



**Long Copse Lane
Ecological Impact Assessment
Land and Partners Ltd
11 August 2021**



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Executive Summary

This report presents an Ecological Impact Assessment (EiA) for outline planning permission for residential development on 14.6ha of land on land north of Long Copse Lane, Emsworth, Hampshire. The is located to the north of Emsworth and consists predominantly of grazed horse paddocks separated by hedgerows and fencing with training paddocks, small woodland copses and two residential properties with associated buildings. Ecological surveys have been undertaken on the site since 2016 and recently updated in 2020 and 2021 to inform an ecological impact assessment of the proposals.

Ecology surveys have been undertaken including Phase1 habitat surveys, amphibian (i.e. great crested newt), reptile and breeding bird surveys. In 2016 and 2020 dormouse surveys were carried out, and bat surveys, including transect, static logger and building and tree assessments have been undertaken to determine the site's importance to this species group. Of specific interest to this site is records of Bechstein's bat on part of, and in forest habitats adjacent to the site. Trapping surveys in 2016 and radio tracking surveys in 2017 and 2021 focussing of Bechstein's bat were therefore used to inform the design of the masterplan from the outset.

The site is dominated by horse grazed pasture which is of overall site ecological importance. This habitat dominates the footprint of the site. Other habitats include buildings and hardstanding and excluding their role in supporting bats, they have negligible ecological importance. The hedgerows associated with the grassland paddocks are generally species poor, although they provide connective habitat within the site and are considered of local importance. Other key onsite habitats include the broadleaved woodland and boundary woodland/treelines and ponds which are also considered of local importance. The site is located adjacent to forest habitats which are considered of District importance. A separate Habitat Regulations Assessment (HRA) of the implications of the proposed development on Internationally importance sites (Ramsar, SAC/SPAs etc) has been undertaken.

The primary ecological importance of the site is the presence of a breeding population of Bechstein's bats, that predominantly use Southeligh Forest on the northern boundary of the site for roosting and foraging. The northern and eastern boundary of the site provides an important connection to other roosting, foraging, and commuting habitats that this population uses to the east and south. The presence of another 10 bat species on the site is also important, although the majority of species that dominate the site are relatively common and abundant in Hampshire and the UK (i.e. *Pipistrellus* spp). Soprano pipistrelle bats were confirmed as day roosting in one of the buildings and has legal implications prior to site development. The other species present that require consideration at the local level include dormice, that use the woodland boundaries of the site, and three red list bird species (starling, song thrush and house sparrow) and one amber list bird species (Dunnoek) that are breeding on the site. Reptile populations and other nesting birds generally are assessed to be important at the site level, although direct impacts on these taxa have legal implications prior to development under the Wildlife and Countryside Act 1981 (as amended).

The main impacts identified are direct impacts to bats, breeding birds and reptiles from construction, and potential indirect impacts to these species (in particular Bechstein's bat), using the adjacent forest areas post construction. The proposed development masterplan has therefore embedded mitigation within the design to avoid direct ecological impacts where possible and manage indirect effects. This includes the retention all significant areas of broadleaved woodland, the retention of approximately 40% of existing onsite hedgerows, and the retention of treelines on the boundaries. To ensure the protection and conservation status of Bechstein's and other bat species, dormice, reptile and bird species, large buffers between the development (average 35m) and adjacent forest habitats have been designed to provide dark corridors, sustainable drainage systems and public space, as well as increasing wildlife habitat and the management of disturbance. Furthermore, additional off-site woodland creation is being undertaken within the home ranges of the local Bechstein's bat population as enhancement.

1 Introduction

1.1 BACKGROUND

- 1.1.1 This report presents an Ecological Impact Assessment (EclA) for outline planning permission for residential development on 14.6ha of land on land north of Long Copse Lane, Emsworth, Hampshire (hereinafter referred to as the 'site'). The site is centred on Ordnance Survey grid reference SU 747 079 and the site location is shown in Figure 1. The desk study and survey work were carried out by Davidson-Watts Ecology Ltd on behalf of Land and Partners Ltd.
- 1.1.2 The site consists predominantly of grazed horse paddocks separated by hedgerows and fencing with training paddocks, small woodland copses and two residential properties with associated buildings. An aerial view map with associated red line boundary has been included in Figure 2.
- 1.1.3 The site is located north of the town of Emsworth, directly adjacent to suburban areas. The north and west of the site is bordered by Southleigh Forest, which comprises of ancient semi-natural woodland, planted ancient woodland, secondary broadleaved woodland and plantation woodland. The land to the east of the site is pastoral and similar in nature to the site. The wooded landscaped grounds of Hollybank House and a small pasture field lie to the west of the site. The Longacre house lies between the site and Long Copse Lane, wrapped on three sides by the application site'
- 1.1.4 Extensive ecological surveys have previously been undertaken on the site by Prime Environment in 2016 and 2018/19 and all results are incorporated within this report as background information.
- 1.1.5 The site forms the main land parcel of a housing allocation (Policy H8) in the Submission version of the emerging Havant Borough Local Plan. The site was also formerly identified as falling within a suitable housing site for early release in the Havant Borough Council Local Plan Housing Statement (Site UE76). A comprehensive masterplan for the whole allocation (16.9ha) has been prepared as required by Policy H8 and of the 260 dwellings anticipated within the masterplan area, around 210 are expected to come forward within the planning application site. The remaining parcels of land within the allocation are the field to the south of Hollybank House and the Longacre property, which will need to be the subject of separate planning applications. The illustrative masterplan is shown in Figure 3. Much of the ecological survey work covers the whole masterplan area to inform the ecological strategy for all the parcels of land within the allocation

1.2 OBJECTIVES

- 1.2.1 The objectives of the EclA report are to:
- To identify and describe all potentially significant ecological effects associated with the proposed development on ecologically important features,
 - To set out the mitigation measures required to ensure compliance with nature conservation legislation and to address any potentially significant ecological effects,
 - To identify how mitigation measures will/could be secured,
 - To provide an assessment of the significance of any residual effects,

- To identify appropriate enhancement measures, and
- To set out the requirements for post-construction monitoring

2 Methodology

2.1 DESK STUDY

2.1.1 The purpose of the desk study is to review information available in the public domain. The following sources were checked for ecological information relating to a 2km radius around the site boundary:

- Sussex Biodiversity Record Centre (SxBRC) – 7th April 2021,
- Hampshire Biodiversity Information Centre (HBIC) – 15th March 2021,
- Aerial mapping (Google Earth Pro),
- MAGIC (Multi-Agency Geographical Information for the Countryside) <http://www.natureonthemap.naturalengland.org.uk>, and
- NBN (National Biodiversity Network) <http://www.data.nbn.org.uk>.

2.2 FIELD SURVEY

2.2.1 The field survey of the site aimed to record both the habitat types present at the site as well as identify any evidence of protected and notable species (listed under Section 41 of the 2006 Natural Environment and Rural Communities (NERC) Act, Birds of Conservation Concern or locally notable species). This can be done by direct observation and through searching for field signs for each species. The survey was undertaken following 'Guidelines for Preliminary Ecological Appraisal' (CIEEM 2013).

2.3 HABITAT SURVEY

2.3.1 The field survey area consisted of all habitats within the site boundary and adjacent woodlands to the north and west of the site, including the pasture field SW of the site in earlier surveys (now outside the redline). Attention was also given to any survey corridors that linked the site with other areas of ecological interest or value for protected and/or notable species. Ponds within 250m (Cresswells 2004) were noted, especially where there were good habitat linkages with the site. Non-native invasive species were recorded where present on the site. Plant species follow nomenclature from Stace (2010).

2.3.2 The original extended Phase 1 habitat survey was carried out by Prime Environment (Land North of Long Copse Lane Ecological Baseline 21 December 2018) and this report is included in **Appendix A**. This included results from surveys on 1 April 2016 (main site), additional fields and the Old Dairy on 29 March and 8 June 2018. In addition to basic Phase 1 Habitat mapping, the site was assessed to identify whether it includes any Habitats of Principal Importance (HPI) or habitats suitable for Species of Principal Importance (SPI) as identified in the Natural Environment and Rural Communities (NERC) Act 2006, or other notable or legally protected species.

- 2.3.3 As part of this ecological baseline, a hedgerow assessment was undertaken to identify features of value within the site. Each hedgerow within the Site was assessed against the ecology criteria for 'important' hedgerows following the method set out in The Hedgerow Regulations 1997.
- 2.3.4 An updated ecological walkover survey was carried out by Cotswold Environmental on 20th May 2021 (**Appendix B**) to confirm the habitats remained in the same condition as the original walkover survey and to record any additional observations. The field visit involved a field survey. Dominant vegetation communities were assessed, allowing habitats on site to be valued for their ecological importance to protected wildlife. Binoculars were also used to scan for features likely to support protected species. All protected species were considered during the assessment and all wildlife species were recorded. The work was completed largely following methodologies set out by the Chartered Institute for Ecology and Environmental Management (CIEEM) 2013 and JNCC 1993.

2.4 BAT SURVEYS

BUILDING SURVEYS

Preliminary Roost Assessment

- 2.4.1 A Preliminary Roost Assessment was undertaken by Prime Environment in 2016 and 2018 (**Appendix A**). An update Preliminary Roost Assessment was undertaken by Cotswold Environmental on 20 May and 10th June 2021 (**Appendix B**).
- 2.4.2 All surveys followed the recommended methodologies from the current best practice guidance (Bat Surveys: Good Practice Guidelines Collins 2016).
- 2.4.3 A description of all buildings on site were recorded including features present that were suitable for roosting bats. Where access was possible, an internal and external search was undertaken of all buildings using binoculars to identify possible roost sites (for example, loose, or missing tiles; missing mortar at gable ends; hanging tiles or wooden cladding; raised lead flashing; gaps beneath the eaves; broken windows; damaged air vents and recesses in stonework). Characteristic field signs of bats, for example accumulations of droppings or obvious scratch/wear marks were also identified where possible.
- 2.4.4 The exterior building search was combined with internal searches of all parts of the building (where safely accessible) to search for signs of bats, including droppings, urine staining, feeding remains (for example, large accumulations of moth wings), and individual bats. An endoscope enabled closer inspection of potentially important features.
- 2.4.5 The internal and external survey results were combined with the surrounding landscape habitats and connectivity to grade the building as having negligible, low, moderate or high potential to support roosting bats.
- 2.4.6 The 2021 survey was undertaken by a licensed ecologist Tom Charlton MRSB (Natural England Class 2 bat licence number 2018-34622-CLS-CLS) and Jason Skinner (NE Class 2 Bat Survey licence 2020-50774-CLS-CLS).

Dusk Emergence and Dawn Re-Entry Surveys

- 2.4.7 Bat emergence and dawn surveys of Hollybank Farm were undertaken in August and September 2016 (see report April 2017 by Prime Environment **Appendix C**). These were supplemented by further surveys on 2019, also by Prime Environment of Holly Bank Farmhouse and the Old Dairy in May, June and July 2019 (results summary **Appendix D**).
- 2.4.8 In 2021 the emergence (Old Dairy) and dawn (Hollybank Farm) surveys were updated by Cotswold Environmental on 10 and 11 June, and the 26 and 27 July respectively. Further (see **Appendix E** for results).
- 2.4.9 Suitably experienced ecologists monitored potential egress points of all building elevations from each suitable structure. Surveyors were equipped with 2017 bat detectors, Anabats (2019) and Echometer Touch II detectors in 2021 for recording and analysis bat call analysis. The 2021 visual surveys were supplemented with IR cameras and supporting IR flood lights (in 2021). All recordings were reviewed post survey by an experienced ecologist.
- 2.4.10 Dusk emergence surveys commenced up to fifteen minutes before dusk and finished ninety minutes after local sunset. Dawn re-entry surveys commenced ninety minutes before dawn until fifteen minutes after local sunrise. All surveys were undertaken in appropriate weather conditions which were recorded. The survey dates were suitable to record any maternity roosts which may be present. Any additional commuting or foraging activity recorded during the protected species surveys was noted to enable a picture of local habitat use by bats to be formulated. The bat survey follows guidance as set out in the Bat Conservation Trust (BCT) Survey Guidelines (Collins 2016).

TREE SURVEYS FOR POTENTIAL ROOST FEATURES – GROUND ASSESSMENT

- 2.4.11 All trees within the site boundary and immediately adjacent to the site were assessed from the ground for their potential to support bat roosts using the following criteria in Table 1 from Collins (2016).
- 2.4.12 For each tree, species and height were recorded along with a description of all potential roost cavities identified on the tree and accompanying grid reference. The surveyor used a Nikon D7300 camera and Opticron high power binoculars.
- 2.4.13 The ground level assessment of trees was conducted on 20 May 2021 by Cotswold Environmental (see **Appendix B**).

Table 1: Criteria for categorising trees for their potential to support a bat roost (taken from Collins, 2016)

Suitability	Description of tree
Negligible	Negligible features on the tree likely to serve as roosting habitat for bats.
Low	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.
Moderate	A 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.

High	A 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.
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ACTIVITY SURVEYS

- 2.4.14 Static bat detector logger surveys were undertaken in 2019 by Prime Environment and subsequently analysed by Davidson-Watts Ecology Ltd in 2020. These data are summarised and reported in **Appendix O**. Eight Wildlife Acoustic SM4s were deployed for five nights per month from May to September 2019.
- 2.4.15 Further static logger surveys were undertaken by DWE in 2021 to update the data collected in 2019.
- 2.4.16 For each static logger survey by DWE in 2021, eight static bat detector loggers have been deployed for 5 nights each month (April – September). Elekon Batlogger A+ were used for the static loggers. The locations of the loggers are shown in **Appendix P** and the same locations and reference numbers were used for the surveys in 2019 and 2021.

TRAPPING AND RADIO TRACKING SURVEYS

- 2.4.17 The presence of Bechstein's *Myotis bechsteinii* bat in and around the site was confirmed in 2009 (Portsmouth Water unpublished data (2009)). As Bechstein's bats are a rare woodland species, and they predominantly roost in trees and are almost impossible to detect/confirm using standard bat surveys (i.e. acoustic surveys), the primary approach to meeting the project aims was to trap free-flying bats and to radio track individual bats to locate maternity and other roost types and to investigate use of the Site by bats when active at night.
- 2.4.18 Three survey sessions of approximately one week duration each have been undertaken, including one session in June 2017 and one session in August 2017 (initial report is **Appendix F**). These surveys were updated in 2021 (combined 2017/21 data in **Appendix G**).
- 2.4.19 Each session began with the trapping of bats. Radio-tagged bats were simultaneously/subsequently followed by radio-tracking during the week to locate roost sites and to examine nocturnal activity of bats, with a focus on collecting activity data for bats within the development boundary. Where access was possible, emergence counts were undertaken at identified roosts to determine the function of the roost and to provide an estimate of population sizes.
- 2.4.20 The following methods were undertaken in line with Chapter 9 (Advanced licensed bat survey methods) in Collins, 2016, particularly for Bechstein's bat. Full details of the survey methods can be found in **Appendix F and G**.

2.5 DORMICE

- 2.5.1 A dormouse *Muscardinus avellanarius* survey was carried out by Prime Environment in 2017 (methods contained in **Appendix H** Dormouse Survey 2017).

- 2.5.2 An update dormouse survey was undertaken by Andy Rothwell on behalf of Davidson-Watts Ecology in 2020 and the results are contained in **Appendix I**.
- 2.5.3 The update survey in 2020 followed best practice guidelines as detailed in The Dormouse Conservation Handbook (English Nature 2006). 92 dormouse nesting tubes were attached to horizontal branches of all suitable habitat (trees and hedgerows) within and around the boundaries of the site. The tubes were placed approximately 15 to 20 metres apart where habitat allowed. The locations and numbers of the tube locations are shown in **Appendix I**.
- 2.5.4 An index of probability of likely presence of dormice in each month is presented in The Dormouse Conservation Handbook (Table 2 below). Using the table, a score is generated based on the number of tubes used and which months they are set out. The scores should be doubled for 100 tubes and halved for 25. The score generated needs to be 20 or over for the survey to be considered robust enough to judge presence or likely absence of dormice from the study area. The surveys should be spread across the survey period as much as practicably possible.

Table 2: Index of Probability

Month	Score
April	1
May	4
June	2
July	2
August	5
September	7
October	2
November	2

- 2.5.5 Tubes were checked for presence of dormice or evidence of dormice nests once a month on the following dates:
- 27th June 2020,
 - 23rd July 2020,
 - 13th August 2020,
 - 14th September 2020,
 - 28th October 2020, and
 - 10th November 2020.
- 2.5.6 In accordance with Table 2 this is an Index of Probability of 20.

2.6 GREAT CRESTED NEWTS

Habitat Suitability Index Survey (HSI)

- 2.6.1 Two ponds were identified on the site at The Dairy Works and Colman's Copse (as described in Section 3) and two ponds were identified offsite within 250m of the site at Old Brickyard Farm. The pond locations are shown in Figure 4.

- 2.6.2 The Habitat Suitability Index (HSI) for the great crested newt (Oldham et al. 2000) was utilised to assess the potential of this pond to support the protected great crested newt *Triturus cristatus*. HSI scoring systems were originally developed by the US Fish and Wildlife Service as a means of evaluating habitat quality and quantity. An HSI is a numerical index, between 0 and 1. 0 indicates unsuitable habitat, 1 represents optimal habitat. The HSI for the great crested newt incorporates ten suitability indices, all of which are factors thought to affect great crested newts.
- 2.6.3 The HSI uses a score system to define pond suitability for great crested newts on a categorical scale:
- <0.5 = poor
 - 0.5 – 0.59 = below average
 - 0.6 – 0.69 = average
 - 0.7 – 0.79 = good
 - > 0.8 = excellent
- 2.6.4 The suitability index criteria and scoring system is included in **Appendix J**.
- 2.6.5 Subsequent eDNA surveys were undertaken on three of the four ponds on 29th April 2021 (ponds 2 and 3) and 19th May 2021 (pond 4) following the best practice sampling advice and sent to ADAS for analysis.
- 2.6.6 In addition to eDNA of the ponds a single visual torchlight survey was undertaken of Pond 4 on the 10 May 2021, whilst awaiting eDNA results.

2.7 REPTILES

- 2.7.1 A reptile survey was undertaken by Prime Environment in 2016 (**Appendix K** Reptile Survey 2016).
- 2.7.2 This survey was updated by Andy Rothwell on behalf of Davidson-Watts Ecology in 2020 (**Appendix L** Reptile Survey 2020).
- 2.7.3 The update reptile survey in 2020 was undertaken following best practice guidelines as detailed in Froglife Advice Sheet 10: Reptile Survey (1999). 75 artificial refugia were placed in all suitable habitat (rough grassland, scrub and woodland/hedgerow interfaces) around the site and left to bed in for a period of two weeks. The locations of all refugia are shown in **Appendix L**.
- 2.7.4 Reptile surveys were then conducted on seven occasions on the following dates:
- 27th May 2020,
 - 10th July 2020,
 - 23rd July 2020,
 - 1st August 2020,
 - 14th August 2020,
 - 22nd August 2020, and

- 13th September 2020.

2.7.5 All surveys were conducted in appropriate weather conditions suitable for observing basking reptiles which were recorded. The survey included all refugia and direct observation of all suitable habitat in between the refugia.

2.7.6 The surveys were carried out by Andy Rothwell who has over twenty years' experience in reptile surveys.

2.8 BREEDING BIRDS

2.8.1 Ten breeding bird surveys were undertaken of the site between mid-March and June 2021 by Ornithologist Alan Crane, with the aim of assessing the bird assemblage and breeding status of the site.

2.8.2 The methods are detailed in **Appendix T** (bird survey report), and followed the methodology outlined by the British Trust for Ornithology Common Bird Census (Marchant, 1983).

2.9 ECOLOGICAL EVALUATION AND SIGNIFICANCE

2.9.1 Ecological features and resources have been evaluated based on the approach described in 'Guidelines for Ecological Impact Assessment in the United Kingdom' published by the Chartered Institute of Ecology and Environmental Management (2019) whereby the value of an ecological feature or resource is determined within a defined geographical context using the following criteria:

- International,
- National (England),
- Regional (South-East),
- County (or Metropolitan) (Hampshire),
- District (or Unitary Authority, City or Borough) (Havant),
- Local (or Parish) (Emsworth),
- Site; and
- Negligible.

2.9.2 Significant ecological features have been determined as those valued above site level and/or where there are legal or planning policy obligations. Criteria have been applied as identified in CIEEM (2018) to evaluate the ecological features.

2.9.3 Consideration has also been given to any invasive species on Schedule 9 of the Wildlife and Countryside Act 1981 (e.g. Japanese knotweed *Fallopia japonica*, Himalayan balsam *Impatiens glandulifera* and giant hogweed *Heracleum mantegazzianum*) and as identified as injurious in the Weeds Act 1959 (as amended by the Ragwort Control Act 2003) to include common ragwort *Senecio jacobaea*, broad-leaved dock *Rumex obtusifolius*, curled dock *Rumex crispus*, creeping thistle *Cirsium arvense* and spear thistle *Cirsium vulgare*.

2.9.4 Ecosystem services including supporting services, provisioning services and cultural services are considered where relevant as well as the presence of natural capital and opportunities for enhancement to increase habitat value where they exist.

2.10 ASSESSMENT OF IMPACTS AND SIGNIFICANCE

- 2.10.1 The document Biodiversity: Code of practice for planning and development published by the British Standards Institute (BS 42020:2013) cites the CIEEM Guidelines for Ecological Impact Assessment (EclA) as the acknowledged reference on ecological impact assessment. EclA is a process of identifying, quantifying and evaluating potential effects of development related or other proposed actions on habitats, species and ecosystems. The EclA must provide reliable and defensible information about, and interpretation of, the likely significant ecological effects from inception to operation, maintenance and, where appropriate, closure and decommissioning.
- 2.10.2 The impact assessment assesses whether important ecological features will be subject to impacts (positive or negative), the characterisation of these impacts (extent, magnitude, duration, reversibility, timing and frequency) and their effects in the absence of mitigation. It is good practice for the EclA to make clear both the potential significant effects without mitigation and the residual significant effects following mitigation.
- 2.10.3 An assessment is required of the significance of the residual ecological effects of the project (after mitigation) including cumulative effects. For the purpose of EclA, 'significant effect' is an effect that either supports or undermines biodiversity conservation objectives for 'important ecological features' or for biodiversity in general. Conservation objectives may be specific (e.g. for a designated site) or broad (e.g. national/local nature conservation policy) or more wide-ranging (enhancement of biodiversity). Effects can be considered significant at a wide range of scales from international to local and legal and policy consequences should be also discussed.
- 2.10.4 Measures should be incorporated in line with the key principles of avoidance, mitigation, compensation and enhancement to reduce and compensate negative ecological impacts and their effects. Provision should be made for ecological enhancements, monitoring impacts and their effects. Evaluation should be undertaken of the success of the proposed mitigation, compensation and enhancement measures and rectification of unexpected negative effects or ineffective mitigation.

3 Baseline Conditions

3.1 DESK STUDY

- 3.1.1 MAGIC mapping website was reviewed for records of protected or notable species. No records were shown from a 2km radius of the site.

3.2 PROTECTED SITES

- 3.2.1 A summary of all statutory and non-statutory sites within 2km of the site is included in **Appendix M**.

- 3.2.2 The protected sites that are ecologically linked to the site or could potentially suffer indirect impacts as a result of the proposed development are:

Statutory Sites

- Chichester and Langstone Harbours Ramsar Site,
- Chichester and Langstone Harbours Special Protection Area (SPA), and
- Solent Maritime Special Area of Conservation (SAC),

Non-statutory Sites

- Stanstead Forest Local Wildlife Site (LWS),
- Land east of 54 Long Copse Lane Site of Importance for Nature Conservation (SINC),
- Barton's Copse and The Slip SINC,
- Southleigh Forest (South) SINC,
- Southleigh Forest SINC, and
- Southleigh Forest (North of Emsworth Common Road) SINC.

- 3.2.3 Land east of 54 Long Copse Lane SINC is located immediately adjacent to the southeast of the site. The remaining locally important sites are within the green corridor of woodlands (including ancient semi-natural woodland) that extends north from the boundary of the site. These sites are designated for their nature conservation importance at the County level, and for the purpose of this assessment are considered of **County** importance.

- 3.2.4 The presence of an internationally important Ramsar site and SPAs is addressed by Policy E16 of the Havant Emerging local plan due to indirect impacts residential development. These are addressed in the mitigation section of this report and are considered to have an ecological value of **International**.

NERC habitats

- 3.2.5 The HBIC broad habitats map confirms a swathe of broadleaved woodland in line with the connected SINC woodland sites offsite to the north. It also shows two areas of neutral grassland which includes the grass fields immediately adjacent to the site to the west and an area of field on site Field with TN6 and southern site boundary although the Phase 1 Habitat Survey in 2016 (**Appendix A**) recorded this field to be heavily poached horse paddocks. Neutral grassland has also been identified to the south of Long Copse Lane associated with the adjacent SINC to the south.

Wildlife Corridors

- 3.2.6 MAGIC and Google Earth Pro were reviewed to identify any key wildlife corridors through or adjacent to the site.
- 3.2.7 HBIC provided a map of Ecological Network Mapping within 2km of the site. The habitat identified on and adjacent to the site as neutral grassland on the broad habitats map has been marked as Network Opportunities. The broadleaved woodland immediately adjacent to the west of the site has been marked as a core non-statutory site as priority habitat.

3.3 HABITAT SURVEY

- 3.3.1 Prime Environment Emsworth Ecological Baseline (**Appendix A**) confirmed that the habitats recorded on site considered to be HPIs included:
- five hedgerows,
 - two ponds (and a further two offsite), and
 - two small broadleaved woodland copse to the south of the site, as well as Hollybank Woods adjacent to the site boundary to the north.
- 3.3.2 HBIC have provided a record of corn spurrey *Spergula arvensis* which was recorded on site in 2011 and is an IUCN vulnerable plant. Marsh ragwort *Jacobaea aquatica* (IUCN Nationally Threatened) and woodrush *Luzula forsteri* (Hampshire responsible 11%) have been recorded on the field immediately adjacent to the west of the site, outside the red line boundary.
- 3.3.3 The habitats that have been recorded on site that are of local value or higher are detailed below are shown on the Phase 1 Habitat Map which was updated in 2021 (Figure 5) and summarised below. Full habitat descriptions are provided in **Appendix B**.

Ponds

- 3.3.4 Two ponds have been confirmed within the site boundary. A small pond is located within Colman's Copse, which is shallow with no associated aquatic vegetation and is approximately 80% shaded. There is also a garden pond at the Old Dairy Farm which is a manmade pond with a butyl liner. This pond is surrounded by amenity grassland and located close to a boundary hedgerow. There are minimal marginal and emergent plants with 20% shade from the adjacent hedgerow.
- 3.3.5 Ponds can provide habitat for a variety of terrestrial and aquatic invertebrates, habitat for amphibians, foraging for grass snake and water resources for local bird and small mammal species. They are also listed as HPIs under the NERC Act 2006.

Habitat value: **Local**

Hedgerows

- 3.3.6 There are five sections of hedgerow across \on the site which are all intact and form the paddock boundaries. All are species poor (dominated by hawthorn *Crataegus monogyna*) with tall ruderal vegetation at the base where access is not available for horses to graze. The central hedgerow features low numbers scattered trees including oak and features no signs indicative of management.
- 3.3.7 Each hedgerow was assessed against the ecology criteria for important hedgerows following the method set out in The Hedgerow Regulations 1997 and reported in the Ecological Baseline (December 2018- **Appendix A**). No hedgerows within the site boundaries were found to be important under the Regulations 1997.
- 3.3.8 The hedgerows can provide ecological connectivity on the site, as well as providing nesting and foraging habitat for locally occurring bird species and shelter for species including hedgehog and reptiles. Hedgerows are listed as HPIs under the NERC Act 2006.

Habitat value: **Local**

Broadleaved Woodland and Trees

- 3.3.9 Two small broadleaved woodland copses are present within the site boundary. The copse to the east of Hollybank access road is dominated by silver birch *Betula pendula* and oak *Quercus robur*.
- 3.3.10 The copse in the south-west corner, known as Colman's copse is approximately 60m by 70m and is dominated by mature oak and semi-mature white poplar *Populus alba* with occasional semi-mature hawthorn, blackthorn *Prunus spinosa*, ash *Fraxinus excelsior* and horse chestnut *Aesculus hippocastanum*. Larger trees within the copse feature low to moderate ivy cover and there are several fallen trees. Dense growth of bramble and holly bush surround the northern and eastern woodland copse edge
- 3.3.11 Hollybank Woods is offsite to the north and west of the site. Parts of the woods (although none immediately adjacent to the Site) are designated as a SINC. Parts of the woods (including an area of woodland immediately north of the Site) are semi-natural ancient woodland.
- 3.3.12 The southern boundary to Long Copse Lane is predominantly a scrub and tree line (oak, ash, sycamore *Acer pseudoplatanus*, goat willow *Salix capraea* and bramble *Rubus fruticosus*).
- 3.3.13 To the north of Hollybank Farm is a small cluster of semi-mature and mature trees located to the rear of the garden area, which includes mature oak and ash trees.
- 3.3.14 The small broadleaved woodland copses and trees on the site are likely to provide important habitat for birds, bats and a range invertebrate as well as having intrinsic value as a NERC S41 habitat.

Habitat value: **Local**

3.4 HABITATS ADJACENT TO THE DEVELOPMENT FOOTPRINT

- 3.4.1 The site is located adjacent to a large forest area consisting of planted ancient woodland, ancient semi-natural woodland and secondary broadleaved woodland to the north and west

(Southleigh Forest and Hollybank Wood). Parts of these forest areas are designated as local wildlife sites.

- 3.4.2 Two ponds are located approximately 250 north east of the site boundary with forest habitats located between the site and the ponds, providing good ecological connectivity. Great crested newt surveys have confirmed no presence of GCN in the ponds.
- 3.4.3 A forest stream/drain out of Southleigh Forest that flows west to east occurs on the northern boundary of the site and continues away from the site at the site's northeast corner before flowing south-east to the River Ems. This drain/stream is well vegetated by trees and woodland and provides an important ecological link to the wider riverine habitats of the River Ems corridor.
- 3.4.4 Habitat value: Taking into account the ancient woodland and designated non-statutory sites and ecological links of the River Ems, the adjacent habitats are considered to be of District value.

3.5 NON-NATIVE INVASIVE SPECIES

- 3.5.1 The schedule 9 plant rhododendron *Rhododendron ponticum* was identified on the western boundary adjacent to the glamping area.
- 3.5.2 There are records of fallow deer *Dama dama* on site in the western field immediately adjacent to the west and mammal trails were recorded leading into Hollybank Wood.

3.6 SURVEY CONSTRAINTS

- 3.6.1 All areas of the site within the red line boundary were fully accessible during the field survey. The weather conditions were suitable for undertaking the survey work. The time of year that the surveys were undertaken was suitable for identifying the habitats that were present. There were therefore no constraints to the habitat surveys.

3.7 BATS

Records

- 3.7.1 Bat records provided on site or immediately adjacent included Barbastelle *Barbastella barbastellus*, *Myotis* sp, Bechstein's, Brandt's, whiskered, Natterer's *Myotis nattereri*, noctule, common pipistrelle, soprano pipistrelle and brown long-eared.
- 3.7.2 There are records for lesser noctule *Nyctalus leisleri*, pipistrelle bat *Pipistrellus* sp. and Nathusius pipistrelle with records 80m south (lesser noctule and Nathusius pipistrelle), 300m west (pipistrelle), 91m south (Nathusius) and 200m east (pipistrelle).
- 3.7.3 Other bat species recorded within 2km of the site included:
- Serotine,
 - Alcatheo, and
 - Daubenton's.

Bat Roosting Assessments and Surveys

- 3.7.4 The Ecological Baseline report (December 2018) confirmed the presence of records for Bechstein's roost in Hollybank Farm Copse and Colman's Copse on site, based on surveys undertaken in 2009 by Portsmouth Water (see also reference to these data in **Appendix G**) and initial trapping surveys by Davidson-Watts Ecology in 2016 (**See Appendix F**) of Southleigh Forest.
- 3.7.5 The initial walkover survey reported 24 trees that had potential roosting features for bats and a Bechstein's bat was recorded roosting in Colman's Copse (in 2009). A number of Bechstein's roosts have been recorded in the forest areas immediately adjacent to the north of the site during radiotracking associated with other projects.
- 3.7.6 In 2019, Prime Environment recorded 61 trees with potential to support roosting bats with 11 moderate trees and 50 trees with low potential for roosting bats, the majority of these being on the boundary of the site. 22 trees were climbed by professional arboreal bat ecologists which recorded six trees with high potential, eight trees with moderate potential and eight trees with low potential for roosting bats (see **Appendix A**).
- 3.7.7 On the updated assessment in 2021 (**Appendix B**), 46 trees were identified with bat roosting potential, although a number of trees within boundary woodlands were excluded from this assessment. 29 of these trees were assessed as being of moderate or high potential to support bat roosts. The majority of these trees are being retained in the broadleaved woodland habitats or boundary tree lines.
- 3.7.8 The potential bat roost assessment (PRA) 2021 (**Appendix B**) assessed eight buildings on the site. This included two buildings in the area of the Old Dairy (B1,B2) and six buildings in the Hollybank Farm complex (B3-B8).
- 3.7.9 One building was assessed as having low potential and one building moderate-high potential in the Old Dairy complex. Two buildings were considered to have low and one building moderate potential to support bat roosts in the Hollybank Farm complex.
- 3.7.10 No bats were recorded during subsequent roost emergence surveys at the Hollybank Farm buildings in August and September 2016 (**Appendix C**), building references B3-B8 in **Appendix B**. In subsequent surveys of Hollybank Farmhouse on 26th June 2019, a pipistrelle *Pipistrellus* bat was recorded to emerge from the gable end of the main house (B8) (**Appendix D**). A dawn survey of B8 in June 2021 found a single soprano pipistrelle return to the farmhouse (see **Appendix E**). No further emergences or return of bats were observed on the 26th/27th July 2021.
- 3.7.11 The residential buildings and stables at the Old Dairy Farm were considered to have suitability for roosting bats and bat emergence surveys on 25th June 2019 and 15th July 2019 found no emerging bats (**Appendix D**). An emergence survey in June and July 2021 found no bats emerging from these buildings (**Appendix E**).

Bat Activity Surveys

- 3.7.12 Bat transect and static bat detector logger surveys were undertaken in 2016 and 2017 (Prime Environment Bat Activity Surveys October 2018 **Appendix N**). These surveys recorded widespread common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*, transitional Nathusius pipistrelle *Pipistrellus nathusii*, low serotine *Eptesicus serotinus* and noctule *Nyctalus noctula* activity and low barbastelle activity. The survey also

recorded *Myotis* sp. predominantly along the tree line along the east of the site and long-eared *Plecotus* sp recorded low activity but was likely to be under recorded.

- 3.7.13 The bat detector static logger surveys of 2019 undertaken by Prime Environment and analysed by DWE, comprised of eight logger locations and recorded bat activity monthly between May and September 2019 inclusive for five nights each month.
- 3.7.14 For various reasons including power failure or corrupt SD cards, two loggers recorded no data in June 2019, one logger recorded no data in July and August 2019, resulting in a total of 180 of the planned 200 nights of static bat detector recording in 2019.
- 3.7.15 A total of 65,246 bat calls were recorded over the 180 nights of survey. Chart 1 shows the species proportions of bats detected on all static loggers combined. Soprano pipistrelle (*P.pyg*) was the most frequently recorded species (44%), with common pipistrelle being the second most frequently recorded bat. Nathusius pipistrelle (*P. nat*) was detected on site with 10 recordings assigned to this species.
- 3.7.16 *Myotis* (which would include Natterer's, Daubenton's, small myotis and Bechstein's) bats made up approximately 3% of the total calls and the big bats group (Noctule/serotine-Nyc/Ept) approximately 4%. Barbastelle and long-eared around 1-2%. Full details of the breakdown can be found in **Appendix O**.
- 3.7.17 Chart 2 shows the nightly bat detections by species for each logger over the entire survey period. Logger D on the north-east boundary of the site shows the greatest levels of overall bat activity, with long-eared bats being a notable component of the bat assemblage outside *Pipistrellus* spp, and big bats. Logger A located adjacent to Hollybank woods, shows the highest activity for barbastelle bats on the site and Logger C on the norther boundary of the site show the highest proportion of *Myotis* bat activity.
- 3.7.18 Loggers F and G in the centre of the site and Logger B adjacent to Long Copse Lane next to Colmans Copse recorded the least levels of bat activity overall.

Chart 1 – Proportion of bat calls by species/species group.

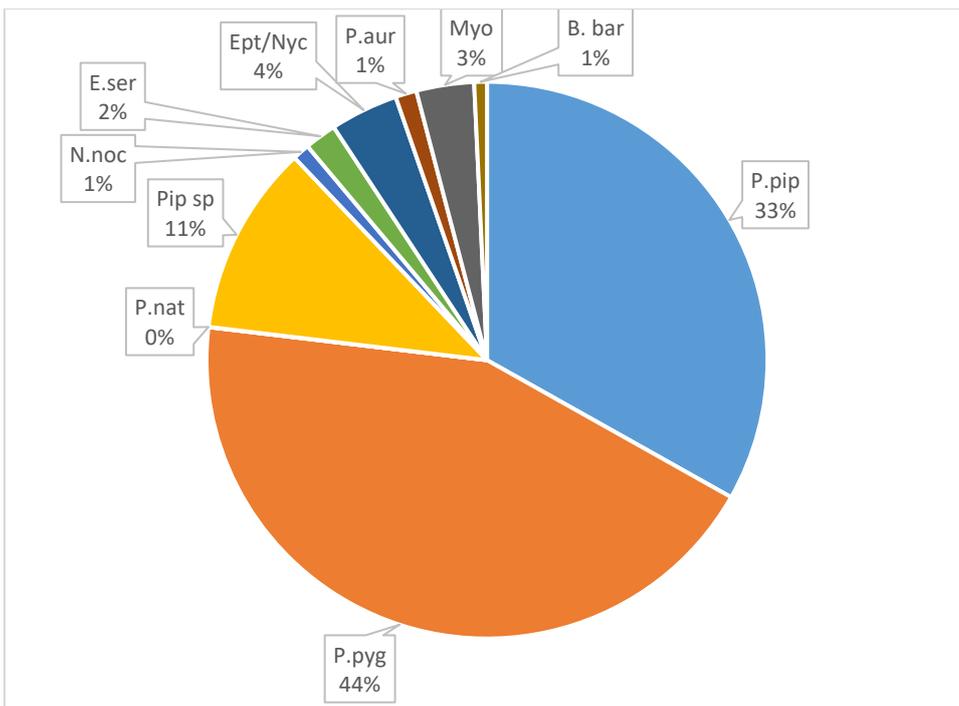
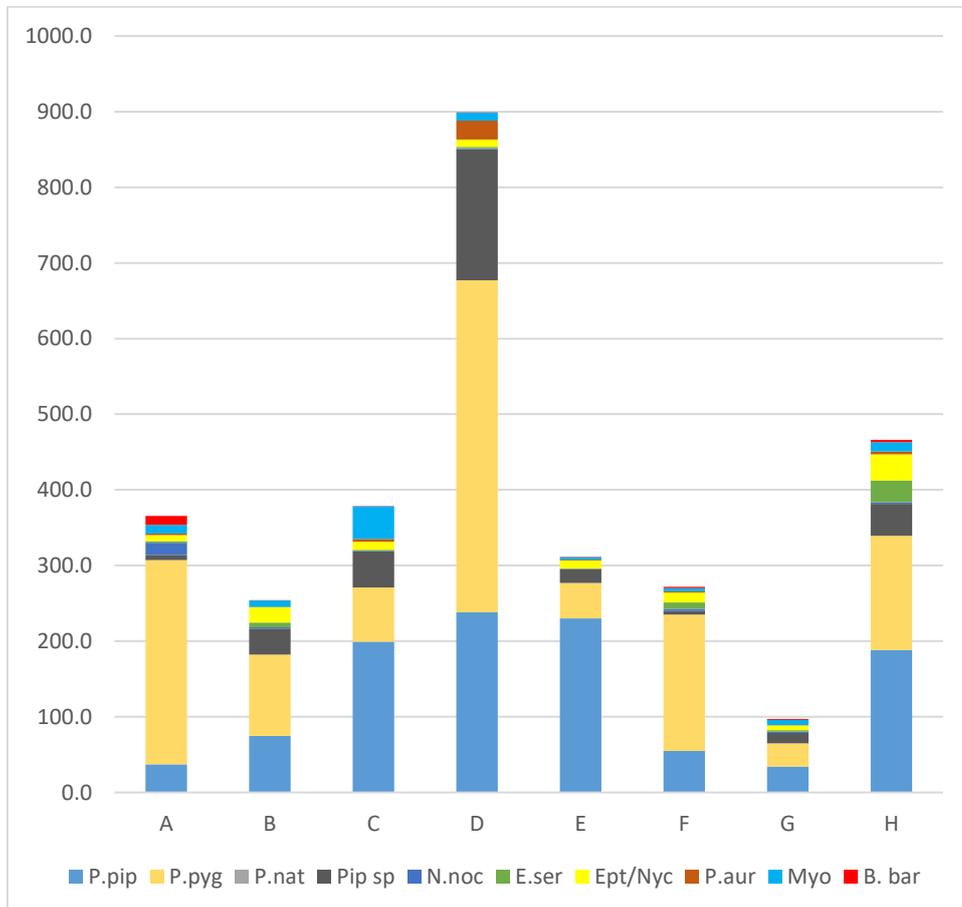


Chart 2 – Proportion of bat calls per night at logger locations A-H



- 3.7.19 Static logger surveys commenced in May 2021 and will run through to September 2021, these results have yet to be analysed.
- 3.7.20 Trapping surveys by Davidson-Watts Ecology in late summer 2016 confirmed the presence of breeding Bechstein's bat in the Southleigh Forest area known as Long Copse adjacent to the northern boundary of the Site. Further surveys were therefore undertaken to confirm the use of the site by Bechstein's bat.
- 3.7.21 A total of six species were caught during four nights of trapping and included Natterer's, whiskered *Myotis mystacinus* /Brandts *Myotis brandtii* /alcatloe *Myotis alcathoe*, Daubenton's *Myotis daubentonii*, Bechstein's, soprano pipistrelle and brown long-eared *Plecotus auritus* (Davidson-Watts Ecology Ltd Bat Trapping and Radio-tracking 2017 **Appendix F**). Two Bechstein's bats were fitted with radio transmitters which found no roosts within the site boundaries with bats flying beyond the proposed development site using the adjacent Southleigh Woodlands and the River Ems corridor roosting in isolated trees near Wesbourne. One bat was recorded foraging in woodland habitats on the A27.
- 3.7.22 A further Bechstein's bat trapping and radio tracking survey was undertaken in June 2021 with an additional survey session planned for early August 2021. Five female Bechstein's bats were captured and three were tagged on the northern boundary of the site/Southleigh Forest and subsequently tracked for five nights. No roosts were found within the site, however the northern, north-eastern and eastern boundaries of the site were used by foraging/commuting tagged Bechstein's bats. One likely maternity roost was located south of the A27 on the northern boundary of the settlement of Hermitage (Emsworth). The roost was use for a week and all tagged bats were recorded using this roost. The River Ems corridor was used to for these bats as a foraging area and commuting routes between the roost site and Southleigh Forest.

Image 1 - Summary of Bechstein's bat movements in relation to the site- showing individual fixes recorded of tagged bats.



Table 3 – Summary of bat evaluation for the site

Species	Summary	Status*	Ecological value
Natterer's	Frequently recorded. Breeding individuals confirmed. Myotis 3.3% activity surveys.	Protected Sch5 Wildlife and Countryside Act, Conservation Regulations. Widespread and locally common in the UK and Hampshire	Local
Small Myotis (Brandt's, whiskered, alcaethoe)	Regularly recorded during trapping surveys. Myotis 3.3% activity surveys.	Protected Sch5 Wildlife and Countryside Act, Conservation Regulations. Uncommon but widespread in the UK and Hampshire	Local
Daubenton's	Sporadically recorded in surveys. Breeding individuals confirmed. Myotis 3.3% activity surveys.	Protected Sch5 Wildlife and Countryside Act, Conservation Regulations. Widespread and locally common in the UK and Hampshire	Local
Brown long-eared	Sporadically captured in trapping surveys, Breeding confirmed.	Protected Sch5 Wildlife and Countryside Act, Conservation Regulations. NERC specie. Widespread and common in the UK and Hampshire.	Site
Soprano pipistrelle	Frequently recorded on site, 43.7% of recordings and breeding confirmed. Day roost located Hollybank Farm House.	Protected Sch5 Wildlife and Countryside Act, Conservation Regulations. NERC species. Widespread in the UK and Hampshire	Local
Common pipistrelle	Regularly recorded on all activity surveys, most common recorded bat 33.2% of detections.	Protected Sch5 Wildlife and Countryside Act, Conservation Regulations. Widespread and common in the UK and Hampshire.	Site
Noctule	Regularly recorded on activity surveys. One capture of a male bat. Large bats made up 6.8% of all detections	Protected Sch5 Wildlife and Countryside Act, Conservation Regulations. Widespread and common in the UK and Hampshire.	Site
Serotine	Regularly recorded on activity surveys. No captures. Large bats made up 6.8% of all detections	Protected Sch5 Wildlife and Countryside Act, Conservation Regulations. NERC species. Restricted distribution in the UK, locally common in Hampshire.	Site
Barbastelle	Sporadic bat detector records on boundaries of the site 0.7 % of call. Most calls recorded at logger A west side of the site.	Protected Sch5 Wildlife and Countryside Act, Conservation Regulations. Widespread but rare in lowland England and Wales, and scarce in Hampshire. Population status unknown.	Local
Bechstein's	Breeding population adjacent to site and site boundaries used for foraging and commuting. Roost record on site at Colman's copse 2009.	Protected Sch5 Wildlife and Countryside Act, Conservation Regulations. NERC priority species. Very rare in the UK one of three known populations in Hampshire. Population status uwnknown.	National

*Status derived from legislative protection, Species of Principle Importance and UK status from BCT 2020.

3.8 DORMOUSE SURVEY

- 3.8.1 Woodland habitats surrounding the site to the north and east provide potential habitat for local dormouse populations. Furthermore, treelines at the survey boundary as well as unmanaged and overgrown hedgerows, and dense growth of scrub present throughout the survey site would provide potential foraging and sheltering opportunities and a good level of connectivity for dispersal.
- 3.8.2 A presence/absence dormouse nest tube survey was carried out in between June and September 2016 (Prime Environment Emsworth Dormouse Survey April 2017). The survey found an unoccupied complete dormouse nest and an unoccupied partially completed dormouse nest on 21st September 2016 along the southern boundary of Hollybank Wood bordering the field adjacent to the site (**Appendix H**)
- 3.8.3 No records of dormouse have been provided on or adjacent to the site from the data searches
- 3.8.4 A full update survey was carried out in 2020, The results are included in full in **Appendix I**.
- 3.8.5 In summary, two dormouse nests were recorded during the survey along the northern boundary of the site, both of which were subsequently taken over by wood mice.
- 3.8.6 Dormouse nests do not provide an accurate indication of population size for dormouse and it should be assumed therefore that dormice are present in all suitable boundary woodland vegetation around the edges of the site.
- 3.8.7 Dormice are present in the surrounding habitats of the site and are protected under the Wildlife and Countryside Act and Conservation Regulations 2017. They are a species of principal importance under the NERC Act and are therefore considered of **local** importance.

3.9 BADGER

- 3.9.1 No evidence of badger *Meles meles* was recorded on site or in the adjacent land (where access was available) during the field surveys in 2016 and 2018 (Prime Environment Ecological Baseline December 2018 – **Appendix A**).
- 3.9.2 No records for badger have been returned for the site or the surrounding area although dense scrub in some areas precluded a thorough survey during the update ecological walkover survey in 2021.
- 3.9.3 No evidence of the presence of badgers or their setts was recorded on site or in the adjacent woodlands during the field survey work in 2021 (**Appendix B**), and they are not considered further in this assessment.

3.10 HEDGEHOG

- 3.10.1 A single record for hedgehog *Erinaceus europaeus* has been returned for the centre of the site. the remainder of the records are from new Brighton to the south and Westbourne to the east.
- 3.10.2 Given the habitats present on site including woodland and hedgerows for shelter and grassland for foraging, it is considered highly likely that hedgehog populations are present on and immediately adjacent to the site, albeit in small numbers given the lack of shelter provided by the grazed pasture.

- 3.10.3 It is considered that the presence of hedgehog is likely on the site, and as a species principal importance, they are considered of **site** importance.

3.11 GREAT CRESTED NEWT

Background

- 3.11.1 A previous Habitat Suitability Index (HSI) assessment was undertaken on four ponds within 250m of the site in 2016 (Ecological Baseline December 2018 **Appendix A**). Two ponds at Sawmills Copse were classed as good (Pond 1 north-east pond) and excellent (Pond 2 south-west pond). The pond at Old Dairy Farm was classed as average (Pond 3) and the pond in Colman's Copse was assessed as below average (Pond 4). See Figure 4 or pond locations.
- 3.11.2 Full great crested newt surveys were undertaken in May 2016 (Prime Environment Great Crested Newt Surveys February 2017 **Appendix Q**) and no great crested newts were found in any of the ponds. No common toads *Bufo bufo* were found in the ponds.
- 3.11.3 There are no records of great crested newt or other common amphibian species on site or within 250m.
- 3.11.4 An update Habitat Suitability Index survey was undertaken on 13th April 2021 in line with the best practice guidance. The full survey results are included in **Appendix R** and summarised below.
- Pond 1 – The Old Brickworks north-east pond - 0.32 poor and dry – screened out,
 - Pond 2 – The Old Brickworks south-west pond – 0.7 good – eDNA undertaken,
 - Pond 3 – Old Dairy Works – 0.54 below average – eDNA undertaken, and
 - Pond 4 – Colman's Copse – 0.49 poor – eDNA undertaken.
- 3.11.5 EDNA surveys were then undertaken for Ponds 2, 3 and 4 and analysed by ADAS. The results are included in **Appendix S** and included below:
- Pond 2 – negative,
 - Pond 3 – negative, and
 - Pond 4 – negative.
- 3.11.6 It is therefore considered that great crested newt *Triturus cristatus* are not present on the site and this species will not be considered further in this report. Further to this, no common toad *Bufo bufo* have been recorded during any of the surveys of the site.

3.12 REPTILES

- 3.12.1 However, hedgerows present both onsite and at the survey boundary, as well as extensive growth of scrub and tall ruderal growth would offer excellent value for commuting and sheltering reptiles and amphibians and may support small populations within the survey boundary. Further potential suitable refuge for reptiles and amphibians includes scattered scrub on site and at field margins, and two substantial spoil heaps and timber piles (**Appendix B** Target Notes 2 and 3) would offer value to slow worm *Anguis fragilis* and grass snake *Natrix helvetica*.

- 3.12.2 Reptile surveys were previously undertaken by Prime Environment between June and October 2016 (**Appendix K**) which recorded low populations of grass snake and slow worm within the site boundaries. Individuals were recorded to the south of Hollybank Farm (slow worm), to the north of Hollybank Farm (slow worm and grass snake), along the central hedgerow running east to west (slow worm and grass snake) and along the north and north-eastern boundary (slow worm and grass snake).
- 3.12.3 ScBRC provided three records of slow worm *Anguis fragilis* from 380m east of the site and a further record 484m south-west. No records are provided for reptiles from HBIC that are in habitats that are ecologically linked to the site, with all records provided from the south of the A27.
- 3.12.4 The updated survey results are included in **Appendix L**.
- 3.12.5 In summary, grass snake was recorded along the northern boundary of the site and halfway down the western boundary. Slow worm was recorded along all boundaries of Field A as well as the northern and western boundary of Field B.
- 3.12.6 The maximum count of grass snake was two on 14th August 2020 and 12 slow worms on 27th May 2020. Providing a population class size assessment for grass snake as **small** and for slow worm, as **medium**.
- 3.12.7 Grass snake and slow worm are currently protected from killing and injury under the Wildlife and Countryside Act and grass snake is also a species of principal importance under the NERC Act. However, given the medium and low population of these species, they are considered of **site** importance.

3.13 INVERTEBRATES

- 3.13.1 No records have been provided for rare or notable invertebrate species within the site boundaries. Numerous moth records have been provided for the adjacent Hollybank Woods as a result of transects through the woodland including several NERC S41 species.
- 3.13.2 The habitats on site are predominantly close grazed grassland or isolated patches of scrub which does not provide the structure, shelter or food resources required for a diverse invertebrate population. It is possible that some of the S41 moth species recorded in the adjacent woodlands may be present along the woodland edges adjacent to the north boundary of the site.

3.14 BREEDING AND NESTING BIRDS

- 3.14.1 There are no records for protected or notable birds from within the site boundary. Common redpoll *Acanthis flammea* was recorded in pasture 190m to the south (amber listed, winter visitor). Other protected or notable bird species that have been recorded within 2km that could reasonably be expected to be present on site given the habitats present include yellowhammer *Emberiza citrinella* (red list and NERC S41 species), linnet *Linaria cannabina* (red list), house sparrow *Passer domesticus* (red list and NERC 41 species), starling *Sturnus vulgaris* (red list), redwing *Turdus iliacus*, song thrush (*Turdus philomelos*) and foraging barn owl *Tyto alba*.
- 3.14.2 Evidence of nesting birds consisted of swallows currently breeding within a stable block (B2) of the Old Dairy and stable block (B4) and storage building (B6) of Hollybank Farm as shown

in **Appendix B**. Additionally, mature trees present within the survey boundary as well trees, hedgerows and dense scrub scattered throughout the site and at field margins could support nesting birds of various species.

- 3.14.3 No evidence of barn owl was discovered during the daytime assessment and no buildings present on site are considered suitable for nesting or roosting.
- 3.14.4 Breeding bird survey found a total of 18 breeding bird species on and adjacent to the site. 17 species had breeding territories within the red line boundary and details of these territories are included in **Appendix T**. With five or more territories being recorded for Blackbird *Turdus merula*, Blue Tit *Parus caeruleus*, dunnock *Prunella modularis*, Robin *Erithacus rubecula*, Swallow *Hirundo rustica*, Wren *Troglodytes troglodytes* and House Sparrow *Passer domesticus*.
- 3.14.5 Of the species with territories on the site, House Sparrow (four-six territories), Song Thrush (one territory) Starling (two territories) are on the Birds of Conservation Concern Red List (ref). Dunnock (5 territories on site) is listed on the Amber list of Birds of Conservation Concern.
- 3.14.6 House sparrow territories were identified around the existing farm building areas of the Old Dairy and Hollybank farm. Other territories overlapped with off-site building and associated garden habitats.
- 3.14.7 Starling territories occurred in Colman's Copse (being retained) and the buildings of the Old Dairy complex.
- 3.14.8 The one song thrush territory identified on the site was also located at Colman's Copse.
- 3.14.9 In addition, a further nine bird species were observed on the site, including kestrel (Amber listed species), collard dove, whitethroat and sparrowhawk.
- 3.14.10 The presence of breeding territories of the relatively common but declining three bird species included in the Red list, and one bird species included on the Amber list of BoCC4 is notable for ensuring their ecological requirements are considered in the mitigation of the proposed development. Therefore, these bird species are considered of **Local** importance.

4 Evaluation

4.1 SUMMARY OF ECOLOGICAL EVALUATION OF HABITAT*

- 4.1.1 The site is dominated by horse grazed pasture which is of overall site ecological importance. This habitat dominates the footprint of the site.
- 4.1.2 Other habitats include buildings and hardstanding and excluding their role in supporting bats, they have negligible ecological importance.
- 4.1.3 The hedgerows associated with the grassland paddocks are generally species poor, although they provide connective habitat within the site and are considered of local importance.
- 4.1.4 Other key onsite habitats include the broadleaved woodland and boundary woodland/treelines and ponds which are also considered of local importance.
- 4.1.5 The site is located adjacent to forest habitats which are considered of District importance.

*a separate Habitat Regulations Assessment (HRA) of the implications of the proposed development on Internationally importance sites (Ramsar, SAC/SPAs etc) has been undertaken.

4.2 SUMMARY OF EVALUATION OF SPECIES

- 4.2.1 The primary ecological importance of the site is the presence of a breeding population of Bechstein's bats, that predominantly use Southeligh Forest on the northern boundary of the site for roosting and foraging. The eastern boundary of the site provides an important connection to other roosting, foraging and commuting habitats that this population uses to the east and south. Given this species rarity and Annex 2 status, a breeding population using the boundaries of the site is considered of National importance.
- 4.2.2 The presence of another 10 bat species on the site is also important, although the majority of species that dominate the site are relatively common and abundant in Hampshire and the UK (*Pipistrellus* spp). Barbastelle bat was recorded with less frequency overall and appeared restricted to the west of the site. In summary the other species do not exceed local importance.
- 4.2.3 Soprano pipistrelle bats day roosting in one of the buildings has legal implications prior to site development.
- 4.2.4 The other species present that require consideration at the local level include dormice, that use the woodland boundaries of the site, and three red list bird species (starling, song thrush and house sparrow) and one amber list bird species (Dunnock) that are breeding on the site.
- 4.2.5 Reptile populations and other nesting birds generally are considered to be at the site level, although direct impacts on these taxa have legal implications prior to development under the Wildlife and Countryside Act 1981 (as amended).

5 Planning Policy and Legislation

5.1 NATIONAL PLANNING POLICY

- 5.1.1 The National Planning Policy Framework (NPPF) (2021) Chapter 15 outlines out how the planning system should contribute to and enhance the natural and local environment by protecting sites of biodiversity, recognising wide benefits from natural capital, minimising impacts on and providing net gains for biodiversity. If a proposed development would result in significant harm to the natural environment, Site of Special Scientific Interest or irreplaceable habitats which cannot be avoided (through the use of an alternative site with less harmful impacts), mitigated or compensated for (as a last resort) then planning permission should be refused (Paragraph 180a and b). 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 180c).
- 5.1.2 To minimise impacts on biodiversity and geodiversity, planning policies should identify and map components of the local ecological networks, including the hierarchy of sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by local partnerships for habitat management, enhancement, restoration or creation, promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species and identify and pursue opportunities for securing measurable net gains for (Paragraph 179).
- 5.1.3 The NPPF retains protection for Local Wildlife Sites which are clearly recognised in the framework as locally designated sites of importance for biodiversity (Paragraph 179a). The policy provides the direction for local authorities to identify, map and protect these sites through local plans. The new policy also requires protection of Local Wildlife Sites to recognise the importance and the contribution that they make to wider ecological networks, as stated in the Government's own Natural Environment White Paper.
- 5.1.4 The government circular 06/2005: Biodiversity and Geological Conservation – Statutory Obligations and Their Impact within the Planning System remains the key reference material to support obligations under the NPPF.
- 5.1.5 The Natural Environment and Rural Communities (NERC) Act came into force on 1st Oct 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 S41 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 Natural Environment and Rural Communities Act 2006, to have regard to the conservation of biodiversity in England, when carrying out their normal functions. Fifty-six habitats of principal importance and 943 species of principal importance are included on the S41 list. These are all the habitats and species in England that were identified as requiring action in the UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework.

5.2 LOCAL PLANNING POLICIES - EMERGING HAVANT BOROUGH LOCAL PLAN

E14 | The Local Ecological Network

All development in Havant Borough is expected to protect, conserve and enhance the Borough's Local Ecological Network. Planning permission will only be granted where:

- a. The development results in biodiversity net gain;
- b. The development avoids the fragmentation of the Local Ecological Network including across administrative boundaries;
- c. The applicant has identified and assessed the level of ecological value of the site through adequate and proportionate information and any matters arising have been addressed through an avoidance or mitigation plan; and
- d. Any necessary mitigation plan includes provision for ongoing management and maintenance. In addition to the above, priority habitats in the Borough are afforded protection by specific nature conservation designations. Development proposals which could affect a designated site will need to consider the impact and respond appropriately.

Para 5.158 - In line with national policy, the Council expects development proposals to achieve a net gain in biodiversity on the site and where appropriate the surrounding area.

5.159 The Council encourages pre-application discussions to address any issues at an early stage and to determine potential mitigation measures.

5.160 Almost any development can achieve biodiversity net gain. Even small developments can include the use of design features to integrate biodiversity attributes into the building itself. At least every new dwelling, or commercial developments that involve the construction of a new building can include boxes or bricks for bats and birds, and other features can additionally be incorporated within larger developments. Further guidance on how to do this and the kinds of products that are available is in the Biodiversity Strategy.

5.161 DEFRA's Biodiversity Metric is one method of calculating net gain. The metric is reliant on up-to date ecological information and may require specialist ecological knowledge to complete. The Council encourages pre-application discussions to determine potential methods for calculating biodiversity net gain.

E15 | Protected Species

Development proposals which are likely to affect protected species, and/or their supporting habitats,

must undertake appropriate surveys to establish their presence/likely absence. In using the findings of such surveys, proposals should, in the first instance, avoid an impact on a protected species. If this is

not possible proposals should mitigate and compensate. Planning permission will only be granted where:

- a. A Mitigation Plan, or if this is not possible a Compensation Plan, is provided to the satisfaction of the Council; and
- b. A Monitoring and Review Plan is put in place.

Bechstein's Bat

In instances where Bechstein's bat is likely to be found on site and/or nearby, survey methods appropriate to Bechstein's bat must be used and undertaken by a suitably qualified ecologist. If the presence of Bechstein's bat is established on site and/or nearby, planning permission will only be granted where:

- c. Impacts on Bechstein's bat breeding habitat (i.e. net loss of/significant disturbance to woodland or trees containing roosts) are avoided;
- d. Impacts resulting in the severance or fragmentation of known or likely flight corridors are avoided wherever possible;
- e. Proposals include appropriate buffers to woodlands, trees, hedgerows and other flight corridors, considering the location of roosts and foraging/commuting habitats; and
- f. Review and monitoring plans are put in place.

Where the above measures cannot be met planning permission will be refused, unless the applicant can show, subject to meeting the tests of the Habitats Regulations, that there would not be an adverse effect on the population of the relevant protected species.

E18 | Trees, hedgerows and woodland

Development affecting trees, hedgerows and woodlands will only be permitted where it:

- a. Reflects, conserves or enhances the existing landscape and integrates the development into its surroundings, adding visual interest and amenity;
 - b. Adequately protects existing trees and hedgerows including their root systems prior to, during and after the construction process; and
 - c. Will not result in the loss or deterioration of ancient woodland and ancient or veteran trees.
- The Council will refuse planning permission for proposals that threaten the retention of important trees, hedgerows, and woodland, unless the need for, and benefits of development in that location clearly outweigh the impact of the proposal. Provision of new trees are expected as part of development proposals for new homes and commercial floorspace. Planning permission will be granted where it:
- d. Facilitates adaptation to climate change by providing shade, shelter and cooling through new tree planting; and
 - e. Includes proposals for the successful implementation, maintenance and management of landscape and tree planting schemes.

5.3 LEGISLATION

- 5.3.1 Animal and plant species that are considered to be threatened as a result of their rarity, vulnerability or persecution are afforded protection through UK law (recently transposed from EU legislation). The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 provides for the transposition of protection for a number of rare and vulnerable animal and plant species listed for protection in Europe through The Conservation of Habitats and Species Regulations 2017. In relation to the site, this is relevant for all bat species and dormice.

- 5.3.2 The Wildlife and Countryside Act, 1981 (as amended by the Countryside and Rights of Way Act, 2000 and NERC Act 2006) affords protection to wild bird species requiring protection in Europe and other rare or vulnerable native species of animals and plants including all native reptile species.

6 Ecological Impact Assessment

6.1 SUMMARY OF THE PROPOSED DEVELOPMENT

- 6.1.1 The development of 210 dwellings and associated infrastructure over circa 16 ha of agricultural land predominantly used for horse grazing. Provision of landscaping, play areas, public open space, access and sustainable urban drainage.
- 6.1.2 The proposed development is outlined in the masterplan revision N and has embedded mitigation within the design to avoid direct ecological impacts where possible. This includes the retention all significant areas of broadleaved woodland, the retention of approximately 40% of existing onsite hedgerows, and the retention of treelines on the boundaries, and the felling of 13 trees (see Arboricultural assessment - Barell 2021).
- 6.1.3 The main high-level direct ecological impact of the scheme is the loss of species poor semi-improved horse grazed pasture which is the dominant habitat on the site, the loss of approximately 259m of species poor native hedgerow, and the loss of existing buildings and one pond to the proposed development with the associated impacts on the relevant species.
- 6.1.4 Without any mitigation the proposed development is likely to indirectly impact the retained broadleaved woodland, hedgerows and adjacent forest habitats and associated species from construction activities, artificial lighting and general human induced disturbance.
- 6.1.5 The specific impacts to habitats and species are outlined below.

6.2 DESIGNATED SITES

- 6.2.1 SPA, SAC, Ramsar – addressed via the separate HRA.

6.3 HABITATS CONSIDERED IMPORTANT AT THE LOCAL LEVEL OR GREATER

- 6.3.1 The proposals require the felling of 13 trees, mainly for the Long Copse Lane widening works. Given the extent of this habitat, specific felling of these trees in isolated areas is unlikely to significantly affect this the majority of broadleaved woodland of Colmans copse, and the majority of groups of trees within the site and on the boundaries of the site, which are being retained. However, without mitigation this habitat could be adversely affected by indirect impacts from unmanaged public access (fly tipping, fires, general human disturbance) and lighting on invertebrate communities could have a **significant permanent adverse impact at the District level**.
- 6.3.2 An estimated 259m of hedgerow will be lost as a result of the development. Although the hedges affected are not floristically diverse, this type of habitat provides food, shelter and connective habitat for a range of birds, bats, other vertebrates and invertebrates, which is considered a **significant permanent adverse impact at the local level**.

- 6.3.3 The pond in Colmans copse is being retained. The pond at the old dairy farm complex would be lost as a result of the development. Ponds provide important aquatic habitat for a range of invertebrates, vegetation and drinking water supply for birds, bats and other mobile species.
- 6.3.4 Without mitigation the loss of one pond, could potentially result in a **significant permanent adverse effect on pond habitats (a NERC habitat) at the local level.**

6.4 SPECIES CONSIDERED IMPORTANT AT THE LOCAL LEVEL OR GREATER

- 6.4.1 Soprano pipistrelle, barbastelle, Daubenton's, Natterer's and small *Myotis* bat species were all considered important at the local level due to their regular presence on site, rarity of presence of breeding animals using the site for foraging. The static logger and trapping surveys indicated that the highest levels of bat activity were found on the northern, western and eastern boundaries of the site. Radio tracking shows that this is also the case for Bechstein's bat which is considered of National importance.
- 6.4.2 As part of the inherent designed of the development layout, these key areas for bats on the northern, eastern and western boundaries are being retained and buffered, however without sufficient mitigation, indirect impacts from the development such as construction activities, noise and lighting would be a significant adverse impact on bats using those areas at the **local** level for the main bat assemblage using the site for foraging and commuting and at a **National** level for Bechstein's bat.
- 6.4.3 In addition, is the presence of a day roost of soprano pipistrelle bat in a building (Hollybank Farmhouse) that will be demolished as part of the development. Without mitigation and appropriate management, the removal of this roost via demolition etc could result in killing, injury and disturbance of a protected bats species which will require a licence without which, an offence would be committed.
- 6.4.4 The review of the arboricultural report and the requirement for the felling of 13 trees across the site, has shown that none of the trees identified with bat potential within the redline boundary are directly affected. A small number of trees on the Long Copse boundary will be felled to provide an access to the east of Colman's copse. However, it is considered that the felling of these trees (none are known to have bat roost potential) is not likely to significantly affect Colman's copse.
- 6.4.5 Dormice occurred in two areas, that are not subject to direct impacts. Nests from the 2016 surveys were found 150m to the west of the redline boundary, and one nest was found on the northern boundary of Southleigh Forest in the retained buffer area.
- 6.4.6 However, without mitigation, indirect impacts from the development including through construction activities and operation such as light, noise and general human disturbance, could be significant permanent adverse impact on dormice at the **local** level.
- 6.4.7 Three red list and one amber list bird species are breeding on the site. The species most likely to be affected is the House Sparrow with 4-6 territories on site, mainly associated with the loss of the existing built habitats. At least three territories of this species will be directly affected.

- 6.4.8 The two starling territories were located in the retained Colman's copse area and the built area of the Old Diary. Therefore, one territory will be directly affected by the development. The one song thrush territory on the site was also found in the retained Colman's copse area and not directly affected.
- 6.4.9 The amber listed Dunnock had five territories on site, with two territories directly affected by habitat loss.
- 6.4.10 Taking these impacts together, it is considered that without mitigation the development proposals are likely to have a significant permanent adverse impact on two red and one amber listed breeding birds at the **local** level.

6.5 SPECIES WITH PROTECTED STATUS

- 6.5.1 The development proposals could potentially kill and injure protected slow worms and grass snakes that occur on site. Therefore, without mitigation the construction activities may lead to offences under the Wildlife and Countryside Act being committed.
- 6.5.2 All nesting birds are protected, and the proposed development is likely to result in a loss of habitat to support birds' nest. Without mitigation construction activities may damage or destroy active bird's nests and this would likely lead to offences under the Wildlife and Countryside Act being committed.

6.6 CUMULATIVE EFFECTS

- 6.6.1 Cumulative and/or in combination effects primarily relate to the increase of housing and likely visitor pressure on coastal SPAs and SAC/Ramsar sites. These effects are addressed through the HRA.
- 6.6.2 The local population is likely to use to the nearby forest habitats (e.g Hollybank wood and Southleigh Forest) to a greater extent than previously. However, there is currently limited use of these areas with no clear access management. Given the size of the forest areas and open space provision and buffers embedded within masterplan, it is considered that any effects on the forest bordering habitats are likely to be non-significant.

7 Mitigation

7.1 MITIGATION STRATEGY

- 7.1.1 The development and design of the masterplan has been informed by the biodiversity surveys and ecological assessment of the site which has been ongoing since 2016. This has been particularly appropriate for Bechstein's bats which have been recognised as an important factor and a major influence on the sustainability of the proposed development and its place within the wider landscape.
- 7.1.2 The main approach to mitigation has been the avoidance of impacts with the development footprint being predominantly on species poor grassland. The main ecological receptors consist of or use woodland or tree/scrub dominated habitats, and the majority of these habitats and have been retained or border the site.
- 7.1.3 This has informed the embedded mitigation already included within the scheme design, such as buffers between key habitats and the main development area.

7.2 CONSTRUCTION MITIGATION

- 7.2.1 Construction activities are temporary but often have the highest impact to ecological receptors both, directly and indirectly. A construction environmental management plan (CEMP) will be developed with the following objectives:
- Identification and protection of retained habitats and protected species habitats ensure areas are protected with barrier systems, and site contractors are properly supervised and briefed, incorporating arboricultural recommendations.
 - Timing of works to ensure sensitive ecological timeframes are incorporated into phasing and construction schedule of works (e.g. nesting birds).
 - The management of light and noise near sensitive retained habitats/species habitats.
 - Ecological supervision and monitoring of works on or adjacent to sensitive habitats/species, e.g. tree felling and hedge removal.
 - The storage and control of hazardous materials and pollution resulting from construction activities -e.g. protection of retained wetlands etc.
 - The supervision of early works mitigation measures such as buffer planting and wildlife habitat creation or enhancement activities.
 - Obtaining the appropriate bat licences and ensuring any requirements form part of the CEMP.

7.3 HABITAT MITIGATION AND COMPENSATION

- 7.3.1 The adjacent forest habitats of Southleigh Forest and Hollybank wood, along with the eastern and southern boundaries, will be protected by a buffer from the main development area of between 20 and 40m (see masterplan). This will provide an important buffer to protect the forest habitats from dust, noise and lighting as a result of construction activities and provide approximately 3.3ha of multiuse (recreation, biodiversity etc) open space during the

operational phase, including specific biodiversity areas of 0.3ha that will be non-accessible, primarily on the northern buffer (see Landscape Plan/Strategy, ARC 2021). The buffer zones will build on the woodland edge habitat that currently exists, providing for further predominantly woodland planting with a grassland/scrub mosaic (for public use) and siting of treelines and hedgerows to screen the buffers from artificial lighting from the main development area.

- 7.3.2 During the operational phase of the development, the buffers will be managed in line with a Landscape and Ecological Management Plan (LEMP) which will be developed. The objectives of the LEMP will provide for the measurable long-term biodiversity management of the buffer zones and other retained habitats on the site, integrated with other uses of the site and buffer areas.
- 7.3.3 The loss of the pond at the Old Dairy will be compensated with the creation of seven wetland and pond habitats within the buffer zones and as part of the sustainable urban drainage system (SUDs) (see BNG summary below in Enhancement). These areas will also be managed in line with the LEMP and site drainage requirements.
- 7.3.4 The anticipated loss of 259m of hedgerow in the centre of the proposed development site will be compensated by the establishment of at least 275m of hedgerow within the buffer zones using a species rich native tree/hedgerow mix (six tree species per 30m).
- 7.3.5 The 13 felled trees will be compensated with further trees being planted across the entire site with biodiversity focussed tree planting within the buffer zones as part of the landscape plan.

7.4 SPECIES MITIGATION AND COMPENSATION

Bats

- 7.4.1 A key biodiversity mitigation objective of proposed development is the protection and enhancement of habitat for Bechstein's bat. Bechstein's bats use the northern and eastern boundaries as commuting and foraging habitat. They have also been recorded roosting in Colman's copse. Therefore, the buffer zones in these areas have been designed primarily to provide dark vegetated flight corridors for Bechstein's bats to ensure their existing commuting and foraging habitat are not indirectly affected by the proposed developed e.g. lighting.
- 7.4.2 The principles of the Trowbridge Bat Mitigation Strategy (John's Associates 2020) which were developed specifically to address Bechstein's bat and other Annex 2 bats species, have been used as a guide in the design of the buffers on the northern, eastern and western boundaries of the site. The designed buffers provide for an average of 30-35m width and the management/control of artificial light levels to adhere to BCT recommendations and the Trowbridge Bat Mitigation strategy recommendations. The Lighting Strategy provides more detail in this regard.
- 7.4.3 As well as Bechstein's bat which is one of the most sensitive species to indirect impacts, the proposed buffer and lighting management mitigation will provide for the remaining bat assemblage and dormouse populations which are also affected by these impacts.
- 7.4.4 The soprano pipistrelle bats that day roost in the Hollybank Farmhouse will require specific mitigation under a Natural England licence, prior to the demolition of this building. The loss of the roost will be mitigated through the erection of bat boxes within the nearby western

buffer habitats on retained trees, and also bat access points in the roof of a new dwelling in a similar location to the current roost with direct access to Hollybank wood.

Dormice

- 7.4.5 The dormice records from the surveys were found in areas of woodland bordering the site, and in respect of the current redline boundary dormice were present on the norther boundary. As part of the biodiversity management of the buffer habitats provided for within the masterplan, the establishment of further woodland and scrub/hedgerow habitats will increase the available habitat for this species in the areas they currently occur.

Birds

- 7.4.6 The buffers habitats outlined in habitat mitigation section will aim to provide an increase in suitable foraging habitats and scrub for nesting habitat for many of the breeding bird species found on the site. Additionally, the gardens of the new dwellings will offer further habitat for nesting and foraging birds currently recorded on site.
- 7.4.7 Specific mitigation for starlings and house sparrows will also include species-specific nest boxes in the eaves of new buildings (i.e. garages/houses) close to existing territories and adjacent to buffer zones.

Reptiles

- 7.4.8 The majority of reptiles found during the survey of 2020 were located in the proposed buffer areas, and these taxa will be provided for with the grassland, scrub and woodland habitats created in this area. The wetland habitats will be particularly beneficial for grass snakes.
- 7.4.9 However as protected species, reptile occurrence in the hedgerows, tall ruderal and log piles/dung heap habitats being removed for the development cannot be ruled out (i.e. around the built habitats). As part of the construction schedule of works, a habitat manipulation approach to reducing the available habitat for reptiles in the areas affected and increasing suitable habitat in the adjacent buffers will be adopted.
- 7.4.10 Any vegetation removal works will be undertaken under ecological supervision and log piles and other suitable habitats dismantled. Where any animals are found they will be moved to the nearest suitable buffer habitat.

7.5 ENHANCEMENT

- 7.5.1 In accordance with the provision of Chapter 15 of the National Planning Policy Framework (Conserving and Enhancing the Natural Environment) and Local Planning Policy, 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 180c).
- 7.5.2 Recent research (zu Ermgassen et al, 2021) has shown that the majority of onsite development related BNG may fall below what was anticipated, often due to small, fragmented areas of habitat failing to receive the necessary management to provide the high-quality habitats promised.

7.5.3 The approach to biodiversity enhancement or biodiversity net gain has therefore attempted to follow the Lawton principles (Lawton, 2010; www.gov.uk/government/publications/25-year-environment-plan). This has therefore focussed enhancements on site by 'bringing the forest out' towards the development and providing for a contiguous/well linked buffer zone on the boundaries of the site which is currently horse grazed pasture. In addition, off site BNG is a substantial area of woodland creation, connecting two major forestry areas (Stansted and Southleigh Forests- see Figure 6 for details of proposed woodland creation).

7.5.4 The following approaches have been used to support the development of BNG for this development proposal.

1. On site biodiversity net gain using Natural England's Biodiversity Metric 2.0
2. Off-site biodiversity net gain using Natural England's Biodiversity Metric 2.0
3. Onsite species-specific enhancements.

7.5.5 Onsite and offsite habitat enhancements are summarised provided in the table below and the full metric calculations are detailed in **Appendix U** (note- the size of the pond being lost is below 0.01 ha and not shown in the calculations, but has been included).

On-site Habitat group	Baseline		Post development on site				Overall Change	
	Existing area	Existing value	Plot Area Proposed area	Proposed value	Area change	Onsite Unit change	Area change	Unit change
Cropland	0.0	0.0	0.0	0.0	0.0	0.0	-9.6	-19.2
Grassland	9.0	18.3	-6.4	-2.6	-15.5	-20.9	-15.5	-20.9
Heathland and shrub	0.5	4.2	0.1	1.2	-0.4	-3.0	-0.4	-3.0
Rivers and lakes	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Sparsely vegetated land	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Urban	1.0	1.0	9.7	20.7	8.7	19.7	8.7	19.7
Wetland	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Woodland and forest	0.0	0.0	0.3	0.9	0.3	0.9	9.9	24.3

Off-site Habitat group	Baseline		Post development Off-site		Off-site Change	
	Existing area	Off-site Existing value	Plot Area Proposed area	Off site Proposed value	Area change	Offsite Unit change
Cropland	9.6	19.2	0.0	0.0	-9.6	-19.2
Grassland	0.0	0.0	0.0	0.0	0.0	0.0
Heathland and shrub	0.0	0.0	0.0	0.0	0.0	0.0
Rivers and lakes	0.0	0.0	0.0	0.0	0.0	0.0
Sparsely vegetated land	0.0	0.0	0.0	0.0	0.0	0.0
Urban	0.0	0.0	0.0	0.0	0.0	0.0
Wetland	0.0	0.0	0.0	0.0	0.0	0.0
Woodland and forest	0.0	0.0	9.6	23.4	9.6	23.4

7.5.6 The headline results for BNG are provided below:

On-site baseline	<i>Habitat units</i>	23.63
	<i>Hedgerow units</i>	2.32
	<i>River units</i>	0.00
On-site post-intervention (Including habitat retention, creation, enhancement & succession)	<i>Habitat units</i>	43.65
	<i>Hedgerow units</i>	2.58
	<i>River units</i>	0.00
Off-site baseline	<i>Habitat units</i>	19.20
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Off-site post-intervention (Including habitat retention, creation, enhancement & succession)	<i>Habitat units</i>	23.37
	<i>Hedgerow units</i>	0.00
	<i>River units</i>	0.00
Total net unit change (including all on-site & off-site habitat retention/creation)	<i>Habitat units</i>	24.20
	<i>Hedgerow units</i>	0.26
	<i>River units</i>	0.00
Total net % change (including all on-site & off-site habitat creation + retained habitats)	<i>Habitat units</i>	102.41%
	<i>Hedgerow units</i>	11.27%
	<i>River units</i>	0.00%

7.6 MONITORING

7.6.1 The LEMP will provide for a biodiversity monitoring programme to be developed with the following key objectives:

- Monitoring the performance of habitat creation on site/within the buffers in line with LEMP objectives.
- Monitoring the performance of the construction programme in protecting retained habitats.
- Monitoring the use of species-specific mitigation such as the presence of breeding red list bird species, reptiles, dormice and Bechstein's bat.
- Monitoring the performance of offsite created habitats for Bechstein's bat.
- The monitoring programme will be undertaken over a period of approximately 20 years to ensure woodland creation is likely to be successful. However, many species/habitats specific monitoring will be between 1-10 years.
- Data obtained during monitoring will be used to adjust mitigation where required.
- Pre-construction baselining for certain species will be required to build on existing datasets to ensure comparable analysis can be undertaken. From which it will be possible to draw objective conclusions as to the effectiveness of the biodiversity mitigation, compensation and enhancement measures implemented.

7.7 LIFESPAN OF SURVEYS

7.7.1 Where the survey data is 18 months or older, it is likely that update surveys and reporting will be required for planning for EPSL licensing purposes as bats are highly mobile species (CIEEM 2019).

7.8 CONCLUSIONS AND RESIDUAL IMPACTS

- 7.8.1 The proposed residential development has been designed will full consideration to the key biodiversity receptors from the start of masterplan development. It was recognised at an early stage that the main development area should focus on the species poor horse grazed pasture and existing residential/stable areas to avoid the main likely effects of the scheme on biodiversity.
- 7.8.2 The focus of the masterplan has therefore been to retain as much woodland and tree/hedgerow habitat as possible within the masterplan design, which has largely been achieved by the felling of just 13 trees, the removal 259m of species poor hedgerow and the loss of one pond.
- 7.8.3 These habitats are subject to a high level of creation and compensation within the retained buffer areas, which will provide for an increase in biodiversity net gain on the site that will be connected to existing forest habitats. The residual impact on habitats from the proposed development is therefore a significant permanent positive effect at the local level.
- 7.8.4 Furthermore, the buffer habitats comprising of 3.3ha, will be managed to support high biodiversity values including wildlife reserve areas, and this will provide higher quality habitats for the birds, reptiles, dormice and bats species using the site, with specific roosting and nesting and bat roosting mitigation being provided in buildings.
- 7.8.5 Overall, it is considered that the increase of higher quality habitats for species currently using the border of the site will be a significant positive effect on bird, reptile, dormice and bat species at the local level.
- 7.8.6 The key ecological objective of the scheme has been to protect the adjoining habitats of Southleigh Forest and Hollybank wood and the use of these areas by most protected and notable species found on site (especially Bechstein's bat) from the indirect effects of the scheme (construction, lighting and human disturbance). The main approach to achieving this objective is through the provision of large buffers which will reduce any indirect impacts such as lighting, to a level which is not predicted to affect the continued use of the area by nocturnal species such as Bechstein's bat and dormice.
- 7.8.7 In addition, the habitat creation within the buffers will further protect such as species from indirect effects and provide opportunities for roosting, commuting and foraging Bechstein's using Southleigh Forest. The additional habitat creation of 1.6ha of Bechstein's bat commuting and foraging habitat connecting Southleigh and Stansted Forests will provide for an overall net gain of habitat within the local population's home ranges at the landscape level, and as a result will be a significant positive affect for Bechstein's bat in the long term at the National level.

8 References

Bat Conservation Trust (2018) Bats and Artificial Lighting in the UK: Bats and the Built Environment Series Guidance Note 08/18.

British Standards Institution. (2012). British Standard 5837:2012, Trees in relation to design, demolition and construction – recommendations. British Standards Institution, London.

CIEEM (2019) Biodiversity Net Gain – Principles and Guidance for UK construction and developments.

CIEEM (2019) Advice Note on the Lifespan of Ecological Reports and Surveys.

CIEEM (2019) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine. Chartered Institute of Ecology and Environmental Management, Winchester.

CIEEM (April 2013) Guidelines for Preliminary Ecological Appraisal.

Collins (ed) (2016) Bat Surveys: Good Practice Guidelines, 3rd Edition, Bat Conservation Trust.

Cresswell, W and Whitworth, R. (2004) English Nature Research Reports Number 576: An assessment of the efficiency of capture techniques and the value of different habitats for the great crested newt *Triturus cristatus*

DEFRA (2012) 'MAGIC Interactive Map – Conservation Sites with Statutory Protection'. Available: <http://magic.defra.gov.uk/>

Ministry of Housing, Communities and Local Government (February 2019). National Planning Policy Framework.

HMSO The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

HMSO The Countryside and Rights of Way Act 2000.

HMSO Wildlife and Countryside Act 1981.

Joint Nature Conservation Committee (2010) Handbook for Phase I habitat survey: A Technique for Environmental Audit.

Lawton, J (2010). Making Space for Nature: A review of England's Wildlife Sites and Ecological Network. Report submitted to the Secretary of State, the Department for Environment, Food and Rural Affairs. London.

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

Stace, C. (2010) New Flora of the British Isles. 3rd Edition. Cambridge University Press.

Stone, E. (2015). Impacts of artificial lighting on bats: a review of challenges and solutions

zu Ermgassen, S. O., Marsh, S., Ryland, K., Church, E., Marsh, R. and Bull, J. (2021) "Exploring the ecological outcomes of mandatory Biodiversity Net Gain using evidence from early-adopter jurisdictions in England", Conservation Letters. Wiley. doi: 10.1111/conl.12820.

Figure 1 Contextual Site Location Plan



Figure 2 Aerial Map with Red Line Boundary



Figure 3 Proposed development – illustrative masterplan



Figure 4 Pond Locations



Figure 5 Phase 1 Habitat Survey

Target Notes:

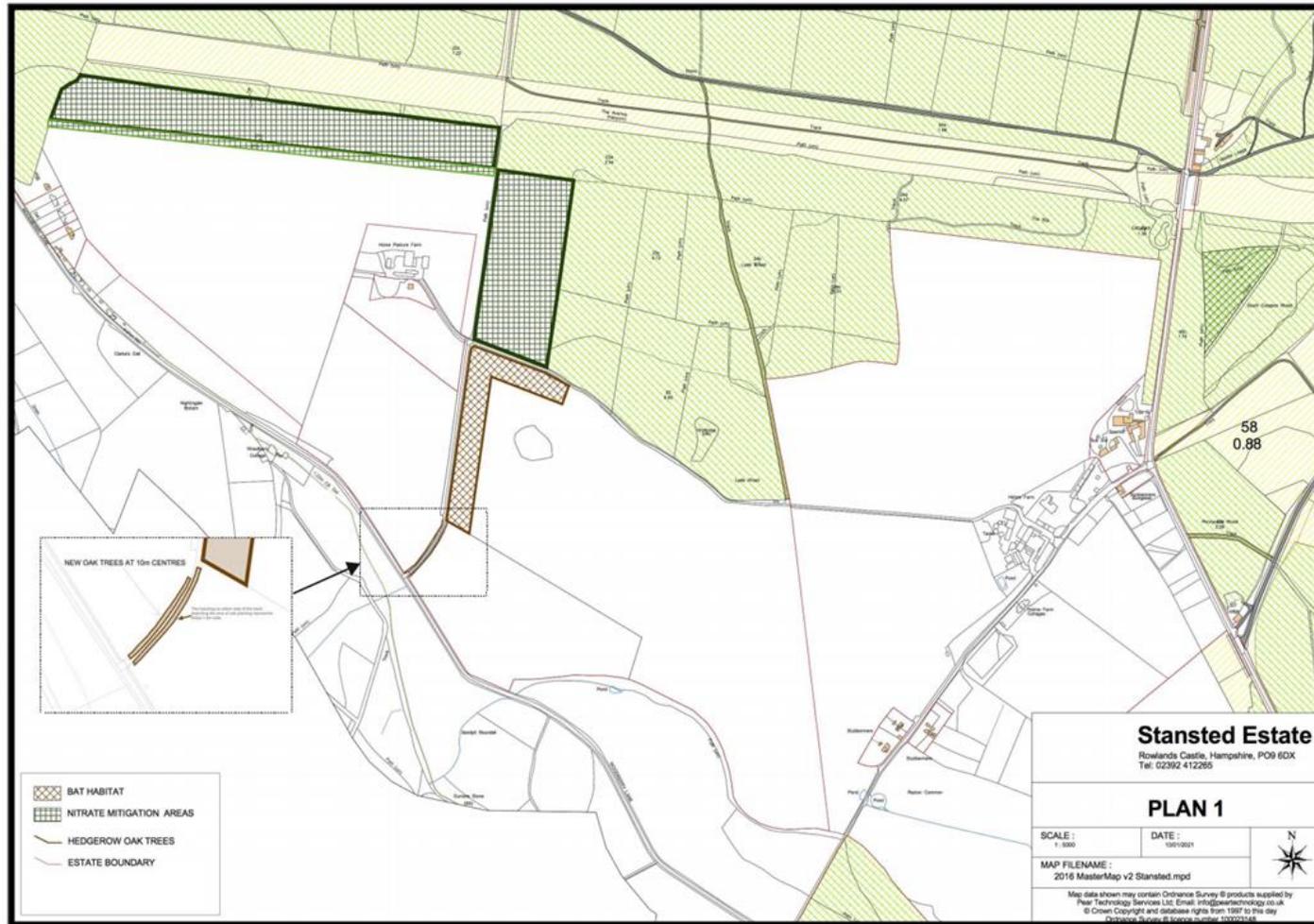
- 1) Dead tree
- 2) Manure heap
- 3) Vegetation and log pile
- 4) Mammal trail
- 5) Mammal trail
- 6) Log pile



Habitats Key

Survey boundary	
Building	
Amenity Lawn	
Hard standing	
Woodland	
Hedgerow	
Scrub	
Mixed plantation	
Tall ruderal	
Pond	
Tree	
Target note	

Figure 6 Offsite habitat creation for Bechstein's Bat



- Appendix A Ecological Baseline Report 2018
- Appendix B Update Ecological Walkover 2021
- Appendix C Bat Emergence Survey 2017
- Appendix D Bat Emergence Survey 2019
- Appendix E Bat Emergence Survey 2021
- Appendix F Bat Radio Tracking 2017
- Appendix G Bat Radio Tracking 2017/2021 combined data
- Appendix H Dormouse Survey 2017
- Appendix I Dormouse Survey Results 2021

Appendix J HSI Criteria

Appendix K Reptile Survey 2017

Appendix L Reptile Survey 2020

Appendix M Statutory and Non Statutory Sites

- Appendix N Bat Activity Report 2017
- Appendix O Bat Static Logger Surveys 2019
- Appendix P Bat Static Logger Surveys 2021 (to be submitted)
- Appendix Q Great Crested Newt Survey Report 2017
- Appendix R Great Crested Newt HSI Results 2021
- Appendix S Great Crested Newt eDNA Results 2021
- Appendix T Breeding Bird Survey 2021
- Appendix U Biodiversity Net Gain Calculations V2