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SOUTHLEIGH PARK HOUSE, EASTLEIGH ROAD, HAVANT, HAMPSHIRE

ECOLOGICAL IMPACT ASSESSMENT

Final Document (Revision 2)

December 2023

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

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ECOLOGICAL IMPACT ASSESSMENT

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EXECUTIVE SUMMARY

Ecological Survey and Assessment Ltd (ECOSA) have been appointed by Bargate Homes to undertake an Ecological Impact Assessment to support a planning application for the redevelopment of Southleigh Park House, Havant. The site comprises several Grade II listed buildings of flint construction, a more modern flat roofed office complex and associated car parking, bordered by mixed scattered trees. There is a lawn of improved grassland in the south of the site and a large pond in the south-western corner.

The main findings of the Ecological Impact Assessment are:

The site is located 2.5 kilometres from the Solent SPAs and has suitability to support bats, breeding birds, notable invertebrates, common toad and European hedgehog.

Day roosts of common pipistrelle, soprano pipistrelle and long-eared bat were recorded in buildings on the site. The site has high suitability to support foraging and commuting bats.

An increase in people in the area may have a negative impact on the Solent SPAs. The proposed changes to the site include loss of scattered trees and improved grassland resulting in habitat loss for breeding birds, saprophytic insects, hedgehogs and toads. Retained trees may be damaged through accidental contact with machinery and root compaction during construction work. Breeding birds, hedgehogs and toads could be harmed during vegetation clearance. The proposed alterations to the buildings may cause direct harm or kill individual bats and disturbance through noise and lighting could impact foraging and commuting bats and bats known to be roosting in trees on the site.

A financial contribution will be made to the Solent and Brent Geese Waders Strategy. Retained habitats will be protected by fencing and new planting incorporating native tree and shrub planting will compensate for tree loss. Sensitive timings and methods of work will prevent harm to bats, breeding birds, hedgehogs and toads and a sensitive lighting scheme will be developed to prevent disturbance to bats at night. Gaps should be cut in boundary fencing to allow continued access for hedgehog. Log piles will be created to compensate for insect habitat loss.

New bat and bird boxes will be installed on retained trees to enhance the site for roosting bats and breeding birds.

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Given the impacts identified, and 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.

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1.0 INTRODUCTION

1.1 Background

Ecological Survey & Assessment Limited (ECOSA) have been appointed by Bargate Homes Ltd to undertake an Ecological Impact Assessment to support a planning application for the redevelopment of Southleigh Park House, Eastleigh Road, Havant, Hampshire PO9 2PE (hereafter referred to as the site).

ECOSA undertook a suite of surveys at the site during 2015 and 2016 (ECOSA, 2018) to support a hybrid planning application comprising a full application which proposed the change of use of the site, alterations and extension of the existing building and construction of 20 residential units (13 units in the main house and seven in the other listed buildings) and an outline application for the 1983 office building and associated brick and glass corridor link and the development of up to 70 residential units (Havant Borough Council Planning Reference APP/17/00863).

In addition, listed building consent application was submitted for the alterations and extension of existing buildings with associated landscaping, parking and amenity space to facilitate the change of use of the main house and other buildings to 20 residential units (13 in the main house and seven in the other buildings) (Planning Reference APP/17/00864).

The Ecological Assessment undertaken by ECOSA identified suitable habitat for foraging, commuting and roosting bats, badger, hazel dormouse, breeding birds and great crested newt. Surveys undertaken confirmed the likely absence of roosting bats on site while up to seven species of foraging and commuting bats on site while bat trapping surveys, most notably, confirmed the presence of foraging and commuting barbastelle and Bechstein's bat. Surveys for great crested newt confirmed the likely absence of the species on site (ECOSA, 2018).

These applications were submitted in August 2017 and planning was approved in January 2019, subject to conditions.

The purpose of this report is to provide an update to the ecological baseline of the site and to support the proposed update to the extant planning application, which will vary the full application by providing an update to the detailed design of the 20 units and associated landscaping, parking and amenity space. The proposed variation to the outline application entails the submission of a fully revised reserved matters application. While the existing listed building consent will be replaced to update the detailed design of the 20 units and associated landscaping, parking and amenity space.

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1.2 The Site

The site is located in Havant, Hampshire and centred on National Grid Reference (NGR) SU 7372 0795 (**Map 1**).

The site itself is approximately three hectares and comprises a number of Grade II listed buildings, an office complex and associated car parking, bordered by mixed scattered trees. There is a grassland lawn in the south of the site and a large pond in the south-western corner. The site is bounded by roads to the north (Bartons Road), east (Horndean Road/B2148) and west (Eastleigh Road) and parkland to the south.

The site is surrounded by parkland, agricultural land and woodland, beyond which lies mixed use development associated with Havant and Emsworth.

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 between 2022 and 2023 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 effects[1] ecological features and outlines enhancements to the site's ecology to be implemented as part of the development. The objectives of the assessment are:

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

[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.
[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'.

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To set out the requirements for any post-construction monitoring.

1.4 Site Proposals

The report will support the Reserved Matters Application for the creation of 41 new residential dwellings on site.

The Ecological Impact Assessment is based on the proposals plan produced by Thrive Architects, dated 18th September 2023 (Drawing No. BARG230130 SL01 Rev. P14) (**Appendix 1**).

Planning permission is being sought during 2023 with construction proposed to commence soon after permission has been granted.

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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 the most recent revised NPPF published in July 2021. 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 182 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 174 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 180, 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 habitats[1], including ancient woodland[2]. 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

[1] 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."*

[2] 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)."

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180 also states "*development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to improve biodiversity in and around developments should be integrated as part of their design, especially where this can secure measurable net gains for biodiversity or enhance public access to nature where this is appropriate.*". Paragraph 181 also sets out that potential SPAs, SACs and listed or proposed Ramsar sites or sites 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. Two 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 designated sites and features of ecological interest including wildlife habitats and corridors; and

Policy DM9: Development in the Coastal Zone

This policy states that permissions will only be granted in this zone where it can be demonstrated that there will be no harmful effects on designated sites.

Production of an updated Havant Borough Local Plan 2036 has been underway since 2016 and has been sent for examination to the Secretary of State for Housing Communities and Local Government on 12 February 2021. Five policies within the Havant Borough Local Plan 2036 refer specifically to ecology and biodiversity:

Policy E14: The Local Ecological Network

This policy states that developments must result in biodiversity net gain and avoid fragmentation of the Local Ecological Network;

Policy E15: Protected Species

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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 (SPA)

This policy refers to protecting SPAs within the Solent and states mitigation measures are 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); and

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.

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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 affected[3]. The appropriate survey radii for the various elements of the assessment (i.e. desktop study and field survey) have been defined in the relevant sections below. These distances are determined based on the professional judgement of the ecologist leading the appraisal, considering 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

A full biological record centre desktop study was not undertaken as part of this assessment. This was not considered necessary as the outline planning permission has already been granted and this report is to support the Reserved Matters Application.

3.4.1 Multi-Agency Geographic Information for the Countryside

The Multi-Agency Geographic Information for the Countryside (MAGIC) database (DEFRA, 2023) was reviewed on 25th August 2023 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

[3] 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).

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(NNRs) and Local Nature Reserves (LNRs) within two kilometres of the site. See **Appendix 3** 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 one kilometre 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.

3.4.2 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).

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

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vegetation type was compiled and any invasive species[4] 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 5**.

3.5.2 Survey Details

The initial field survey was carried out by Georgina Timmis of ECOSA on 17th July 2015. The weather conditions were dry and cloudy becoming sunny with approximately 60%-10% cloud cover, an ambient temperature of 21°C and a light to gentle breeze.

During the survey, the surveyor was equipped with a ladder, 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.

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

3.6 Bat Survey

3.6.1 Survey Methods

Ground Level Tree Assessment

The ground level tree assessment was undertaken in line with current best practice guidelines (Collins, 2016). An assessment was made of the suitability of the trees on the site and immediately on the site boundary (**Map 3**) to support roosting bats based on the presence of Potential Roost Features such as holes, cracks, splits, loose bark and ivy cladding. The assessment of the potential for trees on the site to support roosting bats is based on a four-point scale as detailed in **Appendix 6**.

Bat Emergence/Re-entry Survey

The bat emergence/re-entry surveys were undertaken in line with current best practice guidelines (Collins, 2016). In accordance with guidelines for trees assessed as having

[4] 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.

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suitability to support roosting bats a single dusk emergence survey and a single dawn re-entry survey was undertaken for trees assessed as having medium suitability for roosting bats in order to ascertain the presence/likely absence of roosting bats from within the trees. Where the presence of roosting bats is confirmed the data also allows for an assessment of the status of the roost present. The status of roosts (where appropriate) has been based on standard terminology as detailed in **Appendix 7**.

The dusk emergence surveys commenced approximately 15 minutes before sunset until approximately two hours after sunset. The dawn re-entry surveys commenced approximately two hours before sunrise until just after sunrise.

The surveys were carried out by experienced ECOSA surveyors, positioned at previously identified vantage points around the tree (**Map 4**). These vantage point locations allowed a sufficient coverage of the Potential Roosting Features identified on the trees impacted by the proposals.

During the surveys surveyors recorded the time, species, location and direction of flight for each bat encountered, with particular attention paid to establishing bat access/egress locations to any roosts within the trees.

Bat Trapping Surveys

The aim of trapping surveys is to determine the presence of quiet echolocating species, and to determine the species, sex and breeding status of bats using the site by being able to examine bats in the hand.

In accordance with the Bat Survey Guidelines trapping surveys commenced two hours before dusk to enable adequate set up time and continued for at least four hours after sunset, with approximately 1.5-2 hours of dismantling/packing up time.

The four trapping locations were repeated on each survey (**Map 5**). Trap sites were positively selected to increase the chance of capturing bats. Therefore, habitats most likely to support foraging or commuting bats such as woodlands, treelines or single mature trees and otherwise cluttered habitats were chosen for trap deployment.

All bats caught were identified to species level, sexed, aged and breeding status was determined e.g., breeding female, non-breeding female, sexually active male etc.

Bats were released immediately following examination.

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3.6.2 Survey Details

Ground Level Tree Assessment

The ground level tree assessment was carried out between 18th July and 24th August by Olivia Walton, Ecologist of ECOSA (Natural England Bat Licence 2023-11198-CL17-BAT), Samantha Faggetter, Ecologist of ECOSA (Natural England Bat Licence 2022-10733-CL17-BAT), Kate Carroll, Field Ecologist of ECOSA, Hannah Gunn, Assistant Ecologist of ECOSA and Megan Woolley, Assistant Ecologist of ECOSA. The weather conditions are detailed in **Table 1** below.

Table 1: Ground Level Tree Assessment Details

Date	Weather Conditions
18th July 2023	Dry, 40% cloud cover, with an ambient temperature of 19°C and no wind
20th July 2023	Dry, 20% cloud cover, with an ambient temperature of 19°C and a light wind
23rd August 2023	Dry, 0% cloud cover, with an ambient temperature of 20°C and no wind
24th August 2023	Rain, 100% cloud cover, with an ambient temperature of 20°C and a slight breeze

Bat Emergence/Re-entry Survey

The bat emergence/re-entry building surveys were undertaken between August and September 2022. **Table 2** provides details of each emergence/re-entry survey.

Table 2: Bat emergence/re-entry building survey details

Survey Date	Survey Type	Structure Surveyed	Survey Timings	Weather Conditions	Sunset/ Sunrise Time
16th August 2022	Emergence	Buildings 1, 3, 5 and 6	Start: 20:07 End: 22:22	General conditions: Dry Start temp:22°C End temp: 19°C Cloud Cover: 0-40% Wind Speed: WF0	20:22
2nd September 2022	Re-Entry	Buildings 1, 3, 5 and 6	Start: 04:20 End: 06:34	General conditions: Dry Start temp: 17°C End temp: 17°C Cloud Cover: 70-80% Wind Speed: WF0-WF1	06:19
3rd September 2022	Re-Entry	B2	Start: 04:20 End: 06:35	General conditions: Dry and clear Start temp: 16°C End temp: 15°C Cloud Cover: 0% Wind Speed: WF0	06:20

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Survey Date	Survey Type	Structure Surveyed	Survey Timings	Weather Conditions	Sunset/ Sunrise Time
14th September 2022	Emergence	Buildings 1, 3, 5 and 6	Start: 19:05 End: 20:50	General conditions: Dry Start temp: 19°C End temp: 15°C Cloud Cover: 10% Wind Speed: WF1	19:20
20th September 2022	Emergence	B2	Start: 18:47 End: 21:02	General conditions: Dry Start temp: 18°C End temp: 13°C Cloud Cover: 0% Wind Speed: WF1	19:02

The bat emergence/re-entry tree surveys were undertaken between August and September 2023. **Table 3** provides details of each emergence/re-entry survey.

Table 3: Bat emergence/re-entry tree survey details

Survey Date	Survey Type	Tree Surveyed	Survey Timings	Weather Conditions	Sunset/ Sunrise Time
16th August 2023	Emergence	G604	Start: 20:10 End: 22:25	General conditions: Dry Start temp:22°C End temp: 18°C Cloud Cover: 20-0% Wind Speed: WF0	20:25
21st August 2023	Emergence	G630, T413 and T431	Start: 19:58 End: 22:13	General conditions: Dry Start temp: 21°C End temp: 19°C Cloud Cover: 50-100% Wind Speed: WF0-WF0	20:13
22nd August 2023	Emergence	T496, T499 and T654	Start: 19:56 End: 22:11	General conditions: Dry Start temp: 26°C End temp: 19°C Cloud Cover: 90% Wind Speed: WF0	20:11
30th August 2023	Re-entry	T543	Start: 04:12 End: 06:27	General conditions: Dry Start temp: 18°C End temp: 16°C Cloud Cover: 70-30% Wind Speed: WF0	06:12
5th September 2023	Re-entry	G630, T413 and T431	Start: 04:18 End: 06:33	General conditions: Dry Start temp: 16°C End temp: 16°C Cloud Cover: 0% Wind Speed: WF1-2	06:18
7th September 2023	Re-entry	T654, T496 and T499	Start: 04:26 End: 06:41	General conditions: Dry Start temp: 20°C End temp: 19°C Cloud Cover: 5% Wind Speed: WF2	06:26
13th September 2023	Emergence	G604	Start: 19:08 End: 21:23	General conditions: Dry Start temp: 18°C End temp: 17°C Cloud Cover: 80-10% Wind Speed: WF1	19:23

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During the bat emergence/re-entry surveys the surveyors were equipped with Batlogger M1 bat detectors. Recordings made with the detectors were later analysed using Batexplorer 2.10 to confirm the identity of any species encountered.

The bat emergence/re-entry surveys were coordinated by Joanne Richmond, Senior Ecologist of ECOSA (Natural England Bat Licence No. 2017-31217-CLS-CLS) assisted by suitably qualified and experienced ECOSA surveyors.

Bat Trapping Survey

Table 4 provides details of the bat trapping survey visits.

Table **4**: Bat trapping survey details

Survey Date	Weather Conditions	Sunset/ Sunrise Time
30th May 2022	13-14°C, 50-100% cloud cover, WF2-WF3	20:00
25th July 2022	15-20°C, 50-100% cloud cover, WF1-WF3	21:00
30th August 2022	16-19°C, 80% cloud cover, WF0	19:53

During the bat trapping survey, the surveyors were equipped with harp traps in combination with acoustic bat lures (Sussex Autobat).

The bat trapping survey was undertaken by Colleen Hope, Paul Hope, Adam Cave, and Laura Gravestock.

3.6.3 Survey Limitations

Some bat species, e.g. long-eared bats *Plecotus* species[5], 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.

[5] 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.

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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.

3.7 Great Crested Newt Survey

3.7.1 Survey Methods

Habitat Suitability Index (HSI) Assessment

Those ponds and waterbodies located within a 500 metre radius of the site (**Map 6**), where access permitted, were subject to a Habitat Suitability Index (HSI) assessment (Oldham, et al., 2000). HSI is a numerical index between 0 and 1, derived from an assessment of ten habitat variables known to influence the presence of great crested newt such as geographical location, water body size and permanence, presence of predatory fish and wildfowl, availability of suitable terrestrial habitat and proximity to other ponds. Each factor is scored based on its level of suitability for great crested newt. An HSI of 1 is optimal habitat (high probability of occurrence), while an HSI of 0 is very poor habitat (minimal probability of occurrence). The HSI is calculated on a single pond basis, but takes into account surrounding terrestrial habitat and local pond density. If a pond has a very low HSI score (<0.5) there would typically be a minimal chance of great crested newt presence.

This qualitative score can then be used, with caution, to indicate whether further detailed investigations are necessary or whether a particular waterbody can be 'scoped out' as unsuitable for great crested newts. However, professional judgement should be used rather than simply relying on the HSI to eliminate ponds from further assessment. Further detailed investigations would involve targeted surveys carried out between mid-March and mid-June to determine presence/absence of great crested newt and if present then an assessment of population status.

Environmental DNA (eDNA) Survey

The great crested newt environmental DNA (eDNA) sampling was undertaken following current best practice guidelines (Biggs, et al., 2014).

Given the presence of a number of waterbodies within 500 metres of the site boundary an environmental DNA (eDNA) analysis was undertaken to establish the presence / likely absence of great crested newt from within the ponds which were accessible (**Map 6**).

The field sampling entailed the collection of 20 samples of 30 millilitres of water from pre-selected sub-sampling sites around the margin of each waterbody. Sub-sampling sites are chosen to include areas where great crested newt are likely to be present such as areas of vegetation where they may be egg laying and areas of open water

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where they may be displaying. The 20 samples are then mixed into a single sterile bag from which six samples of water of 15ml are taken each of which is preserved in 35ml of ethanol. The samples are then refrigerated until analysis at the lab. The samples were sent to SuresScreen Scientific testing service for analysis which were analysed in line with current guidance (Biggs, et al., 2014). The samples were taken within the required season (mid-April to June) when great crested newt eDNA is likely to be present within the pond and therefore, the analysis result indicates the presence or likely absence of the species from a given waterbody.

3.7.2 Survey Details

Environmental DNA (eDNA) Survey

The eDNA sampling was carried out by Kate Carroll, Field Ecologist of ECOSA and Hannah Gunn, Assistant Ecologist of ECOSA on 27th May 2022. The weather conditions were dry with approximately 0% cloud cover, an ambient temperature of 22ºC and a light wind.

3.7.3 Survey Limitations

There were no significant limitations to the great crested newt 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.

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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 no statutory designated sites of nature conservation interest situated within one kilometre of the site boundary. Recent studies (Natural England, 2022) have identified that an increase in nitrogen discharge as a result of new wastewater generated from residential development located within the catchment of the Solent designated sites has an in-combination effect on the SPA/Ramsar site and SAC associated with the Solent. The Zone of Influence has been extended to include the following statutory designated sites:

Chichester and Langstone Harbour (Ramsar site) – Located approximately 2.5 kilometres south and designated under Ramsar Criterion 1, 5 and 6 for its diverse habitats supporting internationally important numbers of wintering waterfowl;

Solent Maritime (SAC) – Located approximately 2.5 kilometres south and designated due to the presence of notable habitats including estuaries, Atlantic salt meadows and Spartina swards;

Chichester and Langstone Harbour (SPA) – Located approximately 2.5 kilometres south and designated due to supporting Annex I species including important assemblages of breeding and overwintering birds;

Solent and Isle of Wight Lagoons (SAC) – Located approximately 3.6 kilometres south-west, designated for a series of coastal lagoons which support three notable species: the nationally rare foxtail stonewort *Lamprothamnium papulosum*, the nationally scarce lagoon sand shrimp *Gammarus insensibilis*, and nationally scarce starlet sea anemone *Nematostella vectensis*; and

Kingley Vale (SAC) – Located seven kilometres north-east and designated for supporting several Annex 1 habitats including yew *Taxus baccata* woods and

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semi-natural dry grasslands and scrubland facies on calcareous substrates (*Festuco-Brometalia*).

Non-Statutory Designated Sites

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

Southleigh Forest (South) (SINC) – Located 30 metres east of the site. Designated for supporting pasture woodlands of considerable biological and historical interest;

Southleigh Forest (North of Emsworth Common Road) (SINC) – Located 110 metres north of the site and designated for supporting pasture woodlands of considerable biological and historical interest;

Barton's Copse and the Slip (SINC) – Located 160 metres north and designated for supporting ancient semi-natural woodland; and

Southleigh Forest (SINC) – Located 725 metres east of the site. Designated for supporting pasture woodland of considerable biological and historical interest and notable species purple emperor *Apatura iris* and coral necklace *Illecebrum verticillatum.*

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

4.2.2 Evaluation

The Chichester and Langstone Harbour Ramsar site is of International value while the Solent Maritime SAC, Chichester and Langstone Harbour SPA, Solent and Isle of Wight Lagoons SAC and Kingley Vale SAC are of European value. The nearby SINCs are considered to be of county value.

4.3 Habitats

4.3.1 Baseline Ecological Conditions

Desktop Study Results

Consultation with the MAGIC database revealed the presence of small blocks of the Habitat of Principal Importance, lowland mixed deciduous woodland, within the north and east of the site.

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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:

Scattered Scrub

A small area of scrub is present in the north-west corner of the site (**Figure 1**)(**TN1)**. Species present include herb robert *Geranium robertianum*, bramble *Rubus fruticosus aggregate*, common sorrel *Rumex acetosa*, cleavers *Galium aparine*, nettle *Urtica dioica*, garlic mustard *Alliaria petiolata* and enchanter's nightshade *Circaea lutetiana*.



Figure 1: Scattered scrub in north-west of site

Scattered Trees

The northern, eastern and western boundaries of the site are dominated by wide margins of mature and semi-mature deciduous and coniferous trees (**Figure 2**) comprising both native and non-native species. The areas of tree planting can be broken down into a number of discrete areas (**Map 2**), which have been summarised in **Table 12**:

Table 5: Descriptions of areas of scattered trees within the Southleigh Park House site

Area Number[6]	Habitat Description
Area 1	Shelterbelt comprising semi-mature sycamore *Acer pseudoplatanus*
Area 2	Narrow tree belt comprising mature pedunculate oak *Quercus robur*, holly *Ilex aquifolium*, beech *Fagus sylvatica*, English yew *Taxus baccata*
Area 3	Narrow tree belt comprising mature pedunculate oak and English yew

[6] Area numbers relate to those shown on Map 2

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Area 4	Predominantly English yew, Irish yew *Taxus baccata 'Fastigiata'*, and sycamore with overgrown shrubs including cherry laurel *Prunus laurocerasus*, bay laurel *Laurus nobilis*, hazel, holly, Lawsons cypress *Chamaecyparis lawsoniana* and pittosporum *Pittosporum* species.
Area 5	Area of more mature trees, predominantly non-native including redwood *Sequoia sempervirens*, Wellingtonia *Sequoiadendron giganteum*, Caragana *Caragana* species and monkey puzzle *Araucaria araucana,* although mature pedunculate oak, beech, yew and common lime *Tilia europaea* are also present. The mature trees are surrounded by overgrown shrub including cherry *Prunus* species, sycamore cherry laurel, silver birch *Betula pendula*, Portugal laurel *Prunus lusitanica*, silver lime *Tilia tomentosa,* holly and ash *Fraxinus excelsior*
Area 6	Mature pedunculate oak and horse chestnut *Aesculus hippocastanum*, with Leyland cypress *Cupressocyparis leylandii* and cherry laurel along the southern boundary of the car park
Area 7	Single mature pedunculate oak and a small a small number of immature silver birch
Area 8	Area of predominantly overgrown shrubs including cherry laurel, Portugal laurel, holly and semi-mature silver birch and beech with scattered mature conifers including Californian Scots pine *Pinus sylvestris* and Californian redwood.
Area 9	Shelterbelt comprising semi-mautre birch, holly, cherry laurel and false acacia *Robinia pseudoacacia* with scattered trees including pedunculate oak, English yew, hazel, Lebanon cedar *Cedrus libani* and Norway spruce *Picea abies,*
Area 10	Mature trees, predominantly native in this section, including oak, beech, sycamore, holly, ash, Turkey oak *Quercus cerris*, and silver lime as well as cherry and cherry laurel
Area 11	Trees associated with the pond including mature and semi-mature beech, ash, oak and yew and semi-mature goat willow *Salix caprea*, grey willow *Salix cinerea*, silver birch, cherry laurel, Portugal laurel and holly and Rhododendron *Rhododendron* species

The scattered trees form a dense canopy and therefore a very limited understorey and ground flora, the ground layer is dominated by leaf litter (**Figure 3**).



Figure 2: Scattered trees in west of site



Figure 3: Interior of tree margin

Individual trees are present across the site, mainly within the areas of managed grassland around the on-site buildings (**Figure 4**) and the track in the east of the site (**Figure 5**)(**TN2**). Species present include native species such as silver birch, wild cherry *Prunus avium*, pedunculate oak and, and non-native ornamentals including

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Turkey oak, weeping willow *Salix babylonica,* rowan *Sorbus* 'Joseph Rock', grand magnolia *Magnolia grandiflora,* golden Indian bean tree *Catalpa bignonioides 'Aurea'*, Persian ironwood tree *Parrotia persica*, Lebanon cedar and silver lime.



Figure 4: Scattered trees in north of site



Figure 5: Scattered tree in south-east of site

Improved Grassland

An area of lawn measuring approximately 0.36ha is present in the south of the site (**Figure 6**) (**TN3**). In addition, a number of smaller areas of grassland are present between on-site buildings and areas of hardstanding (**Figure 7**). All areas comprise well-managed improved grassland with species dominated by course grasses such as perennial ryegrass *Lolium perenne and* fescue *Festuca* species. Other species recorded within the sward include catsear *Hypochaeris radicata*, ribwort plantain *Plantago lanceolata*, creeping cinquefoil *Potentilla reptans*, red fescue *Festuca rubra*, bird's-foot trefoil *Lotus corniculatus*, creeping buttercup *Ranunculus repens*, daisy *Bellis perennis*, selfheal *Prunella vulgaris*, hop trefoil *Trifolium campestre*, greater plantain *Plantago major*, white clover *Trifolium repens*, red clover *Trifolium pratense*, ragwort *Jacobaea vulgaris*, yarrow *Achillea millefolium*, and creeping thistle *Cirsium arvense*.



Figure 6: Well-managed lawn in the south of the site.



Figure 7: Small area of grassland between building and hardstanding.

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Standing Water

An ornamental pond measuring approximately 0.11ha is present in the south-western corner of the site (**Figure 8**) (**TN4**). The pond is lined by trees to the north and south, the well managed lawn is to the east and a driveway is directly adjacent to the west of the pond. There is limited aquatic vegetation within the pond, however, the banks are well vegetated, including species such as great willowherb *Epilobium hirsutum*, bramble, rose *Rosa* species, flag iris *Iris pseudacorus*, bracken *Pteridium* species, pendulous sedge *Carex pendula*, cocksfoot *Dactylis glomerata* and rough meadow grass *Poa trivialis*.



Figure 8: Pond in south-west of site

Introduced Shrub

Small areas of flower bed planted with ornamental species including hydrangea *Hydrangea* species are present on the eastern edge of Building 3 (**TN5**). A small section of introduced shrub is present between Building 1 and Building 4 (**TN6**).

Fence

The majority of the site is bounded by chainlink fencing. There is a short stretch of closed board fencing on the western boundary (**TN7**).

Wall

Short stretches of flint wall are present in the north-east of the site, along the western site boundary adjacent to Building 7 (**TN8**), and along a section of the northern edge of the tree margin that divides the car park from the tarmac track behind (**TN9**).

Buildings and Hardstanding

There are seven buildings on site, four listed buildings of flint construction, two smaller outbuildings of similar construction and a single modern office block of brick and glass construction. Further details of these buildings are provided in **Table 6**.

There is a large car park in the north of the site (**TN10**) and a smaller visitor's car park in the west (**TN11**), the site is crossed by a number of tarmac access tracks and there are areas of patio associated with the south and west of Building 3 (**TN12**).

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Invasive Species

Rhododendron was recorded in the south-eastern corner of the site. Rhododendron is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). This makes it illegal to plant or otherwise cause the species to grow in the wild.

4.3.2 Evaluation

The habitats recorded on site are considered common and widespread in the local area. Therefore the habitats are considered to have no more than site value.

4.4 Bats

4.4.1 Baseline Ecological Conditions

Desktop Study Results

Consultation with the MAGIC database revealed a single granted EPSM licences for bats within two kilometres of the site boundary. This is 2019-40030-EPS-MIT-1 which was granted for the destruction of a common pipistrelle *Pipistrellus pipistrellus* resting place between 2019 and 2024, approximately 1.6 kilometres north-west of the site.

Previous bat surveys carried out on trees during 2020, and trapping works carried out on site in 2022 recorded a total of nine bat species including Bechstein's bat *Myotis bechsteinii*, barbastelle *Barbastella barbastellus*, Nathusius' pipistrelle *Pipistrellus nathusii*, soprano pipistrelle *Pipistrellus pygmaeus*, serotine *Eptesicus serotinus*, *Myotis* species bat[7], noctule and brown long-eared *Plecotus auratus.* No bats were recorded roosting in the trees surveyed during the emergence/re-entry surveys undertaken in 2020.

Field Survey Results

Building Assessment

Four buildings are present within the application boundary. Three of the buildings are assessed to have high suitability to support roosting bats. The results of the building assessment are provided in **Table 6**.

Tree Assessment

The site supports a large number of mature trees, many of which have potential to support roosting bats. Therefore, the site is assessed as having suitability to support tree roosting bats.

[7] 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.

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Foraging and Commuting Habitat

The site is bounded to the north, east and west by bands of mature trees that provide linear features for foraging and commuting bats. The mature trees and the pond in the south-west of the site are also likely to be a good source of invertebrate prey. The on-site habitat is connected to extensive suitable foraging and commuting habitat in the wider area, due to the presence of ancient and semi-natural woodland including Southleigh Forest and Barton's Copse to the north and east and parkland to the south. Lighting associated with the roads to the north, east and west of the site may discourage bats in the wider area from dispersing into on-site habitat. Overall, the site is assessed as having high suitability for foraging and commuting bats.

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Table 6: Building Assessment – Summary of Features with Bat Roost Potential and Evidence of Bat Roost Activity

Surveyed Feature	Figure	Building Description	Description of Potential Bat Roost Features	Evidence of Bat Roost Activity and Location	Assessment of Suitability for Roosting Bats
Building 1	 **Figure 9**: Western elevation  **Figure 10**: Interior of southern roof void  **Figure 11**: Gap at eaves	Building 1 is locally listed building of brick and flint construction with a complex hip and gable ended roof structure. The roof is clad with slate tiles as is the large porch on the western elevation. The building also supports a clock tower (**Figure 9**). A single storey flat roofed continuation of Building 4 wraps around the rear of Building 1 connecting to its eastern elevation. Internally, the building supports two separate roof voids, one in the northern part of the building and one in the southern part of the building. The southern void is small, measuring approximately 0.5m high, 6m wide and 6.5m long. The void is supported by a timber frame with bitumen felt lining and old blanket loft insulation (**Figure 10**). Trusses are present in the centre of the void. The northern void was not accessible at the time of survey but is likely to be of similar construction to the southern void.	A number of potential bat roosting features were identified associated with Building 1, including: Gaps under slipped tiles on western elevation; Gaps in soffits; Gaps under barge boards; and Gaps at the eaves where the roof and porch protrude beyond the walls (**Figure 11**).	No evidence of roosting bats was recorded during the survey.	High suitability

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Surveyed Feature	Figure	Building Description	Description of Potential Bat Roost Features	Evidence of Bat Roost Activity and Location	Assessment of Suitability for Roosting Bats
Building 2	 **Figure 12**: Southern and eastern elevations  **Figure 13**: Interior of southern roof void	Building 2 is of brick and flint construction with a cropped hipped roof clad with plain slate tiles. There is a single storey extension on the northern elevation, of the same construction, and a second single storey extension on the eastern elevation which has a corrugated roof (**Figure 12**). Internally the roof void is divided across the middle, with a single large void in the south of the building and four smaller voids in the north of the building. The southern void measures approximately 2m high, 8m wide and 7m long. It is supported by a timber frame with bitumen roofing felt lining and thick blanket loft insulation. The southern wall is painted brick, while the northern dividing wall is clad with timber boarding (**Figure 13**). Only one of the smaller voids in the north of the building was accessed at the time of survey, although they are all likely to be of similar construction. The void was small, measuring approximately 0.25 the volume of the southern void with the ridge at one end. The entire void is clad with painted plaster board and supported by a painted timber	The roof of Building 2 is generally well sealed and in good condition. However there are gaps present behind the barge boards on the main part of the building and the northern extension (**Figure 14**) and a single lifted tile is present on the western elevation.	No evidence of roosting bats was recorded during the survey.	Moderate suitability

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Surveyed Feature	Figure	Building Description	Description of Potential Bat Roost Features	Evidence of Bat Roost Activity and Location	Assessment of Suitability for Roosting Bats
	 **Figure 14**: Gap behind barge board	frame. This void also has thick blanket loft insulation.			
Building 3	 **Figure 15**: Southern elevation  **Figure 16**: Northern elevation	Building 3 is of flint construction with a combination of pitched and flat roof sections (**Figure 15** and **Figure 16**). There is a long central void which is closed timber boarded with a timber frame and blanket loft insulation. The void is 'L' shaped and measures approximately 1.5m high, 4m wide by 20m long (**Figure 17**). The presence of number of roof lights, mean the void is well lit during the day. A chimney stack with flint cladding is present in the north-western corner of the void. There are three smaller voids in the easternmost part of the building, comprising older timber frames with flint walls, closed boarding and lined in places. All have thick blanket loft insulation. There is a large void in the west of the building, which is lined and has	Due to the structure of the building, much of the roof was obscured from ground level and therefore some potential roosting features may not have been visible. However, a number of potential features were identified, including: Lifted lead flashing; Cracks in the flint walls; and Gaps behind barge boards.	No evidence of roosting bats was recorded during the survey.	High suitability

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Surveyed Feature	Figure	Building Description	Description of Potential Bat Roost Features	Evidence of Bat Roost Activity and Location	Assessment of Suitability for Roosting Bats
	 **Figure 17**: **I**nternal void in the centre of the building.	a timber frame. The void is situated above a 'server room' and the machinery below results in a high temperature within the void. A large chimney stack is present at the far end of the void beyond which daylight could be seen, however due to the presence of electrical wires within the void and the fact that many of the cross beams were obscured by these and insulation it was considered unsafe to investigate beyond the chimney stack.			
Building 4	 **Figure 18**: Southern and western elevations	Building 4 is a modern office block of brick and glass construction, with a flat roof (**Figure 18**). There are no internal roof voids within this building.	The building is considered generally unsuitable for bats due to the lack of roof void or any other features that provide potential for roosting bats, such as soffits or bargeboards.	No evidence of roosting bats was recorded during the survey.	Negligible suitability

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Surveyed Feature	Figure	Building Description	Description of Potential Bat Roost Features	Evidence of Bat Roost Activity and Location	Assessment of Suitability for Roosting Bats
Building 5	 **Figure 19**: Northern and western elevations  **Figure 20**: Gap behind barge board	Building 5 is a small single-storey outbuilding of brick and flint construction with a gable ended slate roof (**Figure 19**). The building was not accessed during the survey.	A number of potential bat roosting features were identified associated with Building 5, including: Gaps behind barge boards at the gable ends (**Figure 20**); Gaps at the wall top where roof beams protrude; and Cracks within the flint wall.	No evidence of roosting bats was recorded during the survey.	High suitability
Building 6	 **Figure 21**: Northern elevation	Building 6 is a small octagonal building of brick and flint construction with a clay pan tile pyramidal roof (Figure 16). Internally the building is open to the apex, and well-lit due to a number of windows, with a timber frame and timber crossbeams at wall top height (Figure 17).	A number of potential bat roosting features were identified associated with Building 6, including: Gaps under slipped tiles (**Figure 23**); Gaps at wall tops; Gaps around window frames; and	No evidence of roosting bats was recorded during the survey.	Moderate suitability

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Surveyed Feature	Figure	Building Description	Description of Potential Bat Roost Features	Evidence of Bat Roost Activity and Location	Assessment of Suitability for Roosting Bats
	 **Figure 22**: Interior of Building 6  **Figure 23**: Gaps under lifted roof tiles		Gaps in brickwork and cracks in the flint walls.		
Building 7	 **Figure 24**: Northern elevation	Building 7 is of flint and stone construction with a pitched slate roof (**Figure 24**). There is a small single storey brick extension to the rear which also has a slate roof. The building was not accessed during the survey.	A number of potential bat roosting features were identified associated with Building 7, including: Gaps under slipped tiles (although the roof appeared to be undergoing repair at the time of survey); Gaps around window frames (**Figure 25**);	No evidence of roosting bats was recorded during the survey.	High suitability

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Surveyed Feature	Figure	Building Description	Description of Potential Bat Roost Features	Evidence of Bat Roost Activity and Location	Assessment of Suitability for Roosting Bats
	 **Figure 25**: Gaps around windows  **Figure 26**: Gaps at wall top on extension		Gaps under barge boards; and Gaps at the wall tops of the single storey extension where roof beams protrude (**Figure 26**).		

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Bat Ground Level Tree Assessment

The results of the ground level tree assessment of the on-site trees are provided in **Table 7**. Details of tree locations and levels of bat suitability are provided in **Map 3**.

Table 7: Ground level tree assessment results

Tree Number	Species and Description	Description of Features	Climb and Inspect Survey?	Suitability for Bats
T405	Goat Willow (*Salix caprea*)	N/A	No	Negligible
T412	Ash (*Fraxinus excelsior*)	N/A	No	Negligible
T413	Portuguese laurel *Prunus lusitanica*	Rot hole and loose bark	Tree unsuitable for climb and inspect survey	Moderate
T415	Goat Willow (*Salix caprea*)	Callus roll and hollow limb	Yes	Low
T416	Goat Willow (*Salix caprea*)	N/A	No	Negligible
T417	Ash (*Fraxinus excelsior*)	N/A	No	Negligible
T418	Ash (*Fraxinus excelsior*)	N/A	No	Negligible
T423	Portuguese laurel (*Prunus lusitanica*)	Dense canopy prevented full survey	No	Low
T431	Holly (*Ilex aquifolium*)	Split, limb scar, hollow trunk, and rot hole	Tree unsuitable for climb and inspect survey	Moderate
G433	Laurel (*Laurus nobilis*)	N/A	No	Negligible
G435	Portuguese laurel (*Prunus lusitanica*)	Loose bark, split	Tree unsuitable for climb and inspect survey	Low
G435	Hazel (*Corylus avellana*)	Ivy clad	No	Low
T437	Oak spp (*Quercus spp*)	N/A	No	Negligible
G438	Leyland Cypress (*Cupressus x leylandii*)	N/A	No	Negligible
T439	Pedunculate Oak (*Quercus robur*)	Ivy clad, callus roll	No	Low

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Tree Number	Species and Description	Description of Features	Climb and Inspect Survey?	Suitability for Bats
T440	Ash (*Fraxinus excelsior*)	N/A	No	Negligible
T441	Horse-chestnut (*Aesculus hippocastanum*)	Ivy clad, limb scar	No	Low
T442	Ash (*Fraxinus excelsior*)	N/A	No	Negligible
T463	Acacia (*Vachellia farnesiana)*	N/A	No	Negligible
G464	Hornbeam (*Carpinus betulus*)	N/A	No	Negligible
G475	Acacia (*Vachellia farnesiana)*	N/A	No	Negligible
T477	Birch spp (*Betula spp*)	N/A	No	Negligible
T480	Acacia (*Vachellia farnesiana)*	Loose bark	No	Low
T481	Ash (*Fraxinus excelsior*)	N/A	No	Negligible
T482	Ash (*Fraxinus excelsio*r)	N/A	No	Negligible
T483	Sweet Chestnut (*Castanea sativa*)	N/A	No	Negligible
T486	Cherry (*Prunus avium*)	N/A	No	Negligible
T492	Ash (*Fraxinus excelsior*)	N/A	No	Negligible
T495	Silver Birch (*Betula pendula*)	N/A	No	Negligible
T496	Willow spp (*Salix spp*)	Callus roll, rot hole	No	Negligible
T497	Silver Birch (*Betula pendula*)	N/A	No	Negligible
T498	Crab Apple (*Malus sylvestris*)	N/A	No	Negligible
T499	Willow spp (*Salix spp*)	Rot hole	Yes	Moderate
T541	Sycamore (*Acer pseudoplatanus*)	N/A	No	Negligible

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Tree Number	Species and Description	Description of Features	Climb and Inspect Survey?	Suitability for Bats
T542	Sycamore (*Acer pseudoplatanus*)	N/A	No	Negligible
T543	Pittosporum (*Pittosporum tobira*)	Callus role, split	No	Moderate
G550	Yew (*Taxus baccata*)	No	No	Negligible
G553	Sycamore (*Acer pseudoplatanus*)	Ivy clad	No	Low
G557	Sycamore (*Acer pseudoplatanus*)	N/A	No	Negligible
T558	Sycamore (*Acer pseudoplatanus*)	N/A	No	Negligible
T559	Yew (*Taxus baccata*)	N/A	No	Negligible
T560	Field Maple (*Acer campestre*)	N/A	No	Negligible
T563	Holly (*Ilex aquifolium*)	Rot hole	Yes	Low
T564	Sycamore (*Acer pseudoplatanus*)	N/A	No	Negligible
G565	Holly (*Ilex aquifolium*)	N/A	No	Negligible
G604	Portuguese laurel (*Prunus lusitanica*)	Hollow trunk, rot hole, woodpecker hole	Yes	High
T613	Small-leaved Lime (*Tilia cordata*)	N/A	No	Negligible
T616	Sycamore (*Acer pseudoplatanus*)	N/A	No	Negligible
T617	Ash (*Fraxinus excelsior*)	N/A	No	Negligible
T618	Silver Birch (*Betula pendula*)	N/A	No	Negligible
T619	Birch spp (*Betula spp*)	Loose bark	No	Low
T620	Birch spp (*Betula spp*)	N/A	No	Negligible
T621	Silver Birch (*Betula pendula*)	N/A	No	Negligible
T622	Pine species	N/A	No	Negligible

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Tree Number	Species and Description	Description of Features	Climb and Inspect Survey?	Suitability for Bats
T623	Silver Birch (*Betula pendula*)	N/A	No	Negligible
T625	Birch spp (*Betula spp*)	Ivy clad	Tree unsuitable for climb and inspect	Low
T626	Birch spp (*Betula spp*)	N/A	No	Negligible
G630	Holly (*Ilex aquifolium*)	Rot hole, limb scar, hazard beam	No	Moderate
G630	Birch spp (*Betula spp*)	Callus roll	Yes	Low
G630	Dead tree	Ivy clad, split, rot hole, loose bark	No	Low
G630	Holly (*Ilex aquifolium*)	Rot hole, limb scar, hazard beam	No	Moderate
G630	Birch spp (*Betula spp*)	Callus roll	Yes	Low
G630	Small-leaved Lime (*Tilia cordata*)	Ivy clad	Tree unsuitable for climb and inspect	Low
G630	Silver Birch (*Betula pendula*)	Ivy clad, split, other	Tree unsuitable for climb and inspect	Low
T632	Oak spp (*Quercus spp*)	Split, broken limb starting to rot	No	Low
T633	Silver Birch (*Betula pendula*)	N/A	No	Negligible
T636	Persian Ironwood (*Parrotia persica*)	N/A	No	Negligible
T637	Persian Ironwood (*Parrotia persica*)	N/A	No	Negligible
T638	Persian Ironwood (*Parrotia persica*)	N/A	No	Negligible
G640	Birch spp (*Betula spp*)	N/A	No	Negligible
T643	Birch spp (*Betula spp*)	Rot hole	No	Low
T645	Oak spp (*Quercus spp*)	Limb scar	Yes	Low

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Tree Number	Species and Description	Description of Features	Climb and Inspect Survey?	Suitability for Bats
T647	Hazel (*Corylus avellana*)	N/A	No	Negligible
T648	Holly (*Ilex aquifolium*)	N/A	No	Negligible
T649	Beech (*Fagus sylvatica*)	N/A	No	Negligible
T650	Turkey Oak (*Quercus cerris*)	Ivy clad	No	Low
T651	Acacia (*Vachellia farnesiana)*	N/A	No	Negligible
T652	Hazel (*Corylus avellana*)	N/A	No	Negligible
T653	Hazel (*Corylus avellana*)	N/A	No	Negligible
T654	Mountain Redwood (*Sequoia sempervirens*)	Loose bark, rot hole	Yes	Moderate
T655	Sycamore (*Acer pseudoplatanus*)	N/A	No	Negligible
T656	Holly (*Ilex aquifolium*)	Ivy clad	No	Low
T659	Camellia spp. (*Camellia sinensis*)	N/A	No	Negligible
T661	Hazel (*Corylus avellana*)	N/A	No	Negligible
T662	Hazel (*Corylus avellana*)	N/A	No	Negligible
T606	Holly (*Ilex aquifolium*)	N/A	No	Negligible
T667	Hazel (*Corylus avellana*)	Snag	Yes	Low
T668	Sycamore (*Acer pseudoplatanus*)	N/A	No	Negligible
T669	Sitka Spruce (*Picea sitchensis*)	N/A	No	Negligible
T670	Lawson's Cypress (*Chamaecyparis lawsoniana*)	N/A	No	Negligible
T671	Hazel (*Corylus avellana*)	N/A	No	Low

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Tree Number	Species and Description	Description of Features	Climb and Inspect Survey?	Suitability for Bats
T672	Sycamore (*Acer pseudoplatanus*)	N/A	No	Negligible
T673	Lawson's Cypress (*Chamaecyparis lawsoniana*)	N/A	No	Negligible

Bat Emergence/Re-entry Survey Results - Buildings

The surveys recorded at least six species of bat: common pipistrelle, soprano pipistrelle, serotine, noctule, long-eared bat *Plecotus* species[5] and *Myotis* species bat[7].

During the surveys, a peak count of four common pipistrelle were recorded roosting within building 1 while a peak count of two soprano pipistrelle and one long-eared bat were recorded roosting within building 3. Therefore, the on site buildings are assessed as containing a day roost of common pipistrelle in building 1 and a day roost of common pipistrelle and long-eared bat in building 3.

Table 8 provides details of the species, numbers and locations of bats recorded roosting and foraging/commuting during the emergence/re-entry surveys. Locations of bat emergences and re-entries are shown in **Map 4**.

Table 8: Bat Emergence/Re-entry Survey Results (Buildings)

Visit 1 - Survey Details				
Survey Date:	16th August 2022			
Structures Surveyed:	Buildings 1, 3, 5 and 6			
Survey Type:	Dusk Emergence Survey			
Time of Sunset:	20:22			
Recorded Bat Roosts				
Map Ref.	**Species**	**Number of bats**	**Emergence Time**	**Roosting/Access Feature**
A	Soprano pipistrelle	1	20:33	Flew from chimney area of building 1.
B	Soprano pipistrelle	2	20:40 and 20:47	Both emerged from second story of building 3 and flew north-east
C	Long-eared bat	1	21:40	Emergence from gap in ridge tile building 3.
General Bat Activity				
Moderate levels of bat activity were recorded on site during the survey with the majority of activity attributed to common pipistrelle and soprano pipistrelle. Low levels of myotis and serotine activity were also recorded.				

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Visit 2 - Survey Details				
Survey Date:	2nd September 2022			
Structures Surveyed:	Building 1, 3, 5 and 6			
Survey Type:	Dawn Re-entry Survey			
Time of Sunrise:	06:19			
Recorded Bat Roosts				
Map Ref.	**Species**	**Number of bats**	**Re-Entry Time**	**Roosting/Access Feature**
D	Pipistrelle species	1	06:15	Flew into north side of roof of building 1.
E	Soprano pipistrelle	1	06:16	Emerged from under left side of the fourth window building 3.
General Bat Activity				
Low levels of bat activity were recorded on site during the survey with the majority of activity attributed to common pipistrelle and soprano pipistrelle. Low levels of Leisler's bat , myotis, long eared, and serotine activity were also recorded.				

15Visit 3 - Survey Details	
Survey Date:	3rd September 2022
Structures Surveyed:	Building 2
Survey Type:	Dawn Re-entry Survey
Time of Sunrise:	06:20
General Bat Activity	
No bat activity was recorded during the survey.	

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Visit 4 - Survey Details				
Survey Date:	14th September 2022			
Structures Surveyed:	Buildings 1, 3,5 and 6			
Survey Type:	Dusk Emergence Survey			
Time of Sunset:	19:20			
Recorded Bat Roosts				
Map Ref.	**Species**	**Number of bats**	**Emergence Time**	**Roosting/Access Feature**
F	Common pipistrelle	1	19:33	Possible emergence from building 3.
G	Soprano pipistrelle	3	19:25 19:36 19:39	Flew from roof of building 1.
H	Common pipistrelle	1	19:41	Possible emergence from tree adjacent to building 3.
I	Soprano pipistrelle	1	19:42	Flew from under right window of building 3.
General Bat Activity				
Low levels of bat activity were recorded on site during the survey with the majority of activity attributed to common pipistrelle and soprano pipistrelle. Low levels of myotis, long eared, and serotine activity were also recorded.				

Visit 5 - Survey Details	
Survey Date:	20th September 2022
Structures Surveyed:	Building 2
Survey Type:	Dusk Emergence Survey
Time of Sunset:	19:02
General Bat Activity	
Low levels of bat activity were recorded on site during the survey, including activity of common pipistrelle, soprano pipistrelle, and serotine with roughly equal levels of activity between the species.	

Bat Emergence/Re-entry Survey Results - Trees

Surveys undertaken did not record any roosts within the on site trees to be felled. However, at least four soprano pipistrelle were recorded re-entering T400, a large oak tree that is not proposed to be felled on a single occasion. It is considered that this is likely to be a day roost of soprano pipistrelle however, was not subject to detailed surveys and therefore the roost has not been formally characterised. Details of surveys carried out to date can be found in **Table 9**.

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Table 9: Bat Emergence/Re-entry Survey Results (Trees)

Visit 1 - Survey Details	
Survey Date:	16th August 2023
Trees Surveyed:	G604
Survey Type:	Dusk Emergence Survey
Time of Sunset:	20:25
General Bat Activity	
High levels of foraging bat activity were recorded on site during the last half of the survey with the majority of activity attributed to common pipistrelle and soprano pipistrelle.	

Visit 2 - Survey Details	
Survey Date:	21st August 2023
Trees Surveyed:	T431; T413 and G630
Survey Type:	Dusk Emergence Survey
Time of Sunset:	20:13
General Bat Activity	
Low levels of bat activity were recorded on site during the survey. Activity was dominated by common pipistrelle with lower numbers of soprano pipistrelle, serotine, long-eared bat and a single pass of a *Myotis* bat species.	

Visit 3 - Survey Details	
Survey Date:	22nd August 2023
Trees Surveyed:	T654; T496 and T499
Survey Type:	Dusk Emergence Survey
Time of Sunset:	20:11
General Bat Activity	
Low levels of bat activity were recorded during the survey. Activity was mostly attributable to common pipistrelle, with several recordings of serotine and noctule and a recording of common pipistrelle.	

Visit 4 - Survey Details	
Survey Date:	30th August 2023
Trees Surveyed:	T543
Survey Type:	Dawn Re-entry Survey
Time of Sunrise:	06:12
General Bat Activity	
Bat activity levels were very low during the survey with only single passes of soprano pipistrelle and noctule recorded.	

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Visit 5 - Survey Details	
Survey Date:	5th September 2023
Trees Surveyed:	G630, T431 and T413
Survey Type:	Dawn Re-entry Survey
Time of Sunrise:	06:18
General Bat Activity	
No bats were recorded during the survey of G630 or T431. During the survey of T413 moderate levels of soprano pipistrelle activity were recorded, with several passes of *Myotis* species and common pipistrelle and one pass of long-eared. At least four soprano pipistrelle were recorded re-entering T400, a large oak tree that is not proposed to be felled.	

Visit 6 - Survey Details	
Survey Date:	7th September 2023
Trees Surveyed:	T654; T496 and T499
Survey Type:	Dawn Re-entry Survey
Time of Sunrise:	06:26
General Bat Activity	
Common pipistrelle foraging activity was recorded throughout the survey, with several passes of soprano pipistrelle and *Myotis* species.	

Visit 7 - Survey Details	
Survey Date:	13th September 2023
Trees Surveyed:	G604
Survey Type:	Dusk Emergence Survey
Time of Sunset:	19:23
General Bat Activity	
Common pipistrelle activity dominated the survey, several soprano pipistrelle and occasional noctule also recorded. Common pipistrelle foraging above canopy, but no bats seen below canopy.	

Bat Trapping Survey Results

A total of 18 bats of five species were captured over three nights of trapping. Bats of particular note include a lactating female Bechstein's bat captured on the 25th July 2022. The other bat species included common pipistrelle, brown long-eared, whiskered bat *Myotis mystacinus* and Natterer's bat *Myotis nattereri*.

No bats were captured on the first trapping survey, however bats were captured in the two following surveys. Traps placed at Site 3 Pond captured the most bats, including the Bechstein's bat. The least captures were from Site 1.

Table 10provides full details of the trapping data which should be cross referenced with **Map 5.**

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Table 10: Bat trapping survey results at Southleigh Park House 2022.

Date	Time	Species	Sex	Breeding status	Trap
30th May 2022	N/A	N/A	N/A	N/A	N/A
25th July 2022	22:10	Common pipistrelle	Female	Post-lactating	Site 3 Pond
	22:30	Bechstein's bat	Female	Lactating	Site 3 Pond
	23:40	Brown long-eared bat	Male	Adult	Site 3 Pond
	23:40	Natterer's bat	Male	Adult	Site 3 Pond
	23:45	Whiskered bat	Female	Adult, nulliparous	Site 1
30th August 2022	20:25	Brown long-eared bat	Male	Adult	Site 3 Pond
	20:25	Brown long-eared bat	Male	Adult	Site 3 Pond
	20:50	Brown long-eared bat	Female	Post-lac.	Site 4 Field
	21:00	Brown long-eared bat	Male	Adult	Site 4 Field
	21:25	Brown long-eared bat	Male	Adult	Site 3 Pond
	21:50	Brown long-eared bat	Male	Adult	Site 1
	21:50	Natterer’s bat	Male	Adult	Site 3 Pond
	21:50	Brown long-eared bat	Male	Adult	Site 3 Pond
	22:00	Brown long-eared bat	Female	Post-lactating	Site 4 Field
	22:05	Natterer’s bat	Male	Adult	Site 3 Pond
	22:15	Natterer’s bat	Male	Adult	Site 3 Pond
	22:40	Brown long-eared bat	Female	Juvenile	Site 3 Pond
	22:55	Natterer’s bat	Male	Adult	Site 3 Pond

4.4.2 Evaluation

Roosting Bats

Bat surveys recorded a day roost of common pipistrelle in building 1, and soprano pipistrelle and brown long-eared bat in building 3. These species are common and widespread across the county and England. Therefore, the site is considered to be of site value only for roosting bats.

Foraging and Commuting Bats

Bat surveys recorded at least nine species of bat foraging and commuting at the site. **Table 11** shows the geographic level of value of foraging and commuting habitat at the site.

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Table 11: Value of the site to bat species/species complexes

Species	Site Value
Bechstein's bat	Regional
Barbastelle	Regional
Nathusius' pipistrelle	Regional
Common pipistrelle	County
Soprano pipistrelle	County
Serotine	County
Other *Myotis* bat species	Local
Noctule	Local
Brown long-eared bat	Local

Bechstein's Bat

The historic surveys undertaken for the Havant Thicket project identified a number of maternity roosts within the woodland surrounding Southleigh Park House. Bechstein's bats are known to be a sedentary species (Dietz, et al., 2009) foraging near to their roost sites. Radiotracking undertaken in 2009 followed the range of female Bechstein's foraging and commuting behaviour. The bats generally remained within a one kilometre area with the furthest recorded distance travelled from the roost 830 kilometres. The nearest of identified roost to the Southleigh Park House site is 930 metres east. The bat trapping surveys undertaken on site during 2022 identified a single lactating female within the site. This indicated that the site is within the foraging and commuting range of a maternity colony of the species.

The on-site boundary habitat is dominated by mature and semi-mature deciduous and coniferous trees comprising both native and non-native species, forming a dense canopy, and with a very limited understorey. This habitat is considered sub-optimal for Bechstein's bat which is known to prefer unevenly aged, deciduous woodland with a high proportion of oaks and a good understorey. This explains why only a small number of Bechstein's bat were recorded at the site (only five Bechstein's bats trapped during the surveys and *Myotis* bats accounting for only 3.6% of all bat calls recorded by automated detectors during surveys undertaken in 2016 (ECOSA, 2018), of which only a proportion of which are likely to be attributed to Bechstein's bat). Juvenile bats are known to range erratically around colony territory and make use of lower quality habitat (Greenway & Hill, 2004). Males have high fidelity to their roosts and forage in close proximity to them (generally within a smaller range than females), however, they usually have multiple roosts at distances of up to 2.5 kilometres (Dietz, et al., 2009).

Five Bechstein's bats were trapped at the site, two males and two females in 2016 and one lactating female in 2016. This is as expected considering the large numbers of Bechstein's known to be present in the local area and the limited extent and relatively low quality of the on-site habitat. The on-site habitat is likely to form a very small part of a much wider foraging area associated with the extensive local woodland habitat.

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Barbastelle and Nathusius' Pipistrelle

A small number of barbastelle were recorded from the static detector surveys undertaken in 2016 (ECOSA, 2018) and an assessment of the value of the site indicated that these records mean that the site is of regional importance for these species. However, an average of only one barbastelle registration was recorded per month (three registrations overall) and no individuals were recorded during the emergence/re-entry surveys undertaken in 2022 and 2023. Barbastelle are regularly encountered through woodlands in southern England and, given the high quality of nearby habitat, it is considered unlikely that on-site trees forms key foraging and commuting habitat for the local barbastelle population.

Nathusius' Pipistrelle

Nathusius' pipistrelle were recorded only in September 2016 with 21 registrations (ECOSA, 2018). This suggests autumn migration behaviour with a small number of bats commuting through on-site habitat. No Nathusius' pipistrelle registrations were made during the 2022 and 2023 emergence/re-entry surveys. Given the high quality of nearby habitat, it is considered unlikely that the on-site trees form key commuting habitat for the local Nathusius' pipistrelle population.

4.5 Otter

4.5.1 Baseline Ecological Conditions

Desktop Study Results

Consultation with the MAGIC database produced no records of granted EPSM licence with regards to otter *Lutra lutra* within the search radius.

The Ecological Impact Assessment completed by ECOSA in 2018 (ECOSA, 2018) determined the site to have negligible suitability for supporting otter and therefore this species has been scoped out of this report. The status of the site has not changed since this date and therefore this assessment is still considered valid.

4.6 Badger

4.6.1 Baseline Ecological Conditions

Desktop Study Results

The Ecological Impact Assessment completed by ECOSA in 2018 (ECOSA, 2018) determined the site to have low suitability for supporting badger and therefore no further surveys works were undertaken in relation to this species. The status of the site has not changed since this date and therefore this assessment is still considered valid.

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4.7 Hazel Dormouse

4.7.1 Baseline Ecological Conditions

Desktop Study Results

Consultation with the MAGIC database produced no records of granted EPSM licences with regards to hazel dormouse *Muscardinus avellanarius* within the desktop study area.

The Ecological Impact Assessment completed by ECOSA in 2018 (ECOSA, 2018) determined the site to have low suitability for supporting hazel dormouse and therefore no further surveys works were undertaken in relation to this species. The status of the habitats on site have not changed since the initial assessment undertaken and therefore no further works are recommended in relation to hazel dormouse.

4.8 Water Vole

4.8.1 Baseline Ecological Conditions

Desktop Study Results

The Ecological Impact Assessment completed by ECOSA in 2018 (ECOSA, 2018) determined the site to have negligible suitability for supporting water vole *Arvicola amphibius* and therefore this species has been scoped out of this report. As the status of the site has not changed this assessment is still considered valid.

4.9 Birds

4.9.1 Baseline Ecological Conditions

Field Survey Results

A number of common bird species were recorded on site during the field survey, including long-tailed tit *Aegithalos caudatus*, treecreeper *Certhia familiaris*, great tit *Parus major*, blackbird *Turdus merula*, woodpigeon *Columba palumbus* and carrion crow *Corvus corone*. Of these species woodpigeon is an amber listed species of conservation concern[8].

[8] 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.

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Overhanging eaves and porches of the on-site buildings and scattered trees have potential to support nesting birds. The site is therefore considered to have suitability for breeding birds.

4.10 Reptiles

4.10.1 Baseline Ecological Conditions

Desktop Study Results

The Ecological Impact Assessment completed by ECOSA in 2018 (ECOSA, 2018) determined the site to have negligible suitability for supporting reptiles and therefore no further surveys works were undertaken in relation to this species. The on site grassland, while not as regularly managed as it was during the initial assessment, still does not provide suitable habitat for the species group. The grassland is maintained to a short sward which would not provide sufficient shelter for foraging and basking individuals.

4.11 Great Crested Newt

4.11.1 Baseline Ecological Conditions

Desktop Study Results

Consultation with the MAGIC database did not produce any records of granted EPSM licences with regards to great crested newt *Triturus cristatus* within the desktop study area.

No great crested newt class survey licence returns were submitted to Natural England within two kilometres of the site.

OS mapping revealed five waterbodies within 500 metres of the site, with one pond within the boundary of the site (**Table 12**) (ECOSA, 2018).

Field Survey Results

The scattered tree and scrub habitats on site provide good opportunities for foraging and sheltering great crested newt in their terrestrial phase and the on-site pond provides good breeding opportunities for great crested newt. Therefore the site is assessed as having suitability to support great crested newt.

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Table 12: Ponds within 500m of Site Boundary - Details

Pond No.	NGR	Location in Relation to Site Boundary	HSI Score	HSI Suitability	Waterbody Description	Access Possible	Further Survey
1	SU 7369 0788	South-western corner of site	0.78	Good	Large ornamental pond	Yes	eDNA
2	SU 73775 08136 -	40m east	-	-	Large pond within woodland	No	-
3	SU 73439 08272	285m north-east	-	-	Small pond within a cemetery	No	-
4	SU 73533 08469	400m north	-	-	Large pond within woodland	No	-
5	SU 74251 07712	430m south-east	-	-	Small pond within woodland	No	-

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Great Crested Newt eDNA Survey Results

It was only possible to gain access to pond 1, located on site. The results of the eDNA survey of the ponds returned negative for the presence of great crested newt, therefore the species is considered likely absent from the site. Previous surveys undertaken of ponds within the area during 2016 returned negative results from all off-site ponds, except pond 2 where access was not possible. As a result, great crested newt are considered absent from the local area and therefore the species is not considered any further in this report. The results of the eDNA test are provided in **Appendix 8**.

4.12 Invertebrates

4.12.1 Baseline Ecological Conditions

Desktop Study Results

The Ecological Impact Assessment completed by ECOSA in 2018 (ECOSA, 2018) determined the site to have low suitability for supporting invertebrates including stag beetle *Lucanus cervus* and therefore no further surveys works were undertaken in relation to this species.

Field Survey results

The site supports low value habitats that are limited in extent. However, due to the presence of dead wood on site and records of notable invertebrates associated with dead wood in the wider area (such as stag beetle) revealed through the HBIC consultation, the site is considered to have suitability to support notable invertebrate species and assemblages.

Evaluation

The woodland habitats on site our representative of the habitats available for invertebrates in the wider area, therefore the site is considered to be of site value only for notable invertebrates.

4.13 Other Relevant Species

4.13.1 Baseline Ecological Conditions

Desktop Study Results

The Ecological Impact Assessment completed by ECOSA in 2018 (ECOSA, 2018) determined the site to have negligible suitability for supporting other relevant species and therefore no further surveys works were undertaken in relation to these species groups.

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Field Survey results

On-site woodland, grassland and pond habitats provide suitable habitat for European hedgehog and common toad. Therefore the site is assessed as having suitability for these species.

Evaluation

Given the habitats present it is considered likely that the site would be of local value for European hedgehog and common toad.

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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 hierarchy[9] 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 174 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 change of use of the site, alterations and extension of the existing building and construction of 20 residential units (13 units in the main house and seven in the other listed buildings) and an outline application for the demolition of the1983 office building and associated brick and glass corridor link and the development of up to 70 residential units. Access is to remain the same, entering the site from Eastleigh Road to the west of the site. External lighting will form part of the proposals.

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 proposals will result in an increase in human activity/number of residents at the site, there is potential for impacts on both statutory and non-statutory designated sites. The site lies within the 5.6km buffer zone of the Solent SPAs. Therefore, a net increase in residents at the site is considered likely to have a negative impact on these sites. No impacts are anticipated in relation to the local SINCs as it is understood that these are on private land and only accessible via specified public rights of way.

[9] 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'.

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5.3.2 Mitigation Measures

A financial contribution will be made to the Solent and Brent Geese Waders Strategy (SWBGS) to off-set the recreational impacts on nearby designated sites. The S106 Agreement for the site, dated 30th January 2019 stated that for the first SRMP instalment the sum of £9,590.00 would be paid while the Second SRMP instalment would require a sum of £41,134.00.

A nutrient budget calculator, existing and proposed nutrient plan have been submitted as part of this scheme to mitigate the impact of an increase in nitrogen output as part of the development. As part of this scheme, credits have been purchased at Whitewool Farm, East Meon.

5.3.3 Significance of Residual Effects

Following mitigation there are no anticipated effects on designated sites.

5.3.4 Compensation

No compensation measures are proposed with regards to designated sites.

5.3.5 Enhancement

No enhancement measures are proposed with regards to designated sites.

5.4 Habitats

5.4.1 Potential Impacts and Effects

The proposals will result in the loss of scattered trees and improved grassland. Retained trees may be impacted through accidental contact with machinery and root compaction during construction works.

5.4.2 Mitigation Measures

Retained habitats will be protected from damage during construction by installing protective fencing around buffers of retained hedgerows. The installation of protective fencing should follow guidance set out in BS 5837:2012 – Trees in relation to design, demolition and construction (British Standards Institution, 2012).

5.4.3 Significance of Residual Effects

To accommodate the proposals the loss of habitats cannot be mitigated for.

5.4.4 Compensation

Proposed landscaping will incorporate native tree and shrub species, of local provenance, as shown on **Appendix 2**.

New native hedgerow planting will incorporate:

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Field maple *Acer campestre*;
Dogwood *Cornus sanguinea*;
Hazel *Corylus avellana*;
Hawthorn *Crataegus monogyna*;
Holly *Ilex aquifolium*;
Wild privet *Ligustrum vulgare*;
Crab apple *Malus sylvestris*;
Blackthorn *Prunus spinosa*;
Guelder-rose *Vibernum opulus*; and
Dog rose *Rosa canina*.

New native tree planting will include:

Field maple;
Alder *Alnus glutinosa*;
Hornbeam *Carpinus betulus*;
Bird cherry *Prunus padus*;
Pedunculate oak *Quercus robur*; and
Small leaved lime *Tilia cordata*.

Part of the existing improved grassland in the south of the site will be reseeded with a native wildflower meadow mix (e.g. Emorsgate EM3 Special General Purpose Meadow Mixture) and will be managed appropriately.

5.4.5 Enhancement

Retained areas of habitats will be enhanced through the removal of non-native planting within the scattered tree areas. This will largely entail the removal of Rhododendron and laurel and planting of new native specimens as listed in Paragraph 5.4.4.

5.5 Bats

5.5.1 Potential Impacts and Effects

The common pipistrelle, soprano pipistrelle and brown long-eared bat roosts will be retained in-situ as part of the works. No bats were recorded roosting in trees that will be felled, so no direct impacts on tree roosting bats are anticipated. However, bats were incidentally recorded re-entering T400, a large oak tree located in the south of the site. New external lighting may disturb foraging and commuting bats and could cause disturbance to roosting bats if new external lighting fell on bat roosts.

Surveys confirmed the presence of a range of foraging and commuting bats within the site, including Bechstein's bat. The presence of a single lactating female indicates that the site is used for foraging and commuting for a nearby maternity roost for the species.

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In the absence of mitigation the loss of scattered trees will result in a loss of foraging and commuting habitats for bats and fragmentation of available habitat for bats within the local area. Roosting bats may be harmed and/or disturbed if present within trees assessed as having low suitability to support roosting bats identified for removal.

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 4** for details.

5.5.2 Mitigation Measures

New external lighting will comprise hooded luminaires mounted horizontally with no light output above 90° and directed away from bat roosts and vegetation, particularly the boundary retained tree and waterbody habitats. Ideally the bulbs should be LED and be a warm light source (2700 Kelvin or lower). LED lights emit much lower levels of UV and therefore have a lower impact on wildlife. The new lighting should be task related and lux level should be as low as possible to allow the task to be carried out safely and effectively. Guidance on task related lighting levels and mitigation options as described within the Bats and Artificial Lighting in the UK report will be followed (Institution of Lighting Professionals, Bat Conservation Trust, 2023). This lighting is to be secured through a planning condition.

Trees with low suitability to support roosting bats will be subject to sectional felling under the supervision of a licenced bat ecologist in line with current guidance for low suitability trees (Collins, 2016). Should any bats be encountered during the felling then works should cease and a European Protected Species Mitigation (EPSM) licence is required to be sought from Natural England.

A toolbox talk will be delivered by a suitably qualified ecologist prior to commencement of works, to make on-site contractors aware of the potential presence of roosting bats within the retained buildings and areas which should be avoided during the alteration works, to prevent potential disturbance to roosting bats.

If roosting bats are record within trees to be removed, then a protected species licence from Natural England will be required before tree removal works can be carried out. Further mitigation measures will be provided on the completion of the bat emergence/re-entry surveys.

5.5.3 Significance of Residual Effects

The loss of foraging and commuting habitats cannot be mitigated for within the scheme.

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5.5.4 Compensation

As the site has been identified to be used by a range of foraging and commuting bats, the proposed planting in Paragraph 5.4.4 will replace lost commuting and foraging habitats for bats. New native tree and hedgerow planting along the site boundaries will compensate for the loss of foraging habitat post-development and will maintain connectivity across the site in the long-term. It will also serve to screen the site from adjacent street lighting, particularly from Horndean Road.

5.5.5 Enhancement

Retained areas of suitable habitat will be enhanced and managed for foraging and commuting bats, with particular consideration for Bechstein's bat. Many colonies in southern England are in derelict hazel coppice where the oak standards have closed canopy over the old hazel (Greenway & Hill, 2004). Inclusion of coppiced and pollarded native species such as hawthorn and hazel will create the developed understorey preferred by this species. This will be done in addition to the removal of Rhododendron and laurel within the site and replacement of native planting, see Paragraph 5.4.5.

The site will be further enhanced for foraging and commuting bats through the planting of a species rich meadow area in the south of the site. This will provide an enhanced invertebrate prey resource for foraging and commuting bats.

New bat boxes will be erected on retained trees, such as Vivara Pro WoodStone bat boxes to mitigate for the loss of roosting opportunities on site.

5.6 Breeding Birds

5.6.1 Potential Impacts and Effects

The proposals will result in the loss of suitable nesting habitats for birds. Birds may be harmed during vegetation clearance.

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 4** for details.

5.6.2 Mitigation Measures

Vegetation clearance works should be undertaken outside the main breeding bird season of March to August, inclusive, or if not possible, an ecologist should be present immediately prior to clearance to check vegetation. Active nests should be left with a suitable buffer until nesting ends.

5.6.3 Significance of Residual Effects

To accommodate the proposals the loss of nesting habitats cannot be mitigated for.

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5.6.4 Compensation

The proposed planting in Paragraph 5.4.4 will replace lost nesting habitats for birds.

5.6.5 Enhancement

As a measure of enhancement, three Vivara Pro Seville Woodstone Nest Boxes (or similar alternatives) and three Vivara Pro Barcelona Woodstone Nest Boxes (or similar alternatives) will be installed on retained trees on site to provide additional nesting opportunities for breeding birds.

5.7 Invertebrates

5.7.1 Potential Impacts and Effects

The removal of dead trees and deadwood on site may result in a loss of suitable habitat for saprophytic invertebrates. However, given the limited extent of suitable habitat on site compared with that of the surrounding area, the impacts associated with the development are considered to be of low significance.

5.7.2 Mitigation Measures

No mitigation measures are proposed with regards to invertebrates

5.7.3 Significance of Residual Effects

The loss of suitable habitats for invertebrates cannot be mitigated for as part of the proposals.

5.7.4 Compensation

Creation of log ‘piles’ (**Figure 28**) or ‘pyramids’ (**Figure 29**), using felled trees and removed limbs, will mitigate for the loss of dead wood and enhance the site for saprophytic invertebrates, such as stag beetle.

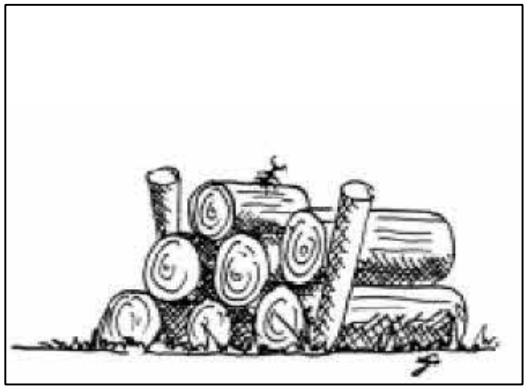


Figure 27: Log ‘pile’, logs held in place by posts.

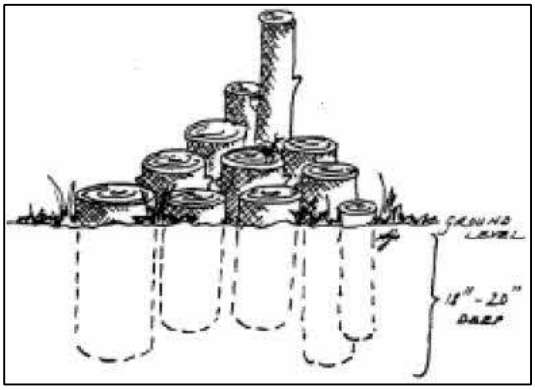


Figure 28: Log ‘pyramid’, suitable for parks and large gardens.

5.7.5 Enhancement

No enhancement measures are proposed with regards to invertebrates.

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5.8 Other Relevant Species

5.8.1 Potential Impacts and Effects

The proposals will result in the loss of suitable European hedgehog and common toad foraging and sheltering habitat. European hedgehog and common toad may be harmed and/or disturbed during the clearance works. New fencing will likely isolate the site from these species.

5.8.2 Mitigation Measures

Any European hedgehog or common toad encountered on site during clearance works should be safely moved to retained habitats on site or allowed to escape. If nesting European hedgehog are encountered during vegetation clearance, they will be left with a suitable buffer and allowed to leave of their own accord.

Gaps of 13 x 13 inches will be left in the base of new fencing to allow continued access to the site for European hedgehog.

5.8.3 Significance of Residual Effects

Following mitigation, the proposals will still result in a loss of foraging and sheltering habitats for European hedgehog.

5.8.4 Compensation

The proposed planting in Paragraph 5.4.4 will replace lost habitats for European hedgehog and common toad.

5.8.5 Enhancement

No enhancement measures are proposed with regards to European hedgehog or common toad.

5.9 Cumulative Effects

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.

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6.0 CONCLUSIONS

6.1 Conclusion

The site is located 2.5 kilometres from the Solent SPAs and has suitability to support a number of protected and notable species including bats, breeding birds, notable invertebrates, common toad and European hedgehog.

A day roost of common pipistrelle was recorded in building 1 and day roosts of soprano pipistrelle and long-eared bat were recorded in building 3. The site has high suitability to support foraging and commuting bats and nine species of bat were recorded during the bat trapping surveys.

An increase in people in the area may have a negative impact on the Solent SPAs. The proposed changes to the site will result in loss of scattered trees and improved grassland. Retained trees may be damaged through accidental contact with machinery and root compaction during construction works. Loss of trees and grassland will result in habitat loss for breeding birds, saprophytic insects, hedgehogs and toads. There is potential for harm to breeding birds, hedgehogs and toads during vegetation clearance. The proposed alterations to the buildings may cause direct harm or kill individual bats and disturbance through noise and lighting could impact foraging and commuting bats and bats known to be roosting in trees on the site.

A nutrient budget calculator, existing and proposed nutrient plan have been submitted as part of this scheme to mitigate the impact of an increase in nitrogen output as part of the development and a financial contribution will be made to the Solent and Brent Geese Waders Strategy. Retained habitats should be protected by fencing and proposed landscaping will incorporate native tree and shrub planting. New planting will compensate for tree loss. Sensitive timings and methods of work will prevent harm to bats, breeding birds, hedgehogs and toads and a sensitive lighting scheme will be developed to prevent disturbance to bats at night. Gaps should be cut in boundary fencing to allow continued access for hedgehog. Log piles will be created to compensate for insect habitat loss.

New bat and bird boxes will be installed on retained trees to enhance the site for roosting bats and breeding birds.

Post-development, no residual or cumulative impacts are anticipated. As such it is considered that the proposals will accord with all relevant national and local planning policy in relation to ecology including Policy CP21 of the Joint Core Strategy and the NPPF (see Section 2.0).

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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.

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7.0 REFERENCES

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Map 1 Site Location Plan

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SOUTHLEIGH PARK HOUSE, EASTLEIGH ROAD, HAVANT, HAMPSHIRE

ECOLOGICAL IMPACT ASSESSMENT

Map 1 - Site Location Plan

Client:	Bargate Homes Ltd
Date:	July 2022
Status:	Final

KEY

Site Boundary



Scale at A4: 1:10,000

0 100 200 400 Metres

Prepared by: EV	Date: 270722
Last amended by: N/A	Date: N/A

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Map 2 Phase 1 Habitat Map

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SOUTHLEIGH PARK HOUSE, PORTSMOUTH

ECOLOGICAL IMPACT ASSESSMENT

Map 8 - Phase 1 Habitat Map

Client: Jill Manson & Associates

Date: November 2016 Status: Draft

KEY

Standing Water

Introduced Shrub

Buildings

Wall

Fence

Target Note Features of Interest, As Referenced in Report

Basemap: E ouse, East Leigh Road, Havant, -Tree Survey and Constra A3

N

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Map 3 Ground Level Tree Assessment

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SOUTHLEIGH PARK HOUS E, EASTLEIGH ROAD, HAVANT, HAMPSHIRE

ECOLOGICAL IMPACT ASSESSMENT

Map 3 - Ground Level Tree Assessment

Client:	Bargate Homes Ltd
Date:	October 2023
Status:	Final

KEY

Site Boundary

Bat Roosting Suitability

- High
- Moderate
- Low

1:1,500

0 5 10 15 20 m

N

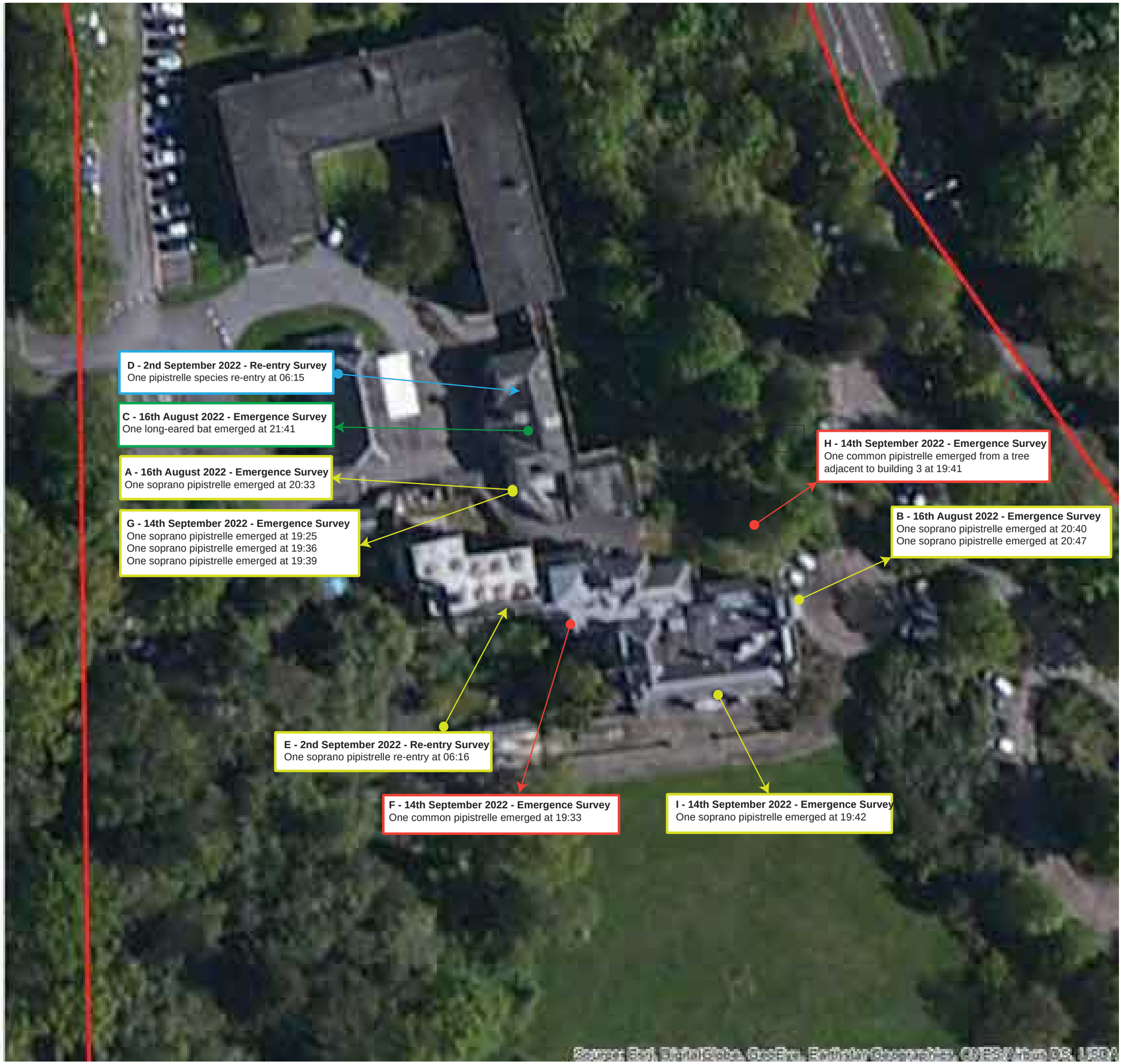
Prepared by: OW	Date: 131023
Last amended by: N/A	Date: N/A

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Map 4 Bat Emergence/Re-entry Survey

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SOUTHLEIGH PARK HOUSE, EASTLEIGH ROAD, HAVANT, HAMPSHIRE

ECOLOGICAL IMPACT ASSESSMENT

Map 4 - Bat Survey Results

Client: Bargate Homes Ltd

Date: October 2023 | Status: Draft

Key:

- Common pipistrelle
- Soprano pipistrelle
- Pipistrelle species
- Long-eared bat

Habitat features not to scale.

Basemap reproduced from Source: Esri, DigitalGlobe, Geoeye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN and the GIS User Community.

Prepared by: HG Date: 2023

Last amended by: Date:

20m

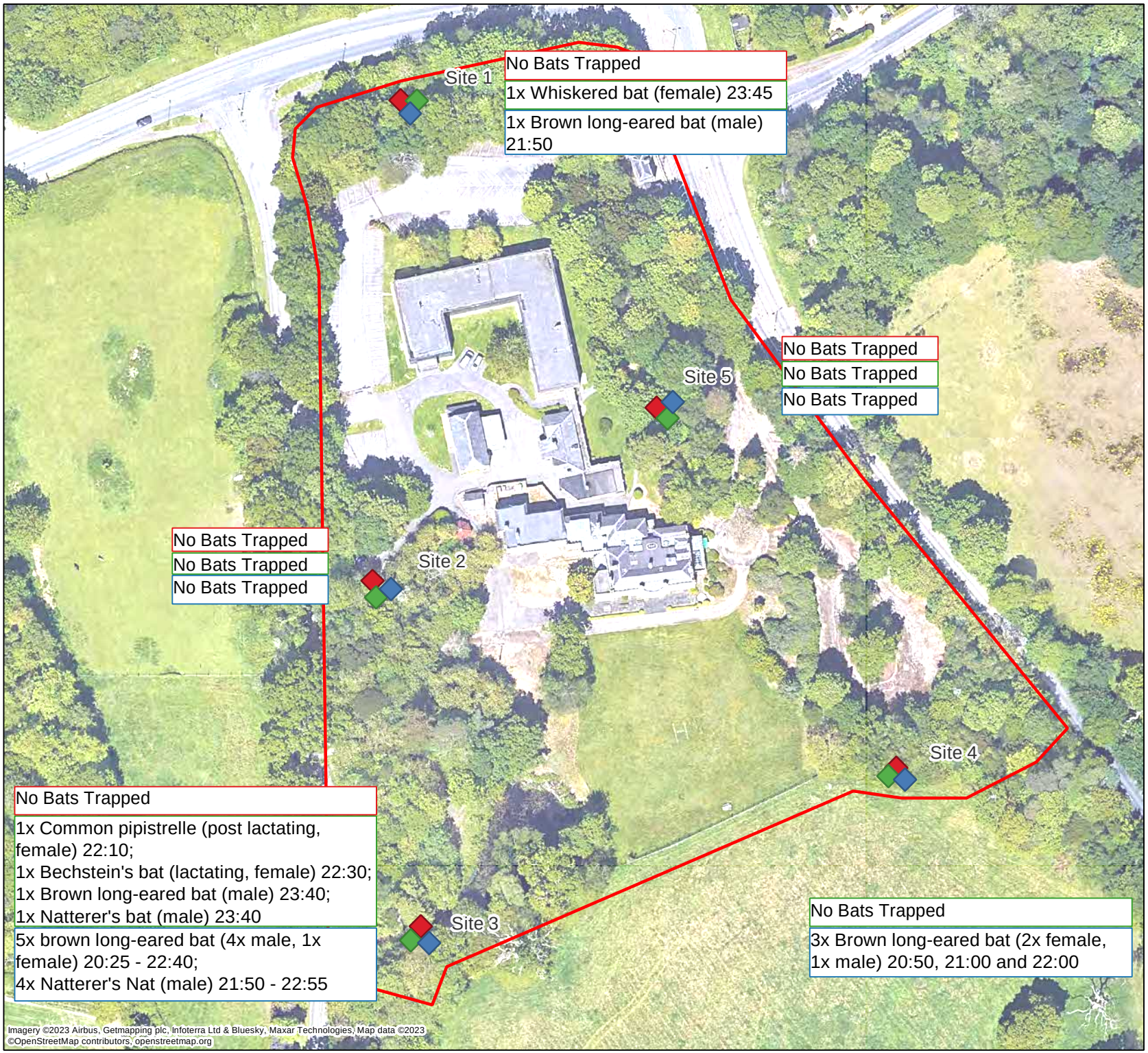
N

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Map 5 Bat Trapping Survey

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SOUTHLEIGH PARK HOUSE, EASTLEIGH ROAD, HAVANT, HAMPSHIRE

ECOLOGICAL IMPACT ASSESSMENT

Map 4 - Bat Trapping Survey

Client:	Jonathan Devile
Date:	June 2023
Status:	Final

KEY

- Site Boundary
- May
- July
- August

1:1,424.312712
0 5 101520 m

N

Prepared by: SF	Date: 131023
Last amended by:	Date:

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Map 6 Great Crested Newt Survey

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SOUTHLEIGH PARK HOUSE, EASTLEIGH ROAD, HAVANT, HAMPSHIRE

ECOLOGICAL IMPACT ASSESSMENT

Map - Great Crested Newt eDNA Survey

Client:	Bargate Homes Ltd
Date:	July 2022
Status:	Draft

KEY

Site Boundary

eDNA Survey Completed - Negative

Scale at A4: 1:2,000

0 20 40 80 Metres

Prepared by: EV	Date: 270722
Last amended by:	Date:

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Appendix 1 Proposed Site Layout

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A1



House Type Reference	House Type	No of Bedrooms	SqFt	No	Total SqFt
1BM (GF)	1B2P	1	564	1	564
1BM (FF)	1B2P	1	693	1	693
2BM (GF)	2B3P	2	737	1	737
2BM (FF)	2B3P	2	845	1	845
2BFOG	2B3P	2	754	6	4524
2B.1	2B3P	2	765	4	3060
3B.1	3B4P	3	938	9	8442
3B.2	3B5P	3	1090	1	1090
3B.3	3B5P	3	1257	3	3771
4B.1	4B6P	4	1152	6	6912
4B.2	4B6P	4	1152	1	1152
4B.3	4B7P	4	1304	2	2608
4B.4	4B7P	4	1485	1	1485
4B.5	4B6P	4	1152	4	4608
TOTALS				41	40491

SITE LEGEND:

- Application Boundary Line
- Existing Tree - Retained
- Root Protection Zone
- Proposed Tree
- Brick Boundary Wall - 1.8M hight
- Low Brick Wall with Railing - 1.8M hight
- Close Board Fence - 1.8M hight
- Estate Railing - 1.2M hight
- Parking Bay
- EV Charging Point
- Bin Collection Point
- Timber Shed - 1.2X1.8M
- Extent of Visibility Splay

scale 1:500

0 10m 20m 30m

N

Rev	Description	Date	Au	Ch
P1	First Issue	04.07.23	CMI	-
P2	Parking arrangement to conversion updated.	06.07.23	CMI	-
P3	Updated in response to engineers comments.	21.07.23	CMI	-
P4	Updated to accomodate additional refuse collection points. HT change to plots 23 and 26.	25.07.23	CMI	-
P5	Updated to adjusted mix.	02.08.23	CMI	-
P6	Plots 21-24 repositioned with parking reconfigured to suite. Vistor parking adjacent plot 39 repositioned. Road widths adjusted to road serving plots 16-28. Refuse store to Main House omitted.	09.08.23	CMI	-
P7	Updated in response to engineers review and client comments.	31.08.23	CMI	-
P8	Selective road widening.	04.09.23	CMI	-
P9	Layout development following further client review.	07.09.23	CMI	-
P10	Issued for Client review.	08.09.23	CMI	-
P11	Layout development following further client review.	11.09.23	CMI	-
P12	Plots 9-15 repositioned. HT.4B.5 added.	12.09.23	CMI	-
P13	Layout development following further client and engineering review.	15.09.23	CMI	-
P14	Layout development following further client and engineering review.	18.09.23	CMI	-

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Project	Southleigh Park, Havant		
Drawing	Site Layout		
Client	Bargate Homes		
Job no.	BARG230130	Date	04.07.23
Dwg no.	SL.01	Revision	P14
Author	CMI Checker	Scale	1:500 at A1
Status	PRELIMINARY	Office	Romsey
Client ref.			

thrive. architects

Appendix 2 Proposed Landscaping

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Appendix 3 Sites Designated for Nature Conservation

Statutory Sites

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

Special Protection Areas (SPAs) and Special Areas of Conservation (SACs) form a network of protected sites across the European Union and United Kingdom. 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 SPAs and SACs.

SACs are sites which support internationally important habitats or internationally important assemblages or populations of species. SPAs are designated for supporting internationally important populations of birds . 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 SPAs, SACs 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 SPA, SAC 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.

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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.

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Appendix 4 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.

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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.

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.

Schedule 9 Invasive Species

Rhododendron is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended). This makes it illegal to plant or otherwise cause the species to grow in the wild. It is also classed as a ‘controlled waste’ under the Environmental Protection Act 1990 (EPA). As such it must be disposed of safely at a licensed landfill site according to the EPA (Duty of Care) Regulations 1991.

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Appendix 5 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 6**.

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

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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

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Biodiversity List, and Local Biodiversity Action Plan (LBAP) species[10], 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.

[10] 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.

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Appendix 6 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**[11].

Table 13: 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 of 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 or 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.

[11] Table adapted from (Collins, 2016)

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Appendix 7 Assessment Criteria for Roosting Bats

Roost types have been defined in accordance with Natural England and Bat Conservation Trust guidelines. Definitions are set out in **Table 15**.

Table 14: Bat roost types as defined by Natural England and the Bat Conservation Trust

Roost Type	Definition
Day Roost	A place where individual bats, or small groups of males, rest or shelter in the day but are rarely found by night in the summer.
Night Roost	A place where bats rest or shelter in the night but are rarely found in the day. May be used by a single individual on occasion or it could be used regularly by the whole colony.
Feeding Roost	A place where individual bats or a few individuals rest or feed during the night but are rarely present by day.
Transitional/Occasional Roost	Used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.
Swarming Site	Where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites.
Mating Sites	Where mating takes place from late summer and can continue through winter.
Maternity Roost	Where female bats give birth and raise their young to independence.
Hibernation Roost	Where bats may be found individually or together during winter. They have a constant cool temperature and high humidity.
Satellite Roost	An alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.

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Appendix 8 eDNA Survey Results

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SureScreen Scientifics

Folio No: E13993
Report No: 1
Purchase Order: Southleigh Park House
Client: ECOSA
Contact: Alice Pemberton

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA IN POND WATER FOR THE DETECTION OF GREAT CRESTED NEWTS (TRITURUS CRISTATUS)

SUMMARY

When great crested newts (GCN), *Triturus cristatus*, inhabit a pond, they continuously release small amounts of their DNA into the environment. By collecting and analysing water samples, we can detect these small traces of environmental DNA (eDNA) to confirm GCN habitation or establish GCN absence.

RESULTS

Date sample received at Laboratory: 08/06/2022
Date Reported: 09/06/2022
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
3382	Southleigh Park House	SU 73686 07876	Pass	Pass	Pass	Negative	0

If you have any questions regarding results, please contact us: ForensicEcology@surescreen.com

Reported by: Esther Strafford **Approved by:** Jennifer Higginbottom

METHODOLOGY

The samples detailed above have been analysed for the presence of GCN eDNA following the protocol stated in DEFRA WC1067 'Analytical and methodological development for improved surveillance of the Great Crested Newt, Appendix 5.' (Biggs et al. 2014). Each of the 6 sub-sample tubes are first centrifuged and pooled together into a single sample which then undergoes DNA extraction. The extracted sample is then analysed using real time PCR (qPCR), which uses species-specific molecular markers to amplify GCN DNA within a sample. These markers are unique to GCN DNA, meaning that there should be no detection of closely related species.

If GCN DNA is present, the DNA is amplified up to a detectable level, resulting in positive species detection. If GCN DNA is not present then amplification does not occur, and a negative result is recorded.

Analysis of eDNA requires scrupulous attention to detail to prevent risk of contamination. True positive controls, negative controls and spiked synthetic DNA are included in every analysis and these have to be correct before any result is declared and reported. Stages of the DNA analysis are also conducted in different buildings at our premises for added security.

SureScreen Scientifics Ltd is ISO9001 accredited and participate in Natural England's proficiency testing scheme for GCN eDNA testing. We also carry out regular inter-laboratory checks on accuracy of results as part of our quality control procedures.

INTERPRETATION OF RESULTS

SIC: **Sample Integrity Check** [Pass/Fail]
When samples are received in the laboratory, they are inspected for any tube leakage, suitability of sample (not too much mud or weed etc.) and absence of any factors that could potentially lead to inconclusive results.

DC: **Degradation Check** [Pass/Fail]
Analysis of the spiked DNA marker to see if there has been degradation of the kit or sample between the date it was made to the date of analysis. Degradation of the spiked DNA marker may lead indicate a risk of false negative results.

IC: **Inhibition Check** [Pass/Fail]
The presence of inhibitors within a sample are assessed using a DNA marker. If inhibition is detected, samples are purified and re-analysed. Inhibitors cannot always be removed, if the inhibition check fails, the sample should be re-collected.

Result: **Presence of GCN eDNA** [Positive/Negative/Inconclusive]
Positive: GCN DNA was identified within the sample, indicative of GCN presence within the sampling location at the time the sample was taken or within the recent past at the sampling location.
Positive Replicates: Number of positive qPCR replicates out of a series of 12. If one or more of these are found to be positive the pond is declared positive for GCN presence. It may be assumed that small fractions of positive analyses suggest low level presence, but this cannot currently be used for population studies. In accordance with Natural England protocol, even a score of 1/12 is declared positive. 0/12 indicates negative GCN presence.
Negative: GCN eDNA was not detected or is below the threshold detection level and the test result should be considered as evidence of GCN absence, however, does not exclude the potential for GCN presence below the limit of detection.