proposed development in combination with other plans or projects)	
Outline any other plans or projects with likely significant effects when considered in combination with the proposed development:	
The emerging Local Plan for Arun District Council includes a housing target of 20,768 in the period 2011 – 2031 (525 per annum). Further housing will come forward in their neighbouring boroughs and districts.	
Describe any potential impact pathways and characterise any likely significant effects on the Internationally designated site:	
As discussed for the Ramsar, the designated features of the Arun Valley Ramsar site are not vulnerable to recreational disturbance due to limited pedestrian access into the key habitats and favourable management practices.	
Are significant effects likely when considered in combination with other plans or projects? If yes, proposed development is screened in	NO

Conclusion

Based on the information provided here-in, it is anticipated that the Arun District Council, in their capacity as competent authority under Regulation 63 of the Conservation of Habitats and Species Regulations 2017, will conclude that the proposed development would not be likely to have a significant effect on any Internationally designated site, either alone or in combination with other plans or projects (in light of the definition of these terms in the 'Waddenzee' ruling of the European Court of Justice Case C-127/02) and that no Appropriate Assessment is required.⁴

⁴ Wording adapted from The Habitats Regulation Assessment Handbook, www.dtaapplications.co.uk. DTA Publications Ltd (September) 2013.

Appendix G
Bat Survey Report

1.0 Introduction

- 1.1 This report sets out the methods and results of bat activity transect and static monitoring surveys undertaken at Wilmington, Angmering (hereafter referred to as 'the Site') during July-August 2021.

2.0 Legislation

- 2.1 All British bat species are legally protected under Regulation 43 of the Conservation of Habitats and Species Regulations 2017 (as amended). 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, or which significantly affects the local distribution or abundance of the species
- Damage or destroy a breeding site or resting place used by bats

- 2.2 All bats and their roosts in the UK were previously fully protected under the Wildlife & Countryside Act 1981 (as amended). Amendments to the Act have removed most provisions as they relate to bats, 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
- Intentionally or recklessly obstruct access to any structure or place used for shelter or protection

- 2.3 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 Regulations, the offence of damaging or destroying a breeding site or resting place is subject to 'strict liability', i.e. an offence is committed irrespective of whether the causal act was deliberate or otherwise.

- 2.4 Where development is proposed that would result in an offence under the Regulations, a European Protected Species (EPS) statutory derogation licence (often termed 'EPS Mitigation Licence') will need to be secured from Natural England to permit an act that would otherwise be unlawful. Such a licence can only be granted following receipt of planning permission with all relevant conditions discharged, and where it has been demonstrated that specific statutory derogation tests have been met.

3.0 Methods

- 3.1 The following survey methods, design, data analysis and interpretation have been undertaken with due consideration of the Bat Conservation Trust (BCT) guidelines 3rd Edition (Collins, 2016).

Preliminary Roost Assessment (PRA)

Tre e s

- 3.2 On-site trees to be removed were inspected from ground level, using binoculars, high-powered torches and binoculars as appropriate. Particular attention was given to woodpecker holes, limb splits, lifting bark, mature ivy stems.
- 3.3 An endoscope was used to inspect the cavities and crevices on willow trees within G20.
- 3.4 A description of each tree was made, including the species, height, diameter at breast height and condition.
- 3.5 The aim of this inspection was to record direct (i.e. actual roosting bats) or indirect evidence of roosting bats (e.g. droppings), as well as the nature and number of features with 'potential' to support roosting bats. This includes consideration of trees to support bats whilst in hibernation.

Asse ssing 'Potential'

- 3.6 Trees were assigned to one of four categories in respect of their 'potential' to support roosting bats, or the confirmation of any bat roosts identified. 'Potential' in this context is taken to be the broad suitability of features to support roosting bats, based upon the nature, condition or structure of such features, in the absence of confirmed evidence of roosting.
- 3.7 Assigning the following categories is intended to determine the effort of any further targeted survey or inspections which are necessary to prove presence or likely absence of roosting bats, rather than to assign importance to such features.
- 3.8 The following categories are assigned to structures and/or trees herein, Either:
- **Confirmed roost** – where one or more bat roosts are identified during PRA inspections, either through direct sightings of bats, and/or indirect evidence such as bat droppings, Or;
 - **High** – A structure or tree 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.
 - **Moderate** – A structure or tree with one or more potential roost sites 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 (with respect to roost type only, assessments at this stage are made irrespective of species conservation status).

- **Low** – A structure or tree with one or more potential roost sites 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 or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation).
- **Negligible** – Negligible habitat features on site likely to be used by roosting bats.

- 3.9 The potential of a tree or structure to support roosting bats is often influenced by its age and construction, thermal stability, lighting and levels of human activity. Furthermore, the proximity to foraging habitat - particularly woodland, parkland and wetland- as well as the presence of navigational routes (e.g. hedgerows, treelines and watercourses) influence both the potential for bats to roost, as well as the species which may roost. Professional judgement is therefore applied, based upon known factors which effect the potential of features to support roosting bats, insofar as determining the need or scope of further surveys or inspections.

Limitations

- 3.10 The cavity within tree G20 C extended upwards further than the length of the endoscope could reach, so the entire length could not be inspected. It therefore remains possible that bats were present in the uppermost section of the cavity which could not be observed.

Roost Surveys

- 3.11 A single dusk emergence survey was undertaken to confirm the presence/likely absence of roosting bats in association with the on-site tree G20 C. In addition, the surveys aim to determine the character of any identified roosts, namely species present, number of roost bats and roost type (i.e. day, night feeding, maternity and transitory).
- 3.12 The dusk emergence/pre-dawn re-entry surveys were undertaken for approximately 1.5 hours following British Summer Time (BST) sunset and 1.5 hours prior to BST sunrise respectively, with due consideration for the BCT good practice guidelines. The survey was carried out by Jessica Raynor ACIEEM (Bat Class Survey Licence WML-CL18, Registration Number 2020-44643-CLS-CLS) in suitable weather conditions (see Table 2).
- 3.13 During the survey, the surveyor watched for any bats entering parts of the tree or using key flight lines, equipped with a hand-held Batlogger M detector to assist in determining species of bat and any associated behaviour. 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.

- 3.14 An infrared video camera rig (Sony Handycam HDR SR5E) was used to film any bats entering/emerging from the tree.
- 3.15 Following the survey all bat calls were downloaded from the EM3 detector and analysed using BatExplorer to enable species identification, where possible, and quantitative analysis of the data.

Activity Surveys

Transect Surveys

- 3.16 Three transect surveys were undertaken between July and September 2021. A single transect route aimed to cover all accessible areas, features and habitats at the Site. Each transect route was repeated at least once during each survey to minimise temporal bias.
- 3.17 Each transect was walked at a moderate and consistent speed with qualitative observations of bat behaviour made by the surveyor. Each survey commenced at sunset (British Summer Time), continuing for the following two hours.
- 3.18 Bat calls were recorded using Elekon Batlogger M detectors. This detector automatically records ultrasonic signals with a one second delay between recordings. Recordings of bat contacts were subsequently analysed using BatExplorer software, with sonograms reviewed to confirm bat identification to genera, or where possible, species level.
- 3.19 Each of the recorded files, which contain a variable number of call 'pulses', was designated a 'bat contact'. At the point of contact, each sound file is assigned a GPS location.
- 3.20 Transect surveys are intended to gather data on the spatial distribution of bat activity across the Site, identifying areas of relative importance for bats, including key flight lines. In addition direct observation of bats allows for qualitative assessments of how bats use the Site to be made complementing quantitative data collected through remote monitoring.

Remote Monitoring

- 3.21 A Wildlife Acoustics Songmeter (SM2) detector was deployed in July, August and September to provide three data-sets. The location of this Monitoring Location (ML) is shown on Figure 1 below.



ML ● ML1

Figure 1. The locations of each Monitoring Location (ML) surveyed during remote monitoring surveys in July, Early September and Late September

- 3.22 The detectors were setup to automatically record ultrasonic signals for the period from half an hour before sunset to half an hour after sunrise each night, with each monitoring period spanning at least five consecutive nights.
- 3.23 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, see Table 2) were taken forward for analysis.
- 3.24 Recordings are triggered when a bat echolocation call is detected and will contain a variable number of call 'pulses'. Each file containing call pulses by a bat/s is designated as a 'bat contact' for each species present. The maximum recording duration is 15 seconds after which

time a new recording file, and thus a new bat contact, is generated if echolocation calls are still being detected. This means that periods of prolonged bat activity near a detector is represented as multiple bat contacts, rather than a single one.

- 3.25 Recorded bat calls were analysed using the specialist software AnalookW to identify the species present. Quantitative analysis of bat activity was then undertaken by calculating the average bat contacts per hour on each night monitored, for each species.
- 3.26 Bat activity can show considerable inter-night variability and is dependent on a number of variables, including temperature, wind, and seasonality, amongst others. To account for this variability the median values for the average hourly bat contacts per night are reported, rather than a mean value which would misrepresent the average activity.

Limitations

- 3.27 It should be noted that the findings described herein for remote monitoring surveys are based on the bat activity recorded at the location immediate to each detector, and therefore only describe localised activity at the Site.
- 3.28 In addition, comparisons drawn on the number of detector activations by different species/genera can only give an indication of relative species abundance at the Site, as detectability varies between species.
- 3.29 It is acknowledged that the quantum of bat contacts recorded during a survey may not give a true reflection of the abundance of bats using the Site. For example, a single bat foraging close to a detector may trigger several hundred activations in the course of one night. However, this activity level does provide a proxy for the level of use by bats, and therefore its relative importance.
- 3.30 Activity surveys should typically be spread out to cover spring (April/May), summer (June/July/August) and autumn (September/October) seasons. Due to the time of year ecological survey work commenced, it was not possible to complete a spring transect survey and remote monitoring period. To compensate for this, an additional set of activity surveys were completed in the summer period.
- 3.31 During the final monitoring period, the detector only recorded for three nights instead of five due to batteries running out. Therefore, a smaller dataset was obtained during this period.

4.0 Results

Preliminary Roost Assessment

Trees

- 4.1 A total of 6 trees were included in the assessment. Full results of the survey and a map showing the location of trees with bat roosting potential is given in Appendix A/at the end of this report/below.
- 4.2 One tree was identified to have “high” bat roosting potential, three trees to have “low” potential, and two trees to be “negligible”.
- 4.3 The cavity within tree G20 D with “moderate” potential, and G20 C with “high” potential were inspected with an endoscope.
- 4.4 The results of the Preliminary Roost Assessment are summarised in Table 1 below.

Table 1: Summary of trees with bat roosting potential

Tree Reference	Species	Description	Bat roost potential
G20 A	Crack willow	Mature crack willow with stress fracture causing a split along the middle branch.	Low
G20 B	Crack willow	Less mature crack willow with cracks and splits in lower branch, and some ivy cover.	Low
G20 C	Crack willow	Split in base between main and secondary stem. Cavity at split in base is quite rotten and extends into main tree. Some ivy suitable for roosting. Cavity inspected with endoscope and no bats or evidence of bats was observed, but full extent of cavity could not be reached.	High
G20 D	Crack willow	Large split down trunk of southern elevation, hollow exposed from 2m above ground level all the way down. Inspected with endoscope and no bats or evidence of bats was observed.	Low
T21	Cypress	Too dense and no roost features.	Negligible
T22	Cypress	Too dense and no roost features.	Negligible

Dusk Emergence Survey

- 4.5 No bats were seen emerging from tree G20 C during the single emergence survey.

Activity Surveys

Transect Surveys

- 4.6 The weather conditions experienced during the transect surveys are provided in Table 2 below.

Table 2. Bat transect survey timings and weather conditions

Survey Date	Sunset Time	Start Time	End Time	Temp. (°C)		Cloud Cover (oktas)		Wind (Beaufort Scale)		Precipitation
				Start	End	Start	End	Start	End	
22/07/21	21:02	21:02	22:32	21	18	1	0	0	0	None
16/09/21	19:15	19:14	21:15	19	17	0	0	0	0	None
04/10/21	18:34	18:34	20:34	15	15	8	2	4	4	Light rain at start

4.7 At least eight species of bat were recorded at the site during the transect surveys, comprising common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, noctule *Nyctalus noctula*, serotine *Eptesicus serotinus*, long-eared bat *Plecotus* species, *Myotis* species, and Western barbastelle *Barbastellus barbastellus*. The majority of contacts were recorded travelling towards or foraging along woodland edge in the north of the site, and some foraging activity in the centre of the site around central scattered trees.

4.8 The number of bat contacts recorded for each species are summarised in Table 3 below. The locations of each bat contact and the overall distribution of activity across the Site are illustrated in Figures 2 and 3.

Table 3. Summary of bat contacts recorded during transect surveys

Month	Barbastelle	Common pipistrelle	Myotis species	Nathusius' pipistrelle	Noctule	Nyctalus species	Pipistrellus species	Plecotus spec.	Serotine	Soprano pipistrelle
July	0	25	6	0	1	0	1	0	0	93
Early Sept	2	47	5	1	0	1	1	0	1	13
Late Sept	3	58	3	0	0	0	0	1	0	22
Total	5	130	14	1	1	1	2	1	1	128
Percentage of Total	1.8%	45.8%	4.9%	0.4%	0.4%	0.4%	0.7%	0.4%	0.4%	45.1%



Bat Species	Common pipistrelle	Nectarivore	Brown long-eared	Barbastelle
	Supersonic pipistrelle	Myotis species	Long-eared species	Unidentified Myotis/long-eared
	Nathusius' pipistrelle	Leisler's	Serotine	Lesser horseshoe
	Pipistrellus species	Myotis species	Myotis/Eptesicus species	Greater horseshoe

Figure 2. Locations of bat contacts recorded across all transect surveys

- 4.9 Figure 3 below provides an indicative illustration of 'hotspots' in bat activity recorded across all transect surveys undertaken at the Site. Bat activity was higher in the north and west of the Site, along the woodland edges and around the scattered trees. Only common pipistrelle were frequently observed around the house and its garden.



Figure 3. Indicative 'Utilisation Distribution' (UD) of all bat species/genera at the Site estimated from all transect data combined. The UD illustrates the relative probability of a bat in flight being present at a given point at the Site, with higher/central contours having a greater probability, and lower/peripheral contours having less probability.

Remote monitoring

- 4.10 The weather conditions experienced during the five nights (three for Late September) where data was analysed are provided in Table 3 below.

Table 3. Overnight weather conditions during remote monitoring

Survey Month	Dates Sampled (2021)	Temp. (°C)		Cloud Cover (%)		Wind (km/h)		Precipitation
		Min	Max	Min	Max	Min	Max	
July	22/07	15	17	3	11	19	22	Dry
July	23/07	17	18	51	83	8	34	Moderate rain throughout night
July	24/07	16	17	47	100	6	23	Moderate rain at 21:00, very light rain at 00:00, then dry

July	25/07	16	17	18	87	6	10	Moderate rain at 21:00, very light rain at 00:00, then dry
July	26/07	16	17	73	87	16	21	Very light rain 21:00- 00:00, light rain at 03:00, moderate rain at 6:00.
Early Sept	01/09	13	20	0	61	22	27	Dry
Early Sept	02/09	12	21	0	41	21	25	Dry
Early Sept	03/09	12	21	0	50	22	25	Dry
Early Sept	04/09	13	17	0	59	13	21	Dry
Early Sept	05/09	15	20	6	23	8	12	Dry
Late Sept	21/09	11	14	5	8	1	6	Dry
Late Sept	22/09	11	12	0	13	10	14	Dry
Late Sept	23/09	12	14	6	12	9	12	Dry

4.11 The total number of bat contacts recorded across all monitoring locations and monitoring periods for each bat species/genera are provided in Figure 4 below.

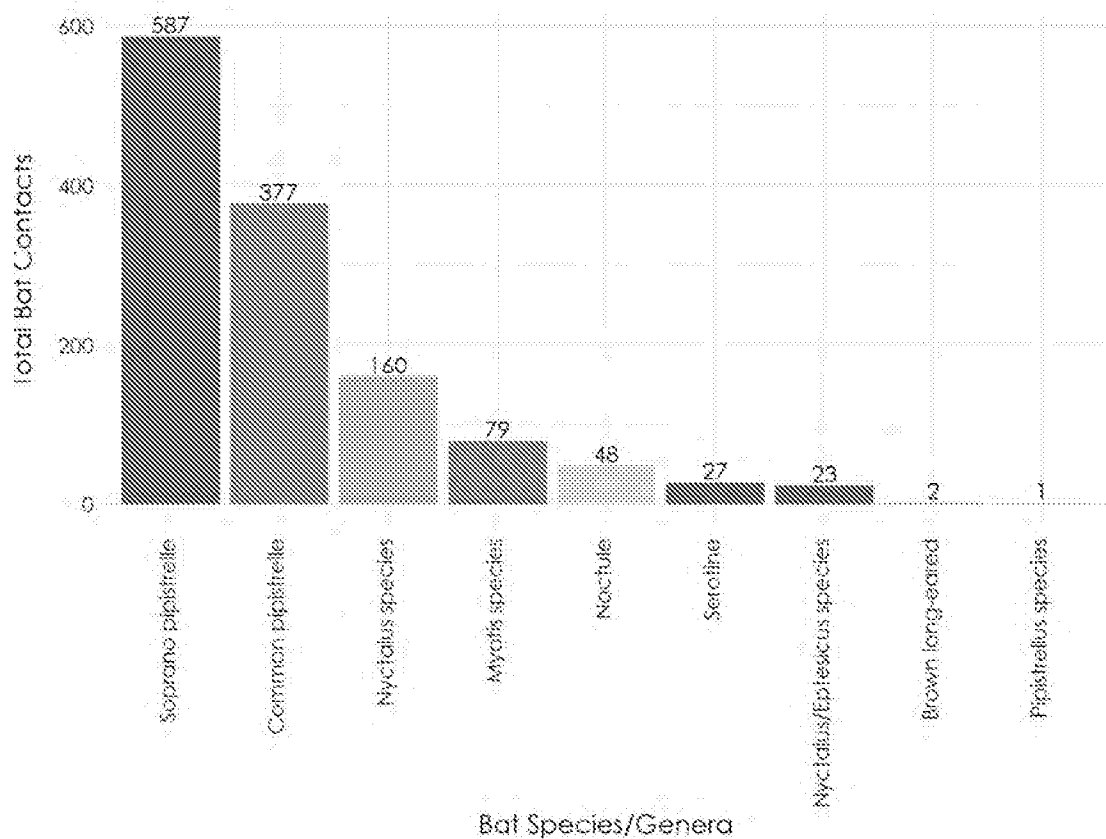


Figure 4. Total bat contacts by species/genera recorded across all remote monitoring periods and monitoring locations

- 4.12 Markedly higher pass numbers of soprano pipistrelle *Pipistrellus pygmaeus* were recorded. Lower levels of common pipistrelle *Pipistrellus pipistrellus* and *Nyctalus* bat species were also recorded alongside very low numbers of *Myotis* bat species, noctule *Nyctalus nyctalus*, serotine *Eptesicus serotinus*, *Nyctalus/Eptesicus* species, brown long-eared *Plecotus auritus*, and *Pipistrellus* bat species.
- 4.13 On 23 July soprano pipistrelle was recorded at 21:08, eight minutes after sunset, indicating that the bat was roosting very nearby. Soprano pipistrelle were also regularly recorded at less than 20 minutes after sunset. This could be indicative of a roost within tree G20 C, but is not conclusive.
- 4.14 The data in Table 4 below shows that activity for all species/genera was markedly higher in July than early or late September, but the decrease was particularly sharp for common and soprano pipistrelle.

Table 4. Total bat contacts for each species/genera recorded during remote monitoring surveys by month

Month	Brown long-eared	Common pipistrelle	Myotis species	Noctule	Nyctalus species	Nyctalus/Eptesicus species	Pipistrellus species	Serotine	Soprano pipistrelle
July	1	325	56	11	100	22	0	23	466
Early Sept	1	25	12	20	57	1	1	3	56
Late Sept	0	27	11	17	3	0	0	1	65
Total	2	377	79	48	160	23	1	27	587

- 4.15 Figure 5 below shows the variance in nightly activity levels for each of these bat species recorded on-site. More detailed data describing Figure 5 are provided in Table 5. The activity data in Figure 5 is presented as boxplots for each bat species, which show the inter-night variability in bat activity across the 13 nights monitored. The median value (middle line of the boxplot) is taken as the typical level of activity for that species on-site at the point monitored. The length of each coloured boxplot is the interquartile range which shows the variance in nightly activity around the median value. The ends of each whisker line define the minimum and maximum nightly activity values recorded at the monitoring location. Outlying values are nightly activity levels that are greatly different when compared to the distribution of the remaining nightly activity levels. Outliers are illustrated as black points away from the boxplot. While important to note, these outliers do not represent the bat activity more commonly found at the Site for the species in question.

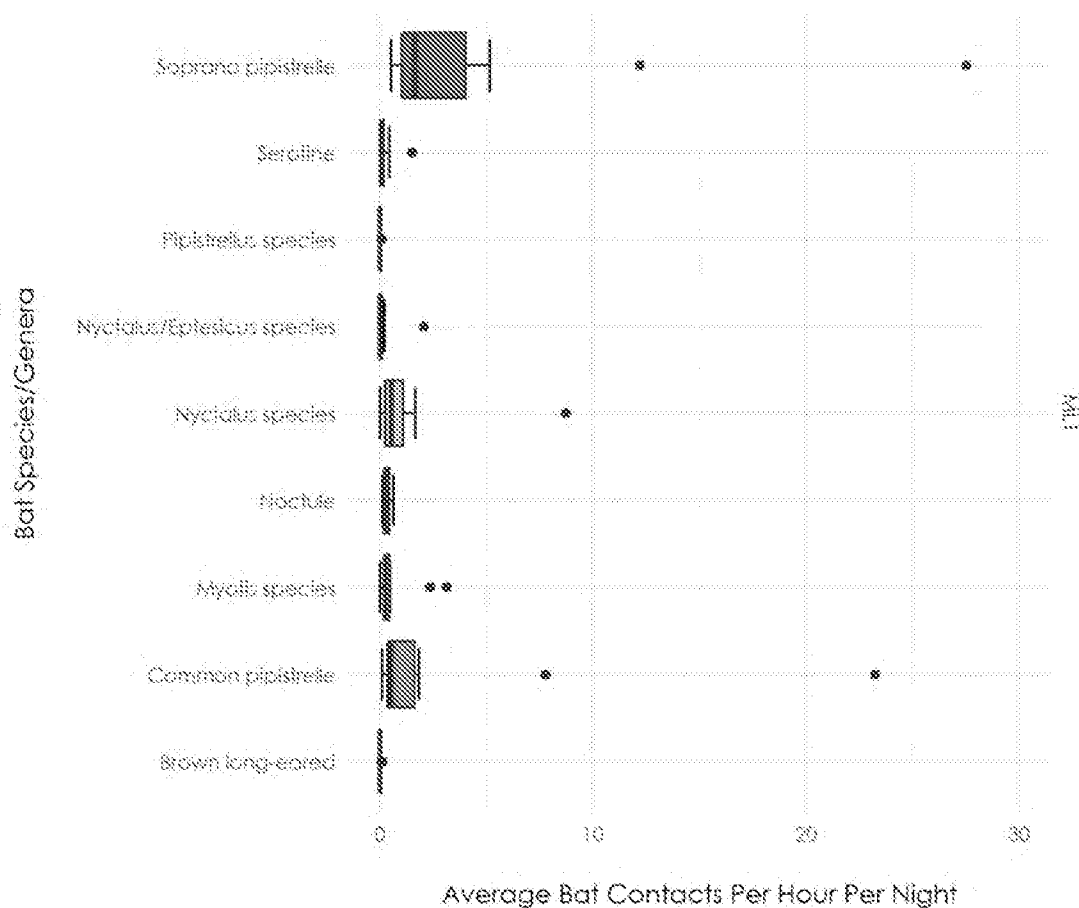


Figure 5. Average bat contacts per hour per night for each bat species/genera recorded across all remote monitoring

Table 5. Average bat contacts per hour per night recorded during remote monitoring surveys

Species	Average bat contacts per hour per night				Total bat contacts	Number of nights monitored
	Minimum	Maximum	Median	IQ range		
Brown long-eared	0.000	0.108	0.000	0.000	2	13
Common pipistrelle	0.078	23.226	0.517	1.275	377	13
Myotis species	0.000	3.118	0.216	0.259	79	13
Noctule	0.106	0.645	0.311	0.261	48	13
Nyctalus species	0.000	8.710	0.517	0.835	160	13
Nyctalus/Eptesicus species	0.000	2.043	0.000	0.086	23	13
Pipistrellus species	0.000	0.086	0.000	0.000	1	13
Serotine	0.000	1.505	0.085	0.172	27	13
Soprano pipistrelle	0.512	27.527	1.625	2.981	587	13

5.0 Summary

- 5.1 The Site supports a good range of bat species, including occasional passes from rarer species such as barbastelle and Myotis bat species. No evidence of roosting has been detected within the on-site trees to be removed.



-  Site boundary
-  Tree with low bat roosting potential
-  Tree with moderate bat roosting potential
-  Tree with high bat roosting potential



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

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

Project	Wilmington, Angmering	Date	Oct 2021	Drawing No.	CSA/5557/104
Drawing Title	Preliminary Ground Level Tree Assessment Results	Scale	Refer to scale	Rev	A
Client	Mr & Mrs Parsons	Drawn	LG	Checked	JR

Appendix H
Dormouse Survey Report

1.0 Introduction

- 1.1 This report sets out the methods and results of dormouse surveys undertaken at Wilmington, Angmering (hereafter referred to as 'the Site') during July and September 2021.

2.0 Legislation

- 2.1 The hazel dormouse *Muscardinus avelanarius* is legally protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and is afforded significant further protection as a European Protected Species under Regulation 43 of the Conservation of Habitats and species Regulations 2017 (as amended).

- 2.2 Collectively and in summary, this legislation inter alia makes it an offence to:

- Intentionally or deliberately kill, injure or capture dormice
- Intentionally, deliberately or recklessly disturb dormice in such a way as to be likely to significantly affect the ability of any significant group of dormice to survive, breed, or rear or nurture their young or the local distribution of or abundance of the species
- Intentionally or recklessly damage, destroy or obstruct access to places used by dormice for shelter or protection (whether occupied or not) or intentionally or recklessly disturb a dormouse whilst it is occupying such a place
- Damage or destroy a breeding site or resting place of a dormouse.
- Possess or transport a dormouse (or any part thereof) unless under licence, and
- Sell or exchange dormice

- 2.3 Development proposals affecting the dormouse require a European Protected Species licence from Natural England.

3.0 Methods

- 3.1 Dormouse nest tubes were installed at the site on 25 June 2021 by Lydia Galbraith and Nancy Inman. The intention of these surveys is to determine the presence or likely absence of dormice within suitable habitat within all areas that will be impacted. A total of 25 dormouse nest tubes were distributed across the Site, along boundary vegetation, including hedgerows and within bordering broadleaved woodland. The location of these nest tubes is shown in the Dormouse Survey Plan (CSA/5557/102).

- 3.2 Nest tubes are made from stiff, double-walled black plastic sheets or similar material, 25cm long with a 5cm x 5cm cross-section. A thin plywood tray is inserted into the tube with a short projection at one end and an end block at the other which seals the tube. The tubes are then tied in a suitable location along a horizontal branch in vegetation.

Dormice are known to readily use these tubes to build their nests (Bright et al., 2006).

- 3.3 Monthly checks were carried out between July and August 2021, with further surveys scheduled in October and November 2021, and May 2022, in accordance with the Dormouse Conservation Handbook 2nd Ed. (Bright et al., 2006) and intended to demonstrate a minimum combined 'search effort' score of 20, as based upon the indices of probability within Table 1 below. A search effort score of 20 is taken to be the minimum to adequately determine presence or likely absence of dormice within a survey area (Bright et al., 2006).

Table 1. Index of probability of finding dormice present in nest tubes in any one month (Bright et al., 2006)

Month	Index of probability
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

- 3.4 Checks were undertaken by Clare Caudwell (Natural England Class Survey Licence WML-CL10a – Registration number: 2016-22425-CLS-CLS) and Tilly Fitzwebster (Natural England Class Survey Licence WML-CL10a-Registration number: 2016-26780-CLS-CLS). Bird droppings and other material such as wood mouse nests were cleaned out if found, to maintain the potential of each tube to be used by dormice.

Limitations

- 3.5 Due to the small size of the Site, it was not possible to install more than 25 nest tubes, but they were installed in all available habitat on-site. Although this is not in line with best practice guidelines, given that survey data is publicly available for land immediately adjacent to the south and south-west, where dormice have been recorded present in 2018, it is considered that this level of survey effort is appropriate.

4.0 Results

- 4.1 Of the surveys completed, no dormice or evidence of dormice have been identified, although evidence of *Apodemus* species (wood mouse *A. sylvaticus* or yellow neck mouse *A. flavicollis*) has been recorded. Full results are provided in Table 2 below.

Table 2. Results of dormouse surveys completed to date at Wilmington, Angmering

Tube No.	Survey date		
	22/07/2021	18/08/2021	21/09/2021
1	Empty	Empty	Empty
2	Great tit- no nest	Empty	Empty
3	Empty	Empty	Apodemus food cache (blackberries)
4	Empty	Empty	Empty
5	Empty	Empty	Empty
6	Empty	Empty	Empty
7	Empty	Empty	Empty
8	Empty	Empty	Empty
9	Empty	Empty	Empty
10	Empty	Empty	Empty
11	Empty	Empty	Empty
12	Empty	Empty	Empty
13	Empty	Empty	Empty
14	Great tit- no nest	Empty	Empty
15	Empty	Empty	Empty
16	Empty	Empty	Empty
17	Empty	Empty	Apodemus nest (few brown leaves)
18	Empty	Empty	Branch broken, tube relocated
19	Empty	Empty	Empty
20	Empty	Empty	Empty
21	Empty	Empty	Empty
22	Empty	Empty	Empty
23	Empty	Empty	Empty
24	Empty	Empty	Empty
25	Empty	Empty	Empty

5.0 Summary

- 5.1 The first three of six scheduled dormouse surveys have been undertaken at the Site to-date with no evidence of dormice observed, although evidence of Apodemus species (wood mouse *A. sylvaticus* or yellow neck mouse *A. flavicollis*) has been recorded.
- 5.2 However, given the suitable habitat present and local records of dormice, including presence on land immediately adjacent to the south and south-west, a precautionary approach is recommended to avoid contravening legislation. Proposed mitigation measures to avoid direct impacts of dormice during construction and operation are detailed within the EclA.



Site boundary



Survey area



Dormouse tube location and number



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

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

Project Wilmington, Angmering

Drawing Title Dormouse Survey Plan

Client Mr & Mrs Parsons

Date Oct 2021

Scale Refer to scale

Drawn LG

Drawing No. CSA/5557/102

Rev A

Checked JR

Appendix I
Reptile Survey Report

1.0 Introduction

- 1.1 This report sets out the methods and results of reptile surveys undertaken at Wilmington, Angmering (hereafter referred to as 'the Site') during July and August 2021.

2.0 Legislation

- 2.1 All native British reptile species are listed within Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are afforded protection against killing and injury under parts of sub-section 9(1) of the Act. In addition, all native British reptile species are S41 priority species in England.

3.0 Methods

- 3.1 A total of 50 reptile refugia, comprising rectangles of roofing felt measuring 1.0 x 0.5m, were installed in across areas of suitable habitats present at the Site on 25 June 2021 by Lydia Galbraith and Nancy Inman (see Reptile Survey Plan CSA/5557/101).
- 3.2 Following an initial 2-week 'bedding-in' period for refugia, surveys were carried out on seven occasions during favourable weather conditions (e.g. intermittent or hazy sunshine, not too windy, sunny spells following wet or cloudy weather) between 12 July and 24 August 2021. Each survey visit comprised a slow walk of the Site to visually and physically check refugia for the presence of reptiles. On each occasion a watching brief was also maintained for any reptiles elsewhere on Site, whilst walking between refugia locations.
- 3.3 The primary aim of the reptile survey was to establish the presence or likely absence of widespread reptile species within the survey area, rather than to estimate abundance or population size. To this end, seven survey checks, an effort generally considered 'reasonable effort' in establishing the presence or likely absence of reptiles at a Site, were carried out.
- 3.4 Given the inherent problems in detecting reptiles, greater survey effort and/or identification or marking of individuals would be required to establish the actual or relative abundance of reptile populations. However, as reptiles are confirmed to be present and mitigation action is required, an approximation of population size is useful in guiding reptile mitigation strategies and has therefore been reported below.
- 3.5 There are several published methods for broadly 'categorising' reptile population sizes in the UK, with the most commonly employed by ecological consultants being HGBI (1998), Froglife (1999) and/or Natural England (2011 [now rescinded]). These three approaches vary in their application, assumptions and limitations, and therefore outputs have been reported for all three methods for comparison below.

Limitations

- 3.6 The three metrics referenced below, HGBI (1998), Froglife (1999) and/or Natural England (2011; now rescinded), rely on varying proxies to calculate/estimate reptile populations. The HGBI categories are based on adult population densities, as opposed to peak counts. Moreover, the categorisation by HGBI is intended to inform capture effort for translocation exercises and, therefore, is not directly applicable to providing a population size class estimate, though it is widely applied within the industry for this purpose.
- 3.7 The Froglife method is based on peak adult counts where surveys have used refugia densities of 10 per hectare. Surveys carried out by CSA used densities of c. 83 per ha of suitable reptile habitat to maximise site coverage and opportunities to confirm the presence or likely absence of reptiles. Therefore, to enable comparison with the Froglife categories, peak counts should be divided by a factor of 8.3 so that they are proportionate to the Froglife survey effort of 10 refugia per ha.
- 3.8 Finally, the Natural England methods provide population class size estimates based upon a refugia density of 100 per ha and, in addition, goes on to consider habitat suitability. As with the Froglife method, survey results have been scaled to be proportionate to a survey effort of 100 refugia per ha. The consideration of peak counts and habitat suitability may be the most ecologically sound, or holistic, of the three indices. However, in light of the guidance having been rescinded, this metric cannot be exclusively relied upon.

4.0 Results

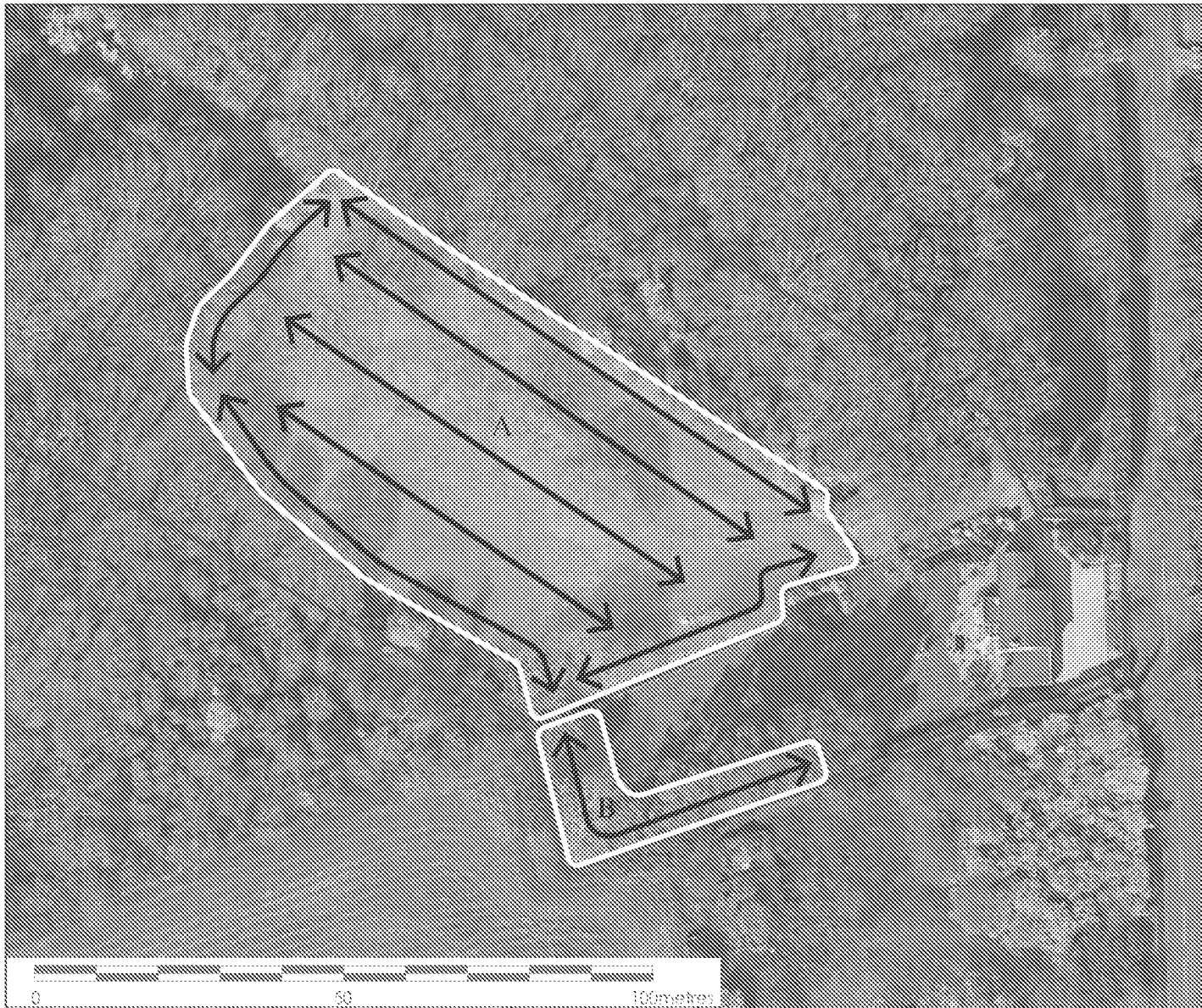
- 4.1 A peak count of 1 adult slow worm and 2 sub-adult grass snakes were recorded, both along the north-eastern boundary of the paddock. No reptiles were recorded within the garden.
- 4.2 It should be noted that although the Site is c. 0.8ha, suitable reptile habitat, comprising grassland, scrub and field margins, account for c. 0.6ha within the Site. Within this area 50 artificial refugia were used to provide a survey refugia density of 83.3 refugia per ha.

Table X. Reptile population size category estimates

Method	Species		
	Slow worm	Common lizard	Grass snake
Peak adult count	1	0	0 (2 sub-adults)
HGBI (1998)	Low	N/A	Low
Froglife (1999)	Low	N/A	Low
Natural England (2011)*	Low	N/A	Low

*Rescinded

- 4.3 It is acknowledged that the above metrics have their limitations. However, in consideration of this information, balanced against an ecological understanding of the Site and survey findings, it is estimated that the Site supports a 'low' population of slow worm and grass snake.
- 4.4 All reptiles were identified in the north-eastern boundary of the poor semi-improved paddock, within the field margin bordering the eastern broadleaved woodland.
- 5.0 Summary
- 5.1 Low numbers of slow worm and grass snake were recorded along the north-eastern boundary of the paddock. As such, low populations of both of these species are considered to be present and therefore measures will be required to minimise impacts on reptiles present, which have been detailed within the EclA.



-  Site boundary
-  Survey area
-  Refugia location



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

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

Project	Wilmington, Angmering	Date	Oct 2021	Drawing No.	CSA/5557/101
Drawing Title	Reptile Survey Plan	Scale	Refer to scale	Rev	A
Client	Mr & Mrs Parsons	Drawn	LG	Checked	JR

Appendix J
GCN Survey Report

1.0 Introduction

- 1.1 This report sets out the methods and results of great crested newt (GCN) *Triturus cristatus* surveys undertaken at Wilmington, Angmering (hereafter referred to as 'the Site') during June 2021.

2.0 Legislation

- 2.1 Great crested newts *Triturus cristatus* are legally protected as European Protected Species (EPS) under Regulation 43 of the Conservation of Habitats and Species Regulations 2017. 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

- 2.2 Great crested newts are also fully protected under the Wildlife & Countryside Act 1981 (as amended), 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

- 2.3 Disturbance of great crested newts is covered by both the 2017 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.

- 2.4 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.

- 2.5 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

- 2.6 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 55(2)(e))

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

- “There is no satisfactory alternative” (Regulation 55(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 55(9)(b))

3.0 Methods

Desktop Study

3.1 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, 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.

Habitat Suitability Index (HSI) Assessment

3.2 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 Nancy Inman (Class Survey Licence CL08 – Registration number: 2019-41981-CLS-CLS) and Lydia Galbraith.

Environmental DNA (eDNA) Sampling

3.3 Environmental DNA (eDNA) sampling was used to determine the presence/ likely absence of great crested newts from ponds 1 and 3. This method has been shown to be a highly effective in detecting the presence of great crested newts (Biggs et al. 2014).

3.4 Water samples were collected from ponds 1 and 3 by Nancy Inman (Class Survey Licence CL08 – Registration number: 2019-41981-CLS-CLS) and Lydia Galbraith, following the recommended procedure. Appropriate biosecurity measures were taken to avoid cross contamination of great crested newt eDNA. Subsequently the samples were sent to ADAS for DNA analysis.

Limitations

- 3.5 Pond 4 was not directly visited due to access permission, but had been assessed in 2018 by CSA Environmental to inform the planning application for land adjacent to the south (Ref: A/122/19/OUT). The report is publicly available on the planning portal, and described the pond as a “small, lined pond with several inlet pipes and no vegetation” with a “major” score for fish in the HSI results table, giving it “below average” suitability for GCN. It was therefore scoped out of further surveys.
- 3.6 The eDNA sampling was conducted outside the optimal period for collecting GCN eDNA, as a precautionary measure given that a pond was present on-site. However, given the low suitability of all ponds in the local area, it is considered very unlikely that GCN would be present. Full presence/absence surveys of ponds within 500m of the land adjacent to the south undertaken in 2018 also did not record any evidence of GCN. This is therefore not considered a significant limitation to the conclusions of this report.

4.0 Results

Desktop Study

- 4.1 The desk based search for ponds and subsequent site visits identified four water bodies occurring within 500m of the Site. These ponds are all identified on the Pond Plan (CSA/5557/103).

Habitat Suitability Index (HSI) Assessment

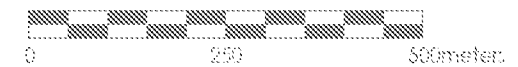
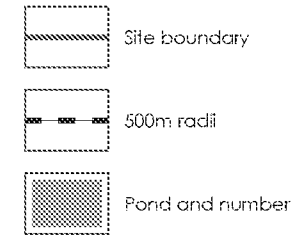
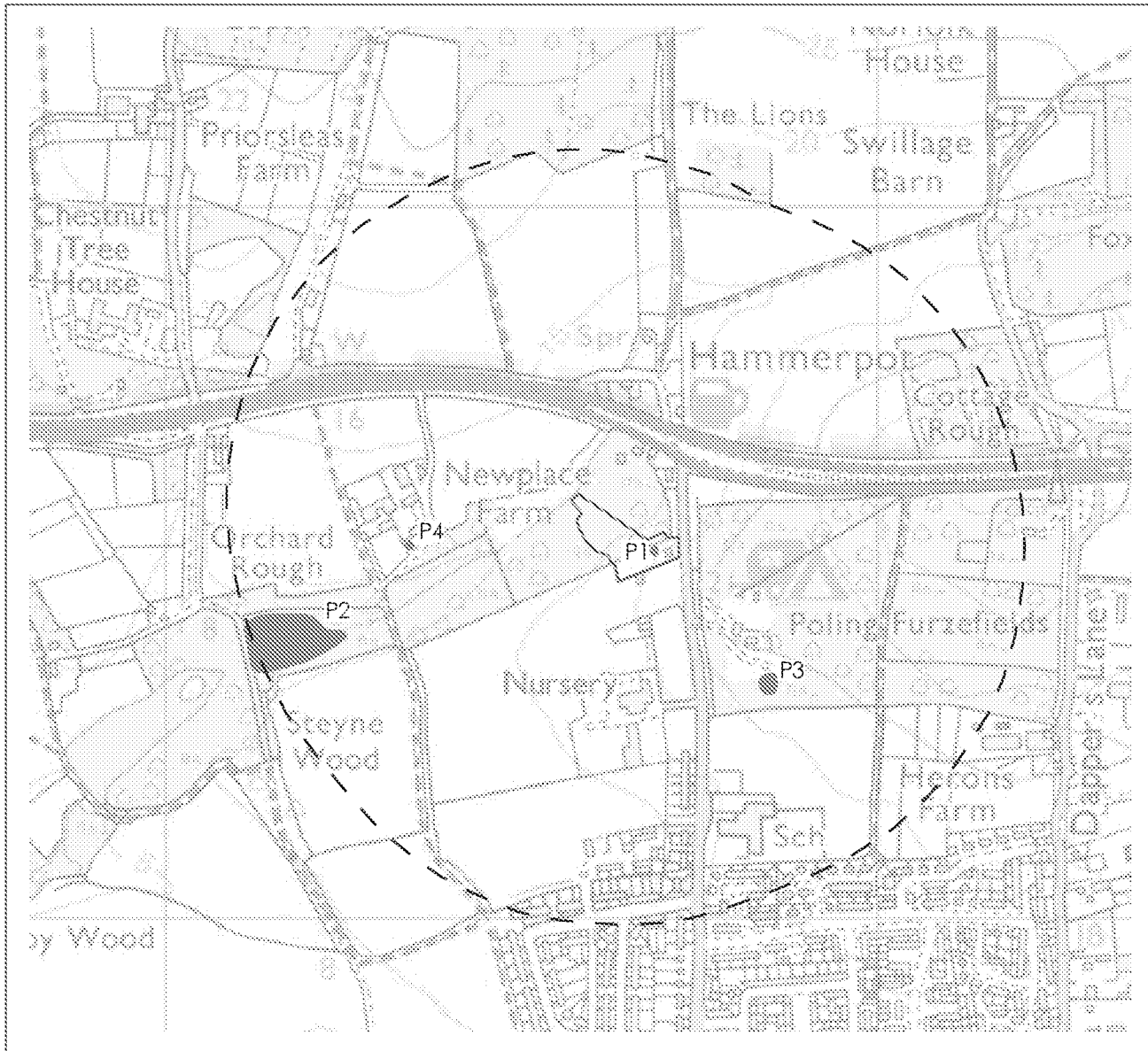
- 4.2 Ponds 1 and 3 were assessed to have habitat of “below average” suitability for GCN, and pond 2 “poor” suitability. These results are shown in Table 1 below.
- 4.3 As detailed above, Pond 4 was not directly surveyed due to lack of access permission. However, it is considered likely that this pond is unlikely to have dramatically changed since previous surveys and as such is likely to remain of “below average” suitability for GCN, as assessed in 2018.

Table 1. Habitat Suitability Index Results for Wilmington, Angmering

Habitat Suitability Factors:		Pond Number and Grid Reference		
		1	2	3
		Garden	Woods	Campsite
Map location	Category	Zone A	Zone A	Zone A
	SI Value	1	1	1
Pond area in m ²	Category	<50m2	>2000m2	200m2
	SI Value	0.05		0.4
Permanence / Desiccation	Category	Never Dries	Never Dries	Dries Annually
	SI Value	0.9	0.9	0.1
Water quality	Category	Moderate	Moderate	Moderate
	SI Value	0.67	0.67	0.67
Percentage perimeter shade to at least 1m from shore	Category	0-60%	0-60%	96-100%
	SI Value	1	1	0.2
Waterfowl impact (excluding moorhen)	Category	Minor	Major	Absent
	SI Value	0.67	0.01	1
Fish presence	Category	Minor	Absent	Absent
	SI Value	0.33	1	1
Number of ponds within 1km not separated by barriers	Category	4	4	4
	SI Value	0.72	0.72	0.72
Terrestrial habitat	Category	Poor	Moderate	Good
	SI Value	0.33	0.67	1
Percentage of pond surface occupied by aquatic vegetation (March – May)	Category	66-80%	6-10%	6-10%
	SI Value	1	0.4	0.4
Product		0.001583881	0.001163549	0.00154368
HSI Score		0.524773927	0.472037028	0.523426526
HSI Suitability		Below Average	Poor	Below Average

Environmental DNA (eDNA) Sampling

- 4.4 The eDNA testing of samples from Ponds 1 and 3 were both negative, with no sedimentation or degradation issues.
- 5.0 Summary
- 5.1 GCN are considered likely absent from the Site and ponds identified within a 500m radius. No recommendations for mitigation are therefore required.



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

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

Project Wilmington, Angmering

Drawing Title Pond Plan

Client Mr & Mrs Parsons

Date August 2021

Scale Refer to scale

Drawn LG

Drawing No. CSA/5557/103

Rev -

Checked JR

