



LINDEN HOMES SOUTH

LAND AT NEWBARN LANE,
NORTH BERSTED,
WEST SUSSEX
(ALTERNATIVE APPLICATION)

Ecological Assessment

ecology solutions for
planners and developers

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CONTENTS

1	INTRODUCTION	1
2	SURVEY METHODOLOGY	3
3	ECOLOGICAL FEATURES	8
4	WILDLIFE USE OF THE APPLICATION SITE	11
5	ECOLOGICAL EVALUATION	18
6	PLANNING POLICY CONTEXT	27
7	SUMMARY AND CONCLUSIONS	31

PLANS

PLAN ECO1	Application Site Location and Ecological Designations
PLAN ECO2	Ecological Features
PLAN ECO3	Protected Species

APPENDICES

APPENDIX 1	Land to the West of New Barn Lane, North Bersted – Site Plan Planning Layout produced by Urban Pulse Design (drawing ref: 19-1013-005-1st).
APPENDIX 2	Land at Bognor Regis – Desktop Survey Report (Sussex Biodiversity Record Centre)
APPENDIX 3	Information obtained from MAGIC
APPENDIX 4	Technical Report – Examination of Environmental DNA in Pond Water for the Detection of Great Crested Newts (SureScreen Scientifics, 13 July 2015)
APPENDIX 5	Technical Report – Examination of Environmental DNA in Pond Water for the Detection of Great Crested Newts (SureScreen Scientifics, 28 July 2015)
APPENDIX 6	Pagham Harbour SPA Natura 2000 Standard Data Form
APPENDIX 7	Pagham Harbour Ramsar site Ramsar Information Sheet
APPENDIX 8	Ecology Enhancement Scheme (Ecology Solutions, 2019)

1. INTRODUCTION

1.1. Background & Proposals

- 1.1.1. Ecology Solutions was commissioned by Landform Estates in June 2015 to undertake an Ecological Assessment of Land at Newbarn Lane, North Bersted, West Sussex (hereafter referred to as the application site). This application for outline planning permission was granted by Arun District Council on 24 February 2016 (planning ref: BE/142/15/OUT).
- 1.1.2. Following this, Ecology Solutions was further commissioned by Linden Homes South to discharge conditions of relevance to ecology matters, as part of a reserved matters application in 2017 (planning ref: BE/113/17/RES).
- 1.1.3. Further to this, Ecology Solutions was again instructed to update the previous assessment work to support a full planning application for the development proposals.
- 1.1.4. The development proposals are for 99 residential properties. An illustrative layout of the proposals has been produced by Urban Pulse Design and is included at Appendix 1.

1.2. Application Site Characteristics

- 1.2.1. The application site is located to the west of the village of North Bersted, near Bognor Regis, in West Sussex (see Plan ECO1). Existing residential development is situated to the east of the application site, with Newbarn Lane forming the eastern boundary. To the north lies a caravan park, with farmland situated to the south and west of the application site.
- 1.2.2. The application site is approximately 3.72 hectares in size and comprises a pasture field, with some scattered scrub and ruderal vegetation in addition to a small strip of amenity grassland. Hedgerows are present along the southern and western boundaries of the field, whilst a treeline is situated beyond the northern boundary.

1.3. Ecological Assessment

- 1.3.1. This document assesses the ecological interest of the application site as a whole. The importance of the habitats present is evaluated with regard to current guidance published by the Chartered Institute of Ecology and Environmental Management (CIEEM)¹.
- 1.3.2. The report also sets out the existing baseline conditions for the application site, setting these in the correct planning policy and legal framework and assessing any potential impacts which could occur from the proposed development. Appropriate

¹ Chartered Institute of Ecology and Environmental Management (2006) *Guidelines for Ecological Impact Assessment in the United Kingdom* (version 7 July 2006). <http://www.cieem.net/ecia>

mitigation where necessary is identified such that it will offset any negative impacts and where possible provide for an ecological enhancement of the application site, in accordance with relevant planning policy.

2. SURVEY METHODOLOGY

- 2.1. The methodology utilised for the survey work can be split into three areas, namely desk study, habitat survey and faunal survey. These are discussed in more detail below.

2.2. Desk Study

- 2.2.1. In order to compile background information on the application site and its immediate surroundings, Ecology Solutions contacted Sussex Biological Record Centre (SxBRC) and the Badger Trust Sussex.
- 2.2.2. Information has been provided by both SxBRC and the Badger Trust Sussex, with the SxBRC desk study report included at Appendix 2 of this assessment. Due to the confidential nature of Badger records, the information returned from the Badger Trust Sussex has not been appended to this report. Reference is made to records returned by the data search where relevant throughout this assessment. Information regarding designated sites is also shown where appropriate on Plan ECO1.
- 2.2.3. Further information on designated sites from a wider search area was also obtained from the online Multi-Agency Geographic Information for the Countryside (MAGIC)² database. This information is reproduced at Appendix 3 and where appropriate on Plan ECO1.
- 2.2.4. The National Biodiversity Network (NBN)³ database was also consulted for any relevant biological records of nature conservation interest within the local area of the application site.

2.3. Habitat Survey Methodology

- 2.3.1. A habitat survey was carried out in June 2015 to ascertain the general ecological value of the land contained within the boundaries of the application site and to identify the main habitats and associated plant species, with notes on fauna utilising the application site.
- 2.3.2. The application site was surveyed based around extended Phase 1 survey methodology⁴, as recommended by Natural England, whereby the habitat types present are identified and mapped, together with an assessment of the species composition of each habitat. This technique provides an inventory of the basic habitat types present and allows identification of areas of greater potential which require further survey. Any such areas identified can then be examined in more detail.

² <http://magic.defra.gov.uk>

³ <http://data.nbn.org.uk/>

⁴ Joint Nature Conservation Committee (2010). *Handbook for Phase 1 Habitat Survey – a Technique for Environmental Audit*. England Field Unit, Nature Conservancy Council, reprinted JNCC, Peterborough.

2.3.3. Using the above method, the application site was classified into areas of similar botanical community types, with a representative species list compiled for each habitat identified.

2.3.4. All of the species that occur in each habitat would not necessarily be detected during survey work carried out at any given time of the year, since different species are apparent at different seasons. However the survey was undertaken during the optimal period for Phase 1 surveys it is considered that an accurate and robust assessment has been made.

2.4. Faunal Survey

2.4.1. General faunal activity observed during the course of the survey was recorded, whether visually or by call. Specific attention was paid to the potential presence of any protected, rare, notable or Priority species. In addition, specific survey work in respect of bats, Badgers *Meles meles*, Great Crested Newts *Triturus cristatus* and reptiles was undertaken.

2.4.2. **Bats.** Specific bat surveys were undertaken in June 2015 to assess the potential for roosting bats within any trees within or adjacent to the application site. The work was undertaken by an experienced bat worker and aimed to establish the likelihood of presence / absence of bats.

2.4.3. Field surveys were undertaken with regard to best practice guidelines issued by Natural England (2004⁵), the Joint Nature Conservation Committee (2004⁶) and the Bat Conservation Trust (2007⁷).

2.4.4. All trees within and immediately adjacent to the application site were assessed for their potential to support roosting bats. For a tree to be classed as having some potential for roosting bats it must usually have one or more of the following characteristics:

- obvious holes, e.g. rot holes and old woodpecker holes;
- dark staining on the tree below a hole;
- tiny scratch marks around a hole from bats' claws;
- cavities, splits and/or loose bark from broken or fallen branches, lightning strikes etc.; and
- very dense covering of mature Ivy *Hedera helix* over trunk.

2.4.5. In order to ascertain the value of the application site by foraging and commuting bats, automated bat detector surveys were undertaken in July 2015.

⁵ Mitchell-Jones, A. J. (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough.

⁶ Mitchell-Jones, A.J. & McLeish, A.P. (Eds.) (2004). *Bat Workers' Manual*. 3rd edition. Joint Nature Conservation Committee, Peterborough.

⁷ Bat Conservation Trust (2007). *Bat Surveys – Good Practice Guidelines*. Bat Conservation Trust, London.

- 2.4.6. SongMeter 2 (SM2) bat detectors were deployed at a number of locations situated adjacent to features of potential value for foraging and commuting bats (specifically the hedgerows and treelines present along the northern, western and southern boundaries of the application site). Detectors were left out for a number of subsequent nights to collect data. This data was subsequently analysed using bat sound analysis software, in order to identify the species present and level of use of the application site by bat species.
- 2.4.7. Surveys were undertaken over two sessions, with a total of six nights of bat data recorded and subsequently analysed.
- 2.4.8. **Badgers.** Surveys were undertaken to search for evidence of Badgers in June 2015, and comprised two main elements. The first of these was a thorough search for evidence of Badger setts. For any setts encountered each sett entrance would be recorded and plotted, even if the entrance appeared disused. The following information was recorded if appropriate:
- i) The number and location of well used or very active entrances; these are clear of any debris or vegetation and are obviously in regular use and may, or may not, have been excavated recently.
 - ii) The number and location of inactive entrances; these are not in regular use and have debris such as leaves and twigs in the entrance or have plants growing in or around the edge of the entrance.
 - iii) The number of disused entrances; these have not been in use for some time, are partly or completely blocked and cannot be used without considerable clearance. If the entrance has been disused for some time all that may be visible is a depression in the ground where the hole used to be and the remains of the spoil heap.
- 2.4.9. Secondly, Badger activity such as well-worn paths and run-throughs, snagged hair, footprints, latrines and foraging signs were also searched for in order to build up a picture of the use of the application site by Badgers.
- 2.4.10. **Great Crested Newts.** Given the presence of a waterbody situated immediately adjacent to the north-western corner of the application site, specific assessment and survey work was undertaken in order to consider the suitability of this waterbody (and habitats present within the application site) to support amphibians, including Great Crested Newts.
- 2.4.11. Initially a Habitat Suitability Index (HSI) assessment⁸ was undertaken in order to identify the likelihood of this feature supporting Great Crested Newts. This assessment is based on

⁸ Amphibian and Reptile Groups of the United Kingdom (May 2010). *Great Crested Newt Habitat Suitability Index*. ARG UK Advice Note 5

a number of factors (such as water quality, shading, presence of fish and terrestrial habitat) to calculate an overall suitability score.

- 2.4.12. In addition, an environmental DNA (eDNA) sample survey was undertaken of this waterbody on 25 June 2015, based on methodology set out by the Freshwater Habitats Trust, which is endorsed by Natural England.
- 2.4.13. The eDNA survey involved collecting 20 samples of 40ml of water at equally spaced locations around the perimeter of the waterbody (where access was available). These 20 samples were then mixed together in a plastic sample bag to form a single amalgamated sample of the water in the pond. The amalgamated sample was mixed thoroughly to ensure any DNA present does not collect at the base of the sample bag.
- 2.4.14. 15ml of water was taken from the amalgamated sample and added to 35ml of ethanol within a sample tube, to preserve any DNA present. The sample tubes were then shaken vigorously to mix the water sample and ethanol thoroughly and prevent degradation of any DNA. This technique was repeated six times, using water from the amalgamated sample, such that six sample tubes are filled.
- 2.4.15. The six sample tubes were then sent to SureScreen Scientifics to be analysed using Polymerase Chain Reaction (PCR) amplification techniques. The analysis involves producing DNA sequences that verify the taxonomic assignation of amplified DNA signals.
- 2.4.16. Each sample is run in 12 replicates. The results are reported as the proportion of these 12 replicate samples that are successfully amplified, indicating whether Great Crested Newt DNA is present (e.g. 1/12, 8/12).
- 2.4.17. Natural England have stated that they will accept eDNA test results as evidence of presence and absence for Great Crested Newts and that the research carried out by the Freshwater Habitats Trust show that eDNA testing can be more effective in confirming the presence or absence of Great Crested Newts than a combination of conventional survey techniques. However, Natural England continue by stating that conventional aquatic surveys will still be required where there is a need to obtain an estimate of how large a population is during any licensing stage⁹.
- 2.4.18. In addition, an eft survey was undertaken on 23 July 2015 in order to search for any Great Crested Newt larve / young (efts). The survey entailed a detailed search of the waterbody using nets.

⁹<http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/ourwork/regulation/wildlife/gcn-eDNA-feature.aspx>

- 2.4.19. An assessment was also undertaken of other waterbodies situated in the local area of the application site.
- 2.4.20. **Reptiles.** Specific survey work to identify the presence or absence of reptiles in the application site was undertaken in July 2015.
- 2.4.21. Following an initial assessment to identify areas of suitable reptile habitat within the application site, refugia surveys were undertaken. A total of 42 artificial refugia, also known as 'tins' (0.5 x 0.5m squares of heavy roofing felt which are often used as refuges by reptiles) were distributed over the suitable reptile habitat within the application site.
- 2.4.22. These tins were left in place for two weeks to 'bed in' and subsequently surveyed for reptiles beneath or upon the tins during suitable weather conditions.
- 2.4.23. Suitable weather conditions to carry out surveys are when the air temperature is between 9 and 18°C. Heavy rain and windy conditions should be avoided.
- 2.4.24. The tins provide shelter and heat up quicker than the surroundings in the morning, and can remain warmer than the surroundings in the late afternoon. Being ectothermic (cold blooded), reptiles use them to bask and raise their body temperature which allows them to forage earlier and later in the day.
- 2.4.25. In addition, an assessment of the potential of the application site to support other protected or notable species was undertaken as part of the habitat survey.

3. ECOLOGICAL FEATURES

- 3.1. The application site was subject to an ecological survey in June 2015. The vegetation present enabled the habitat types to be satisfactorily identified and an accurate assessment of the ecological interest of the habitats to be undertaken.
- 3.2. The following main habitat / vegetation types were identified within the application site:
- Semi-improved Grassland;
 - Ruderal Vegetation;
 - Hedgerows;
 - Amenity Grassland;
 - Trees and Scrub; and
 - Treeline (off-site).
- 3.3. The locations of these habitats are shown on Plan ECO2.
- 3.4. Each habitat present is described below with an account of their representative plant species.
- 3.5. **Semi-improved Grassland**

- 3.5.1. The majority of the application site comprises a pasture field which is currently used for growing hay. At the time of survey the field supported a long sward (approximately 0.5m in height).
- 3.5.2. The species composition of the grassland sward varies across the field, with more ruderal species recorded along the boundaries of the field, areas dominated by Perennial Rye-grass *Lolium perenne* suggesting a more improved character, and other patches of more semi-improved nature.
- 3.5.3. The sward supports a range of grasses, including Yorkshire-fog *Holcus lanatus* (dominant in large areas), Cock's-foot *Dactylis glomerata*, Meadowgrasses *Poa* spp., Timothy *Phleum pratense*, Meadow Barley *Hordeum secalinum*, Black-grass *Alopecurus myosuroides* and Downy Oat-grass *Helictotrichon pubescens*. Herb species present within the sward include White Clover *Trifolium repens*, Yarrow *Achillea millefolium*, Common Nettle *Urtica dioica*, Wavy Bittercress *Cardamine flexuosa*, Redshank *Persicaria maculosa*, Dandelion *Taraxacum officinale* agg., Scented Mayweed *Matricaria recutita*, Broadleaved Dock *Rumex obtusifolius*, Creeping Buttercup *Ranunculus repens*, Creeping Thistle *Cirsium arvense*, Lesser Stitchwort *Stellaria graminea*, Cut-leaved Crane's-bill, Hogweed *Heracleum sphondylium*, Common Vetch *Vicia sativa*, Spear Thistle *Cirsium vulgare* and Common Bird's-foot Trefoil *Lotus corniculatus*.

3.6. Ruderal Vegetation

- 3.6.1. Areas of ruderal vegetation are present along the margins of the field and also in a number of locations in the west of the application site. These areas are typically dominated by Common Nettle, with other species present including Hogweed, Bittersweet *Solanum dulcamara* and Cleavers *Galium aparine*.

3.7. Hedgerows

- 3.7.1. There are two hedgerows present along the boundaries of the application site. These are shown on Plan ECO2 and are described below.
- 3.7.2. H1 is a mature hedgerow with trees situated along the southern boundary of the application site. The hedgerow is approximately 2 to 4 metres in height, and is associated with a dry ditch. The dominant species in this hedgerow is Field Maple *Acer campestre*, with other species present including Hazel *Corylus avellana*, Hawthorn *Crataegus monogyna*, Dog Rose *Rosa canina*, Sallow *Salix cinerea*, Elder *Sambucus nigra* and Bramble *Rubus fruticosus* agg.. This hedgerow supports a number of Oak *Quercus robur* and Ash *Fraxinus excelsior* standards.
- 3.7.3. H2 is a much gappier and sparser hedgerow situated along the western boundary of the application site. This hedgerow is approximately 2-4 metres in height. The hedgerow is dominated by Sallow, with other species present including Hazel, Hawthorn, Butterfly-bush *Buddleja davidii*, Elder, Ash and Bramble.

3.8. Amenity Grassland

- 3.8.1. A small strip of amenity grassland is present along the eastern boundary of the application site. This is regularly mown and comprises a number of common and widespread species including Cocksfoot, Yorkshire Fog, Perennial Rye-grass *Lolium perenne*, Annual Meadow Grass *Poa annua*, Daisy *Bellis perennis*, Dandelion, Creeping Buttercup, Meadow Buttercup *Ranunculus acris*, Black Medic *Medicago lupulina* and Daffodil *Narcissus pseudonarcissus*.

3.9. Trees and Scrub

- 3.9.1. Areas of dense scrub are present in a few patches within the application site, notably in the south and in the north-eastern corner. Species present include Elder, Hawthorn and Blackthorn *Prunus spinosa*.
- 3.9.2. A number of immature scattered Sycamore *Acer pseudoplatanus* trees are present within the eastern area of the application site, on areas of amenity grassland subject to regular mowing.

3.10. **Treeline (off-site)**

- 3.10.1. The northern boundary of the application site comprises a post and wire fence, beyond which lies a treeline associated with a ditch. This feature predominantly comprises Crack Willow *Salix fragilis*, in addition to Oak and Ash trees, and scrub in the form of Hazel, Elder, Sallow and Bramble. The ground layer is dominated by dense Common Nettle and Cleavers.

3.11. **Background Records**

- 3.11.1. The desk study undertaken with SxBRC identified a number of records of notable plant species from within the surrounding area. The closest record was of Annual Beard-grass *Polypogon monspeliensis* which was returned from a location approximately 0.4km to the south-east of the application site at its closest point in 2004. The next closest records were of Chamomile *Chamaemelum nobile* and Musk Stork's-bill *Erodium moschatum*, which were returned from a location approximately 1.3km to the south of the application site at its closest point in 2009 and 1999 respectively.
- 3.11.2. None of these species were recorded within the application site during the Phase 1 survey and it is considered that they are not present within the application site.

4. WILDLIFE USE OF THE APPLICATION SITE

4.1. During the survey general observations were made of any faunal use of the application site with specific attention paid to the potential presence of protected or notable species. Specific surveys were undertaken with regard to bats, Badgers, Great Crested Newts and reptiles.

4.2. Bats

4.2.1. There are no existing buildings present within the application site, and none of the trees situated within or immediately adjacent to the application site support features of potential value for roosting bats, such as flaking bark, holes, cracks or splits. As such it is considered that the application site does not support roosting bats.

4.2.2. The habitats present within the application site offer some potential foraging and commuting opportunities for bat species, with the hedgerows and treeline providing linear features. As such specific bat survey work was undertaken in June 2015 to ascertain the value of these features for foraging and commuting bats.

4.2.3. Automated bat detectors were deployed for two sessions, each of which lasted three subsequent nights (i.e. the survey work covered six nights in total). The locations where detectors were deployed are shown on Plan ECO3.

Session 1

4.2.4. Bat detectors were deployed at locations A1 and A2 (as shown on Plan ECO3) on 17 July 2015, and remained in place in these locations over three consecutive nights (17 -19 July inclusive). The findings of the survey are summarised in Table 1 below.

Date	Location	Bat species	Total number of registrations
17.07.15	A1	Common Pipistrelle	80
		Soprano Pipistrelle	14
		Serotine	4
	A2	Common Pipistrelle	2
18.07.15	A1	Common Pipistrelle	149
		Soprano Pipistrelle	73
		Serotine	4
		<i>Myotis</i> species	1
	A2	Common Pipistrelle	7
		Soprano Pipistrelle	1
19.07.15	A1	Common Pipistrelle	192
		Soprano Pipistrelle	113
		Serotine	25
		Brown Long-eared	2
	A2	Common Pipistrelle	16
		Soprano Pipistrelle	3
		Brown Long-eared	1

Table 1: Automated Bat Survey Results (Session 1)

- 4.2.5. The automated detector surveys identified that the application site is utilised by a number of bat species. The vast majority of registrations were of Common Pipistrelle *Pipistrellus pipistrellus* and Soprano Pipistrelle *Pipistrellus pygmaeus*, with occasional registrations of Serotine *Eptesicus serotinus* and Brown Long-eared bat *Plectous auritus*, and a single registration of a *Myotis* species.
- 4.2.6. The detector deployed in location A1 (along the southern boundary of the application site) recorded much greater activity than the detector deployed at location A2 (in the north-western corner of the application site). Activity was recorded throughout the night.

Session 2

- 4.2.7. Bat detectors were deployed at locations A3 and A4 (as shown on Plan ECO3) on 24 July 2015, and again remained in place in these locations over three consecutive nights (24 – 26 July inclusive). The findings of the survey are summarised in Table 2 below.

Date	Location	Bat species	Total number of registrations
24.07.15	A3	Common Pipistrelle	3
	A4	Common Pipistrelle	497
		Soprano Pipistrelle	7
25.07.15	A3	Common Pipistrelle	588
		Soprano Pipistrelle	176
		Nathusius Pipistrelle	4
		Serotine	29
		<i>Myotis</i> species	2
	A4	Common Pipistrelle	118
		Soprano Pipistrelle	18
		Serotine	13
		Brown Long-eared	7
26.07.15	A3	<i>Myotis</i> species	4
		Common Pipistrelle	345
		Soprano Pipistrelle	222
		Brown Long-eared	3
		Serotine	5
	A4	<i>Myotis</i> species	2
		Common Pipistrelle	512
		Soprano Pipistrelle	223
		Serotine	7

Table 2: Automated Bat Survey Results (Session 2)

- 4.2.8. The automated detectors again recorded that the vast majority of registrations were of Common Pipistrelle and Soprano Pipistrelle, with occasional registrations of Serotine, Brown Long-eared bats, *Myotis* species and four registrations (during one survey night) of Nathusius' Pipistrelle *Pipistrellus nathusii*.
- 4.2.9. The levels of bat activity recorded in session 2 was higher than session 1, and identified that both locations A3 and A4 are

utilised by foraging bats. Activity was again recorded throughout the night.

- 4.2.10. **Background records.** The desk study, which incorporates data from the Sussex Bat Group, identified a number of records of bat within the vicinity of the application site. The nearest record was of a Brown Long-eared bat located approximately 0.4km to the south-east of the application site at its closest point in 2010. The desk study also identified records of Common Pipistrelle, Soprano Pipistrelle, Daubenton's *Myotis daubentonii*, Whiskered *Myotis mystacinus*, Serotine, *Plecotus* sp. and *Nyctalus* sp. from the surrounding area.

4.3. Badgers

- 4.3.1. No evidence of Badgers, such as the presence of any setts, latrines, foraging signs, well used pathways, hairs or prints, was recorded within the application site during the survey undertaken in June 2015, or during any of the subsequent site visits.
- 4.3.2. Whilst the application site provides some potential foraging and sett building opportunities for Badgers, given the absence of any evidence of activity it is considered that the application site is not utilised by Badgers, and therefore no further consideration has been given to this species within this Ecological Assessment.
- 4.3.3. **Background records.** The desk study did not return any records of Badger from the application site or surrounding area.

4.4. Dormice

- 4.4.1. The hedgerows present along the boundaries of the application site support a range of native species, including species of value to Hazel Dormice *Muscardinus avellanarius*.
- 4.4.2. However given the paucity of woodland and scrub habitats within the local area (comprising predominantly arable land and existing development), limited connectivity via hedgerows and that the desk study exercise (undertaken with SxBRC) did not return any records of Hazel Dormice from the application site or local area, it is considered highly unlikely that this species would be present, and as such this species no further consideration has been given to this species in this Ecological Assessment.
- 4.4.3. Notwithstanding the above, in any event it is noted that the majority of the hedgerows and treelines situated along the boundaries of the application site are to fully be retained and enhanced under the development proposals. New areas of native tree and scrub planting will be provided as part of the development, which will more than offset any minor losses to these habitats.

- 4.4.4. **Background records.** The desk study exercise did not identify any records of Dormice from the application site or local area.

4.5. Amphibians

- 4.5.1. There are no waterbodies situated within the application site boundary; however an area of standing water was identified adjacent to the north-western boundary (labelled D1 on Plan ECO2). In order to identify whether this feature supports breeding amphibians, detailed survey and assessment work was undertaken by Ecology Solutions in 2015, in line with the methodology set out in Section 2 above.

- 4.5.2. The HSI assessment of D1 identified the waterbody to have a score of 0.59, which corresponds to 'Below Average'. The assessment is shown below in Table 3.

Factor	Score
SI1 Location	1.00
SI2 Pond Area	0.80
SI3 Pond Drying	0.50
SI4 Water Quality	0.33
SI5 Shade	0.40
SI6 Fowl	1.00
SI7 Fish	0.33
SI8 Ponds	0.60
SI9 Terrestrial Habitat	0.67
SI10 Macrophytes	0.70
Overall Score	0.59

Table 3: HSI Assessment score of off-site waterbody D1

- 4.5.3. The waterbody is subject to significant levels of overshadowing from the adjacent treeline and hedgerow, and supported a low level of water when surveyed in early June, 2015. By late-July however, this waterbody was observed to support very little water indeed, with a very small area of remaining water. As such it is considered likely that the pond dries on an annual basis.
- 4.5.4. With the exception of waterbody D1, it was noted that the application site is separated from other waterbodies in the local area, with the ditches along the remainder of the northern, western and southern boundaries of the application site recorded to be dry during the survey periods. Other waterbodies in the local area are significantly separated from the application site (and ditch D1) by regularly managed arable fields (to the south and west) and significant areas of existing development (to the north and east).
- 4.5.5. An eDNA sample survey was undertaken on 25 June 2015, following the methodology outlined in Section 2 above. The findings of the assessment are included in the report produced by SureScreen Scientifics at Appendix 4.

- 4.5.6. The analysis of the eDNA sample found that whilst eleven of the twelve replicates tested as negative (i.e. no evidence of GCN DNA), one of the twelve replicates tested positive. Where such a low quantity of GCN eDNA is identified (1 out of 12 replicates), the findings could represent a 'false positive' arising as a result of contamination; and indeed this is recognised in the SureScreen report (on Page 3).
- 4.5.7. Such 'contamination' could occur for example through the introduction of DNA on clothing at the time of sampling, disturbance of sediment in the waterbody that could liberate historical DNA for GCN (i.e. the species being no longer present), or contamination of the sample at the laboratory.
- 4.5.8. Given the lack of clarity regarding the findings of the eDNA assessment, a further water sample was taken from the waterbody and submitted to the laboratory for analysis. The methodology followed (both in terms of obtaining the water sample and processing at the laboratory) was identical to that previously adopted. The second report produced by SureScreen Scientifics is included at Appendix 5.
- 4.5.9. The analysis of the second eDNA sample found that all twelve of the replicates tested as negative – i.e. no evidence of GCN DNA was recorded. As such (and given the findings of the other assessment work undertaken) it is considered most likely that the first eDNA analysis represented a 'false positive'.
- 4.5.10. Further survey work in the form of an eft search was also undertaken on 23 July 2015 in order to search for any Great Crested Newt larvae. No efts or adult newts were recorded during this survey, and it was noted that the ditch supported very little water at the time of survey (approximately 1 square metre of water).
- 4.5.11. Checks of refugia within and adjacent to the application site (including the 42 artificial refugia used as part of the reptile survey, which were checked on seven occasions) did not identify any Great Crested Newts.
- 4.5.12. It is also noted that specific survey work in respect of Great Crested Newts was undertaken in support of a strategic parcel of land in close proximity to the application site for Berkeley Homes (Southern) Limited (planning reference BE/122/10). No Great Crested Newts were recorded during this specific survey work.
- 4.5.13. **Background records.** The desk study did not identify any records of Great Crested Newts from the application site or local area. The only amphibian record returned was of Common Toad *Bufo bufo* which was from allocation approximately 1.7km to the south-east of the application site at its closest point in 2006.

4.6. Reptiles

- 4.6.1. Whilst the agricultural management of the application site ensures that a tussocky, rank sward is absent from the field, areas of longer vegetation present along the boundaries of the application site support potential habitat for reptiles. As such reptile surveys were undertaken in 2015 in order to ascertain the presence or absence of this group.
- 4.6.2. A total of seven survey visits were undertaken in line with the methodology set out in Section 2 above, with all visits undertaken during suitable weather conditions. Surveyors checked both the 42 artificial refugia deployed as part of the survey. The results of the survey are presented in Table 4 below.

Survey Visit	Date	Weather Conditions	Reptiles Recorded
1	17.07.15	18C, 50% cloud cover	None
2	20.07.15	18C, 100% cloud cover	None
3	22.07.15	17C, 50% cloud cover	None
4	24.07.15	13C, 100% cloud cover	None
5	27.07.15	15C, 60% cloud cover	None
6	29.07.15	15C, 30% cloud cover	None
7	31.07.15	14C, 0% cloud cover	None

Table 4: Reptile Survey Results (Ecology Solutions, 2015)

- 4.6.3. No reptiles were recorded during the survey work undertaken in 2015. It is therefore considered that the application site does not support reptiles and no further consideration has been given to this group in this Ecological Assessment.
- 4.6.4. **Background records.** The desk study identified a number of records of reptile species from the local area, including Slow-worm *Anguis fragilis*, Grass Snake *Natrix natrix*, Common Lizard *Zootoca vivipara* and Adder *Vipera berus*. The closest records were of Adder and Common Lizard, both of which were returned from a location approximately 0.6km to the south-east of the application site in 2011.

4.7. Birds

- 4.7.1. The habitats present within the application site provide some suitable foraging and nesting habitats for common bird species.
- 4.7.2. Bird species recorded within and adjacent to the application site during the habitat survey were House Sparrow *Passer domesticus*, Carrion Crow *Corvus corone*, Chiffchaff *Phylloscopus collybita*, Robin *Erithacus rubecula*, Wren *Troglodytes troglodytes*, Woodpigeon *Columba palumbus*, Great Tit *Parus major* and Yellowhammer *Emberiza citrinella* (in the field to the west).
- 4.7.3. **Background records.** Information received from the NBRC, which incorporates data collected by the Sussex Ornithological

Society, identified a number of records of notable bird species from the surrounding area. This included records of a number of species listed on Schedule 1 of the Wildlife and Countryside Act, on the Red List of Species of Conservation Concern and UK Priority Species. The closest record was of Barn Owl *Tyto alba* which was returned from within a 4 digit grid reference (SU9101) which included the application site.

4.7.4. Other notable species returned were from locations within grid square SU9201 which is located approximately 0.4km to the east of the application site at its closest point. Species returned from this location include Mediterranean Gull *Larus melanocephalus* (2005), Curlew *Numenius arquata* (2005), Kingfisher *Alcedo atthis* (2005), Red Kite *Milvus milvus* (2012), Grey Partridge *Perdix perdix* (2005), Cetti's Warbler *Cettia cetti* (2012), Corn Bunting *Emberiza citronella* (2005), and Firecrest *Regulus ignicapilla* (2005).

4.7.5. None of these species were recorded during the surveys undertaken and it is considered that these species would not be reliant on the application site for either nesting or foraging.

4.8. Invertebrates

4.8.1. The habitats within the application site are considered likely to support a range of common invertebrate species, although there is nothing to suggest that the application site supports any protected or notable species.

4.8.2. **Background records.** Information returned as part of the desk study exercise identified a limited number of records of protected or notable invertebrate species. The closest record was of Wall Butterfly *Lasiommata megera* which was returned from a 4 digit grid reference located approximately 1km to the north-east of the application site at its closest point in 1998. The only other record of invertebrate species returned was of Stag Beetle *Lucanus cervus* returned from a location approximately 2km to the south-west of the application site at its closest point in 2010.

5. ECOLOGICAL EVALUATION

5.1. The Principles of Site Evaluation

- 5.1.1. The latest guidelines for ecological evaluation produced by CIEEM propose an approach that involves professional judgement, but makes use of available guidance and information, such as the distribution and status of the species or features within the locality of the project.
- 5.1.2. The methods and standards for site evaluation within the British Isles have remained those defined by Ratcliffe¹⁰. These are broadly used across the United Kingdom to rank sites, so priorities for nature conservation can be attained. For example, current Site of Special Scientific Interest (SSSI) designation maintains a system of data analysis that is roughly tested against Ratcliffe's criteria.
- 5.1.3. In general terms, these criteria are size, diversity, naturalness, rarity and fragility, while additional secondary criteria of typicalness, potential value, intrinsic appeal, recorded history and the position within the ecological / geographical units are also incorporated into the ranking procedure.
- 5.1.4. Any assessment should not judge sites in isolation from others, since several habitats may combine to make it worthy of importance to nature conservation.
- 5.1.5. Further, relying on the national criteria would undoubtedly distort the local variation in assessment and therefore additional factors need to be taken into account, e.g. a woodland type with comparatively poor species diversity, common in the south of England may be of importance at its northern limits, say in the border country.
- 5.1.6. In addition, habitats and species of local importance are often highlighted in a Local Biodiversity Action Plan (BAP). The Sussex BAP highlights a number of priority habitats and species. These are referred to below where relevant.
- 5.1.7. Levels of importance can be determined within a defined geographical context from the immediate site or locality through to the International level.
- 5.1.8. The legislative and planning policy context are also important considerations and have been given due regard throughout this assessment.

5.2. Habitat Evaluation

Designated sites

¹⁰ Ratcliffe, D A (1977). *A Nature Conservation Review: the Selection of sites of Biological National Importance to Nature Conservation in Britain*. Two Volumes. Cambridge University Press, Cambridge.

- 5.2.1. **Statutory sites.** There are no statutory designated sites of nature conservation interest within or immediately adjacent to the application site boundary. The nearest statutory designated sites are The Brooks Local Nature Reserve (LNR), situated approximately 1.3km to the east of the application site at its closest point, and Bognor Reef Site of Special Scientific Interest (SSSI), situated approximately 2.5km to the south of the application site boundary at its closest point (see Plan ECO1).
- 5.2.2. The Brooks LNR comprises meadows, wet woodland and wetland habitats situated to the east of North Bersted, whilst Bognor Reef SSSI is designated on account of the vegetated shingle and sand dune habitats that the site supports (in addition to the geological value of the site).
- 5.2.3. The application site is separated from both of these statutory designated sites by significant areas of existing development at North Bersted and Bognor Regis. As such, and given the size of the proposed development, it is considered that the development proposals would not result in adverse effects to these designated sites.
- 5.2.4. The nearest European / internationally designated site of nature conservation interest is Pagham Harbour Special Protection Area (SPA) / Ramsar site, which is situated approximately 4.4km to the south-west of the application site at its closest point (see Plan ECO1).
- 5.2.5. Pagham Harbour SPA qualifies under Article 4.1 of the Birds Directive on account of it supporting breeding populations of Little Tern *Sterna albifrons*, Common Tern *Sterna hirundo*, together with over-wintering Ruff *Philomachus pugnax*. The SPA further qualifies under Article 4.2 of the Birds Directive on account of it supporting important populations of over-wintering Dark-bellied Brent Goose *Branta bernicla bernicla*. The Natura 2000 Standard Data Form for the SPA is included at Appendix 6.
- 5.2.6. Pagham Harbour Ramsar site qualifies under Ramsar criterion 6 on account of it supporting important populations of wintering Dark-bellied Brent Goose. Black-tailed godwit *Limosa limosa islandica*, are cited on the Ramsar Information Sheet as being identified subsequent to designation for possible future consideration under Criterion 6. The Ramsar Information Sheet for the Ramsar site is included at Appendix 7.
- 5.2.7. The application site is separated from the SPA / Ramsar site by extensive areas of intensively managed agricultural land, in addition to existing development. Given the limited scale of the development proposals, it is considered that there would be no significant effects on these designated sites from lighting, air quality or noise impacts during the construction and operational phases of the proposed development.

- 5.2.8. Whilst there are a number of ditches along the boundaries, there is no direct hydrological link between the application site and the SPA/Ramsar site. Other watercourses in the vicinity of the application site flow towards the Aldingbourne Rife, which flows to the south and east (i.e. away from the SPA / Ramsar site).
- 5.2.9. Notwithstanding the above, the surface water drainage strategy for the scheme will utilise a SuDS based system, including appropriately designed attenuation features. As such there will be no direct discharge of surface water into the local drainage network and natural infiltration levels would not be above the current 'green field' run off rate.
- 5.2.10. Regarding the treatment of foul and storm water, it is understood that this would either be discharged to Ford Aerodrome Waste Water Treatment Works (WwTW), situated to the east (and therefore not connected to the SPA / Ramsar site), or Pagham Water WwTW. Whilst clarity is being sought from Southern Water, it is considered likely that Pagham WwTW has sufficient capacity and that ('clean' water) discharge rates from the WwTW would not be adversely affected by the development proposals.
- 5.2.11. Consideration has also been given to the extent to which the land associated with the development proposals could be classed as 'supporting habitat' to the SPA / Ramsar site (i.e. land which falls outside of the designation boundary but which plays an important role in the maintenance of populations of qualifying species).
- 5.2.12. Of the listed qualifying bird interest features for the SPA / Ramsar site, the only species which requires more detailed consideration is Dark-bellied Brent Goose. This species is known to utilise arable land in the local area of the designated site for foraging. Other qualifying bird interest features (Tern species and Ruff) would not be reliant upon the land in question given the habitats present and the specific requirements of these species.
- 5.2.13. The application site is separated from the SPA / Ramsar site by extensive areas of open arable land, which provide potential opportunities for foraging Dark-bellied Brent Geese. In contrast, the application site itself comprises an enclosed grassland field, with boundary features including a treeline and hedgerows, and is bounded to the north and east by existing residential development. Noting the preference for this species for large areas of open habitat, and that the desk study only returned a single record of Dark-bellied Brent Geese from the entire search area, it is considered that the application site does not include any land which could be classed as important supporting habitat for the SPA / Ramsar site.
- 5.2.14. It is considered that there is potential for new residents associated with the proposed development to access areas of the SPA / Ramsar site (e.g. for recreational purposes), thereby

increasing visitor pressure on the site and potentially disturbing birds, including those listed as designating features of the site.

- 5.2.15. Specific consideration of to this effect within a standalone Habitat Regulations Assessment (produced by Ecology Solutions, December 2018) submitted as part of this application.
- 5.2.16. The Habitat Regulations Assessment concludes that the project alone or in combination would not contribute to an adverse impact on the integrity of the SPA / Ramsar site (in view of the SPA conservation objectives), or adverse impacts on the SSSI, the Development Proposals would by definition be acceptable, subject to securing the mitigation and avoidance measures proposed. In those terms the competent authority could legally and safely grant consent for the proposed plan/project.
- 5.2.17. **Non-statutory sites / Ancient Woodland.** The desk study did not identify any non-statutory designated sites or parcels of ancient woodland from the vicinity of the application site. As such no adverse impacts will arise as a result of the proposed development and no mitigation is necessary.

Habitats within the Application Site

- 5.2.18. The habitats present within the application site boundary are considered to be of limited ecological value, comprising semi-improved grassland with ruderal vegetation, scrub, amenity grassland and hedgerows.
- 5.2.19. Whilst some areas of grassland are of comparatively greater value, in the main the semi-improved grassland is considered to be of low ecological value, comprising a fairly limited complement of widespread and common species. As such it is considered that losses to this habitat which are necessary to facilitate the development proposals are of low ecological significance. Areas of ruderal vegetation and amenity grassland are of very low ecological value and losses to this habitat are of negligible significance.
- 5.2.20. Under the development proposals an area of species-rich wildflower grassland will be provided within the open space in the eastern part of the development. A species-rich wet grassland mixture will also be sown in the proposed attenuation features in order to enhance their ecological value. With the implementation of an appropriate management regime, it is considered that the value of these habitats will be significantly greater than existing grassland present at the site, and will provide enhanced opportunities for foraging birds, bats and invertebrates.
- 5.2.21. The hedgerows and treelines along the boundaries of the application site are considered to be of comparatively greater ecological value at the site level. With the exception of a single immature scattered tree along the sites eastern boundary, the

vast majority of these features are to be retained under the development proposals.

- 5.2.22. In order to protect retained hedgerows and treelines, temporary protective fencing shall be installed and will remain in place throughout the construction period. This fencing shall be installed in line with the relevant British Standard and will prevent any potential encroachment of machinery and personnel.
- 5.2.23. In addition there is scope to significantly enhance the ecological value and structure of hedgerow H2 through the provision of bolster planting using a range of native species. Together with the provision of new tree and scrub planting, it is considered that this would more than offset the loss of a single scattered tree.
- 5.2.24. An Ecology Enhancement Scheme (EES) has been produced (see Appendix 8) by Ecology Solutions that covers the application site. The EES provides detail on the provisions summarized above.

5.3. Faunal Evaluation

Bats

- 5.3.1. **Legislation.** All bats are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and included on Schedule 2 of the Conservation of Habitats and Species Regulations 2010 ("the Habitats Regulations"; as amended). These include provisions making it an offence:
- Deliberately to kill, injure or take (capture) bats;
 - Deliberately to disturb bats in such a way as to:-
 - (i) be likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or to hibernate or migrate; or
 - (ii) affect significantly the local distribution or abundance of the species to which they belong;
 - To damage or destroy any breeding or resting place used by bats;
 - Intentionally or recklessly to obstruct access to any place used by bats for shelter or protection.
- 5.3.2. While the legislation is deemed to apply even when bats are not in residence, Natural England guidance suggests that certain activities such as re-roofing can be completed outside sensitive periods when bats are not in residence provided these do not damage or destroy the roost.
- 5.3.3. The words deliberately and intentionally include actions where a court can infer that the defendant knew that the action taken would almost inevitably result in an offence, even if that was not the primary purpose of the act.

- 5.3.4. The offence of damaging or destroying a breeding site or resting place (which can be interpreted as making it worse for the bat) is an absolute offence. Such actions do not have to be deliberate for an offence to be committed.
- 5.3.5. European Protected Species licences are available from Natural England in certain circumstances, and permit activities that would otherwise be considered an offence.
- 5.3.6. Licences can usually only be granted if the development is in receipt of full planning permission and it is considered that:
- (i) The activity to be licensed must be for imperative reasons of overriding public interest or for public health and safety;
 - (ii) There is no satisfactory alternative; and
 - (ii) 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.
- 5.3.7. **Application Site Evaluation.** None of the trees present within or immediately adjacent to the application site support features of potential value for roosting bats.
- 5.3.8. Specific bat survey work undertaken in 2015 identified that the hedgerows and treelines adjacent to the application site are utilised by foraging and commuting bats. The vast majority of registrations recorded were of Pipistrelle species, which are common and widespread, although Nathusius' Pipistrelle was recorded during one night in the second survey session (4 registrations in total).
- 5.3.9. **Mitigation and Enhancements.** As outlined above, with the exception of a small section of H1, the treelines and hedgerows present along the boundaries of the application site are to be fully retained and enhanced as part of the development proposals. With the provision of bolster planting to enhance both the structure and species diversity of hedgerow H2 along the western boundary, and also the provision of new species-rich habitats in the eastern part of the application site (including grassland, attenuation features, scrub and trees), it is considered that opportunities for foraging bats will be retained and enhanced compared to the existing situation.
- 5.3.10. In order to ensure that these areas remain suitable for bats, care will be taken to minimise lightspill, through the use of hoods and cowls to direct lighting away from these features. This will ensure that dark corridors are retained in these areas and that the development proposals would not result in any potential effects to bat populations in the local area.
- 5.3.11. In order to provide an enhancement to roosting bats in the local area, a number of bat boxes to be installed on suitable mature trees present within the application site. The details,

such as the type and location of the boxes and other enhancements are included within the EES (see Appendix 8).

Great Crested Newts

- 5.3.12. **Legislation.** All British amphibian species receive a degree of protection under the 1981 Wildlife and Countryside Act (as amended). The level of protection varies from protection from sale or trade only, as is the case with species such as Smooth Newt *Lissotriton vulgaris* and Common Toad *Bufo bufo*, to the more rigorous protection afforded to Great Crested Newts, which are protected at the European level.
- 5.3.13. Although Great Crested Newts are regularly encountered locally and throughout much of England, the UK holds a large percentage of the world population of the species. As such the UK has an international obligation to conserve the species and they receive full protection under domestic and European legislation and are a material consideration.
- 5.3.14. Great Crested Newts are also listed in Annex IV(a) of the European Community Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora, more commonly known as the Habitats Directive. The Habitats Directive was transposed into UK law by the Habitats Regulations (as amended), which list Great Crested Newts under Schedule 2.
- 5.3.15. Great Crested Newts are thus protected from deliberate or reckless killing, injury or capture with their habitat, including a breeding site, resting place or any structure or place used for 'shelter or protection' also protected against damage or destruction. It is also illegal to deliberately or recklessly disturb Great Crested Newts and their eggs are protected from taking or destroying.
- 5.3.16. **Application Site Evaluation, Mitigation and Enhancements.** The application site does not support any waterbodies that could be utilised by Great Crested Newts for breeding. However surveys and assessment were undertaken of the waterbody situated immediately adjacent to the application site (D1).
- 5.3.17. It should be noted from the outset that this waterbody is to be fully retained and protected under the development proposals (as it sits beyond the application site boundary).
- 5.3.18. The habitats present within the application site are considered, in general, to represent sub-optimal terrestrial opportunities for Great Crested Newts, with opportunities restricted to areas of longer vegetation and ruderal vegetation along the hedgerows. Again, these areas are to be retained as part of the development proposals. The details of habitat enhancements are included within the EES (see Appendix 8).
- 5.3.19. A suite of survey and assessment work has been undertaken in respect of Great Crested Newts, including desk studies, HSI

assessment, environmental DNA sampling and eft searches, as well as terrestrial surveys (undertaken as part of the reptile survey). Based on the findings of this detailed assessment, in addition to the fact that waterbody D1 dries out regularly, is heavily shaded and is separated from other waterbodies in the local area, it is considered highly unlikely that Great Crested Newts would be present within the waterbody. As such it is therefore considered that they would not be present within the application site.

- 5.3.20. In any event, the development proposals will retain the most suitable terrestrial habitats for amphibian species (in the form of hedgerow buffers), and moreover will also provide new areas of wetland habitats in the form of attenuation features. Whilst these features may not support water all year round, they may provide suitable opportunities for amphibians during the breeding season, and therefore result in enhancements over the existing situation.

Birds

- 5.3.21. **Legislation.** Section 1 of the Wildlife and Countryside Act is concerned with the protection of wild birds, whilst Schedule 1 lists species which are protected by special penalties
- 5.3.22. **Application Site Evaluation, Mitigation and Enhancements.** There are some limited opportunities for nesting birds in the habitats within the application site. As all species of birds receive general protection whilst nesting, to avoid a possible offence it is recommended that any vegetation removal is undertaken outside the main bird breeding season (between March and the end of July inclusive), or that checks be made for nesting birds by an ecologist immediately prior to removal.
- 5.3.23. In order to provide an enhancement for nesting birds new bird nesting boxes are to be installed on suitable mature trees situated within the application site. The details, such as the type and location of the boxes and other enhancements are included within the EES (see Appendix 8).

6. PLANNING POLICY CONTEXT

- 6.1. The planning policy framework that relates to nature conservation in the Hertsmeire Borough is issued nationally through the revised National Planning Policy Framework (NPPF), and at the local level through the Arun Local Plan.

National Policy (NPPF)

- 6.1.1. The National Planning Policy Framework (NPPF) sets out the Government's requirements for the planning system and was adopted on 27th March 2012 and subsequently revised on the 24th July 2018
- 6.1.2. The key element of the NPPF is that there should be 'a presumption in favour of sustainable development, which should be seen as a golden thread running through both plan-making and decision-taking' (paragraph 11).
- 6.1.3. The revised NPPF is comparable to previous versions (which it replaces), including reference to minimising impacts on biodiversity and provision of net gains to biodiversity where possible (paragraph 170) and ensuring that Local Authorities place appropriate weight to statutory and non-statutory nature conservation designations, protected species and biodiversity.
- 6.1.4. The NPPF also considers the strategic approach which local authorities should adopt with regard to the protection, enhancement and management of green infrastructure, priority habitats and ecological networks, and the recovery of priority species.
- 6.1.5. Paragraph 175 of the NPPF comprises a number of principles which Local Authorities should apply, including;
- encouraging opportunities to incorporate biodiversity in and around developments; and
 - provision for refusal of planning applications if significant harm cannot be avoided, mitigated or, as a last resort, compensated for.
 - the provision for the refusal for developments resulting in the loss or deterioration of 'irreplaceable' habitats unless the need for, and benefits of, the development in that location clearly outweigh the loss.
- 6.1.6. National policy therefore implicitly recognises the importance of biodiversity and that, with sensitive planning and design, development and conservation of the natural heritage can co-exist and benefits can, in certain circumstances, be obtained.

6.2. Local Policy

Arun Local Plan 2011-2031

- 6.2.1. The Arun Local Plan 2011 – 2031 sets out the Council's vision for the development of Arun up to 2031. It contains strategic and development management planning policies which will shape the future of the area and should be used in the consideration of planning applications. This plan was formally adopted in July 2018.
- 6.2.2. Policy ENV SP1 refers to the Natural Environment and states that the District will promote the conservation 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, the creation of new areas of habitats will also be promoted.
- 6.2.3. Policy ENV DM1 refers to designated sites of biodiversity or geological importance. It states that a proposed development likely to have an adverse effect on any such designated sites will not normally be permitted. Consideration will be given to the designated features present on site and their scarcity, while their protections will be recognised. The policy also states that in determining planning applications affecting sites of biodiversity importance the Council must ensure that the intrinsic value of the sites are safeguarded or enhanced having regard to the following; the European, National or Local status and designation of the site; the nature and quality of the site's features, including rarity value; the extent of any adverse impacts on the notified features of interest; the need for compensatory measures in order to re-create remaining features of habitats on or off site. The policy states that where appropriate the Council will ensure the effective management of designated sites through the imposition of planning conditions or Section 106 agreements as appropriate.
- 6.2.4. Policy ENV DM2 deals specifically with mitigation required for development that falls within proximity to Pagham Harbour SPA.
- 6.2.5. Policy ENV DM3 refers to Biodiversity Opportunity Areas (BOAs). It states that within BOAs development shall retain and sympathetically incorporate locally valued and important habitats including wildlife corridors and stepping stones. Development shall also be designed in order to minimise disturbance to habitats. Development proposals will not be permitted unless they reasonably address opportunities for enhancing BOAs. Where a scheme results in habitat loss, mitigation measures must be included in the proposals. Within BOAs, or where likely to impact the species or habitats within them, any planning application must include appropriate surveys of these features.

- 6.2.6. Policy ENV DM4 refers to the protection of trees. It also states that where trees are removed an equivalent number of similar species and age (where practical) should be provided, at least, and that appropriate protective measures should be adopted during construction.
- 6.2.7. Policy ENV DM5 refers to development and biodiversity and states that development should seek to achieve a net gain in biodiversity while protecting existing habitats. The policy states that development should incorporate features that would benefit biodiversity such as green walls, green roofs, bat and bird boxes and landscape features. Links should also be provided with surrounding habitats where possible to facilitate species movement across the landscape as a whole. Where evidence of protected species within a development site is identified, surveys must be undertaken and if impacts identified, mitigation provided.

6.3. Discussion

- 6.3.1. Recommendations have been put forward in this report that would fully safeguard the existing ecological interest of the application site, and wherever possible, measures to enhance ecological and biodiversity value have been set out. Based on surveys undertaken and assessment, the presence and potential presence of protected species has been given due regard and measures to enhance the application site for such species have been put forward.
- 6.3.2. In conclusion, implementation of the measures set out in this report enable the development proposals to fully accord with planning policy for ecology and nature conservation at all administrative levels.

7. SUMMARY AND CONCLUSIONS

- 7.1. Ecology Solutions was commissioned by Landform Estates in June 2015 to undertake an Ecological Assessment of Land at Newbarn Lane, North Bersted, West Sussex. This application for outline planning permission was granted by Arun District Council on 24 February 2016 (planning ref: BE/142/15/OUT).
- 7.2. Following this, Ecology Solutions was further commissioned by Linden Homes South to discharge conditions of relevance to ecology matters as part of a reserved matters application in 2017 (planning ref: BE/113/17/RES). The relevant condition was discharged through the creation of an Ecological Enhancement Scheme that details habitat and species enhancements for the application site and wider study area.
- 7.3. Further to this, Ecology Solutions was again instructed to update the previous assessment work to support a full planning application for part of the site (hereafter referred to as the 'application site').
- 7.4. The development proposals are for 99 new residential properties.

Designated Sites

- 7.5. There are no statutory or non-statutory designated sites of nature conservation interest within or immediately adjacent to the application site boundary. The nearest statutory designated site is The Brooks LNR, situated approximately 1.3km to the east, whilst the nearest European / internationally designated site is Pagham Harbour SPA / Ramsar site, situated approximately 4.4km to the south-west at its closest point.
- 7.6. The application site is significantly separated from Pagham Harbour SPA / Ramsar site, is not linked to the SPA / Ramsar site by any hydrological pathways, and does not include potential supporting habitat for the bird species associated with the site.
- 7.7. Information to inform a Habitat Regulations Assessment has been produced by Ecology Solutions and submitted within a standalone report as part of this application. The HRA concludes that the project alone or in combination would not contribute to an adverse impact on the integrity of the SPA / Ramsar site (in view of the SPA conservation objectives), or adverse impacts on the SSSI, the Development Proposals would by definition be acceptable, subject to securing the mitigation and avoidance measures proposed. In those terms the competent authority could legally and safely grant consent for the proposed plan/project.
- 7.8. In line with the agreed strategic approach, mitigation is proposed in respect of any potential increase in informal recreational pressure which could arise, in the form of the provision of on-site open space, and also contributions towards off-site mitigation measures (at the SPA / Ramsar site). Taking the mitigation measures into consideration, it is concluded that the development proposals would not be likely to give rise to a significant effect on the SPA / Ramsar site either when considered alone or in combination with other plans or projects.

Habitats

- 7.9. The habitats present within the application site boundary are considered to be of limited ecological value, comprising semi-improved grassland with ruderal vegetation, scrub and hedgerows.
- 7.10. With the retention and enhancement of existing hedgerows and treelines, and the provision of species-rich wildflower grassland as part of the informal open space, it is considered that losses which are required to facilitate the development proposals will be more than mitigated, resulting in an overall enhancement in terms of the ecological value of the site. In order to maximise benefits for biodiversity, it is recommended that any new planting should utilise native species of local provenance, or wildlife-beneficial species, where possible.

Protected Species

- 7.11. Bats. None of the trees present within or immediately adjacent to the application site support features of potential value for roosting bats. However specific bat survey work undertaken in 2015 identified that the hedgerows and treelines along the boundaries of the application site are utilised by foraging and commuting bats.
- 7.12. Existing treelines and hedgerows present along the boundaries of the application site are to be fully retained and enhanced as part of the development proposals. With the provision of bolster planting to enhance both the structure and species diversity of hedgerow H2 along the western boundary, and also the provision of new species-rich habitats in the eastern part of the application site (including grassland, attenuation features, scrub and trees), it is considered that opportunities for foraging bats will be retained and enhanced compared to the existing situation.
- 7.13. In order to ensure that these areas remain suitable for bats, care will be taken to minimise lightspill, through the use of hoods and cowls to direct lighting away from these features. This will ensure that dark corridors are retained in these areas and that the development proposals would not result in any potential effects to bat populations in the local area.
- 7.14. The provision of new bat boxes on suitable mature trees within the application site will also provide an enhancement for local bat populations.
- 7.15. Great Crested Newts. A suite of survey and assessment work has been undertaken in respect of Great Crested Newts, including desk studies, HSI assessment, environmental DNA sampling and eft searches, as well as terrestrial surveys (undertaken as part of the reptile survey). Based on the findings of this detailed assessment, in addition to the fact that the waterbody adjacent to the application site boundary dries out regularly, is heavily shaded and is separated from other waterbodies in the local area, it is considered highly unlikely that Great Crested Newts would be present within the waterbody. As such it is therefore considered that they would not be present within the application site.

- 7.16. In any event, the development proposals will retain both the waterbody itself (as it falls outside of the application site boundary) and the most suitable terrestrial habitats for amphibian species (in the form of hedgerow buffers), and moreover will also provide new areas of wetland habitats in the form of attenuation features. Whilst these features may not support water all year round, they may provide suitable opportunities for amphibians during the breeding season, and therefore result in enhancements over the existing situation.
- 7.17. Birds. There are some limited opportunities for nesting birds in the application site. As all species of birds receive general protection whilst nesting, to avoid a possible offence it is recommended that any vegetation removal is undertaken outside the main bird breeding season (between March and the end of July inclusive), or that checks be made for nesting birds by an ecologist immediately prior to removal.
- 7.18. In order to provide an enhancement for nesting birds, it is also recommended that new bird nesting boxes are installed on suitable mature trees situated in close proximity to the application site.
- 7.19. The details of enhancement measures for habitats and species are presented within the Ecological Enhancement Scheme.

Conclusions

- 7.20. In conclusion, the application site is considered to be of limited value from an ecology and nature conservation perspective, both in terms of the habitats present and the species which it supports. The retention and enhancement of features of relatively higher value as part of the scheme's design and the implementation of mitigation measures as recommended in this report will ensure that there are no adverse effects on any designated sites or protected species as a result of development at the application site.
- 7.21. Moreover it is considered that the proposed development would offer enhancements for biodiversity over the existing situation, and would therefore fully accord with current legislation and policy pertinent to ecology and nature conservation.