

**SOUTHMERE FIELD, LANGSTONE ROAD,
LANGSTONE, HAVANT**

ECOLOGICAL IMPACT ASSESSMENT

Final Document

July 2021

Preliminary Ecological Appraisals • Protected Species Surveys and Licensing • NVC • EclA • HRA • Management Plans
Habitats • Badger • Bats • Hazel Dormouse • Birds • Reptiles • Amphibians • Invertebrates • Riparian and Aquatic Species

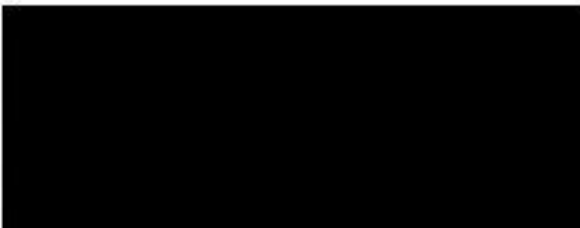
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**SOUTHMERE FIELD, LANGSTONE ROAD,
LANGSTONE, HAVANT, HAMPSHIRE**

ECOLOGICAL IMPACT ASSESSMENT

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EXECUTIVE SUMMARY

Ecological Survey and Assessment Ltd (ECOSA) have been appointed by Persimmon Homes South Coast to undertake an Ecological Impact Assessment to support a planning application for the development of Southmere Field, Langstone, Havant. The site is located in Langstone, Havant and comprises a parcel of an agricultural field. The proposals entail the development of the site and construction of residential dwellings.

The main findings of the Ecological Impact Assessment are:

- The site is situated within 90 metres of Chichester and Langstone Harbours SPA and Ramsar site. The site has also been identified as a Secondary Support Area in the Solent Waders and Brent Goose Strategy. The proposals have the potential for indirect impacts through the loss of the Secondary Support Area, increase in nitrate discharge and increase in recreational pressure. Offsite mitigation and contributions to strategic mitigation measures will need to be secured in order to address these impacts.
- The site has been assessed as supporting common and widespread habitats with the feature of relatively greater ecological interest being the western boundary woodland.
- The site has been identified as supporting an assemblage of foraging and commuting bats, a low population of slow-worm and breeding and wintering birds. The site also has suitability for supporting common and widespread invertebrates. The western boundary woodland has suitability for roosting bats and hazel dormouse. Suitable mitigation, compensation and enhancement measures for these species/species group have been outlined within this report.
- A range of enhancement measures are proposed including new native species planting, new native grassland creation and the installation of integrated bat and bird units as part of the scheme.
- Subject to securing appropriate mitigation in relation to Chichester and Langstone Harbours SPA/Ramsar site, the mitigation, compensation and enhancement measures proposed it is considered that the proposals accord with all relevant local and national planning policy.
- If the planning application boundary changes or the proposals for the site alter, a re-assessment of the scheme in relation to ecology may be required. Given the mobility of animals and the potential for colonisation of the site over time, updating survey work may be required, particularly if development does not commence within 18 months of the date of the most recent relevant survey.

1.0 INTRODUCTION

1.1 Background

Ecological Survey & Assessment Limited (ECOSA) have been appointed by Persimmon Homes South Coast to undertake an Ecological Impact Assessment to support a planning application for the development of Southmere Field, Langstone Road, Langstone, Havant, Hampshire PO9 1RB (hereafter referred to as the site).

Previous survey work was undertaken at the site between 2016 and 2018 by WYG including an extended Phase 1 habitat survey (WYG, 2017), a botanical survey (WYG, 2018a) and wintering bird survey (WYG, 2018b) with reference made to these reports where relevant.

1.2 The Site

The site is located in Langstone, Hampshire, centred on National Grid Reference (NGR) SU 7154 0516 (**Map 1**). The Phase 1 habitat map (**Map 2**) depicts the boundary of the site.

The site comprises a parcel of an agricultural field of approximately 2.6 hectares and is bounded by residential development to the north, the remainder of the field to the south, Langstone Road A3023 to the east, and a woodland belt and a wet ditch to the west. The Lavant (Hampshire) river lies beyond the woodland belt which drains into Langstone Harbour.

The wider landscape is dominated by residential development of Langstone and Havant to the north, green space to the east and west, and the coastal environment of Bridge Lake and Hayling Island to the south.

1.3 Aims and Scope of Report

The information within this report is based on a field survey and desktop study and relevant species-specific surveys carried out by ECOSA between January 2020 and November 2020. Previous survey work undertaken by WYG is referenced, where relevant (WYG, 2017) (WYG, 2018a) (WYG, 2018b). The report describes the habitats and species (hereafter referred to as ecological features) within the site's Zone of Influence (Paragraph 3.2), and provides a detailed assessment of potential ecological effects of the proposed development of the site. It identifies the need for any measures to avoid, mitigate or compensate for significant adverse effects¹ ecological features and outlines enhancements to the site's ecology to be implemented as part of the development. The objectives of the assessment are:

¹ For the purposes of this assessment a 'significant' adverse effect is one which will have an adverse effect on the ecological feature at the site level or higher.

- To provide baseline information on ecological features within the site's Zone of Influence and determine the importance of these features;
- To assess, characterise and quantify the effects on ecological features, including cumulative effects, and identify significant effects in the absence of any mitigation;
- To set out measures to avoid, mitigate and compensate for significant ecological effects in accordance with the 'mitigation hierarchy'²;
- To provide an assessment of the significance of any residual effects;
- To outline opportunities for enhancement in order to achieve a net gain for biodiversity; and
- To set out the requirements for any post-construction monitoring.

1.4 Site Proposals

The proposals for the site comprise the construction of 65 new residential dwellings in the northern-most two-thirds of the site, with access roads and associated parking. Access will be created to the north of the site from The Mallards. The southern third of the site will comprise green space. The planning application is due to be in outline with all matters reserved except for access.

The Ecological Impact Assessment is based on the Layout Structure Plan produced by Persimmon Homes dated 2nd June 2021 (Drawing No. A-02-111-SD No Revision) (**Appendix 1**).

Current construction timescales are not currently known, however outline planning permission will be sought during 2021.

² In accordance with CIEEM Ecological Impact Assessment guidance (CIEEM, 2018) a sequential process is adopted to address impacts on features of ecological interest, with 'Avoidance' prioritised at the top of the hierarchy and 'Compensation/Enhancement' at the bottom. This is often referred to as the 'mitigation hierarchy'.

2.0 PLANNING POLICY CONTEXT

2.1 Introduction

This section summarises the planning policy in relation to ecology and biodiversity within the Havant Borough Council administrative area. This information is then used to assess the compliance of the scheme in relation to relevant planning policy and where necessary make recommendations for mitigation, compensation and enhancements (see Section 5.0).

2.2 National Policy

The National Planning Policy Framework (NPPF) sets out the government's requirements for the planning system in England. The original document was published in 2012 with a revised NPPF published in February 2019. A number of sections of the NPPF are relevant when taking into account development proposals and the environment. As set out within Paragraph 11 of the NPPF *"Plans and decisions should apply a presumption in favour of sustainable development"*. However, Paragraph 177 goes on to state that *"The presumption in favour of sustainable development does not apply where the plan or project is likely to have a significant effect on a habitats site (either alone or in combination with other plans or projects), unless an appropriate assessment has concluded that the plan or project will not adversely affect the integrity of the habitats site."*

The NPPF sets out that development proposals should not only minimise the impacts on biodiversity but also to provide enhancement. Paragraph 170 states that the planning system should contribute to and enhance the natural environment by *"...minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures..."*.

A number of principles are set out in Paragraph 175, including that where harm cannot be adequately avoided then it should be mitigated for, or as a last resort, compensated for. Where impacts occur on nationally designated sites, the benefits must clearly outweigh any adverse impact and incorporating biodiversity in and around developments should be encouraged. Specific reference is also made to the protection of irreplaceable habitats³, including ancient woodland⁴. Where loss to irreplaceable habitats occurs planning permission would normally be refused unless there are wholly exceptional reasons and an adequate compensation strategy is in place. Paragraph

³ The NPPF defines irreplaceable habitats as *"Habitats which would be technically very difficult (or take a very significant time) to restore, recreate or replace once destroyed, taking into account their age, uniqueness, species diversity or rarity. They include ancient woodland, ancient and veteran trees, blanket bog, limestone pavement, sand dunes, salt marsh and lowland fen."*

⁴ Natural England defines ancient woodland as *"An area that has been wooded continuously since at least 1600 AD. It includes ancient semi-natural woodland and plantations on ancient woodland sites (PAWS)."*

175 also states *“development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity”*. Protection of sites proposed as SPAs, SACs and Ramsar sites or acting as compensation for SPAs, SACs and Ramsar sites, should receive the same protection as habitat sites.

In addition to the NPPF, Circular 06/05 provides guidance on the application of the law relating to planning and nature conservation as it applies in England. Paragraph 98 states *“the presence of a protected species is a material consideration when a planning authority is considering a development proposal that, if carried out, would be likely to result in harm to the species or its habitat”*. Paragraph 99 states *“it is essential that the presence or otherwise of a protected species, and the extent that they may be affected by the Proposed Project Development, is established before planning permission is granted”*.

2.3 Local Policy

Local planning policy within Havant Borough is provided by the Havant Borough Core Strategy 2011, adopted March 2011. Three policies refer in part to ecology and biodiversity:

- **Policy CS11: Protecting and Enhancing the Special Environment and Heritage of Havant Borough**

This policy refers to protecting and enhancing statutory and non-statutory designated sites, and features of ecological interest including wildlife habitats and corridors, through appropriate mitigation measures.

- **Policy DM9: Development in the Coastal Zone**

This policy refers to the protection of the coastal zone and states that permissions will only be granted in this zone where it can be demonstrated that there will be no harmful effects on internationally, nationally and locally designated sites.

Production of an updated Havant Borough Local Plan 2036 has been underway since 2016 and is currently in its consultation phase, with adoption proposed to be in late 2021. Five policies within the Havant Borough Local Plan 2036 refer specifically to ecology and biodiversity:

- **Policy E14: The Local Ecological Network**

This policy refers to protecting, conserving and enhancing internationally, nationally, and locally designated sites for nature conservation, and the requirement for a net gain in biodiversity.

- **Policy E15: Protected Species**

This policy refers to avoiding impacts on protected species and their habitats, with special reference made to Bechstein's bat.

- **Policy E16: Solent Special Protection Areas**

This policy refers to protecting SPAs within the Solent, and states mitigation measures required if significant effects on the SPAs are anticipated.

- **Policy E17: Solent Waders and Brent Goose Feeding and Roosting Sites**

This policy refers to protecting sites associated with the Solent Waders and Brent Goose Strategy (SWBGS).

- **Policy E18: Trees, Hedgerows and Woodland**

This policy refers to protecting important trees, hedgerows and woodland and the successful implementation of landscape and tree planting schemes.

3.0 METHODS

3.1 Introduction

This section details the methods employed during the Ecological Impact Assessment. Any significant limitations to the assessment are also considered.

3.2 Zone of Influence

To define the total extent of the study area for this assessment, the proposed scheme was reviewed to establish the spatial scale at which ecological features could be affected⁵. The appropriate survey radii for the various elements of the assessment (i.e. desktop study, field survey and species-specific surveys) have been defined in the relevant sections below. These distances are determined based on the professional judgement of the ecologist leading the appraisal, taking into account the characteristics of the site subject to assessment, its surroundings and the nature of the proposals.

3.3 Scoping

Protected species considered within the Ecological Impact Assessment are those species/species groups considered likely to be encountered given the geographical location and context of the site. Where the site was found to be suitable to support these species/species groups, and adverse effects cannot be avoided from the outset, further species-specific surveys are undertaken. These are discussed within the results section (Section 4.0) of the current report. Where such a species is unlikely to be present on site a justification for likely absence is provided. Species considered likely absent from the site are not then considered in the assessment of ecological effects and mitigation/compensation measures section (Section 5.0) of this report.

3.4 Desk Study

3.4.1 Biological Records Centre

Hampshire Biodiversity Information Centre (HBIC) was consulted on 21st January 2020 for the following data:

- Records of non-statutory designated sites (Sites of Importance for Nature Conservation (SINCs)) within one kilometre of the site boundary. See **Appendix 2** for details; and
- Records of legally protected and notable species (flora and fauna) within one kilometre of the site boundary, including Species of Principal Importance (**Appendix 3**);
- Records of bats within two kilometres of the site boundary. Bat species are highly mobile and therefore the search radius is increased for this species group; and

⁵ The Zone of Influence (Zoi), as defined by CIEEM, is the area over which ecological features may be subject to significant effects as a result of the proposed project and associated activities (CIEEM, 2018).

- Records of sites relating to the Solent Wader and Brent Goose Strategy within one kilometre of the site boundary.

3.4.2 Multi-Agency Geographic Information for the Countryside

The Multi-Agency Geographic Information for the Countryside (MAGIC) database (DEFRA, 2020) was reviewed on 11th November 2020 to establish the location of statutory designated sites located within the vicinity of the site. This included a search for all internationally and nationally designated sites such as Special Protection Areas (SPAs), Special Areas of Conservation (SACs), Wetlands of International Importance (Ramsar sites), Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs) and Local Nature Reserves (LNRs) within one kilometre of the site. See **Appendix 2** for details. Where appropriate, the desk study search area has been extended to take account of any appropriate statutory designated sites which need consideration in terms of potential in-direct effects and which support particularly mobile species, particularly those specifically mentioned in local planning policy. The Impact Risk Zones (IRZ) were also obtained from MAGIC, which are used to help guide and assess planning applications for likely effects on SSSIs.

Sites within two kilometres of the site boundary where European Protected Species Mitigation (EPSM) licences have been granted were reviewed. This information allows a greater understanding of the potential for European Protected Species to be present in the local area.

3.4.3 Other Sources of Information

Online mapping resources, at an appropriate scale, were used to identify the presence of habitats such as woodland blocks, ponds, watercourses and hedgerows, in the vicinity of the site. These habitats may offer resources and connectivity between the site and suitable habitat in the local area, which may be exploited by local species populations.

The presence of ponds or other waterbodies within a 500 metre radius of the site in particular are noted in relation to great crested newt. The 500 metre radius is a standardised search radius to assist in the assessment of the suitability of a site and its surrounding habitat to support this species, based on current Natural England guidance (English Nature, 2001).

The survey work previously undertaken at the site by WYG is also referred to, where relevant (WYG, 2017), (2018a), (2018b).

3.5 Field Survey

3.5.1 Survey Methods

The field survey broadly followed standard Phase 1 habitat survey methodology (JNCC, 2010) and included a search for evidence of, and an assessment of the site's suitability to support, protected and notable species as recommended by CIEEM (CIEEM, 2017). The field survey covered all accessible areas of the site, including boundary features. Habitats described in Section 4.0, have been mapped (**Map 2**) and photographs provided, where relevant. For ease of reference, Target Notes (TN) depict locations of particular ecological interest or features which are too small to map.

Phase 1 Habitat Survey

An assessment was made of all areas of vegetation within the site based on the standardised Phase 1 habitat survey methodology (JNCC, 2010). This involved identification of broad vegetation types, which were then classified against Phase 1 habitat types, where appropriate. A list of characteristic plant species for each vegetation type was compiled and any invasive species⁶ encountered as an incidental result of the survey recorded.

Protected and Notable Species Appraisal

A preliminary appraisal of the site's suitability to support legally protected and notable species was carried out. Specific methods for species/species groups considered during the appraisal are provided in **Appendix 4**.

3.5.2 Survey Details

The field survey was carried out by Richard Chilcott, Principal Ecologist of ECOSA on 16th January 2020. The weather conditions were clear, dry and sunny with approximately 20% cloud cover, an ambient temperature of 9°C and a light wind.

During the survey, the surveyor was equipped with 10x40 binoculars, a high powered torch and a digital camera.

3.5.3 Field Survey Limitations

Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. The field survey has therefore not produced a complete list of plants and animals and in the absence of evidence of any particular species should not be taken as conclusive proof that the species is absent or that it will not occur in the future.

⁶ Plant species included on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). The survey was not specifically aimed at assessing the presence of these species and further specialist advice may need to be sought.

Online mapping resources provide an indication of habitat features present in the wider area, but do not provide a detailed assessment of habitat types.

The desk study data mainly originates from ad-hoc surveys by volunteers and other records from members of the public. Therefore, the data search results cannot be taken as an exhaustive list of species present in the area.

3.6 Bat Survey

3.6.1 Survey Methods

Bat Transect Survey

Bat transect surveys were undertaken in line with current best practice guidelines (Collins, 2016). Given that the site has been assessed as having low suitability for supporting foraging and commuting bats a single survey visit was undertaken in spring, summer and autumn to allow an assessment of the status and importance of foraging/commuting bats at the site to be made.

A team of two surveyors walked a pre-determined transect route across the site on each occasion (**Map 3a**), walking the same transect route on each survey with the transect reversed on each survey in order to vary the coverage of the site. The transect route ensured that the surveyors visited key areas of foraging and commuting habitat within the site, particularly boundary adjacent to the off-site boundary woodland, as well as less suitable habitats. The dusk transects surveys commenced at sunset and lasted for at least two hours depending on the level of bat activity recorded.

The transect route was split into equal sections and was walked at a steady speed so that the activity levels on each section and from each survey are comparable.

At the end of each transect survey, data was downloaded and then analysed using BatExplorer (Version 2.1.6). This program is designed to analyse bat call data by identifying key call characteristics such as call shape, call length, call 'distance' (i.e. the time period between two consecutive calls) and peak frequency.

The species calls were subsequently checked manually by a suitably qualified ecologist using the spectrogram feature of BatExplorer to verify their identities. Where suitable recordings were obtained, bats were identified to species level. For some groups,

notably long-eared bat species⁷ and *Myotis*⁸ bat species, species specific identification was not possible.

The GPS feature of the Batlogger M allows the location of the surveyor at the time of each bat call registration to be recorded. This data is exported to BatExplorer and used to create a 'heat map' of activity at the site for each bat species recorded.

The GPS feature shows the location of the surveyor when the registration was recorded, not the location of the bat. Where bats were heard but not seen it has been assumed that they are flying in the vicinity of the surveyor. Where bats were seen some distance from the surveyor the locations of these bats were noted.

Bat Automated Detector Survey

In addition to the transect surveys automated detector surveys were undertaken in line with current best practice guidelines (Collins, 2016), with three deployments undertaken in spring, summer and autumn 2020.

Two Wildlife Acoustics Song Meter 4 (SM4 FS) detectors with SMM-U2 microphones were deployed at the site for five consecutive nights in May, July and October 2020.

The automated detectors were secured in suitable habitat with the microphone positioned to face towards the nearest open space. The devices were programmed to record between 30 minutes before sunset, until 30 minutes after sunrise the following morning on each night they were deployed. The settings utilised on the automated detectors are provided in **Appendix 5**.

The detectors were deployed at the same location during each survey period in order to allow a determination of the levels of activity at the site in each survey period. The locations at which the automated detectors were deployed are provided in **Map 4**.

At the end of each automated survey period, the remote bat detectors were retrieved from the site, data was downloaded and then analysed using Kaleidoscope Pro[®] (Version 5.1.9g). This program is designed to analyse large volumes of bat call data using an automated classifier (Bats of United Kingdom version 5.1.0). More information on the settings used for the conversion process are provided in **Appendix 5**.

⁷ There are two species of long-eared bat, the brown long-eared bat *Plecotus auritus* and the grey long-eared bat *Plecotus austriacus*. These species can only be separated by examination of physical characteristics and Phylogenetic Analysis Identification of bat droppings. Unless confirmation of identification has been made by visual identification the two species shall be referred to in this report as long-eared bat. The brown long-eared bat is the commonest of the two species typically being found roosting within large roof voids although small voids and trees are also utilised. The grey long-eared bat is rare and confined to southern England and like the brown long-eared typically roosts in roof voids.

⁸ There are seven species of *Myotis* bats in Britain. *Myotis* bats are very difficult to identify specifically, this can generally only be done by examination of physical features and Phylogenetic Analysis Identification of bat droppings. Many of these bats are common and will utilise buildings for roosting often occupying small and inaccessible voids. For the purpose of this report all species shall be referred to as *Myotis* bats unless a specific identification has been possible.

The species calls were subsequently checked manually by a suitably qualified ecologist using the Kaleidoscope software, to verify their identities. Sonobat® (v2.9.7) was used to confirm the species identity for ambiguous bat calls. Where suitable recordings were obtained, bats were identified to species level. For some groups, notably long-eared bat species and *Myotis* bat species, specific identification was not always possible.

The data was then exported to Microsoft Excel for detailed analysis (i.e. counts of bat registrations) of various parameters.

The number of registrations recorded is not a measure of the number of bats present on site; the number of registrations provides a quantitative assessment of the level of bat activity at a particular location (i.e. the greater the number of registrations, the greater the level of bat activity). The data cannot differentiate between, for example, a single bat passing the detector 10 times or 10 bats passing the detector on a single occasion. The detectors were programmed to count each two second call as a single bat pass.

In order to standardise the number of bat calls recorded the data was then used to calculate an "Activity Index" for various different parameters to be assessed. This involved dividing the number of registrations by the number of nights which detectors were deployed. This data is then represented as number of registrations per night.

3.6.2 Survey Details

Bat Transect Survey

The bat transect surveys were undertaken between May and October 2020 with a total of three dusk bat transect surveys undertaken. **Table 1** provides details of each survey.

Table 1: Bat transect survey details

Survey Date	Survey Type	Duration	Weather Conditions	Sunset/ Sunrise Time
8 th June 2020	Dusk	21:25 – 23:16	17-15°C, dry, 40-90% cloud cover and a light breeze	21:15
27 th July 2020	Dusk	20:56 – 22:56	18°C, dry, 70% cloud cover and a moderate breeze	20:56
17 th October 2020	Dusk	18:28 - 20:29	18°C, dry at beginning of survey, with light rain at the end, 85% cloud cover and a light breeze	18:28

The bat transect surveys were coordinated and led by Richard Chilcott, Principal Ecologist of ECOSA (Natural England Bat Licence No. 2015-16561-CLS-CLS), assisted by suitably qualified and experienced ECOSA surveyors.

The detector programming and data analysis was conducted by Richard Chilcott, Principal Ecologist of ECOSA and David Miller, Assistant Ecologist of ECOSA.

Bat Automated Detector Survey

The automated detector surveys were undertaken between May and October 2020 with a total of 15 nights recording undertaken. **Table 2** provides details of each recording period.

Table 2: Automated detector survey details

Survey Period	Date	Weather Conditions ⁹				Sunset	Sunrise
		Temperature (°C)		Wind (km/h)	Precipitation (mm)		
		High	Low ₁₀				
May 2020	18 th	20	-	27	0.0	20:51	05:07
	19 th	20	-	16	0.0	20:53	05:06
	20 th	23	-	16	0.0	20:54	05:05
	21 st	24	-	10	0.0	20:56	05:04
	22 nd	20	-	45	0.0	20:57	05:02
July 2020	27 th	20	-	39	0.0	20:56	05:26
	28 th	20	-	28	0.0	20:54	05:27
	29 th	21	-	16	0.0	20:52	05:28
	30 th	26	-	13	0.0	20:51	05:30
	31 st	29	-	22	0.0	20:49	05:31
October 2020	7 th	16	-	19	0.0	18:28	07:17
	8 th	18	-	32	0.0	18:26	07:18
	9 th	15	-	17	0.0	18:24	07:20
	10 th	14	-	20	0.0	18:21	07:22
	11 th	15	-	19	0.0	18:19	07:23

The automated detectors were deployed by a suitably experienced ECOSA ecologist. The detector programming and data analysis was conducted by Richard Chilcott, Principal Ecologist of ECOSA and David Miller, Assistant Ecologist of ECOSA.

⁹ Weather data is sourced from online weather data (Weather Underground, 2020)

¹⁰ Weather station data did not record overnight temperatures in the month surveyed 2020. The reason for this is not clear.

3.6.3 Survey Limitations

Some bat species, e.g. long-eared bat species, generally emerge from their roosts in total darkness and do not produce strong echolocations, and therefore these bats can be difficult to observe and record during bat surveys, leading to under-recording.

The quality of both hand-held and automated bat detector recordings is based, to a large extent, on the proximity of a bat to the detector's microphone. Obstructions such as vegetation or environmental variables such as rainfall and wind noise from vegetation will all influence the quality of sound reaching the microphone and thus some bat echolocation recordings are of insufficient quality for specific identification. Bats routinely alter their echolocations in relation to behaviour and their environment. It is not always possible to make a robust identification of every bat recording.

The use of bat detectors is likely to result in the under-recording of a percentage of bats present, such as those flying at height (Collins & Jones, 2009), which would be out of the recording range for the detectors.

3.7 Reptile Survey

3.7.1 Survey Methods

The reptile survey was undertaken in accordance with current best practice guidelines (Froglife, 2015).

The reptile survey consisted of the laying bitumen felt mats approximately 500 millimetres x 500 millimetres in areas of suitable habitat on the site. Typically, this included areas of suitable habitat with good exposure to the sun. The mats were distributed in all areas considered to offer suitable reptile habitat. The locations of these mats are marked on **Map 5**.

The use of such refugia is an effective way of surveying for all species of reptile and current survey guidance states that seven inspections are sufficient to confirm presence/likely absence. Survey visits were undertaken in marginal weather conditions such as cold but sunny weather or hazy and somewhat overcast conditions, as this will maximise the thermal value of the refugia for basking reptiles.

During each visit surveyors also undertook a visual inspection survey of other suitable refugia in the site and other suitable basking locations. During the survey a note was also made of any suitable hibernation features present within the site.

3.7.2 Survey Details

A total of 60 reptile refugia were distributed on 26th March 2020 with seven inspection visits undertaken between 6th April and 18th May 2020. **Table 3** provides details of each reptile survey.

Table 3: Reptile survey details

Survey Date	Air Temperature (°C)	Weather Conditions
6 th April 2020	12°C	Dry, with 20% cloud cover and a light breeze
14 th April 2020	10°C	Dry, with 10% cloud cover and no wind
20 th April 2020	17°C	Dry, with no cloud cover and a moderate breeze
5 th May 2020	13°C	Dry, with 90% cloud cover and a moderate breeze
7 th May 2020	13°C	Dry, with 50% cloud cover and a light breeze
14 th May 2020	13°C	Dry, with 80% cloud cover and a light breeze
18 th May 2020	13°C	Dry, with 5% cloud cover and a moderate breeze

The reptile survey was coordinated by Richard Chilcott, Principal Ecologist of ECOSA assisted by suitably experienced ECOSA surveyors.

3.7.3 *Survey Limitations*

There were no significant limitations to the reptile survey.

3.8 **Criteria used to Assess Ecological Value**

The evaluation criteria used in this report are based on ECOSA's professional judgement and publicly available publications, survey data and other sources as referenced in the main text. The evaluation is based on a sliding scale of importance as follows; international and European, national, regional, county, local and site. There are a wide range of characteristics which contribute to the importance of ecological features, and these may justify an increase or reduction in the value of an ecological feature. Where deviations occur, these will be explained in the evaluation section of this report (Section 4.0). Current published relevant guidance, including information sources such as A Nature Conservation Review (Ratcliffe, 1977) and Guidelines for Ecological Impact Assessment in the United Kingdom (CIEEM, 2018) have also been used to inform the assessment.

4.0 BASELINE ECOLOGICAL CONDITIONS AND EVALUATION

4.1 Introduction

This section details the results of the Ecological Impact Assessment undertaken for the site. It assesses the baseline ecological conditions of the site at the time the desktop study was completed and based on the findings of the field survey and subsequent protected species surveys. This section also provides an assessment of the ecological value of ecological features present at the site.

4.2 Statutory and Non-statutory Designated Sites

4.2.1 Baseline Ecological Conditions

Details of designated sites are provided in the paragraphs below.

Statutory Designated Sites

There are eight statutory designated sites of nature conservation interest situated within two kilometres of the site boundary. These are:

- Chichester and Langstone Harbours (Ramsar site) – Located 100 metres south-west of the site boundary and designated for extensive intertidal mudflat, saltmarsh and reedbed habitats supporting internationally and nationally important numbers of wintering water birds;
- Chichester and Langstone Harbours (SPA) – Located 100 metres south-west of the site boundary and designated for supporting internationally important bird species;
- Solent and Dorset Coast (SPA) – located approximately 100 metres south-west of the site and designated for providing foraging habitat for international important bird populations;
- Solent Maritime (SAC) – Located 290 metres south of the site boundary and designated for important coastal habitats such as Atlantic salt meadows, coastal lagoons and estuaries;
- Langstone Harbour (SSSI) – Located 100 metres south-west of the site boundary and designated for extensive mudflat and saltmarsh habitats supporting international high densities of intertidal invertebrates and migrant and overwintering waders and wildfowl;
- Chichester Harbour (SSSI) – Located 350 metres south-east of the site boundary and designated for large areas of habitat with important plant communities supporting wintering wildfowl and waders and breeding birds;

- Warblington Meadows (SSSI) – Located 1.2 kilometres east of the site and designated for a gradation from freshwater marsh to salt marsh with their rich associated flora;
- Hayling Billy (LNR) – Located 800 metres south of the site and designated for supporting notable coastal habitats, wintering bird populations, and invertebrate assemblages; and
- West Hayling (LNR) – Located 800 metres south of the site and designated for supporting notable coastal habitats, wintering bird populations, and invertebrate assemblages.

Further details of the statutory designations listed above are provided in **Appendix 6**.

Non-Statutory Designated Sites

There are six non-statutory designated sites of nature conservation interest situated within one kilometre of the site boundary. These are:

- Southmoor Reserve (SINC) – Located 90 metres west of the site designated agriculturally unimproved grasslands, semi-natural coastal and estuarine habitats;
- Wade's Court Park (SINC) – Located 330 metres east of the site and designated for supporting a significant population of little egret *Egretta garzetta*;
- Langstone Mill Pond (SINC) – Located 350 metres east of the site and designated for semi-natural coastal and estuarine habitats, unimproved waterlogged habitats, and for supporting the notable large-leaved lime *Tilia platyphyllos*;
- Southmoor - Big Field (south edge) (SINC) – Located 420 metres south west of the site and designated for semi-natural coastal and estuarine habitats;
- Hayling Billy Line (SINC) – Located 950 metres south of the site and designated for supporting the notable species divided sedge *Carex divisa*;
- St Faith's Churchyard (SINC) – Located 950 metres north of the site and designated for semi-improved grasslands which retain a significant element of unimproved grassland.

Further information on sites designated for nature conservation are provided in **Appendix 2**.

There are also 13 sites within one kilometre of the site boundary identified as being of importance to waders and Brent goose in the Solent Wader and Brent Goose Strategy (SWBGS) (Solent Wader and Brent Goose Strategy, 2020). Sites are classified according to a scoring system based on various parameters including importance relative to the British populations of the species, proximity to SPAs, and proximity to known SPA species populations and/or assemblages (see **Appendix 2**).

SWBGS classified sites within one kilometre of the site boundary are listed below:

- Core Areas – No sites within one kilometre of the site.
- Primary Support Area – Six sites. Five clustered together 520 metres east, one 590 metres west;
- Secondary Support Area – Two sites, including the site itself (labelled as H27). The other is located 340 metres west;
- Low Use – One site located 330 metres east and one located 900 metres north; and
- Candidate – One site located 570 metres west.

4.2.2 Evaluation

The Chichester and Langstone Harbours Ramsar site and SPA and the Solent Maritime SAC are of international importance. Chichester Harbour and Warblington Meadows SSSIs, national importance. The six SINC's are of county importance and the Hayling Billy Line and West Hayling LNRs are of local importance.

The Solent Wader and Brent Goose Strategy Sites are not designated at a geographic frame of reference individually, however, the network as a whole is functional linked to the Chichester and Langstone Harbour SPA/Ramsar site and, therefore, taken as a whole the network is of international importance.

4.3 Habitats

4.3.1 Baseline Ecological Conditions

Desktop Study Results

A previous botanical survey of the field was undertaken by WYG in July 2018. Prior to the survey, the field had been cut and as such a full National Vegetation Classification (NVC) survey was not possible. A total of 17 species were recorded within the grassland field and 27 species were recorded within the margins of the field.

The only notable species recorded was a single southern marsh orchid *Dactylorhiza praetermissa*, which was recorded in an uncut patch of grass in the west of the site. Although this species can be interpreted as an indicator of unimproved grassland, it is

widespread in southern England and can be found in semi-improved or unimproved grassland.

Consultation with MAGIC identified the site as potentially supporting the Habitat of Principal Importance Coastal and Floodplain Grazing Marsh present across the entire site.

Consultation with MAGIC also returned records of a large area of Coastal and Floodplain Grazing Marsh immediately west of the site and an area of the priority habitat Deciduous Woodland, connected to the woodland along the western boundary of the site.

HBIC returned records of Coastal and Floodplain Grazing Marsh immediately adjacent to the south-west of the site. This area contains an area of another Habitat of Principal Importance, Purple Moor Grass and Rush Pastures.

HBIC returned records of 60 notable flowering plant species from within one kilometre of the site. Many of these species are Priority Species listed under Section 41 of the Natural Environment and Rural Communities Act 2006, were listed as nationally rare or scarce, or count rare or scarce.

Field Survey Results

Habitats within the site are shown on the Phase 1 Habitat Map (**Map 2**), Target Notes and photographs have been provided as appropriate, Target Notes are cross referenced to **Map 2**. Habitats are described in general terms using standard Phase 1 habitat survey terminology, with reference to dominant, characteristic and notable species in each vegetation type. The main habitats recorded on site during the Phase 1 habitat survey were as follows:

Broad-leaved Plantation Woodland

The western boundary of the site is formed by an offsite area of a broad-leaved plantation woodland strip dominated by poplar *Populus* species (**Figure 1** and **Figure 2**). Other species recorded include ash *Fraxinus excelsior*, hazel *Corylus avellana*, elm *Ulmus* species, sycamore *Acer pseudoplatanus*, alder *Alnus glutinosa* and holly *Ilex aquifolium*. This woodland is connected to a further area of off-site broadleaved woodland to the north-west.



Figure 1: Woodland along western boundary



Figure 2: Woodland along western boundary facing south

Semi-Improved Neutral Grassland

The majority of the site comprises a managed semi-improved grassland field which was cut to approximately 15 centimetres in length at the time of the survey (**Figure 3** and **Figure 4**). Species recorded include perennial rye grass *Lolium perenne*, cock's-foot *Dactylis glomerata*, broad-leaved dock *Rumex obtusifolius*, dove's-foot cranesbill *Geranium molle*, creeping bent *Agrostis stolonifera*, red clover *Trifolium pratense* and common sorrel *Rumex acetosa*.



Figure 3: Grassland field facing south-west



Figure 4: Grassland field facing east

Tall Ruderal

A small area of tall ruderal vegetation is present along the western boundary in the north-western corner of the site. It had been largely cut back at the time of the survey. Species recorded included common nettle *Urtica dioica*, low lying bramble *Rubus fruticosus* aggregate, hogweed *Heracleum sphondylium*, cleavers *Galium aparine* and hedge woundwort *Stachys sylvatica*.

Other Habitats

A shed and area where farm equipment is located in the north-western corner of the site. An off-site wet ditch runs along adjacent to the western boundary. A wall and fence

marks the northern boundary of the site, with the fence continuing along the eastern boundary of the site.

4.3.2 Evaluation

The site is listed on the MAGIC website as being floodplain and coastal grazing marsh which is defined as “*periodically inundated pasture or meadow, typically with ditches or rills containing standing brackish or fresh water*” (Maddock, 2008). However, the site is not marked on HBIC’s broad habitat layer which identifies the site as improved grassland.

The survey was undertaken at a time of year when water levels were high and no evidence to indicate that the site periodically floods was recorded. The site is situated in flood zone 1 and therefore, is not likely to flood with a less than 1 in 1,000 annual probability of river or sea flooding. The site is also not intersected by a ditch network with the adjacent, offsite, ditch appearing only likely to hold waters in periods of prolonged rainfall. Therefore, the site is not considered to support Coastal and Floodplain Grazing Marsh.

The habitats on the site itself are relatively common and widespread and does not meet the definition of any Habitat of Principal Importance. The off-site woodland which forms the western boundary is the habitat of highest value in the context of the site. Given the context of the surrounding area, the off-site woodland is assessed as being of local value. The semi-improved grassland is assessed as being of local value and the tall ruderal is assessed as being of no more than site value. All other on-site habitats are assessed as being of negligible value.

4.4 Bats

4.4.1 Baseline Ecological Conditions

Desktop Study Results

Consultation with MAGIC produced two records of granted EPSM licences in respect of bats within two kilometres of the site. These were located 1.2 kilometres north-west and two kilometres south-east of the site, and were granted in 2014 for the destruction of a resting place of common pipistrelle *Pipistrellus pipistrellus*, and in 2010 for the destruction of a resting place of common pipistrelle, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus* and Natterer’s bat *Myotis nattereri* respectively.

Consultation with HBIC returned a large number of records of bats from within two kilometres of the site boundary comprising at least ten species. The only recent (last ten years) record of a bat roost returned was from 2014 and was of an unspecified

roost type of common pipistrelle located approximately one kilometre north-east of the site. Other species identified within the two kilometre search radius were barbastelle *Barbastella barbastellus*, serotine *Eptesicus serotinus*, *Myotis* bat species, Daubenton's bat *Myotis daubentonii*, whiskered bat *Myotis mystacinus*, Leisler's bat *Nyctalus leisleri*, noctule *Nyctalus noctule* and Nathusius' pipistrelle *Pipistrellus nathusii*.

Field Survey Results

Building Assessment

The only building present on site is the shed in the north-western corner (TN1) (Figure 5). It is approximately three metres by five metres in size, is of singled-skinned timber construction and has a pitched bitumen felt roof (Figure 6). There is no roof void present and windows providing significant light spill into the interior. Due to this light spill, the lack of void and absence of suitable thermal conditions the shed is assessed as having negligible potential to support roosting bats.



Figure 5: Shed in north-western corner



Figure 6: Bitumen felt roof and window of shed

Tree Assessment

Due to the large number of trees present in the woodland on the western boundary, a detailed roost inspection of every tree was not undertaken.

A single poplar within the offsite woodland strip approximately three metres from the woodland edge was identified as having a potential bat roosting feature in the form of a rot hole on the eastern elevation approximately six metres high (TN2) (Figure 7). The tree is assessed as having moderate suitability to support roosting bats.



Figure 7: Poplar with moderate suitability to support roosting bats

Several other trees within the woodland strip were noted to be ivy-clad or having torn limbs and may offer roosting opportunities for bats and therefore, it is considered that the boundary woodland as a whole offers suitability for roosting bats.

Foraging and Commuting Habitat

The site offers limited habitat suitable for foraging and commuting bats in the form of the off-site western boundary woodland which is connected to further woodland north-west of the site.

The wider area is dominated by areas with limited suitability for foraging and commuting bats such as the residential development to the north, and open habitat to the south-west with Langstone Harbour beyond. As the suitable areas of habitat are concentrated in one section of the site, and the wider area has limited suitability, the site as a whole is assessed as offering low suitability for foraging and commuting bats.

Bat Transect Survey Results

A total of three bat transect surveys were undertaken between May 2020 and October 2020 which time a minimum of five species of bat were recorded within the site including common pipistrelle, soprano pipistrelle, *Myotis* bat species, serotine and noctule.

The majority of the registration made during the transect survey were attributed to soprano pipistrelle (56.2%) and common pipistrelle (39.6%) with only small numbers of *Myotis* bat species, serotine and noctule recorded. The key foraging and commuting corridor within the site was identified as being the western boundary woodland. The locations of the bat activity recorded are provided on **Map 3a** to **Map 3c** with a summary of the findings of each survey provided in **Table 4**.

Table 4: Bat activity recorded during transect surveys

Survey Date	General Bat Activity at the Site
8 th June 2020	A total of 26 registrations were made during the transect with 21 registrations of soprano pipistrelle and five registrations of common pipistrelle. The common pipistrelle activity recorded was entirely recorded in the south-western corner of the site. The majority of the remaining activity was recorded along the western boundary of the site with single registration on the north and southern boundary and a small number of registrations in the north-eastern corner of the site.
27 th July 2020	A total of 175 registrations were recorded during the transect with the majority attributed to soprano pipistrelle (97 registrations) and common pipistrelle (74) registrations. Two registrations of serotine and noctule were also recorded. The recordings were generally made along the western boundary of the site with a small number of registrations on other boundaries of the site including a single noctule registration along the eastern boundary travelling west.
7 th October 2020	A total of 64 registrations were recorded during the transect with the soprano pipistrelle (31) and common pipistrelle (26) being the most frequent. The majority of the activity, including seven registrations of <i>Myotis</i> bat species, was recorded along the eastern boundary of the site. Seven registrations were made along the northern boundary of the site and a single along the southern boundary.

Bat Automated Detector Survey Results

The automated bat detector survey results recorded a total of 8,316 bat registrations of at least nine species: soprano pipistrelle, common pipistrelle, noctule, *Myotis* bat species, serotine, Nathusius' pipistrelle, Leisler's bat, long-eared bat species and greater horseshoe *Rhinolophus ferrumequinum*.

Activity by Species

Table 5 shows the number of registrations and proportion of recorded bat activity at the site by species. The majority of the activity recorded across the survey period was attributable to soprano pipistrelle (65.2% of registration) and common pipistrelle (29.9%) which together accounted for 95.1% of all the recorded registrations. There were smaller number of noctule and *Myotis* bat species registrations with lower number of serotine, Nathusius' pipistrelle and Leisler's bat with single registrations of long-eared bat and greater horseshoe also recorded.

Table 5: Number of registrations and proportion of bat activity from each species

Species	No. Registrations	% Registrations
Soprano pipistrelle	5,424	65.2%
Common pipistrelle	2,490	29.9%
Noctule	230	2.8%
<i>Myotis</i> bat species	116	1.4%
Serotine	38	0.5%
Nathusius' pipistrelle	14	0.2%
Leisler's bat	2	0.0%
Long-eared bat species	1	0.0%
Greater horseshoe	1	0.0%
Grand Total	8,316	100.0%

Species Activity by Month

Table 6 provides the number of registrations of each species recorded within each month. The survey was designed to sample spring (May), summer (July) and autumn (October). The highest activity was recorded in July with an average of 563.8 registrations per night with May at 223.0 registrations per night and notably less in October where only 44.8 registrations per night were recorded. In terms of species diversity soprano pipistrelle, common pipistrelle and *Myotis* bat species were recorded across all three months. Noctule, serotine, Nathusius' pipistrelle, and Leisler's bat were recorded in both May and July. Whilst a single registration of long-eared bat was recorded in May and a single registration of greater horseshoe recorded in July.

Table 6: Number of registrations of each month split by species

Period	Species	No. Registrations	Activity Index
May 2020	Soprano pipistrelle	1,466	146.6
	Common pipistrelle	582	58.2
	Noctule	139	13.9
	Serotine	25	2.5
	Nathusius' pipistrelle	11	1.1
	<i>Myotis</i> bat species	5	0.5
	Leisler's bat	1	0.1
	Long-eared bat species	1	0.1
May 2020 Total		2,230	223.0
July 2020	Soprano pipistrelle	3,695	369.5
	Common pipistrelle	1,754	175.4
	Noctule	91	9.1
	<i>Myotis</i> bat species	80	8.0
	Serotine	13	1.2
	Nathusius' pipistrelle	3	0.3
	Leisler's bat	1	0.4

Period	Species	No. Registrations	Activity Index
	Greater horseshoe	1	0.1
July 2020 Total		5,638	563.8
October 2020	Soprano pipistrelle	263	26.3
	Common pipistrelle	154	15.4
	<i>Myotis</i> bat species	31	3.1
October 2020 Total		448	44.8
Grand Total		8,318	277.2

Activity Levels at Locations

Table 7 shows the number of registrations recorded at each individual location throughout the survey period. The greater activity overall was recorded at Location 2 (308.3 registrations per night), despite no recordings being made at this location in October. There were a total of 4,625 registrations made at this location which 3,621 were attributable to soprano pipistrelle. Species diversity at Location 1 was also notably low in May when compared to Location 2. The species of highest note was greater horseshoe with a single registration made at Location 1 in July 2020.

Table 7: Activity Recorded at Each Location

Location	Period	Species	No. Registrations	Activity Index
Location 1	May 2020	Common pipistrelle	148	29.6
		Soprano pipistrelle	144	28.8
	July 2020	Common pipistrelle	1,399	279.8
		Noctule	67	13.4
		Soprano pipistrelle	1,396	279.2
		Serotine	8	1.8
		Nathusius' pipistrelle	1	0.2
		Greater horseshoe	1	0.2
		Myotis bat species	80	16.0
	October 2020	Common pipistrelle	154	30.8
		Soprano pipistrelle	263	52.6
		Myotis bat species	31	6.2
Location 1 Total			3,693	246.2
Location 2	May 2020	Common pipistrelle	434	86.8
		Noctule	139	27.8
		Soprano pipistrelle	1,322	264.4
		Serotine	25	5.0
		Nathusius' pipistrelle	11	2.2
		Leisler's bat	1	0.2
		Long-eared bat species	1	0.2
		Myotis bat species	5	1.0
	July 2020	Common pipistrelle	355	71.0
		Noctule	24	4.8

Location	Period	Species	No. Registrations	Activity Index
		Soprano pipistrelle	2,299	459.8
		Serotine	4	0.8
		Nathusius' pipistrelle	2	0.4
		Leisler's bat	1	0.2
Location 2 Total			4,623	308.3
Grand Total			8,318	277.2

4.4.2 Evaluation

Roosting Bats

The site itself does not provide any suitability support roosting bats. However, the boundary woodland is likely to provide suitability. Given that no further survey work has been undertaken associated with the woodland the value of the boundary for roosting bats is currently unknown.

Foraging and Commuting Bats

Bat surveys recorded at least nine species of bat foraging and commuting at the site. The most notable species was greater horseshoe which was not identified as part of the desktop study and is relatively rare species both in Hampshire and the UK. However, only a single registration of this species was recorded associated with the western boundary woodland which would not indicate that the species is reliant on the site for foraging or commuting purposes.

It is also not possible to establish whether the records of long-eared bat are of the common and widespread brown long-eared bat or rarer grey long-eared bat. It is considered highly unlikely to be the rarer grey long-eared bat based on the lack of records in the wider area and the restricted range of the species. However, given that only a single registration was recorded it is not considered that the value of the site for these species would be more than local regardless of the species using the site.

It is unknown whether the *Myotis* bat species recorded are commoner species such as Natterer's bat or rarer species, such as Bechstein's bat *Myotis bechsteinii*. However, the latter species rely on complex woodland networks (such as those present in Southleigh Forest approximately 3.3 kilometres to the north of the site separated by Havant) which are neither present on site or in the immediate surrounds.

Hampshire SINC criteria only allows designation of SINC's for supporting breeding populations of notable species. Whilst not all boundary trees have been assessed there is no evidence to indicate a maternity species of bats on the site itself based on the information gathered during the bat activity surveys such as notable commuting records made during the transect survey. Therefore, the site is not of county value for either

individual species or the overall assemblages. Whilst the site is not of county level importance the woodland boundary habitat in particular provides good linkages to the surrounds and an assemblage of bats was recorded during the automated detector and transect surveys. Therefore, the site is assessed as being of local importance for foraging and commuting bats overall.

4.5 Otter

4.5.1 Baseline Ecological Conditions

Desktop Study Results

Consultation with MAGIC produced no records of granted EPSM licences in respect of otter *Lutra lutra* within two kilometres of the site.

Consultation with HBIC produced no records of otter within one kilometre of the site, however, this does not confirm the absence of the species in the local area.

Field Survey Results

No evidence of otter was recorded during the survey. The wet ditch adjacent to the western site boundary appeared shallow and terminated to the south of the site with a culvert to the north. It is also considered highly unlikely that the ditch would hold water all year round and is considered unsuitable for supporting otter. There is a network of waterbodies, both freshwater and saltwater in the surrounding area associated with the coastal estuaries which provides further suitable habitat for otter. However, given the unsuitability of the site itself no further consideration to this species is given within this report.

4.6 Badger

4.6.1 Baseline Ecological Conditions

Desktop Study Results

Consultation with HBIC produced no records of badger *Meles meles* within the desktop study area, however, this does not confirm the absence of the species in the local area.

Field Survey Results

No evidence of badger was recorded during the survey, however the site does offer suitable foraging habitat for the species in the form of the semi-improved grassland, woodland strip and tall ruderal. The off-site western boundary woodland also provides opportunities for resident badger with suitable habitat for sett construction present. However, given the absence of any evidence it is highly unlikely that setts are present or that the species would be reliant on the site for foraging purposes. Therefore, no further consideration to the species is given within this report.

4.7 Hazel Dormouse

4.7.1 Baseline Ecological Conditions

Desktop Study Results

Consultation with MAGIC produced no records of granted EPSM licences in respect of hazel dormouse *Muscardinus avellanarius* within two kilometres of the site.

Consultation with HBIC produced no records of hazel dormouse within the desktop study area, however, this does not confirm the absence of the species in the local area.

Field Survey Results

The site itself offers no suitable habitat for hazel dormouse. The off-site woodland to the west offers limited suitable habitat connectivity to further suitable habitat within the wider off-site woodland. The species generally requires this connectivity for dispersal. This suitable habitat extends north approximately 400 metres before being cut off by residential development which decreases the suitability of the woodland for the species. However, at this stage it is not possible to rule out presence of hazel dormouse from this boundary woodland.

4.7.2 Evaluation

The site itself offers no suitable habitat for hazel dormouse and therefore the on-site habitats are assessed as being of negligible value for hazel dormouse. However, the off-site boundary woodland to the west does offer suitable habitat for the species. Given that the presence of the species is currently unknown it is not possible to robustly evaluate this and a precautionary assumption has been made in the impact assessment.

4.8 Water Vole

4.8.1 Baseline Ecological Conditions

Desktop Study Results

Consultation with HBIC returned 32 records of water vole *Arvicola amphibious* within one kilometre of the site. A number of the records are associated with the river which runs to the west of the site (located approximately 20 metres west of the site boundary) but are all located further upstream away from the site.

Field Survey Results

No evidence of water vole was recorded during the survey and the site itself lacks any suitable habitat for the species. The offsite wet ditch running along the western boundary of the site was assessed for its suitability during the field survey and is poorly vegetated and shallow. It is also poorly connected to the surrounds with no connectivity

to the south and immediately culverted to the north. All of these factors significantly reduces the likelihood of water vole utilising the ditch. There is a network of waterbodies, both freshwater and saltwater in the surrounding area associated with the coastal estuaries which provides further suitable habitat for water vole. However, given the lack of on-site habitat and poor suitability of the offsite ditch no further consideration for this species is given within this report.

4.9 Birds

4.9.1 Baseline Ecological Conditions

Desktop Study Results

Previous wintering bird surveys carried out by WYG recorded a total of 24 species using the site. None of the six wintering bird species, including the amber listed brent goose *Branta bernicla*, for which the Langstone and Chichester Harbour SPA is designated for were recorded (see Paragraph 4.2.1). Only one wader species, the red listed curlew *Numenius arquata* was recorded on site. Up to 15 individuals were recorded foraging on site, primarily in the southern half. No curlew were recorded roosting on site.

Other red listed species recorded during the surveys were herring gull *Larus argentatus*, starling *Sturnus vulgaris*, song thrush *Turdus philomelos*, redwing *Turdus iliacus* and a resident pair of mistle thrush *Turdus viscivorus*. Amber listed species recorded during the surveys were dunnoek *Prunella modularis*, stock dove *Columba oenas*, black-headed gull *Chroicocephalus ridibundus*, meadow pipit *Anthus pratensis* and kestrel *Falco tinnunculus*.

Consultation with HBIC returned records of 115 bird species from within one kilometre of the site boundary. 40 records of brent goose were returned, mostly located within Chichester and Langstone Harbours SPA. The nearest record was from 2017 located 130 metres south-west of the site. There were also records returned within a one kilometre grid square of the site of all five of the other bird species which for the Langstone and Chichester Harbour SPA is designated.

The Solent Wader and Brent Goose Strategy identified 15 individual records at the site between 2008 and 2018. Ten were attributed to curlew with a peak count of 47, three to oystercatcher with a peak count of three, a single record of nine lapwing and 90 dark-bellied Brent goose.

Field Survey Results

During the survey, six species of bird were recorded on site. These were woodpigeon *Columba palumbus*, great tit *Parus major*, blue tit *Cyanistes caeruleus*, blackbird

Turdus merula, robin *Erithacus rubecula* and the amber listed mute swan *Cygnus olor*¹¹.

The off-site boundary woodland and scattered trees offer suitable nesting habitat for breeding birds. A nest box designed for use by the Schedule 1 listed¹² barn owl *Tyto alba*, was also recorded in a tree on the western boundary (TN3). During the bat transect survey undertaken in May 2020 a barn owl was recorded emerging from this nest box. Additionally, the semi-improved grassland offers suitable habitat for ground nesting birds such as the red-listed skylark *Alauda arvensis*. However, no ground nesting birds were recorded as an incidental result of the survey work undertaken at the site and a grass cut was undertaken during their nesting season which would reduce the suitability of the site for ground nesting birds.



Figure 8: Barn owl box on western boundary

The site offers suitability for wintering birds in the form of the semi-improved grassland agricultural field and has been confirmed as a Secondary Support Area for waders and brent goose in the SWBGS.

¹¹ The UK's birds are split in to three categories of conservation importance - red, amber and green. Red is the highest conservation priority, with species needing urgent action. Amber is the next most critical group, followed by green. Amber list criteria include species which are: in unfavourable conservation status in Europe; subject to historical population decline during 1800–1995, but recovering; subject to moderate (25–49%) decline in UK breeding population or contraction of UK breeding range over last 25 years, or the longer-term period; subject to moderate (25–49%) decline in UK non-breeding population over last 25 years, or the longer-term period; rare breeders (1–300 breeding pairs in UK); rare non-breeders (less than 900 individuals), or; internationally important species with at least 20% of European breeding or non-breeding population in UK.

¹² Birds listed on Schedule 1 of the Wildlife and Countryside Act (1981 as amended) are afforded additional protection making it an offence to: Intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or; Intentionally or recklessly disturb the dependent young of any such bird.

4.9.2 Evaluation

Breeding Birds

The site itself offers suitable habitat for ground nesting birds in the form of semi-improved grassland. The western boundary woodland also provides good nesting habitat with an active barn owl box identified within this woodland. Given the size of the site and the relatively lack of optimal nesting bird habitat the site itself is assessed as being of site value to breeding birds.

Wintering Birds

The SWBGS network as a whole is of international importance given that it provides supporting habitat for the Solent SPAs. The site in isolation, however, supports assemblages of wintering birds which are not uncommon in the wider area. Current HBIC SINC Criteria indicates that for the site to be designated as a SINC (i.e. county value) for brent goose or curlew the peak count would need to be in excess of 200. No SINC criteria are provided for the other wintering bird species identified on site. Therefore, the site is assessed as having local value for wintering birds.

4.10 Reptiles

4.10.1 Baseline Ecological Conditions

Desktop Study Results

HBIC provided three records of slow-worm *Anguis fragilis* and one record of grass snake *Natrix helvetica* within one kilometre of the site. The most recent was of slow-worm in 2014 located 520 metres east of the site.

Field Survey Results

The semi-improved grassland offers suitable habitat for reptiles during their active season, with extensive basking opportunities present, particularly at the fringes of the site where the vegetation is less managed and is allowed to grow longer. Additionally, log piles and waste piles present on site provide hibernating opportunities for the species group. The off-site woodland to the west also provides suitable habitat for reptiles, both active and hibernating.

Reptile Survey Results

A summary of the reptile surveys at the site is provided in **Table 8** and on **Map 5**. Slow-worm was the only reptile species recorded on site during the surveys, with a peak count of one adult female. No males or juvenile slow-worm were recorded. Slow-worm were recorded during only two survey visits, with both sightings occurring in the east of the site.

Table 8: Summary of reptile survey results

Survey Date	Number of Individuals Recorded	
	Slow-worm	
	Adult	Juvenile
6 th April 2020	0	0
14 th April 2020	0	0
20 th April 2020	0	0
5 th May 2020	1	0
7 th May 2020	0	0
14 th May 2020	0	0
18 th May 2020	1	0
Peak Count	1	0

4.10.2 Evaluation

Population Class Size Assessment

Table 9 shows the current guidance (Froglife, 1999) for assessing the population size of reptiles based on a refugia density of 10 per hectare. A density of approximately 23 per hectare was used at the site.

Table 9: Criteria for population size assessment based upon a refugia density of 10 per hectare

Species	Low Population	Good Population	Exceptional Population
Slow-worm	<5	5-20	>20

Given the peak count of one adult female slow-worm, the site is assessed as supporting a low population of slow-worm. No male or juvenile slow-worm were recorded on site and therefore it is considered that the site does not support a breeding population of the species.

Evaluation

The site supports a low population of slow-worm. Slow-worm is the most common reptile species in the UK. Given the low numbers of individuals recorded, the site does not support an important or breeding population of the species. Therefore, the site is assessed as being of no more than site value for reptiles.

4.11 Great Crested Newt

4.11.1 Baseline Ecological Conditions

Desktop Study Results

Consultation with MAGIC produced no records of granted EPSM licences in respect of great crested newt *Triturus cristatus* within two kilometres of the site.

Consultation with HBIC produced no records of great crested newt within the desktop study area, however, this does not confirm the absence of the species in the local area.

A review of online mapping resources did not identify any suitable waterbodies such as ponds within 500 metres of the site. A large number of rivers are present in the surrounds which would form barrier to dispersal of the species.

Field Survey Results

There are no waterbodies on site and therefore the site itself is unsuitable for breeding great crested newt. The wet ditch west of the western boundary of the site comprises running water, and is therefore unsuitable for use for breeding great crested newt.

The semi-improved grassland, tall ruderal and off-site woodland offer suitable habitat for the species both during their terrestrial stage and when hibernating. However, given the absence of suitable waterbodies within 500 metres of the site great crested newt is assessed as being absent from the site and no further consideration is given to the species within this report.

4.12 Invertebrates

4.12.1 Baseline Ecological Conditions

Desktop Study Results

HBIC provided records of nine notable coleoptera (beetles) species and three notable lepidoptera (butterflies and moths) species within one kilometre of the site. Records of two Species of Principal Importance, stag beetle *Lucanus cervus* and cinnabar *Tyria jacobaeae*, were returned from 2006 and 2004 and located 700 metres north and 390 metres south-west respectively.

Field Survey Results

The habitats on site are suitable for common and widespread invertebrate species and assemblages. The off-site woodland to the west is of relatively greatest value for invertebrates within the context of the site and could support notable terrestrial invertebrates such as stag beetle, which was returned as part of the desktop study.

4.12.2 Evaluation

Given the presence of suitable habitat for common and widespread species only, the site itself is assessed as being of no more than site value for invertebrates.

4.13 Other Relevant Species

4.13.1 Baseline Ecological Conditions

Desktop Study Results

HBIC provided three records of European hedgehog *Erinaceus europaeus* and one record of common toad *Bufo bufo* within one kilometre of the site. The most recent records of both species were from 2017.

Field Survey Results

The site-itself offers suitable foraging habitat for foraging European hedgehog in the form of grassland and tall ruderal. Common toad may also utilise these suitable on-site habitats during their terrestrial stage. There is further suitable habitat in the surrounds for both species in the form of the off-site woodland, further woodland strips and blocks and residential gardens.

4.13.2 Evaluation

Given the presence of further suitable habitats in the surrounds the habitats on site are assessed being of no more than site value for both European hedgehog and common toad.

4.14 Summary of Baseline Ecological Conditions

Table 10 provides a summary of the ecological features of value at the site. Ecological features considered during the appraisal but concluded to have no ecological value have been omitted from this summary.

Table 10: Summary of Baseline Ecological Conditions at the Site

Ecological Feature		Level of Importance
Designated Sites	Chichester and Langstone Harbour SPA, Ramsar site and Solent Maritime SAC	European to International
	Various SINC's in proximity of the site	County
Habitats		Local to Site
Bats	Foraging and Commuting	Local
Hazel Dormouse		Unknown
Birds	Breeding	Site
	Wintering	Local
Reptiles		Site
Invertebrates		Site
Common Toad		Site
European Hedgehog		Site

5.0 ASSESSMENT OF ECOLOGICAL EFFECTS AND MITIGATION/COMPENSATION/ ENHANCEMENT MEASURES

5.1 Introduction

This section assesses the ecological effects of the proposed development scheme on the identified ecological features as identified in Section 4.0. Methods for addressing potential impacts on ecological features have been approached in accordance with the mitigation hierarchy¹³ with avoidance of impacts prioritised where possible. Where significant adverse effects cannot be avoided other forms of mitigation are prioritised over compensation. Enhancement measures have been detailed, where relevant, in order to not only minimise the impacts on biodiversity but also to provide enhancement in accordance with Paragraph 170 of the NPPF (Paragraph 2.2). It is anticipated that mitigation, compensation and enhancement measures will be secured through the planning process.

5.2 Scheme Design

The proposed development entails the construction of 65 new residential dwellings in the northern-most two-thirds of the site, with access roads and associated parking. Access will be created to the north of the site from The Mallards. The southern third of the site will comprise green space. The planning application is to be outline with all matters reserved with the exception of access. No detailed landscaping scheme is due to be submitted as part of the scheme. The application is to be supported by a Biodiversity Mitigation and Enhancement Plan which is anticipated will be secured by planning condition and should be read in-conjunction with this impact assessment. Any contributions are likely to be secured by a Section 106 agreement.

The potential ecological impacts and effects of these proposals, in the absence of mitigation, are described for each ecological feature below. For each ecological feature, measures to mitigate and/or compensate for significant effects are described.

5.3 Designated Sites

5.3.1 Potential Impacts and Effects

The increase in local residents has the potential to result in increased recreational pressure on the Chichester and Langstone Harbour SPA/Ramsar site and Solent Maritime SAC in-combination with other plans or projects.

The site is also identified as a Secondary Support Area in the Solent Wader and Brent Goose strategy (site H27). The development of the site would result in the loss of this

¹³ In accordance with CIEEM Ecological Impact Assessment guidance (CIEEM, 2018) a sequential process is adopted to address impacts on features of ecological interest, with 'Avoidance' prioritised at the top of the hierarchy and 'Compensation/Enhancement' at the bottom. This is often referred to as the 'mitigation hierarchy'.

Secondary Support Area which in turn could result in a likely significant effect on the Chichester and Langstone Harbours SPA/Ramsar site either alone or in-combination with other plans or projects.

The proposals would result in wastewater discharge from the site, which has the potential to result in an increase in nitrogen output into the Solent. This has been identified as having a likely significant effect either alone in-combination with other plans or projects including the Chichester and Langstone Harbour SPA/Ramsar site and Solent Maritime SPA.

Given the proximity of the site to the Chichester and Langstone Harbour SPA/Ramsar site there is also the potential for impacts on these designated sites as a result of accidental pollution events, primarily through potential pollution to the river to the west of the site.

5.3.2 Mitigation Measures

The proposals will need to make a financial contribution towards Bird Aware Solent strategy (Bird Aware Solent, 2017). This strategy is designed to implement measures to address in-combination effects across the Solent area.

A strategy in order to ensure that the site can deliver "nitrate neutrality" will need to be devised as part of the proposals in order to ensure that there is no likely significant effect either alone or in-combination with other plans or projects. This will entail contributions towards Havant Borough Council's Warblington Farm Mitigation Scheme which allows developers to make a contribution of £1,235.00 per kilogram of total nitrogen discharged to offset the increase.

In order to offset the loss of the Secondary Support Area a strategy will need to be devised to support the planning application. The SWBG mitigation strategy currently states the following:

Where the functional area of a Secondary Support Area is to be lost in its entirety with no direct replacement of habitats by the applicant then additional measures will be necessary to ensure the continued ecological function of the network. Appropriate measures include the use of companies such as the Environment Bank to ensure appropriate sites are provided elsewhere within the network, the funding of an identified strategic offsetting site or project that has been agreed by the SWBGS Steering Group, or in addition, an additional agreed level of funding for land purchase. In such cases the final compensation package will be determined on a case-by-case basis.

The funding secured, via section 106 agreements, will be used to enhance, manage and monitor the wider solent wader and brent goose ecological network. This funding

will be managed by the respective local authority and will be used to support schemes across the network, this includes those in neighbouring authority boundaries"

The current figure for compensation costs of a secondary support area is £85,464 per hectare, assuming there would be no need for any additional land purchase. Therefore, a contribution towards this strategy will be made to Havant Borough Council in order to implement these strategic measures. Whilst the red line boundary is a total of 2.6 hectares the development of the site will render the remainder of the H27 Solent Wader and Brent Goose Strategy site unsuitable. Therefore, the 3.7 hectares of the site will require offsetting which will result in a financial contribution of £316,216.80. It is anticipated that this contribution will be secured as part of a Section 106 agreement.

In order to mitigate for the potential pollution events during construction it is recommended that a Construction Environmental Management Plan (CEMP) will be implemented as part of the construction process.

5.3.3 Significance of Residual Effects

Subject to the implementation of appropriate strategic mitigation measures, there would be no significant residual effect on any designated sites.

5.3.4 Compensation

No specific compensation in respect of designated sites are proposed.

5.3.5 Enhancement

No specific enhancements in respect of designated sites are proposed.

5.4 Habitats

5.4.1 Potential Impacts and Effects

The proposals will result in the loss of 2.6 hectares of semi-improved grassland including a small areas of tall ruderal vegetation along the western site boundary. Construction activities have the potential to result in damage and degradation to the retained bounded woodland and trees and pollution to the offsite river which is currently buffered by the existing woodland.

5.4.2 Mitigation Measures

Boundary trees to be retained should be protected with Root Protection Zones established in accordance with BS 5837:2012 (British Standards, 2012). Where possible boundary vegetation should be buffered from built form (including gardens, houses, and infrastructure) by a minimum of five metres in order to protect retained habitats. This buffer should be maintained as a landscaped buffer in the long-term.

In order to avoid any potential pollution events or degradation to retained habitat a Construction Environmental Management Plan (CEMP) will be implemented during the construction phase of the development.

5.4.3 Significance of Residual Effects

The loss of the semi-improved grassland cannot be mitigated and is assessed as having a residual impact at the site level in the absence of compensation.

5.4.4 Compensation

A detailed landscaping plan is not currently available at the time of the outline planning application. Once the detail landscaping plans come forward these will be designed in consultation with a suitably qualified ecologist.

In order to offset the loss of the semi-improved grassland as a result of the development the new area of public open space situated to the southern of the site will be sown with a diverse seed mix such as Emorsgate EM3 (or similar approved mix) and subject to appropriate management in order to increase the diversity over the baseline situation.

5.4.5 Enhancement

New native tree planting will be undertaken in the new Public Open Space of approximately 30 trees.

The buffer to be established along the western boundary of the site between built form and the existing woodland will be planted with a new native species scrub/thicket mix including species such as hazel *Corylus avellana*, field maple, blackthorn *Prunus spinosa*, hawthorn *Crataegus monogyna*, holly *Ilex aquifolium*, spindle *Euonymus europaeus* and guelder rose *Viburnum opulus*.

New hedgerow planting is proposed along the northern and eastern boundaries of the site to provide new green corridors around the boundaries. Suitable species would include blackthorn, hawthorn, hazel, field maple, elder *Sambucus nigra* and wild privet *Ligustrum vulgare*.

5.5 Bats

5.5.1 Potential Impacts and Effects

The boundary woodland along the western site boundary is to remain unaffected as part of the proposals which will retain the key foraging and commuting corridor within the site.

The introduction of new external lighting has the potential to result in increased light spill on roosting, foraging and commuting features (offsite within retained woodland), resulting in the disturbance of bats.

In England, bats and their habitat are fully protected under the Wildlife and Countryside Act 1981 through inclusion in Schedule 5. In addition, all bat species are protected under the Conservation of Habitats and Species Regulations 2017. Refer to **Appendix 3** for details.

5.5.2 Mitigation Measures

A detailed lighting scheme was not available at the time of preparation of this report which will be secured as part of reserved matters. However, it is recommended that no external lighting be introduced to the periphery of the site as part of the proposals. If this cannot be avoided, a sensitive lighting scheme will require implementation at the site including maintaining dark corridors (less than 0.5 lux) across key areas of suitable foraging and commuting habitat such as the boundary woodland along the western boundary of the site. Guidance on task related lighting levels and mitigation options as described within the Bats and Artificial Lighting in the UK report should be followed (Institution of Lighting Professionals, Bat Conservation Trust, 2018).

5.5.3 Significance of Residual Effects

Following the implementation of the mitigation measures no significant residual effects are anticipated.

5.5.4 Compensation

Given the absence of any significant residual effects no compensation specifically in relation to bats is proposed.

5.5.5 Enhancement

There are opportunities to enhance the site for roosting bats through provision of roosting opportunities such as integrated bat boxes in the new buildings. It is proposed that 10% of all new buildings include new roosting features such as Woodstone Build-In Bat Box (or similar).

Creation of new trees, shrub and hedgerow habitat as discussed in Paragraph 5.4 has the potential to enhance existing boundary habitat for foraging and commuting bats.

5.6 Hazel Dormouse

5.6.1 Potential Impacts and Effects

The site itself is unsuitable for supporting hazel dormouse. However, the boundary woodland may support the species, although the presence or absence within the woodland has not been confirmed. No direct impact, such as killing or injuring or loss of suitable habitat is anticipated as a result of the proposals. However, the introduction of new lighting has the potential to result in increased disturbance to hazel dormouse, if present.

In England, hazel dormouse and their habitat are fully protected under the Wildlife and Countryside Act 1981 through inclusion in Schedule 5. In addition, this species is protected under the Conservation of Habitats and Species Regulations 2017. Refer to **Appendix 3** for details.

5.6.2 Mitigation Measures

The implementation of a suitable sensitive lighting scheme at the site (Paragraph 5.5.2) which will ensure no disturbance impact on hazel dormouse as a result of the scheme.

5.6.3 Significance of Residual Effects

Following the implementation of the proposed mitigation no residual effects in respect of hazel dormouse are anticipated.

5.6.4 Compensation

No specific compensation measure in respect of hazel dormouse are proposed.

5.6.5 Enhancement

No specific enhancement measures in respect of hazel dormouse are proposed. However, the inclusion of new native species shrub planting along the western boundary of the site would provide an increase in overall habitat for the species, if present.

5.7 Birds

5.7.1 Potential Impacts and Effects

No removal of woody vegetation is anticipated as a result of the proposals. However, there will be a net loss of suitable ground nesting habitat and potential harm to ground nesting birds during site clearance (if present). There is also the potential for disturbance to barn owl utilising the offsite boundary barn owl box during the construction phase. The introduction of new lighting has the potential to result in disturbance to nesting birds within the boundary vegetation.

The development of the site will result in a loss of wintering bird habitat for waders associated with the Chichester and Langstone Harbours SPA. The retained habitat will be significantly reduced in suitability as a result of the increase of built form and increased human presence.

All birds, their nests, eggs and young are legally protected, with certain exceptions, under the Wildlife and Countryside Act 1981 (as amended). Refer to **Appendix 3** for details.

5.7.2 Mitigation Measures

The implementation of a suitable sensitive lighting scheme at the site (Paragraph 5.5.2) which will ensure no disturbance impact on nesting as a result of the scheme.

Should the works commence in the nesting bird season (March to August) then a suitably qualified ecologist will undertake a check for nesting barn owl within the adjacent barn owl box. Should barn owl be present then it would be necessary to establish a suitable buffer from works in order to avoid disturbance on the species.

The site will be subject to a reptile translocation exercise which will mitigate potential impacts on ground nesting birds during site clearance.

5.7.3 Significance of Residual Effects

The loss of suitable ground nesting bird habitat is considered significant at the site level. The proposals will result in the loss of over wintering bird habitat which will result in a significant residual effect at the local level.

5.7.4 Compensation

Specific mitigation and compensation measures in respect of wintering birds and the associated SWBGS site are provided in Paragraph 5.3.4 and would involve contributions towards offsite compensation measures.

The delivery of new areas of open space as set out in Paragraph 5.4 will create new ground nesting bird habitat.

5.7.5 Enhancement

In order to provide an enhancement for breeding birds new integrated nesting units will be installed on a minimum of 10% of new dwellings. This will include a variety of different designs such as Vivrapro House Sparrow Nest Box, Woodstone Build-In Swift Nest Box B and Woodstone Build-In Open Nest box.

The introduction of new trees, shrub and hedgerow planting at the site, as set out in Paragraph 5.4 has the potential to deliver a long-term enhancement in suitable nesting habitat at the site.

5.8 Reptiles

5.8.1 Potential Impacts and Effects

The proposals have the potential for direct harm to individual slow-worm during the construction phase and has the potential to result in a long-term loss in suitable habitat of 2.6 hectares.

Widespread reptile species (slow-worm, common lizard *Zootoca vivipara*, grass snake and adder *Vipera berus*) are protected under the Wildlife and Countryside Act 1981 against harm. Refer to **Appendix 3** for details.

5.8.2 Mitigation Measures

Given the presence of a low population of slow-worm within the site it will be necessary to ensure that these animals are not harmed during the necessary ground clearance works prior to development and that the animals are not present within the development area during construction works. Therefore, a translocation exercise will be necessary in order to remove the population from the construction area.

The southern third of the site which will form the receptor site during the translocation works. This area is contiguous with the site and contains identical habitat to that which is going to be lost. Prior to any translocation works being undertaken the habitat will be re-inspected by a the ecologist leading the translocation in order to confirm continued suitability of the habitat for receiving the population. This area will then remain unmanaged for the duration of the construction phase.

Prior to the commencement of the translocation exercise it is proposed that reptile proof fencing is erected around the boundary of the suitable reptile habitat to be lost to the proposals. Fencing will consist of 1000 gauge polythene or geotextile fence buried into the ground by 100 millimetres with an external return to prevent reptiles burrowing beneath it. Posts will be erected at approximately one to two metre intervals to support the fence. The fence is to be 750 millimetres to one metre in height.

Following the installation of the reptile fencing reptile capture and removal will be undertaken during the active season of April and October when reptiles are not in hibernation by a suitably qualified ecologist. A high density of refugia will be distributed throughout areas of suitable habitat and inspected on a daily basis until five 'clear' visits have been achieved or sufficient effort has been deemed to be expended by the ecologist leading the translocation. The translocation exercise will take a minimum of 30 days. All captured animals will be placed in a secure container and transported to the receptor area at the end of each visit capture.

Following an appropriate number of clear days, a destructive search will be undertaken of the on-site habitat under supervision of a suitably qualified ecologist. This will entail the methodical removal of any suitable habitat within the site. Any additional reptiles encountered as part of the destructive search will be captured by the ecologist and relocated to the receptor area. Once the destructive search has been completed, and all suitable reptile habitat has been removed from the site, the development work will be able to proceed.

The reptile fencing will remain *in situ* until which time it requires removal as the development proceeds. The reptile fencing will need to be monitored by on-site contractors with any repairs made necessary in order to remove the risk of reptile re-colonising at the site. During the construction period the construction zone will also be maintained clear of vegetation in order to minimise the likelihood of any reptiles re-colonising the site.

Following the completion of the development the reptile fencing should be removed under the supervision of a suitably qualified ecologist. This could be undertaken either upon completion of the entire development or on a phased work basis as the development is completed.

5.8.3 Significance of Residual Effects

Following the implementation of the reptile translocation exercise there will an overall loss of 2.6 hectares of reptile habitat at the site. In the absence of compensation the loss of this habitat will have a significant residual effect at the site level.

5.8.4 Compensation

The newly created open space will include an area of approximately one hectare of new reptile habitat. This will be actively managed in the long-term to provide enhanced habitat for reptiles over that which is current present within the site.

5.8.5 Enhancement

In order to enhance the new wildflower planting for reptiles four new hibernacula will be installed within the receptor area.

5.9 Invertebrates

5.9.1 Potential Impacts and Effects

The proposals will result in the loss of managed semi-improved grassland of limited diversity and unlikely to support any notable assemblages or species of invertebrate. Therefore, no significant impacts are anticipated.

5.9.2 Mitigation Measures

Given the absence of any significant effects no specific mitigation measures in respect of invertebrates are proposed.

5.9.3 Significance of Residual Effects

No significant impacts on invertebrates are anticipated.

5.9.4 Compensation

Given the absence of any significant residual effects on invertebrates no specific compensation in respect of this species group is proposed.

5.9.5 Enhancement

The inclusion of new landscaping at the site as detailed in Paragraph 5.4 has the potential to deliver enhanced habitat of invertebrates over the baseline situation.

5.10 Other Relevant Species

5.10.1 Potential Impacts and Effects

Removal of semi-improved grassland on site has the potential to result in the killing and/or injury of European hedgehog and result in the long-term loss of habitat. The introduction of new fencing between the plots has the potential to increase overall fragmentation of the site for the species.

5.10.2 Mitigation Measures

The reptile mitigation set out in Paragraph 5.8.2 will result in the clearance of the on-site habitat under ecological supervision. Any hedgehogs encountered as part of this operation would be relocated outside of the construction area.

Gaps in any new fencing should be created to allow European hedgehog to access the landscaping. This will be achieved either through cutting a square hole of approximately 13 centimetres x 13 centimetres into the bottom of the fence or leaving out a small section of board with at least 13 centimetres clearance.

5.10.3 Significance of Residual Effects

Following the implementation of the mitigation measures at the site no significant residual effects in relation to other relevant species are anticipated.

5.10.4 Compensation

Given the absence of any significant residual effects no compensation for other relevant species is proposed.

5.10.5 Enhancement

No specific enhancement measures in respect of any other relevant species are proposed.

5.11 Cumulative Effects

Subject to securing an appropriate mitigation package in relation to the Chichester and Langstone Harbour SPA/Ramsar site and assuming that the mitigation and compensation measures outlined in the paragraphs above are implemented, no significant residual effects are anticipated. As such it is considered unlikely that the proposals will contribute to cumulative adverse effects in association with other proposals in the local area.

6.0 CONCLUSIONS

6.1 Conclusion

The site supports common and widespread habitats with the habitat of relatively greater ecological interest being the western boundary woodland. Survey work undertaken has identified that the site supports an assemblage of foraging and commuting bats, a low population of slow-worm and breeding and wintering birds. The site also has suitability for supporting common and widespread invertebrates, whilst the boundary woodland has suitability for hazel dormouse and roosting bats. Potential impacts have been identified on these features and suitable mitigation, compensation and enhancement measures proposed.

The site also provides supporting habitat for the Chichester and Langstone Harbours SPA/Ramsar site. The proposals will result in the loss of this habitat as well as potential increases recreational pressure and nitrate discharge into the SPA/Ramsar. A suitable package of mitigation will need to be secured offsite through appropriate contribution to strategic measures.

Subject to the implementation of a package to address potential impacts on Chichester and Langstone Harbour SPA/Ramsar site and the other mitigation/compensation measures set out in this document the proposals will accord with all relevant national and local planning policy in relation to ecology and the NPPF (see Section 2.0).

6.2 Updating Site Survey

If the planning application boundary changes or the proposals for the site alter, a re-assessment of the scheme in relation to ecology may be required. Given the mobility of animals and the potential for colonisation of the site over time, updating survey work may be required, particularly if development does not commence within 18 months of the date of the most recent relevant survey.

7.0 REFERENCES

Bird Aware Solent, 2017. *Solent Recreation Mitigation Strategy*, s.l.: s.n.

British Standards, 2012. *BS 5837:2012 trees in relation to design, demolition and construction – Recommendations*. s.l.:s.n.

CIEEM, 2017. *Chartered Institute of Ecology and Environmental Management Website*.
[Online]
Available at: www.cieem.net

CIEEM, 2017. *Guidelines for Ecological Report Writing*. 2nd ed. Winchester: Chartered Institute of Ecology and Environmental Management.

CIEEM, 2017. *Guidelines for Preliminary Ecological Appraisal*. 2nd ed. Winchester: Chartered Institute of Ecology and Environmental Management.

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

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

Collins, J. & Jones, G., 2009. Differences in Bat Activity in Relation to bat Detector Height: Implications for Bat Surveys at Proposed Windfarm Sites. *Acta Chiropterologica*, 11(2), pp. 343-350.

DEFRA, 2020. *Multi-Agency Geographic Information for the Countryside (MAGIC) Map Application*. [Online]
Available at: www.defra.magic.gov.uk

English Nature, 2001. *Great Crested Newt Mitigation Guidelines*. Peterborough: English Nature.

Froglife, 1999. *Reptile survey: an introduction to planning, conducting and interpreting surveys for snake and lizard conservation*. *Froglife Advice Sheet 10*. Halesworth: Froglife.

Froglife, 2015. *Surveying for Reptiles: Tips, techniques and skills to help you survey for reptiles*, Peterborough: Froglife.

Institution of Lighting Professionals, Bat Conservation Trust, 2018. *Bats and Artificial Lighting in the UK*, Rugby: Institution of Lighting Professionals.

JNCC, 2010. *Handbook for Phase 1 Habitat Survey: A Technique for Environmental Audit*. Peterborough: Joint Nature Conservation Committee.

Ratcliffe, D., 1977. *A Nature Conservation Review*. Cambridge: Cambridge University Press.

Solent Wader and Brent Goose Strategy, 2020. *Solent Wader and Brent Goose Strategy - Strategy Maps and Data*. [Online] Available at: <https://solentwbgs.wordpress.com/page-2/> [Accessed 11 November 2020].

Weather Underground, 2020. *Weather Forecasts and Reports*. [Online] Available at: <https://www.wunderground.com/> [Accessed 11 November 2020].

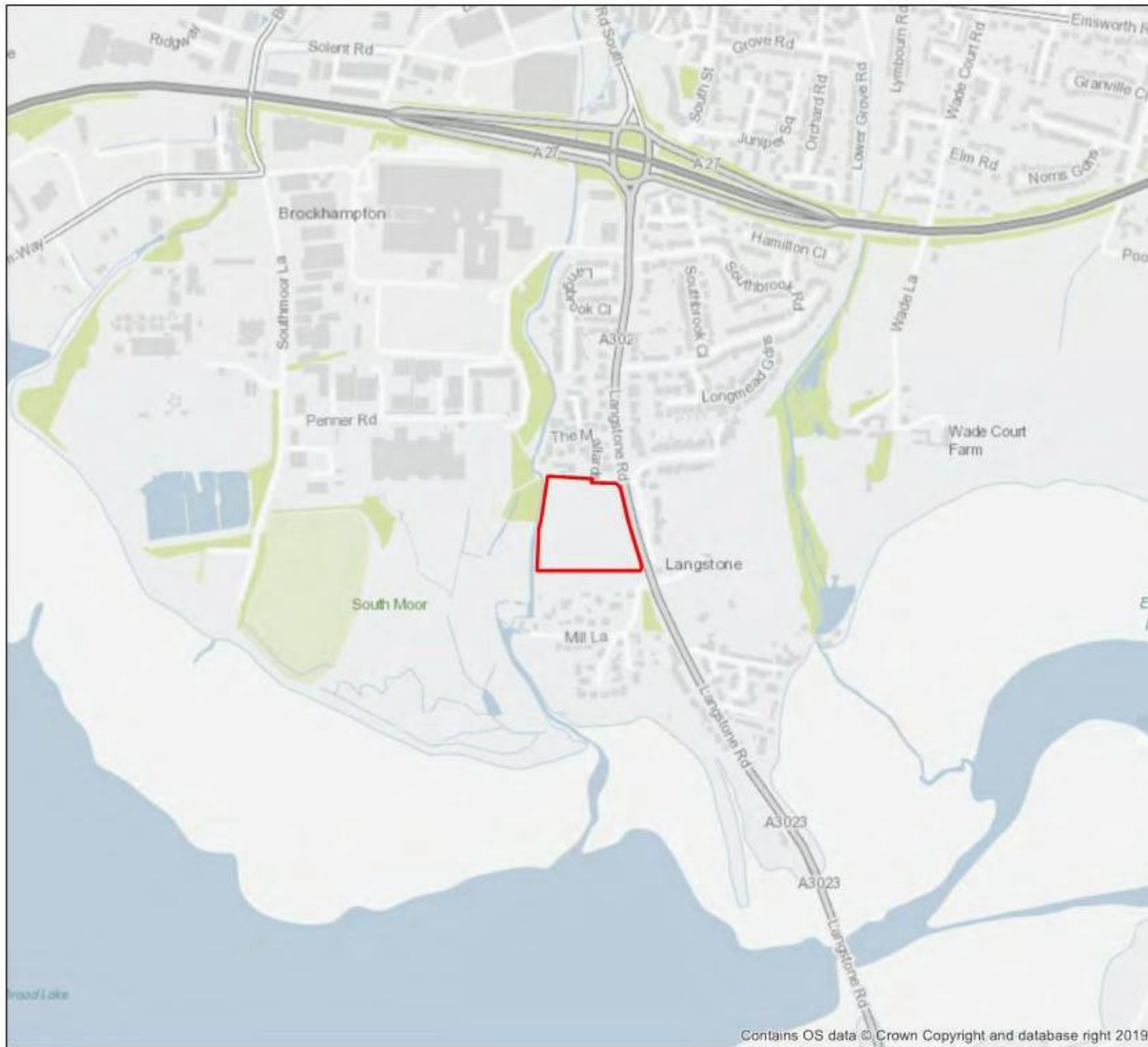
Whitfield, D., 2019. *Solent Waders and Brent Goose Strategy 2019 Interim Project Report: Year Two*, s.l.: Hampshire and Isle of Wight Wildlife Trust.

WYG, 2017. *Southmere, Langstone Road - Extended Phase 1 Habitat Survey Report*, Southampton: s.n.

WYG, 2018a. *Botanical Survey and Assessment - Southmere, Langstone Road, Havant*, Southampton: s.n.

WYG, 2018b. *Southmere, Langston Road: Wintering Bird Survey Report*, Southampton: s.n.

Map 1 Site Location Plan



SOUTHMERE FIELD, LANGSTONE ROAD, LANGSTONE, HAVANT, HAMPSHIRE

ECOLOGICAL IMPACT ASSESSMENT

Map 1 - Site Location Plan

Client:	Persimmon Homes South Coast
Date:	June 2020
Status:	Final

KEY

Site Boundary



Scale at A4: 1:10,000
 0 100 200 400 Metres



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Map 2 Phase 1 Habitat Map

**SOUTHMERE FIELD, LANGSTONE
ROAD, LANGSTON, HAVANT,
HAMPSHIRE**

ECOLOGICAL IMPACT ASSESSMENT

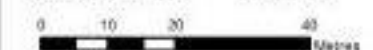
Map 2 - Phase 1 Habitat Map

Client:	Persimmon Homes South Coast
Date:	December 2020
Status:	Final

KEY

-  Site Boundary
-  Scattered Trees
-  Broad-leaved Plantation Woodland
-  Semi-improved Neutral Grassland
-  Tall Ruderal
-  Buildings
-  Fence
-  Wall
-  Wet Ditch
-  Target Note

Scale at A4: 1:1,500



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Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,
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Map 3a Bat Transect Survey: June 2020



SOUTHMERE FIELD, LANGSTONE ROAD, LANGSTON, HAVANT, HAMPSHIRE

ECOLOGICAL IMPACT ASSESSMENT

Map 3a - Bat Transect Survey: June 2020

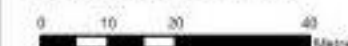
Client:	Persimmon Homes South Coast
Date:	December 2020
Status:	Final

KEY

-  Site Boundary
-  Bat Transect Route
-  Common pipistrelle
-  Soprano pipistrelle

N.B. Points on map represent the location of the surveyor when the registration was recorded, not the location of the bat. Accuracy of the GPS point is dependent on a number of factors such as cloud cover and adjacent canopy cover.

Scale at A4: 1:1,500



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Map 3b Bat Transect Survey: July 2020



**SOUTHMERE FIELD, LANGSTONE
ROAD, LANGSTON, HAVANT,
HAMPSHIRE**

ECOLOGICAL IMPACT ASSESSMENT

Map 3b - Bat Transect Survey: July 2020

Client:	Persimmon Homes South Coast
Date:	December 2020
Status:	Final

KEY

- Site Boundary
- Bat Transect Route
- Common pipistrelle
- ★ Noctule
- ★ Serotine
- Soprano pipistrelle

N.B. Points on map represent the location of the surveyor when the registration was recorded, not the location of the bat. Accuracy of the GPS point is dependent on a number of factors such as cloud cover and adjacent canopy cover.

Scale at A4: 1:1,500



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Map 3c Bat Transect Survey: October 2020



**SOUTHMERE FIELD, LANGSTONE
ROAD, LANGSTON, HAVANT,
HAMPSHIRE**

ECOLOGICAL IMPACT ASSESSMENT

Map 3c - Bat Transect Survey: October 2020

Client: Persimmon Homes South Coast

Date: December 2020

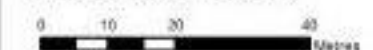
Status: Final

KEY

- Site Boundary
- Bat Transect Route
- Common pipistrelle
- ★ Myotis bat species
- Soprano pipistrelle

N.B. Points on map represent the location of the surveyor when the registration was recorded, not the location of the bat. Accuracy of the GPS point is dependent on a number of factors such as cloud cover and adjacent canopy cover.

Scale at A4: 1:1,500



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Map 4 Bat Automated Detector Survey



SOUTHMERE FIELD, LANGSTONE ROAD, LANGSTON, HAVANT, HAMPSHIRE

ECOLOGICAL IMPACT ASSESSMENT

Map 4 - Bat Automated Detector Survey

Client:	Persimmon Homes South Coast
Date:	December 2020
Status:	Final

KEY

 Site Boundary

N.B. Points on map represent the location of a total of two bat automated detectors, deployed on site for five consecutive nights once per season (Spring, Summer, Autumn).

Scale at A4: 1:1,500



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Map 5 Reptile Survey



SOUTHMERE FIELD, LANGSTONE ROAD, LANGSTON, HAVANT, HAMPSHIRE

ECOLOGICAL IMPACT ASSESSMENT

Map 5 - Reptile Survey

Client:	Persimmon Homes South Coast
Date:	June 2020
Status:	Final

KEY

 Site Boundary

Reptile Survey Results 2020

Species, Peak Count

-  Slow-worm, x1 adult female
-  No reptile records

N.B. Points on map represent the location of a total of 60 reptile refugia deployed on 26th March 2020 and the peak count of reptile species recorded at each location during the surveys undertaken in April and May 2020.

Scale at A4: 1:1,500



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Appendix 1 Proposed Site Layout



-  Principal elevation
-  Primary Street
-  Secondary Street
-  Private Drive

Rev	Class	Revision Details	By	Date
 PERSIMMON Together, we make a home				
Job Title Southmere Field, Langstone				
Drawing Title Layout Structure				
Job No.	Design No.	Rev		
-	A-02-111-SD	-		
Drawn	Checked	Date		
br	gs	02.08.21		
Scale 1:500 @ A1 / 1:1000 @ A3				
				
APPROVAL				

Appendix 2 Sites Designated for Nature Conservation

Statutory Sites

Internationally Designated Sites - Ramsar Sites, Special Areas of Conservation and Special Protection Areas

Special Protection Areas (SPA) and Special Areas of Conservation (SAC) form a network of protected sites across the European Union called Natura 2000 sites. In the United Kingdom the primary legislative protection is afforded to these sites under the Conservation of Habitats and Species Regulations 2017 (as amended).

Ramsar sites are designated as wetlands of international importance which are afforded similar legislative protection to Natura 2000 sites.

SACs are sites which support intentionally important habitats or internationally important assemblages or populations of species. SPAs are designated for supporting internationally important populations of birds listed in the annexes of the Birds Directive. SACs, SPAs and Ramsar sites are generally also designated as Sites of Special Scientific Interest.

Under Regulation 63 of the Conservation of Habitats and Species Regulations 2017 (as amended) there is a legal requirement that competent authorities, such as local planning authorities, need to consider whether plans or projects are likely to have a significant adverse effect on Natura 2000 sites or Ramsar sites, either alone, or in combination with other plans or projects. In the event that a likely significant effect cannot be ruled out, on the basis of objective information, then the competent authority must undertake an "Appropriate Assessment" to fully assess the plan or project against the site's conservation objectives. Unless certain defined derogation tests can be met, the competent authority may not authorise nor undertake any plan or project which adversely affects the integrity of a Natura 2000 site or Ramsar site.

Nationally Designated Sites – Sites of Special Scientific Interest and National Nature Reserves

Sites of Special Scientific Interest (SSSI) receive legal protection under the Wildlife and Countryside Act 1981 (as amended). Such sites are designated to protect specific areas of biological or geological interest of national importance. Such sites also generally receive strict protection through the planning system.

National Nature Reserves (NNR) are also usually designated as SSSIs and are specifically managed for their wildlife value. They receive legal protection through the National Parks and Access to the Countryside Act 1949 and the Wildlife and Countryside Act 1981 (as amended). As with SSSIs, these sites generally receive strict protection through the planning system.

Locally Designated Sites – Local Nature Reserves

Local Nature Reserves (LNR) are designated by local authorities under the National Park and Access to the Countryside Act 1949. These are generally designated not only for their local wildlife value but also for education, scientific and recreational purposes. These sites generally receive protection from development through the planning system.

Non-Statutory Sites

Locally Designated Sites

In addition to statutory designations, local authorities often designate sites of nature conservation importance at the local level. Such designations are named differently by each local authority and may be referred to as Local Wildlife Sites (LWS), Sites of Importance for Nature Conservation (SINC) or Sites of Nature Conservation Importance (SNCI), amongst others. The exact level of protection afforded to these sites varies and is normally defined through local planning policy.

Solent Wader and Brent Goose Strategy Sites

The Solent Wader and Brent Goose Strategy has identified sites across the Solent which are utilised waders and/or Brent geese associated with the Solent SPAs and, therefore, provide functionally linked habitat to the SPAs. The sites are categorised as follows using a metric which is set out in the strategy (Whitfield, 2019):

- SPA Sites - sites which are within the SPA and have bird records and form part of the ecological network;
- Core Areas – are defined as sites which have:
 - a network value – this relates a site's importance to a network score for birds moving to and from the intertidal areas to inland sites, and between inland sites;
 - and/or the max score of seven in three metrics (GB Importance, SPA Importance and SPA Assemblage);
 - and/or a max count of bird use of 1000 or more.
- Primary Support Areas - are defined as sites that score 3-6 in the three metrics (GB Importance, SPA Importance and SPA Assemblage)
- Secondary Support Areas are defined as:
 - sites that score 1-2 (GB Importance, SPA Importance and SPA Assemblage);
 - and/or have max counts of 100 plus birds for any species.

- Low Use Sites - are defined as sites that have records of birds but in low numbers (score 0 in the metric).
- Candidate Sites - sites that have records of high numbers of birds (max count equal to or greater than 100) and/or a total score equal to or greater than one but have less than three records in total.

Appendix 3 Relevant Legislation

Bats

All UK bat species are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017. They are afforded full protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence to:

- Deliberately capture, injure or kill any such animal;
- Deliberately disturb any such animal, including in particular any disturbance which is likely:
- To impair its ability to survive, breed, or rear or nurture their young;
- To impair its ability to hibernate or migrate;
- To affect significantly the local distribution or abundance of that species;
- Damage or destroy a breeding site or resting place of any such animal;
- Intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any place that any of these animals uses for shelter or protection.

In addition, five British bat species are listed on Annex II of the Habitats Directive. These are:

- Greater horseshoe bat *Rhinolophus ferrumequinum*;
- Lesser horseshoe bat *Rhinolophus hipposideros*;
- Bechstein's bat *Myotis bechsteinii*;
- Barbastelle *Barbastella barbastellus*; and
- Greater mouse-eared bat *Myotis myotis*.

In certain circumstances where these species are found the Directive requires the designation of Special Areas of Conservation (SACs) by EC member states to ensure that their populations are maintained at a favourable conservation status. Outside SACs, the level of legal protection that these species receive is the same as for other bat species.

Hazel Dormouse

This species is listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of the Conservation of Habitats and Species Regulations 2017. They are afforded full protection under Section 9(4) of the Act and Regulation 43 of the Regulations. These make it an offence to:

- Deliberately capture, injure or kill any such animal;
- Deliberately disturb any such animal, including in particular any disturbance which is likely, to impair its ability to survive, breed, or rear or nurture their young, to impair its ability to hibernate or migrate;
- To affect significantly the local distribution or abundance of that species;
- Damage or destroy a breeding site or resting place of any such animal;
- Intentionally or recklessly disturb any of these animals while it is occupying a structure or place that it uses for shelter or protection; or
- Intentionally or recklessly obstruct access to any place that any one of these species uses for shelter or protection.

Breeding Birds

With certain exceptions, all wild birds, their nests and eggs are protected by Section 1 of the Wildlife and Countryside Act 1981 (as amended). Therefore, it is an offence, to:

- Intentionally kill, injure or take any wild bird;
- Intentionally take, damage or destroy the nest of any wild bird while it is in use or being built; or
- Intentionally take or destroy the egg of any wild bird.

These offences do not apply to hunting of birds listed in Schedule 2 subject to various controls. Bird species listed on Schedule 1 of the Act receive further protection, thus for these species it is also an offence to:

- Intentionally or recklessly disturb any bird while it is nest building, or is at a nest containing eggs or young; or
- Intentionally or recklessly disturb the dependent young of any such bird.

Reptiles

The four widespread species of reptile that are native to Britain, namely common or viviparous lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, adder *Vipera berus* and grass snake *Natrix*

helvetica, are listed in Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and are afforded limited protection under Section 9 of this Act. This makes it an offence to:

- Intentionally kill or injure any of these species.

The remaining native species of British reptile (sand lizard *Lacerta agilis* and smooth snake *Coronella austriaca*) receive a higher level of protection via inclusion under Schedule 2 of the Conservation of Habitats and Species Regulations 2017. They are afforded full protection under Section 9(4) of the Act and Regulation 43 of the Regulations (in England and Wales only) and the Wildlife and Countryside Act 1981 (as amended). The distribution of these species are restricted to only a few sites in England.

Species and Habitats of Principal Importance in England

The Natural Environment and Rural Communities (NERC) Act came into force on 1st October 2006. Section 41 (S41) of the Act requires the Secretary of State to publish a list of habitats and species which are of principal importance for the conservation of biodiversity in England. The England Biodiversity List is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 40 of the NERC Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions. There are currently 943 species of principal importance and 41 habitats of principal importance included on the England Biodiversity List.

Appendix 4 Protected and Notable Species Appraisal Methods

Bats

The survey conformed to current Bat Conservation Trust guidelines (Collins, 2016). An assessment was made of the suitability of buildings and trees on the site and immediately on the site boundary to support roosting bats based on the presence of features such as loose or missing roof tiles or lifted lead flashing for buildings and holes, cracks, splits, loose bark and ivy cladding for trees.

An assessment was made of the suitability of the site and the surrounding landscape to support foraging and/or commuting bat species. The assessment of the potential for the site to support roosting, foraging and commuting bat is based on a four-point scale as detailed in **Appendix 7**.

Otter

The otter appraisal was based on an assessment of the suitability of the habitat present within the site to support otter by reference to habitat type (such as rivers, streams, ditches, wetlands, reed beds, lakes, ponds and reservoirs), proximity of the site to freshwater and potential important feeding resources (such as fisheries), presence of habitat features which could provide opportunities for resting places and/or holts (such as tunnels, hollows at the base of trees and presence of dense, undisturbed habitat). During the survey attention was paid to the presence of evidence such as spraints, feeding remains, footprints and slides.

Badger

The survey involved a detailed investigation of the site to identify evidence of badger residence, foraging or territorial activity. Particular emphasis was placed on locating badger setts, paths, and signs of territorial activity such as latrine sites both on-site and within immediately adjacent areas where access was possible.

Hazel Dormouse

The appraisal for the potential of the site to support dormouse was based on an assessment of habitat features that may indicate that the species is present. This includes the presence of key food sources such as hazel and bramble, or plants used as nesting material such as honeysuckle and clematis. Additionally, the species requires a continuum of food supply so that habitat structure, diversity and connectivity to adjacent areas of woodland/scrub are important features in determining the potential presence of hazel dormouse.

Water Vole

The water vole appraisal was based on an assessment of the suitability of the habitat present within the site to support water vole by reference to habitat type (such as rivers, streams, ditches, wetlands, reed beds, lakes, ponds and reservoirs), bank structure and the bank side vegetation. Water voles generally require sloping banks in which to burrow and well-developed

bank side vegetation to provide shelter and food. During the survey attention was paid to the presence of burrows, latrines, feeding remains, trails and footprints.

Birds

The appraisal of breeding birds on the site was based on the suitability of habitat present to support nesting bird communities, the presence of bird species that may potentially nest within the available habitat and evidence of nesting such as old or currently active nests.

The assessment of wintering birds was based on an assessment of the suitability of the habitat on site to support important wintering bird species and populations. Particular attention was paid to the potential for the site to support wintering farmland bird species, waders and wildfowl.

Reptiles

The reptile appraisal was based on an assessment of the suitability of the habitat present within the site to support a population of reptiles. Reptiles particularly favour scrub and rough grassland interfaces and the presence of these is a good indication that reptiles may be present on-site. In addition, reptiles may utilise features such as bare ground for basking, tussocky grassland for shelter and compost heaps and rubble piles for breeding and/or hibernating.

Great Crested Newt

The appraisal of the site to support great crested newt included establishing the presence of suitable aquatic habitats such as ponds, lakes or other waterbodies within or adjacent to the site and the presence of suitable terrestrial habitat. Waterbodies that are densely shaded, highly eutrophic or that contain fish are likely to be less suitable for this species. The suitability of on-site ponds and terrestrial habitat is considered in relation to the presence of ponds within the wider area, as identified within the desktop study (Paragraph 3.4.3), and their suitability to be used as a network.

Invertebrates

An assessment was made of the site for its potential value to support diverse communities of invertebrates. The assessment was based on the presence of habitat features which may support important invertebrate communities. These features include, for example, an abundance of dead wood, the presence of diverse plant communities, varied woodland structure, sunny woodland edges with a diverse flora, waterbodies and water courses and areas of free draining soil exposures. During the field survey there was no attempt made to identify species present as this is a more specialist area of ecological assessment reserved for targeted surveys.

Other Relevant Species

An assessment was made of site suitability for other notable species such as more rarely encountered protected species, Species of Principal Importance for the Conservation of diversity in England notified under Section 41 of the NERC Act 2006 and as listed in the England

Biodiversity List, and Local Biodiversity Action Plan (LBAP) species¹⁴, specific to the study region.

Invasive Species

During the field survey any incidental records of invasive species listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) were recorded. However, it should be considered that the survey was not specifically aimed at assessing the presence of these species and further specialist advice may need to be sought.

¹⁴ LBAPs identify local priorities for biodiversity conservation by translating national targets for species into effective action at the local level and identifying targets for species important to the local area.

Appendix 5 Automated Detector Settings

Automated Detector Settings

Automated detectors can be calibrated in a number of different settings which can result in the potential variations in the way that bat calls are recorded. **Table 11** details the standard settings used by ECOSA during automated detector surveys undertaken.

Table 11: Standard automated detector settings

Option	Basic Setup
Settings - Audio	
Sample rate	192000Khz
Channels	Mono L (left)
Compression	WAV
Gain Left	+0.00
Gain Right	+0.00
Settings - Audio Advanced	
Dig High Pass Filter (HPF) Left	Fs/12
Dig High Pass Filter (HPF) Right	Off
Digital Low Pass Filter (LPF) Left	Off
Digital Low Pass Filter (LPF) Right	Off
Trig Lvl Left	12SNR
Trig Lvl Right	Off
Trg Win Left	2.0s
Trg Win Right	2.0s
Trg Max Length	2s
Bits (Div Ratio)	16
Nap Trg Lvl	Off

Data Conversion Settings

In order to analyse the data efficiently the raw .wav files recorded on the automated detector are subsequently converted to zero crossing (.zc) files which are subject to automated classification by Wildlife Acoustics Kaleidoscope Pro. During the conversion process the data is filtered to remove noise files in line with Wildlife Acoustics recommended setting as provided in **Table 12**.

Table 12: Noise file filtering settings

Option	Basic Setup
Signal of Interest – Frequency	8 – 120 kHz
Signal of Interest – Call Length	2 - 500ms
Signal of Interest – Minimum Number of Calls	2
Advanced Signal Enhancement	On

Appendix 6 Statutory Designated Sites within the Desktop Study Area

Details of statutory designated sites within the desktop study area, as listed in Paragraph 4.2.1, are provided in **Table 13**.

Table 13: Statutory Designated Sites Located Within the Desktop Study Area

Site Name	Chichester and Langstone Harbour
Site Designation	Ramsar Site
Approximate Relative Location	90 metres south-west of the site
Reasons for Designation:	
The site is designated under Ramsar Criterion 1, 5 and 6. Criterion 1 – Two large estuarine basins linked by the channel which divides Hayling Island from the main Hampshire coastline. The site includes intertidal mudflats, saltmarsh, sand and shingle spits and sand dunes. Criterion 5 – Assemblages of international importance: 76480 waterfowl, count in winter (5 year peak mean 1998/99 – 2002/2003) Criterion 6 – species/populations occurring at levels of international importance. Qualifying species/populations (as identified at designation) Species with peak counts in spring/autumn: - Ringed plover <i>Charadrius hiaticula</i>; - Black-tailed godwit <i>Limosa limosa islandica</i>; and - Common redshank <i>Tringa totanus totanus</i>. Species with peak counts in winter: - Dark-bellied brent goose <i>Branta bernicla bernicla</i>; - Common shelduck <i>Tadorna tadorna</i>; - Grey plover <i>Pluvialis squatarola</i>; - Dunlin <i>Calidris alpina alpina</i>. Species/populations identified subsequent to designation for possible future consideration under criterion 6: - Little tern <i>Sternula albifrons</i>.	

Site Name	Chichester and Langstone Harbours
Site Designation	Special Protection Area
Approximate Relative Location	90 metres south-west of the site
Reasons for Designation:	
The site qualifies for supporting the following Annex I species: Breeding - Little tern <i>Sterna albifrons</i>, 100 pairs representing up to 4.2% of the breeding population in Great Britain; and - Sandwich tern <i>Sterna sandvicensis</i>, 158 pairs representing up to 1.1% of the breeding population in Great Britain. On passage - Little egret <i>Egretta garzetta</i>, 137 individuals representing up to 17.1% of the population in Great Britain.	

Over winter

- Bar-tailed godwit *Limosa lapponica*, 1,692 individuals representing up to 3.2% of the wintering population in Great Britain; and
- Little egret *Egretta garzetta*, 100 individuals representing up to 20.0% of the wintering population in Great Britain.

This site also qualifies by supporting populations of European importance of the following migratory species:

On passage

- Ringed plover *Charadrius hiaticula*, 2,471 individuals representing up to 4.9% of the Europe/Northern Africa - wintering population.

Over winter

- Black-tailed godwit *Limosa limosa islandica*, 1,003 individuals representing up to 1.4% of the wintering Iceland - breeding population;
- Dark-bellied brent goose *Branta bernicla bernicla*, 17,119 individuals representing up to 5.7% of the wintering Western Siberia/Western Europe population;
- Dunlin *Calidris alpina alpina*, 44,294 individuals representing up to 3.2% of the wintering Northern Siberia/Europe/Western Africa population;
- Grey plover *Pluvialis squatarola*, 3,825 individuals representing up to 2.5% of the wintering Eastern atlantic - wintering population;
- Redshank *Tringa totanus*, 1,788 individuals representing up to 1.2% of the wintering Eastern Atlantic - wintering population; and
- Ringed plover *Charadrius hiaticula*, 846 individuals representing up to 1.7% of the wintering Europe/Northern Africa - wintering population.

The site qualifies by regularly supporting in excess of 20,000 individual waterfowl over winter.

Site Name	Solent Maritime
Site Designation	Special Area of Conservation
Approximate Relative Location	230 metres south of the site
Reasons for Designation:	
Annex I habitats that are a primary reason for selection of this site:	
▪ Estuaries; ▪ Spartina swards (<i>Spartinion maritimae</i>); and ▪ Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>).	
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site:	
▪ Sandbanks which are slightly covered by sea water all the time; ▪ Mudflats and sandflats not covered by seawater at low tide; ▪ Coastal lagoons; ▪ Annual vegetation of drift lines; ▪ Perennial vegetation of stony banks; ▪ Salicornia and other annuals colonizing mud and sand; and ▪ Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes).	
Annex II species present as a qualifying feature, but not a primary reason for site selection:	
Desmoulin's whorl snail <i>Vertigo moulinsiana</i> .	

Site Name	Langstone Harbour
Site Designation	Site of Special Scientific Interest
Approximate Relative Location	90 metres south-west of the site
Reasons for Designation:	
Designated for extensive salt marsh habitats and a rich intertidal system which supports high densities of intertidal invertebrates and large populations of overwintering and migratory birds.	

Site Name	Chichester Harbour
Site Designation	Site of Special Scientific Interest
Approximate Relative Location	350 metres south-east of the site
Reasons for Designation:	
Designated for extensive mudflats and sandflats, a wide range of coastal and intertidal habitats suitable for wintering wildfowl and waders. Also designated for terrestrial habitats suitable for breeding birds such as scrub, hedgerows and semi-natural broadleaved woodland.	

Site Name	Warblington Meadows
Site Designation	Site of Special Scientific Interest
Approximate Relative Location	1.2 kilometres east of the site
Reasons for Designation:	
Designated for an unimproved grazing marsh with a gradation from freshwater base-rich marsh to old reclaimed saltmarsh. Designated for its rich associated flora with at least 158 flowering plant species recorded at time of notification.	

Site Name	Hayling Billy
Site Designation	Local Nature Reserve
Approximate Relative Location	800 metres south of the site
Reasons for Designation:	
Designated for supporting notable coastal habitats, wintering bird populations, and invertebrate assemblages.	

Site Name	West Hayling
Site Designation	Local Nature Reserve
Approximate Relative Location	800 metres south of the site
Reasons for Designation:	
Designated for supporting notable coastal habitats, wintering bird populations, and invertebrate assemblages.	

Appendix 7 Appraisal Criteria for Bats

The criteria used to assess the suitability of roosting and foraging/commuting habitat for bats is based on industry guidelines and outlined in **Table 14**¹⁵.

Table 14: Criteria used to Assess Suitability of Roosting and Foraging/Commuting Habitat for Bats

Suitability	Description of roosting habitats	Commuting and foraging habitats
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.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.
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.	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically/structure that does 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). A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential.	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerows or un-vegetated stream, but isolated (i.e. not very well connected to the surrounding landscape by other habitat). Suitable, but isolated, habitat that could be used by small numbers of foraging bats such as a lone tree or a patch of scrub.
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.

¹⁵ Table adapted from (Collins, 2016)