Ecological Impact Assessment

Land at Campfields, Southwater

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Report	Ecological Impact Assessment (EcIA)
Site Name	Land at Campfields, Southwater
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Executive Summary

Ecosupport Ltd was instructed by Miller Homes to undertake a Preliminary Ecological Appraisal and subsequent Phase II survey work to inform an EcIA for a parcel of land at Campfields, Southwater. This was required in order to identify any potentially important ecological features that may be affected by the proposed development. As part of this assessment, the following surveys were undertaken:

- Data request submitted to the Sussex Biological Records Centre (SxBRC)
- Walkover survey with UKHabs Assessment (March 2023)
- Preliminary roost assessment (March 2023)
- Bat activity surveys (walked transects and static deployments April – October 2023)
- Dormouse nest tube survey (May – October 2023)
- Reptile presence / likely absence survey (May 2023)
- Habitat suitability assessment and eDNA survey (March & April 2023)
- Breeding bird surveys (April - June 2023)

Given the identification of these potential constraints, outline mitigation measures for each species group / feature are indicated in **Table 1** below.

Table 1. Summary of the proposed mitigation / compensation measures to address impacts to the identified receptors / constraints on-site.

Species Group / Features	Potential Impacts	Outline Mitigation / Compensation
Reptiles	Low population of *A. fragilis and Zootoca vivipara* on-site largely within vegetation to be retained.	Passive dispersal method into retained vegetation followed by installation of reptile fencing. 2 hibernacula will be provided within this habitat to enhance its suitability for reptiles.
Bats	Site used for foraging and commuting by 8 species of bat with Annex II Barbastelle recorded in September & October 2023.	Retention of existing boundary tree lines / hedgerows features, sensitive lighting scheme and bat bricks also recommended in new dwellings.
Dormice	Nest tube survey identified 1 Dormice nest meaning presence assumed in all woody / scrub habitats on-site	All vegetation clearance works to be undertaken with an EPS adopting a single stage or two stage approach. Compensational planting proposed around site.
Badgers	No evidence of Badgers present on site during the 2023 walkover. Although suitable habitat on site for foraging and commuting Badgers.	Open excavations left overnight should either be covered to prevent commuting Badgers falling in or escape ladders should be used.

Breeding and nesting birds	Species of County importance noted breeding on site during the surveys.	The boundary tree lines and scrub will be retained, maintaining nesting opportunities on site. Clearance of the woodland and scrub should be carried out outside of the nesting bird season. If not possible, the vegetation should be checked prior to the clearance by an ecologist.
Biodiversity Net Gain	Requirement to demonstrate a 10% net gain in the site's biodiversity value as quantified using the Defra Statutory metric.	Net gain achieved with results presented in a dedicated report.

In addition to the above species / feature specific recommendations, ecological enhancements are proposed in **Section 6.0** which will include the provision of bird and bat boxes along with features to enable Hedgehog movement throughout the site.

1.0 INTRODUCTION

1.1 Brief

Ecosupport Ltd was commissioned by Miller Homes to conduct ecological surveys in support of an EcIA for the land at Campfields, Southwater (here after referred to as 'the site'). The purpose of this survey was to assess any ecological impacts that may arise as a result of the proposed development. The objectives of the survey were as follows:

- Identify and classify any priority habitats;
- Assess the ecological value of the site;
- Identify any signs of protected species and potential features that may support them
- Make recommendations for further survey work as necessary;
- Make recommendations for any necessary ecological avoidance and mitigation

NB: If the works do not take place within 18 months of this report[1] then the findings of this survey will no longer be considered valid and certain aspects may require updating.

1.2 Site Description & Location

The site is comprises of an area of plantation woodland located to the south of Centenary Road, Southwater, Horsham, RH13 9FR (**Fig 1**) (central Grid Reference: TQ 16043 24858). The site is bound by a residential development to the north, the A24 to the east, an area of agricultural grassland to the south and an area of woodland to the west. The wider environ is largely rural situated on the outskirts of Southwater, a village to the south of Horsham.

Figure 1. Redline boundary of the site (Google satellite 2025).

[1] https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf

1.3 Proposed Development

The full scale of the proposals is not yet finalised however, it is understood the proposals entail the construction of up to 82 dwellings (number tbc) with associated access and landscaping works (**Fig 2**).

Figure 2. Illustrative Master Plan (The Core 2025).

2.0 RELEVANT LEGISLATION AND POLICY

2.1 Legislation

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

The Conservation of Habitats and Species Regulations 2017 transposes the EU Habitats Directive (Council Directive 92/43/EEC) into UK domestic law. It provides protection for sites and species deemed to be of conservation importance across Europe. It is an offence to deliberately capture, kill or injure species listed in Schedule 2 or to damage or destroy their breeding sites or shelter. It is also illegal to deliberately disturb these species in such a way that is likely to significantly impact on the local distribution or abundance or affect their ability to survive, breed and rear or nurture their young.

The Conservation of Habitats and Species Regulations 2019 (EU Exit) makes changes to the three existing instruments which transpose the Habitats and Wild Birds Directives so that they continue to work (are operable) upon the UK's exit from the European Union (EU). These include The Conservation of Habitats and Species Regulations 2017 and The Conservation of Offshore Marine Habitats and Species Regulations 2017. This instrument also amends section 27 of the Wildlife and Countryside Act 1981 to ensure existing protections continue. The intention is to ensure habitat and species protection and standards as set out under the Nature Directives are implemented in the same way or an equivalent way when the UK exits the EU.

In order for activities that would be likely to result in a breach of species protection under the regulations to legally take place, a European Protected Species (EPS) licence must first be obtained from Natural England.

2.1.2 The Wildlife and Countryside Act (1981) (as amended)

This is the primary piece of legislation by which biodiversity if protected within the UK. Protected fauna and flora are listed under Schedules 1, 5 and 8 of the Act. They include all species of bats, making it an offence to intentionally or recklessly disturb any bat whilst it is occupying a roost or to intentionally or recklessly obstruct access to a bat roost. Similarly, this Act makes it an offence to kill or injure any species of British reptiles and also makes it an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy their eggs and nests (whilst in use or being built).

The Wildlife & Countryside Act (1981) states that it is an offence to 'plant or otherwise cause to grow in the wild' any plant listed in Schedule 9 art II of the Act. This list over 30 plants including Japanese Knotweed (*Fallopia japonica*), Giant Hogweed (*Heracleum mantegazzianum*) and Parrots Feather (*Myriophyllum aquaticum*).

2.1.3 The Countryside and Rights of Way Act (2000)

This Act strengthens the Wildlife & Countryside Act by the addition of "reckless" offences in certain circumstances, such as where there is the likelihood of protected species being present. The Act places a duty on Government Ministers and Departments to conserve biological diversity and provides police with stronger powers relating to wildlife crimes.

2.1.4 Natural Environment and Rural Communities Act (2006)

Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 requires that public bodies must have due regard to the conservation of biodiversity with a particular regard to species and habitats considered to be of greatest conservation importance. This means that Planning authorities must consider biodiversity and the list of species and habitats of importance when planning or undertaking activities.

Section 41 of the Act lists species and habitats found in England which are considered to be priority species and were identified as requiring action under the UK Biodiversity Action Plan. The latest update to the list of Section 41 habitats of principal importance under the *UK Post – 2010 Biodiversity Framework* includes 56 listed habitats including arable field margins, traditional orchards, hedgerows and several specific habitats within the categories of coastal, grassland, freshwater, inland rock, marine, wetland and woodland. The latest update to the list of Section 41 species of principal importance was in May 2014 and now includes a list of 943 species covering a range of species including vertebrates, terrestrial and marine invertebrates, plants and fungi.

2.1.5 Protection of Badgers Act

The Protection of Badgers Act (1992) relates to the welfare of Badgers (*Meles meles*) as opposed to nature conservation considerations. The Act prevents:

- The wilful killing, injury, ill treatment or taking of Badgers and / or
- Interference with a Badger sett
- Damaging or destroying all or part of a sett
- Causing a dog to enter a set and
- Disturbing a Badger while it is occupying a sett

Provisions are included within the Act to allow for the lawful licensing of certain activities that would otherwise constitute an offence under the Act.

2.1.6 The Environment Act (2021)

The Environment Act 2021 is the UK's new legislation for environmental protection in the UK, which includes protection of water quality, clean air, and biodiversity among other key protections. This Act provides the government power to set targets to reach long-term aims relating to the environment, which will be periodically reviewed and updated. This legislation also establishes a new environmental watchdog organisation, the Office for Environmental Protection (OEP), which will hold the government accountable on environmental issues.

Part 6 of The Environment Act relates to nature and biodiversity. This section makes provision for biodiversity net gain to be a condition of planning permission in England and a requirement for nationally significant infrastructure projects. Biodiversity net gain will require maintenance for a period of at least 30 years after the completion of enhancement works to be achieved.

The legislation also includes updates to existing environmental legislation, such as the NERC Act 2006, to strengthen biodiversity enhancement rather than just conservation and includes a requirement for local, or relevant, authorities to publish biodiversity reports. Further, The

Environment Act places a requirement on responsible authorities to prepare local nature recovery strategies, which will outline nature conservation sites and priorities and opportunities for recovering or enhancing biodiversity within the local area. Within England, the legislation also provides Natural England with the power to publish 'species conservation strategies' and 'protected site strategies' to identify activities that may affect a species or site's status and outline their opinions on measures that would be appropriate to avoid, mitigate or compensate any adverse impacts.

2.2 Policy

2.2.1 National

The National Planning Policy Framework (NPPF) (2024) sets out the Government's planning policies for England and how these should be applied. It provides a framework within which locally-prepared plans for housing and other development can be produced.

Chapter 15 'Conserving and enhancing the natural environment' states that planning policies and decisions should contribute to and enhance the natural and local environment by protecting and enhancing sites of biodiversity, the wider benefits from natural capital and ecosystem services, minimising impacts on and providing net gains for biodiversity.

The NPPF states that plans should distinguish between the hierarchy of international, national and locally designated sites and that the scale and extent of development within all these designated areas should be limited, while development within their setting should be sensitively located and designed to avoid or minimise adverse impacts on the designated areas.

To protect and enhance biodiversity plans should:

identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation;

and 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 biodiversity.

The NPPF states determining planning applications, local planning authorities should apply the following principles:

a) if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;

b) development on land within or outside a SSSI, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of SSSI;

c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons and a suitable compensation strategy exists;

d) 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.

2.2.2 Local – Horsham District Council

As the site falls under the jurisdiction of Horsham District council, the Horsham District Planning Framework (2015) applies. This document outlines the following policies that are relevant to the site.

Policy 25 Strategic Policy: The Natural Environment and Landscape Character

The Natural Environment and landscape character of the District, including the landscape, landform and development pattern, together with protected landscapes and habitats will be protected against inappropriate development. The Council will support development proposals which:

1. Protects, conserves and enhances the landscape and townscape character, taking into account areas identified as being of landscape importance, the individual settlement characteristics, and maintains settlement separation.
2. Maintain and enhances the Green Infrastructure Network and addresses any identified deficiencies in the District.
3. Maintains and enhances the existing network of geological sites and biodiversity, including safeguarding existing designated sites and species, and ensures no net loss of wider biodiversity and provides net gains in biodiversity where possible.
4. Conserve and where possible enhance the setting of the South Downs National Park

Policy 26 Strategic Policy: Countryside Protection

Outside built-up area boundaries, the rural character and undeveloped nature of the countryside will be protected against inappropriate development. Any proposal must be essential to its countryside location, and in addition meet one of the following criteria:

1. Support the needs of agriculture or forestry;
2. Enable the extraction of minerals or the disposal of waste;
3. Provide for quiet informal recreational use; or
4. Enable the sustainable development of rural areas.

In addition, proposals must be of a scale appropriate to its countryside character and location. Development will be considered acceptable where it does not lead, either individually or cumulatively, to a significant increase in the overall level of activity in the countryside, and protects, and/or conserves, and/or enhances, the key features and characteristics of the landscape character area in which it is located, including;

1. The development pattern of the area, its historical and ecological qualities, tranquillity and sensitivity to change;

2. The pattern of woodlands, fields, hedgerows, trees, waterbodies and other features; and 3. The landform of the area.

Policy 31 Green Infrastructure and Biodiversity

1. Development will be supported where it can demonstrate that it maintains or enhances the existing network of green infrastructure. Proposals that would result in the loss of existing green infrastructure will be resisted unless it can be demonstrated that new opportunities will be provided that mitigates or compensates for this loss, and ensures that the ecosystem services of the area are retained.

2. Development proposals will be required to contribute to the enhancement of existing biodiversity, and should create and manage new habitats where appropriate. The Council will support new development which retains and /or enhances significant features of nature conservation on development sites. The Council will also support development which makes a positive contribution to biodiversity through the creation of green spaces, and linkages between habitats to create local and regional ecological networks.

3. Where felling of protected trees is necessary, replacement planting with a suitable species will be required.

4. a) Particular consideration will be given to the hierarchy of sites and habitats in the district as follows:

i. Special Protection Area (SPA) and Special Areas of Conservation (SAC)
ii. Sites of Special Scientific Interest (SSSIs) and National Nature Reserves (NNRs)
iii. Sites of Nature Conservation Importance (SNCIs), Local Nature Reserves (LNRs) and any areas of Ancient woodland, local geodiversity or other irreplaceable habitats not already identified in i & ii above.

b) Where development is anticipated to have a direct or indirect adverse impact on sites or features for biodiversity, development will be refused unless it can be demonstrated that:

i. The reason for the development clearly outweighs the need to protect the value of the site; and,
ii. That appropriate mitigation and compensation measures are provided.

5. Any development with the potential to impact Arun Valley SPA or the Mens SAC will be subject to a HRA to determine the need for an Appropriate Assessment. In addition, development will be required to be in accordance with the necessary mitigation measures for development set out in the HRA of this plan.

2.2.2.1 Emerging Local Plan 2023 - 2040

A new local plan for Horsham District council is currently undergoing examination by an Inspector appointed by the Secretary of State. There are a number of as yet unresolved objections to the plan. Therefore, at present, the emerging policies of the plan can only be given limited weight.

The new Horsham District Local Plan 2023 - 2040 will set out planning policies and proposals to guide development in the District, excluding the South Downs National Park, up to 2040. This document outlines the following policies that are relevant to the site.

Strategic Policy 14: Countryside Protection

1. Outside built-up area boundaries and secondary settlements, the rural character and undeveloped nature of the countryside will be protected against inappropriate development. Any proposal must be essential to, and justify, its countryside location, and must meet one of the following criteria:

a) Support the needs of agriculture or forestry
b) Enable the extraction of minerals or the disposal of waste;
c) Provide for quiet informal recreational use; or
d) Enable the sustainable development of rural areas.

2. In addition, all proposals must be appropriately integrated within the landscape and be of a scale appropriate to its countryside character and location. Development will be considered acceptable where it does not lead, either individually or cumulatively, to a significant increase in the overall level of activity in the countryside, and protects, conserves, and seeks to enhance, the key features and characteristics of the landscape character area in which it is located, including;

a) The development pattern of the area, its historical and ecological qualities, tranquillity and sensitivity to change;
b) The pattern of woodlands, fields, hedgerows, trees, waterbodies and other features;
c) The landform of the area; and
d) The protection of dark skies, in particular where it may impact on a designated International Dark Sky Reserve (IDSR), Neighbourhood Plan designations and High Weald AONB Management Plan objectives.

Strategic Policy 16: Protected Landscapes

1. Development proposals within and adjacent to the High Weald AONB must demonstrate how their development proposals conserve and enhance the natural beauty of the AONB, having appropriate regard to the setting and views into and out of the AONB, the High Weald AONB Management Plan, any updates and any other relevant documents. Proposals will be required to set out any proposed mitigation or compensation measures needed to address any harm. 66

2. Small scale development that helps to support the social and economic well-being of the AONB will be supported, provided that the scheme is compatible with the purpose of the designation.

3. Major development within the AONB will only be permitted in exceptional circumstances. Applicants will be required to demonstrate why the proposal is in the public interest and what alternatives to the proposal have been considered.

4. Proposals within land that contributes to the setting of the South Downs National Park should be consistent with National Park purposes and have regard to the South Downs Local Plan, the South Downs Integrated Landscape Character Assessment, the South Downs Partnership Management Plan and any other relevant document and updates. In particular, proposals should not cause harm to the special qualities (including dark skies), local distinctiveness or sense of place, by negatively affecting views into and out of the National Park. Proposals will be required to set out any proposed mitigation or compensation measures needed to address any harm.

Strategic Policy 17: Green Infrastructure and Biodiversity Green Infrastructure

1. Development will be supported where it can demonstrate that it maintains and enhances the existing network of green infrastructure and contributes to the delivery of public open space, the Local Nature Recovery Strategy, Nature Recovery Network, natural capital, ecosystem services and / or biodiversity. Green Infrastructure should be integral to the design and layout of development, and new provision, including green linkages, should be provided taking into account Natural England's green infrastructure guidance and the council's green infrastructure strategy. Provision should seek to optimise public access to open space and nature via foot, bicycle, wheeling, and also horse as appropriate.

2. Proposals that would result in any loss, degradation or harmful impacts to green infrastructure, or core areas of the Local Nature Recovery Strategy and Nature Recovery Network will be resisted unless it can be demonstrated that new opportunities will be provided that appropriately mitigates and / or compensates for the respective harm and ensures that the ecosystem services of the area are retained and enhanced. Development proposals will be expected to remove invasive species.

3. Proposals will be expected to retain and enhance existing priority habitats and trees, and accord with the aims and objectives of the Green Infrastructure and Local Nature Recovery Strategies. Habitat enhancement including additional hedgerow and tree planting must take account of the local landscape and habitat context. It should seek to optimise biodiversity, ecological connectivity and function, and climate change resilience.

4. Development likely to affect a watercourse and its associated corridor should seek to conserve and enhance its ecological, landscape and recreational value. This should include providing adequate natural buffer zones to the watercourse. 74 Biodiversity

5. The Council will support appropriate new development which delivers at least 12% biodiversity net gain and:

a) Retains and enhances significant features of nature conservation value on development sites;

b) Makes a positive contribution to biodiversity and accords with the aims and objectives of the Green Infrastructure and Local Nature Recovery Strategies, through the creation of appropriate green spaces, that provide linkages between habitats to create local and regional ecological networks that enable the movement of wildlife through development sites; and / or

c) Following the principle of 'right habitat in the right place', significantly increases woodland or other habitats for the purpose of appropriately enhancing biodiversity, carbon sequestration, pollution control, and / or flood mitigation.

6. Relevant development proposals will be expected to deliver 12% biodiversity net gain and must submit Biodiversity Net Gain information to show how this will be achieved using the mandated Biodiversity Metric or the Small Sites Metric as appropriate and must abide by the metric trading rules. Submissions must make clear what will be provided to meet no net loss and what will deliver net gains. The net gain must be achieved through the delivery of appropriate on-site biodiversity net gain or, where this is not practicable, through off-site net gain within the District especially areas, as suitable to the habitats subject to gain, identified in the District's Green Infrastructure Strategy or the Local Nature Recovery Strategy, or as agreed by the Council. All such schemes, excluding any respective element using statutory biodiversity credits, must submit for approval by the Council a funded maintenance and management plan, including monitoring / reporting and appropriate enforcement processes, that secures the biodiversity net gains for at least 30 years.

7. All other development proposals must seek to demonstrate how measurable biodiversity net gains will be delivered. Protected Sites and Species

8. Proposals must give appropriate consideration to protected and notable species. They will be expected to protect priority species and seek to aid their recovery, and must conserve, restore and enhance priority habitats, and should create and manage appropriate new habitats, taking into account pollination, where practicable. 9. Particular consideration will be given to the hierarchy of sites and habitats, including buffer areas, within the District, or functionally linked to, as follows:

a) Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Ramsar sites;

b) Sites of Special Scientific Interest (SSSIs), National Nature Reserves (NNRs), Veteran Trees, Ancient Woodland and other irreplaceable habitats; 75

c) Local Wildlife Sites (LWS), Local Nature Reserves (LNRs) and any areas of priority habitats including traditional orchards, local geodiversity, Core Sites in the emerging NRN and other irreplaceable habitats not already identified in a & b above.

10. An appropriate buffer around woodland will be required, this will be at least 15m around Ancient Woodland or greater in accordance with good practice, and consideration should be

given to the potential for protected species, such as bats, and impacts on hydrology. Around ancient and veteran trees a minimum buffer zone of at least 15 times larger than the diameter of the tree, or 5 metres from the edge of the tree's canopy whichever is the larger, will be required.

11. Where the felling of a tree is necessary, for example due to disease, replacement planting with a suitable tree species, age and location to retain and enhance the link with the wider network of habitats and Green Infrastructure, will be required.

12. Where development is anticipated to have a direct or indirect adverse impact on sites or features of importance to nature conservation, development will be refused unless it can be demonstrated that:

a) The mitigation hierarchy has been applied and the objectives of a site's designation, where applicable, and integrity of the area will not be undermined;

b) The reason for the development clearly outweighs the likely impact to notified features and / or the need to protect the value of the site; and

c) Appropriate mitigation and compensation measures will be provided alongside the delivery of measurable biodiversity net gain as relevant.

13. Any development with the potential to impact the Arun Valley SPA / SAC / Ramsar site, The Mens SAC and / or Ebernoe Common SAC will be subject to a Habitats Regulation Assessment to determine the need for an Appropriate Assessment. In addition, development will be required to be in accordance with the necessary mitigation measures for development set out in the Habitat Regulation Assessment of this Plan.

3.0 METHODOLOGY

3.1 Desk Study

3.1.1 Data Request

A data request was submitted to the Sussex Biological Records Centre (SxBRC) to ascertain any records held of nature conservation designations and protected species within 1 km of the boundary of the site.

The data search covered:

- Statutory designated sites
- Non-statutory designations such as LWS
- Records of protected and notable species.

3.1.2 Waterbodies

Any ponds located within 500 m of the proposed development were searched for using Ordnance Survey maps and available aerial images.

3.2 Field Survey

3.2.1 Habitats

The field survey which forms the basis of the findings of this report was carried out by Lyndsey Barratt BSc (Hons) PGCert ACIEEM and Lewis Lakudzala BSc (Hons) MSci on the 28th March 2023. An updated walkover was carried out on the 13th March 2024 by Lyndsey Barrat BSc (Hons) PGCert ACIEEM and Amy Johnston BSc (Hons).

Habitats on site pre-development were identified in accordance with the categories specified for a UK Habitats survey, using Habitat Definitions Version 2.0 (UKHab Ltd., 2023). This was chosen as an appropriate habitat categorisation system as it fits within the Biodiversity Metric calculation.

UKHab represents a method for classifying habitats which has been produced to provide an up-to-date replacement for the current industry standard phase 1 survey method. One of the main benefits of UKHab is that it supports the evaluation of habitats for EcIA and no net loss/ net gain analysis, providing a more detailed interpretation of habitat types, which is important for assessing the distinctiveness and condition of habitats against which biodiversity net gain is measured.

3.2.2 Badger

The site was thoroughly searched for evidence of use by Badgers (*Meles meles*) with the specific aim of identifying the presence and location of any setts. In accordance with the *Badgers and Development: A Guide to Best Practice and Licensing* (Natural England, 2011) guidance, the survey accounted for a 30m from the site's boundary (observed where possible i.e. does not conflict with private dwellings). Evidence of Badgers could include latrines, dung pits, feeding remains and foraging evidence, trails and setts.

3.2.3 Bats

3.2.3.1 PRA

A non-exhaustive assessment of trees on site requiring removal / remedial works were subject to a Preliminary Roost Assessment (PRA) following BCT (Collins (ed) 2016) best practice survey guidelines searching for any PRFs / evidence of bat occupation and assigning a roost potential assessment as outlined in **Table 2** below.

Table 2. Guidelines for assessing the potential suitability of a built structures / trees for roosting bats (reproduced from BCT (Collins (ed) 2016.

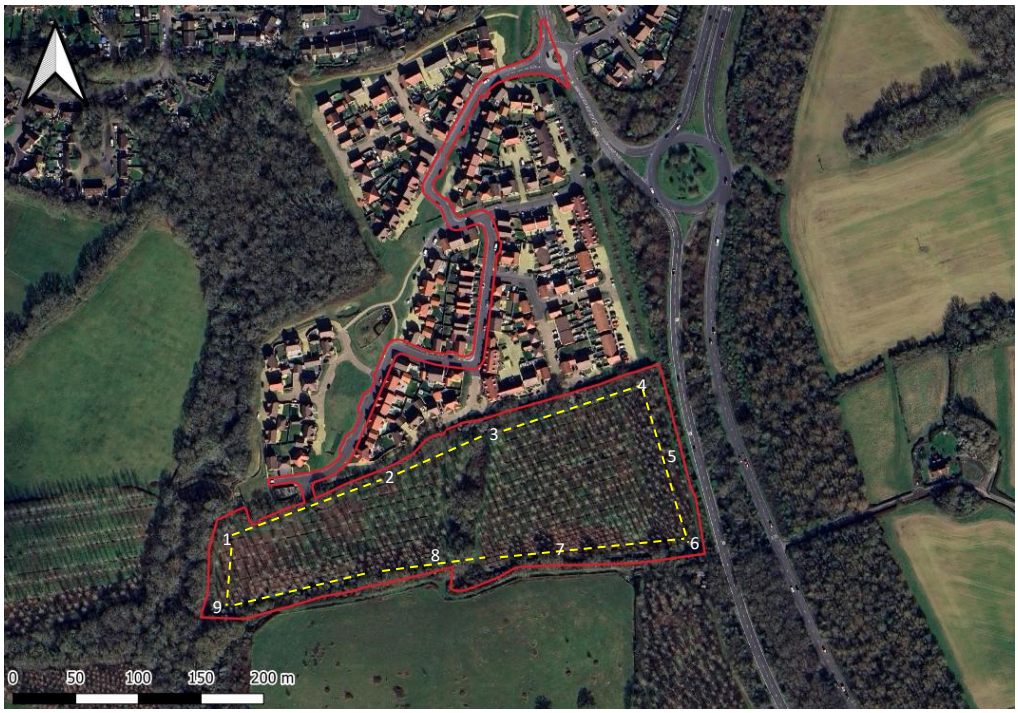
Suitability	Description of Roosting Habitats
Negligible	Negligible habitat features on site are likely to be used by roosting bats
Low	A structure or tree with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions[2] and/or suitable surrounding habitat to be used on a regular basis or by a large number of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

3.2.3.2 Walked Transects

Based on the suitability of the habitat for foraging and commuting walked transects were carried out on-site between April – September in 2023 (**Fig 3** with 9 listening stations used). Approximately 13 minutes was spent at each listening point during which passes of species were noted. Any passes recorded whilst walking between points were also noted. Both a Bat Box duet / Elekon Batscanner heterodyne and Elekon Batlogger (for analysis of calls via sonogram) detector was employed during all surveys. The surveys were carried out by Katalin Annett-Balazs, Zoltan Annett-Balazs, Lewis Lakudzala, Maddie Errington, Amy Johnston, George Phillips, Ollie Silvester and Ellie Hartfield. (2 staff used per transect and all experienced bat surveyors with Ecosupport Ltd).

[2] For example, in terms of temperature, humidity , height above ground level, light levels or levels of disturbance.

Figure 3. Map showing the transect route and associated listening stations used during the walked transects.



3.2.3.3 Static Monitoring

In addition to the walked transects, as per the requirements outlined in the BCT guidelines (Colins ed.), 2016), static detectors were placed at different locations along the transect routes (as outlined in **Fig 3** above) for 5 consecutive nights each month during the survey periods (April – October in 2023). The locations of the static bat detectors are shown in **Fig 4** below, with Anabat Express and / or a Song Meter Mini detector deployed. Analysis of sonograms was completed using either Analook or Kaleidoscope.

Figure 4. Approximate locations of the static bat static detectors placed on-site (A = April, B = May etc.).

3.3 Reptile Survey

The reptile surveys undertaken by Ecosupport were carried out in accordance with best practice guidelines as stated in various resources (Froglife 1999) (Gent & Gibson 1998) during May 2023. Artificial refugia comprising of bitumen roofing felt were distributed throughout the suitable reptile habitats on site. The distribution of 72 pieces of refugia throughout the identified suitable habitat on-site**.** Seven visits to the site were subsequently undertaken during suitable weather conditions during which all the refugia were checked for the presence of reptiles in combination with a visual observation transect.

This survey is considered sufficient to identify the presence or likely absence of reptiles on the site. It does not provide sufficient information to allow an accurate assessment of population sizes however, it does allow inferences to be made as to population size class in combination with other considerations such as the extent and quality of the habitat.

3.4 Dormice

The walkover identified suitable habitat for Dormouse (*Muscardinus avellanarius*) on the site and consequently recommended a survey should be undertaken to determine their presence or likely absence. Methodological guidance for Dormouse surveys is provided in the *Dormouse Conservation Handbook* (Bright *et al* 2006) whereby a minimum of 50 tubes is recommended to be used per site, at a spacing of 20m. A total of 50 tubes were deployed on site in April 2023 with the approximate locations of the areas covered are shown in **Fig 5**.

The *Dormouse Conservation Handbook* uses an "index of probability" to assess the likelihood of a survey detecting Dormice. This assigns a score for each month which nest tubes are on a site (see **Table 3**) and recommends that a total of 20 points is necessary. The surveys were carried out between May and October 2023 to ensure that all key parts of the season were covered and sufficient survey effort was achieved.

Table 3. Index of probability of finding Dormice present in nest tubes in any one month. From the Dormouse conservation handbook (Bright et al 2006).

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

Figure 5. Areas of the site covered by the Dormouse nest tube surveys in 2023 with 50 tubes set out.

3.5 Great Crested Newts

3.5.1 Habitat Suitability Index

Two ponds located within the site itself were subject to Habitat Suitability Index (HSI) (**Fig 6**). This takes into account the following factors when calculating the ponds suitability to support GCN:

- Location of Pond,
- Surface Area,
- Desiccation Rate,
- Water Quality,
- Shade,
- Presence of Waterfowl and Fish,
- Number of Ponds within 1km,
- Quality of Terrestrial Habitat,
- Macrophyte Cover.

These criteria are used to calculate a score according to ARG guidelines (ARG, 2010) using the Oldham (2000) calculation formulae.

This gives a score between 0 and 1 of the suitability of the pond for GCN with:
0.40 – 0.50: Poor suitability for GCN
0.51 – 0.59: Below average suitability for GCN
0.60 – 0.69: Average suitability for GCN
0.70 – 0.79: Good suitability for GCN
0.80 – 1.00: Excellent suitability for GCN

3.5.2 eDNA Survey

As one of the ponds was found to be suitable for GCN, a subsequent eDNA survey was carried out on pond 2. The survey was undertaken in full compliance with best practice guidance published by Defra (Biggs et al., 2014). A total of 20 water samples were taken from the pond, spaced as evenly as possible around the pond margin and targeting in particular areas where suitable egg-laying vegetation was present, as well as areas of open water which could facilitate displaying male GCN. 30ml samples were taken at each survey point and mixed together in a sterile bag. Six individual 15ml samples of this water were then mixed thoroughly with ethanol to preserve the eDNA sample. These samples were then refrigerated at 2-4° C prior to being sent for analysis. Analysis of the eDNA samples was undertaken by Surescreen Scientifics, a recognised 'quality supplier' by Natural England. The survey was undertaken in April 2023 during the optimal timings as per best practice guidelines.

Figure 6. Ponds located within 250m of site.

3.6 Breeding Bird Surveys

The survey methodology was broadly based upon the British Trust of Ornithology (BTO) Breeding Bird Survey (BBS) and Common Bird Census methods, including the BTO Standard Recording Codes (BTO, 2004). Four surveys were undertaken covering April-June during favourable weather conditions (with little or no rain, little to no wind and good visibility). The survey visits were carried out at dawn, taking approximately 140 minutes each. The surveys followed the same pre-defined linear transect route as per the walked bat transects (**Fig 3**) and comprised 15 No. 10-minute observational points from where the surveyor could observe bird activity and listen for birdcalls to establish territories and presence of breeding/nesting birds. Behaviour such as singing male birds, young, nests, feeding behaviour, territorial disputes and defensive behaviour around possible active nests were noted. Observations were marked on a site plan.

3.7 Assessment Methodology

3.7.1 Introduction

The methodology for the assessment of the likely ecological effects of the proposed development is based on CIEEM's *Guidelines for Ecological Assessment in the UK* (CIEEM 2018). This includes establishing the likely Zone of Influence (ZoI) for the project.

3.7.2 Valuation

Features of ecological interest are valued on a geographic scale. Value is assigned on the basis of legal protection, national and local biodiversity policy and cultural and/or social significance.

3.8 Limitations

There is not considered to be any limitations on the majority survey work conducted as all areas of the site were accessible and the surveys were conducted at the appropriate time of year. However, the original walkover conducted in March was carried out outside of the optimum time of year for vascular flowering plants. Given the nature of the habitat types present and the species recorded this is not considered to have affected the accuracy of the site's valuation. Similarly, this survey does not constitute a full site assessment for invasive plant species such as Japanese Knotweed (*Fallopia japonica*).

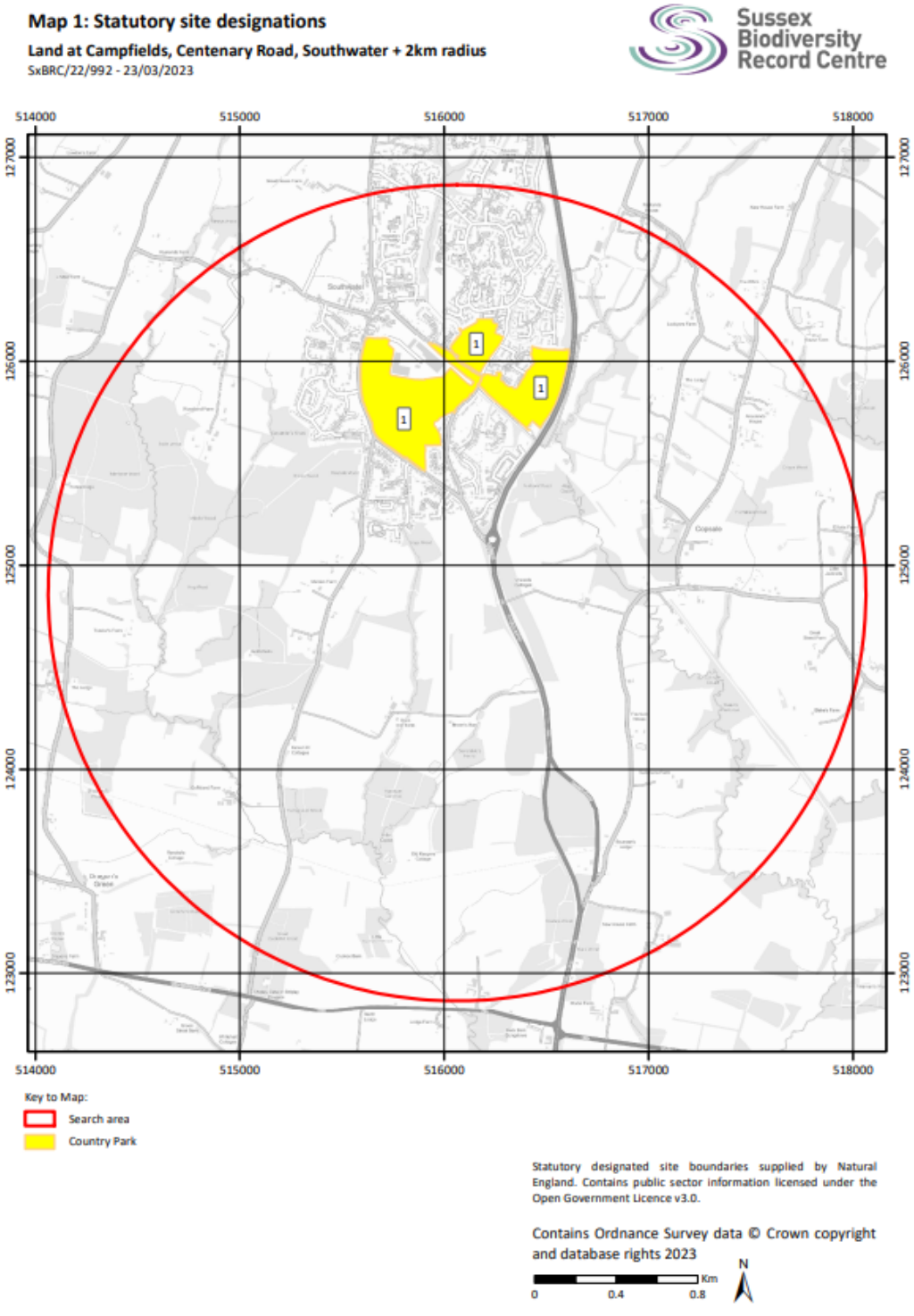
4.0 ECOLOGICAL BASELINE

4.1 Designated Sites

4.1.1 Statutory Designations

There is only one statutory designated site identified within 2 km of the site as per the map provided by SxBRC below (**Fig 7**). This is the Southwater Country Park. The site does not fall within the Zone of Influence of The Mens SAC or Arun Valley SAC/Ramsar.

Figure 7. Statutory designated sites located within 1 km of the site as provided by SxBRC.



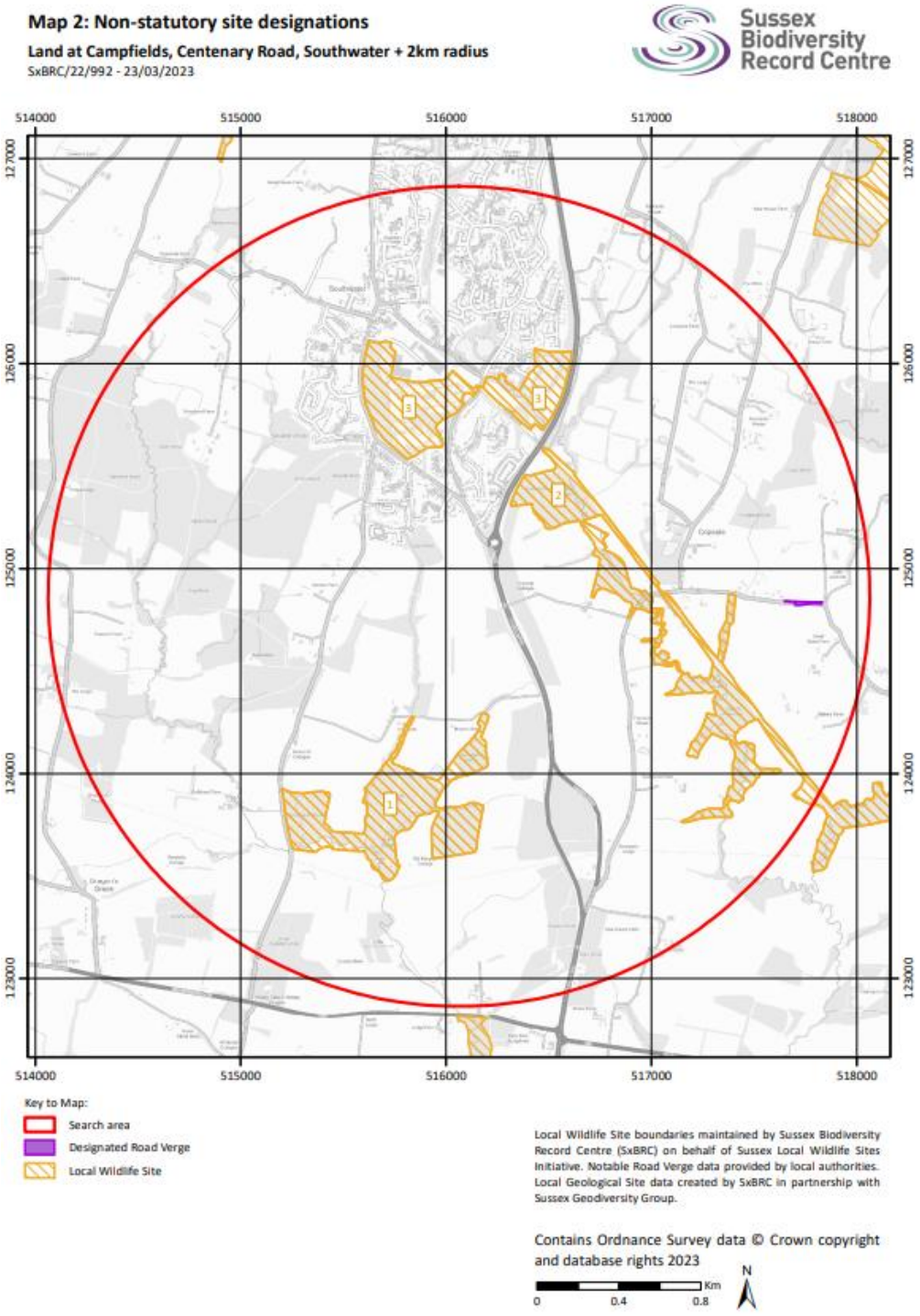
4.1.2 Non-Statutory Designations

Three LWS were identified within 2km of the site as per the map provided by SXBRC below (**Fig 8**). There were:

- H30 - Horsham Common, Alder Copse, Coate's Furzefield & Constable's Furze (1)
- H33 - The Downs Link, Nutham Wood & Greatsteeds Farm Meadow (2)
- H70 - Southwater Country Park Complex (3)

The Copsale Road designated road verge was also identified within 2km of the site.

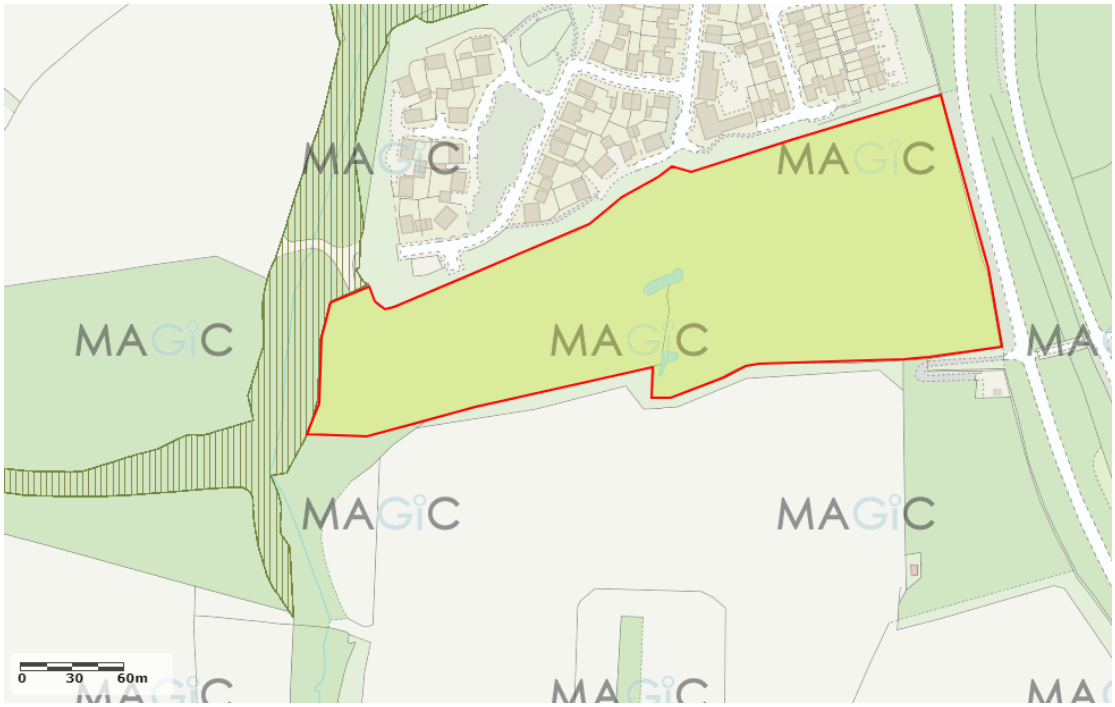
Figure 8. Non-statutory designated sites located within 1 km of the site as provided by SxBRC.



4.1.3 Ancient Woodland

Adjacent to the western boundary of the site there is an area of ancient woodland present (**Fig 9**).

Figure 9. Ancient woodland adjacent to the western boundary of the site.



4.2 Vegetation Survey Results

The vegetation within the site has been described below using classification terminology as described within Habitat Definitions Version 2.0 (UKHab Ltd., 2023). The below species should not be considered an exhaustive list and instead refer to dominant, characteristic and other noteworthy species associated with each community within the survey area. The habitat types on site comprise of:

- w1g – Other woodland; broadleaved with scattered scrub (10) and plantation (36)
- g4 – Modified grassland
- w1g6 – Line of trees (33) with scattered scrub (10)
- r1 - Standing open water and canals with ponds (19)

4.2.1 w1g – Other woodland; broadleaved with scattered scrub (10) and plantation (36)

This habitat is present across the majority of the site (**Fig 10**) and is largely comprised of Downy Birch (*Betula pubescens*). There is also an understory present of Bramble *(Rubus fruticosus)* and Blackthorn *(Prunus spinosa)* scrub.

Figure 10. View of the plantation woodland present on site (taken March 2023).

4.2.2 g4 – Modified grassland

This habitat is present on site forming pathways around the boundaries of the plantation woodland and through the centre of the site (**Fig 11**). Species noted included; Perennial Rye grass *(Lolium perenne)*, Dandelion *(Taraxacum agg.)*, Lesser Celandine *(Ficaria verna)*, Yarrow *(Achillea millefolium)*, Common Nettle *(Urtica dioica)*, Sedge (*Carex spp.*) and Creeping Buttercup *(Ranunculus repens).*

Figure 11. View of the modified grassland present on site (taken March 2023).

4.2.3 w1g6 - Line of trees (33) with scattered scrub (10)

There are lines of trees present around all boundaries of the site with an understory of scrub (**Fig 12**). Species noted included: Oak (*Quercus spp.*), Ash *(Fraxinus excelsior)*, Downy birch and an understory of Bramble, Elder *(Sambucus nigra)*, Hawthorn *(Crataegus monogyna)*, Blackthorn, Ivy *(Hedera helix)* and Cleaver *(Galium aparine)*.

Figure 12. View of the line of trees present on site (taken March 2023).

4.2.4 r1 - Standing open water and canals with Ponds (19)

There are two ponds present within the centre of the site (**Figs 13a & 13b**).

Figure 13a. View of pond 1 present on site (taken March 2023).

Figure 13b. View of pond 2 present on site (taken March 2023).

4.3 Bat Survey Results

4.3.1 Pre-existing Data

Table 4 below outlines the bat records returned by SxBRC from within 2km of the site.

Table 4. Records of bats within 2km of the site as returned by SXBRC.

Taxon name	Common name	Date of earliest record	Date of latest record	No. records	Max abundance
Chiroptera	Bat	01/01/1985 - 31/12/1985	08/06/2005	7	68
Eptesicus serotinus	Serotine	20/06/2011	04/06/2019	3	2
Myotis	Myotis Bat	20/06/2011	10/06/2020	10	6
Myotis bechsteinii	Bechstein's Bat	09/06/2017	16/06/2017	2	Present
Myotis daubentonii	Daubenton's Bat	03/09/2008	05/08/2020	4	26
Myotis mystacinus/brandtii	Whiskered/Brandt's	09/09/2019	09/09/2019	1	1
Myotis nattereri	Natterer's Bat	09/05/2010	27/05/2020	4	1
Nyctalus noctula	Noctule Bat	03/07/2010	04/06/2019	2	2
Pipistrellus	Pipistrelle Bat species	06/08/2007	21/06/2011	4	5
Pipistrellus nathusii	Nathusius's Pipistrelle	04/06/2019	04/06/2019	1	1
Pipistrellus pipistrellus	Common Pipistrelle	31/07/1987	10/06/2020	27	58
Pipistrellus pygmaeus	Soprano Pipistrelle	20/06/2011	05/08/2020	17	28
Plecotus	Long-eared Bat species	02/03/2003	08/12/2011	3	3
Plecotus auritus	Brown Long-eared Bat	02/10/1984	10/06/2020	17	7

4.3.2 Preliminary Roost Assessment (Trees)

During the walkover in 2023, 3 trees were assessed as having ***Moderate Potential*** for roosting bats due to the presence of PRFs (**Fig 14 & 15**). The locations of these are shown in **Figure 16** below. It is understood that these are being retained during the development.

Figure 14. View of the trees (TN1) found to be of moderate potential for roosting bats (taken March 2023)

Figure 15. View of the tree (TN2) found to be of moderate potential for roosting bats (taken March 2023).

Figure 16. Location of the trees on site found to be suitable for roosting bats.

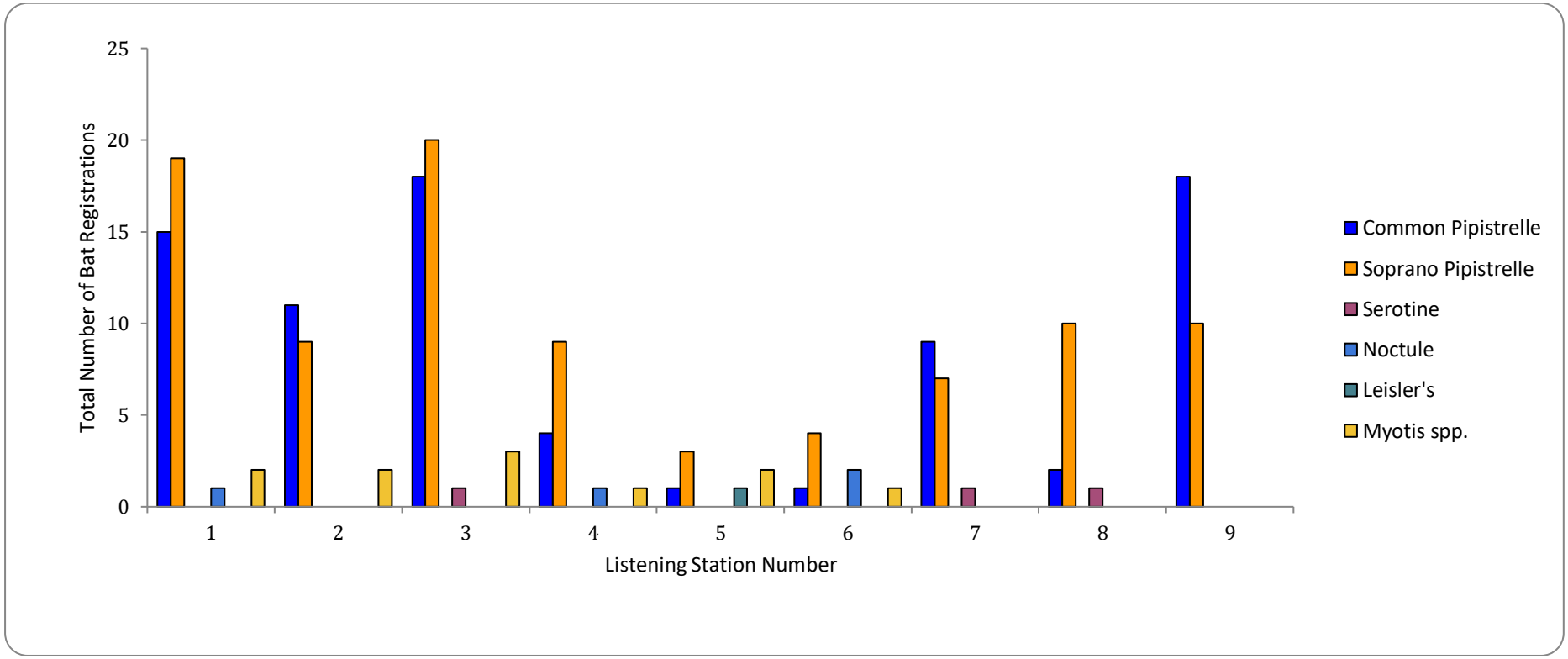
4.3.3 Bat Activity Surveys

Table 5 below indicates the dates and other relevant information recorded during the transect surveys with the results presented below in **Fig 17.**

Table 5. Relevant information recorded during the transect surveys. Wind speed is approximated in the Beaufort Scale. CW = Clockwise and ACW = Anti Clockwise (refer to **Fig 3** for route).

Date	Temp (°C)	Cloud Cover (%)	Precipitation	Wind (Beaufort scale)	Start Time	Finish Time	Starting Point / Direction of Travel
25/04/23	8	66	10	2	20:14	22:14	1 - CW
17/05/23	15	30	0	1	20:50	22:50	6 - ACW
08/06/23	17	0	0	2	21:13	23:13	3 – ACW
06/07/23	14	0	0	1	21:17	23:17	8 – CW
07/07/23	12	0	0	0	03:00	05:00	7 – ACW
24/08/23	19	45	14	0	20:05	22:05	2 – ACW
07/09/23	22	20	0	1	19:44	21:44	8 - CW

Figure 17. The number and species composition of bat recordings noted during the walked transects at the different listening points from all the surveys conducted to date (April – September 2023).



4.3.4 Static Monitoring

The results from the static detector deployments during the 2023 survey work (refer to **Fig 4** for approximate locations) are provided below in **Table 6.**

Table 6. Results from the static detector deployments covering April – October 2023 (2 deployed per month and refer to **Fig 4** for approximate locations).

Location	Date	Species	Total passes	Average passes per night	Average passes per hour
A1	19th - 24th April 5 Nights 9.75 hrs p/n	C.pip	728	145.60	14.93
		Noctule	260	52.00	5.33
		Myotis spp.	16	3.20	0.33
		Leisler's	8	1.60	0.16
		Plecotus spp.	2	0.40	0.04
		S.pip	26	5.20	0.53
A2	19th - 25th April 5 Nights 9.75 hrs p/n	C.pip	3	0.60	0.06
		Noctule	1	0.20	0.02
		S.pip	60	12.00	1.23
		Myotis spp.	1	0.20	0.02
B1	10th - 17th May 7 Nights 8.50 hrs p/n	C.pip	1678	239.71	28.20
		S.pip	750	107.14	12.61
		Leisler's	6	0.86	0.10
B2	10th - 17th May 7 Nights 8.50 hrs p/n	C.pip	860	122.86	14.45
		S.pip	220	31.43	3.70
		Noctule	30	4.29	0.50
		Serotine	1	0.14	0.02
		Leisler's	25	3.57	0.42
		Myotis spp.	8	1.14	0.13
C1	2nd - 8th June 5 Nights 7.75 hrs p/n	C.pip	8	1.60	0.21
		S.pip	156	31.20	4.03
C2	2nd - 8th June 5 Nights 7.75 hrs p/n	C.pip	6	1.20	0.15
		S.pip	34	6.80	0.88
		Myotis spp.	2	0.40	0.05
D1	12rd - 17th July 6 Nights 7.75 hrs p/n	C.pip	660	132.00	17.03
		S.pip	388	77.60	10.01
		Noctule	1	0.20	0.03
		Serotine	2	0.40	0.05
		Myotis spp.	42	8.40	1.08

D2	12th - 17th July 6 Nights 7.75 hrs p/n	C.pip	1027	205.40	26.50
		S.pip	66	13.20	1.70
		Noctule	1	0.20	0.03
		Serotine	4	0.80	0.10
		Myotis spp.	34	6.80	0.88
		Plecotus spp.	3	0.60	0.08
		Leisler's	1	0.20	0.03
E1	8th - 15th August 8 Nights 9.25 hrs p/n	C.pip	256	32.00	3.46
		S.pip	198	24.75	2.68
		Noctule	3	0.38	0.04
		Serotine	1	0.13	0.01
		Myotis spp.	15	1.88	0.20
E2	8th - 15th August 8 Nights 9.25 hrs p/n	C.pip	153	19.13	2.07
		S.pip	159	19.88	2.15
		Noctule	2	0.25	0.03
		Serotine	3	0.38	0.04
		Myotis spp.	10	1.25	0.14
		Plecotus spp.	2	0.25	0.03
		Leisler's	8	1.00	0.11
F1	10th - 14th September 5 Nights 11.25 hrs p/n	C.pip	1469	293.80	26.12
		S.pip	227	45.40	4.04
		Noctule	1	0.20	0.02
		Serotine	2	0.40	0.04
		Myotis spp.	60	12.00	1.07
		Plecotus spp.	27	5.40	0.48
		Leisler's	3	0.60	0.05
		Barbastelle	5	1.00	0.09
F2	10th - 14th September 5 Nights 11.25 hrs p/n	C.pip	339	67.80	6.03
		S.pip	1930	386.00	34.31
		Serotine	1	0.20	0.02
		Myotis spp.	64	12.80	1.14
		Plecotus spp.	1	0.20	0.02
G1	11th - 16th October 6 Nights 13.00 hrs p/n	C.pip	147	24.50	1.88
		S.pip	359	59.83	4.60
		Noctule	2	0.33	0.03
		Serotine	3	0.50	0.04
		Myotis spp.	8	1.33	0.10
G2	11th - 16th October 6 Nights 13.00 hrs p/n	C.pip	371	61.83	4.76
		S.pip	76	12.67	0.97
		Serotine	1	0.17	0.01
		Myotis spp.	36	6.00	0.46
		Barbastelle	5	0.83	0.06

4.3.5 Evaluation

In general, the site can be considered relatively important locally for foraging and commuting bats with a reasonable number of calls recorded throughout the survey period and 8 different species noted. Across the 2023 surveys, high numbers of Common and Soprano Pipistrelles were recorded along all boundaries of the site (considered a common bat species in England (Wray *et al.,* 2010)). Moderate numbers of *Myotis* spp. and Noctules were recorded across the site. In addition, low numbers of Serotine, *Plecotus* spp. and Leisler's were also recorded across the site. Of particular note was the occasional usage of the site by Barbastelle during September and October 2023 (with Barbastelle considered a rarest species in the UK (Wray *et al*, 2010)). Detailed analysis in order to identify the separate *myotis spp.* was not undertaken and therefore, the species present was presumed based on the local records received from SXBRC.

The Bat Mitigation Guidelines (2023) provides a standard method for assessing importance of bat assemblage. This approach has been developed to reflect geographic variations in species distributions. To determine the maximum possible score any site could achieve, a score is assigned to each species that could be present where:

- widespread in (almost) all geographies [score 1]
- widespread in many geographies, but not as abundant in all [score 2]
- rarer or restricted distribution [score 3]
- rarest Annex II species and very rare [score 4]

Table 7. Rarity category and associated score for calculating importance score (for 'Southern England') (Bat Mitigation Guidelines, 2023).

Rarity Category	Species	Score
Widespread	**Common Pipistrelle** **Soprano Pipistrelle** **Brown Long-eared**	**1** **1** **1**
Widespread in many geographies but not as abundant in all	**Whiskered*** **Brandts*** **Daubentons*** **Natterers*** **Noctule**	**2** **2** **2** **2** **2**
Rarer or restricted in distribution	Alcathoe **Serotine** **Leisler's** Nathusius Pipistrelle	3 **3** **3** 3
Rarest Annex II Species and very rare	Greater Horseshoe Lesser Horseshoe Bechstein **Barbastelle** Grey Long-eared	4 4 4 **4** 4
	Maximum Score (out of 45)	**23**

Once the score for each category has been calculated (**Table 7** above) and summed to determine the maximum theoretical score, the threshold score needed for any assemblage to meet each geographic level of importance, can be calculated:

- Assemblage score meets or exceeds 45% of the maximum score: County importance
- Assemblage score meets or exceeds 55% of the maximum score: Regional importance
- Assemblage score meets or exceeds 70% of the maximum score: National importance

The threshold for any site in the Southern England achieving a score of –

- **20 would be classed as of at least 'County' importance,**
- 25 would be classed as of 'Regional' importance,
- 32 classed as of 'National' importance.

Using this system, the site scores ***23 points*** for commuting and foraging bats (see **Table 6**) and is correspondingly considered to be of at least '***County***' importance.

4.4 Badgers

4.4.1 Pre-existing Information

SxBRC did not return any records for Badger (*Meles meles*) within 2 km of the site.

4.4.2 On-Site Assessment

During the updated walkover, the site was thoroughly searched for evidence of use by Badgers (*Meles meles).* Evidence of Badgers could include latrines, dung pits, feeding remains and foraging evidence, trails and setts. No evidence of Badger sett(s) or presence was noted. Notwithstanding this, the site supports suitable habitat for Badgers and therefore there is considered to be ***Moderate Potential*** for Badgers to be foraging and commuting on site.

4.5 Reptiles

4.5.1 Pre-existing Information

SxBRC have provided the following reptile records on-site within 2 km of the site; Grass Snake (*Natrix helvetica*) (56 records), Adder (*Vipera berus*) (2 records), Common Lizard (*Zootoca vivipara*) (66 records) and Slow Worm (*Anguis fragilis*) (134 records).

4.5.2 Reptile Surveys

Habitats on site were considered suitable for reptiles in the form of longer sward grassland and scrub present across the site. As such, a suite of presence/likely absence surveys was undertaken in May 2023. The full results of this are provided below in **Table 8** with the locations of where Slow Worms and Common Lizard were noted indicated in **Fig 18**.

Table 8. Results of the reptile surveys undertaken on site during May 2023. Wind speed is estimated in the Beaufort scale.

Date	Start Time	End Time	Weather Conditions (Temp, Wind, Cloud &, Precipitation)	Common Lizard	Grass Snake	Adder	Slow Worms	Reptile Mat Number/Location
05/05/23	9:30	10:10	15, 0, 80%, 59%	0	0	0	2	6
10/05/23	10:00	10:40	17, 0, 40%,30%	0	0	0	4	64, 20, 9
12/05/23	10:20	11:10	14, 3, 70%, 0%	1(37)	0	0	7	72, 7, 68, 34, 36
15/05/23	10:45	11:35	14, 1, 70%, 0%	0	0	0	3	57, 16, 38
18/05/23	9:00	9:30	14, 1, 45%, 0%	0	0	0	3	47, 5
23/05/23	9:00	9:30	15, 1, 50%, 0%	0	0	0	3	63, 16
26/05/23	9:00	9:30	16, 1, 15%, 0%	0	0	0	3	11, 43

Figure 18. The locations of where Slow Worms (blue circles) and Common Lizard (yellow circle) were identified on site during the presence / likely absence surveys undertaken in 2023.

4.5.3 Evaluation

Given the size of the suitable areas of habitat, the number of refugia deployed and the maximum count of adults (which was 7), a '***Low***' population of Slow Worm is present on-site. Considering the max count of Common Lizards (which was 1), a '***Low***' population of Common Lizards is present on site. Slow Worms and Common Lizards are however relatively widespread within the UK and West Sussex and as such the site it is considered to be ***Local Value*** for reptiles.

4.6 Hazel Dormouse

4.6.1 Pre-existing Information

SxBRC returned 8 records for Hazel Dormouse (*Muscardinus avellanarius*) within 2 km of the site.

4.6.2 Hazel Dormouse Survey

Table 9 below indicates the dates on which the tubes were checked and any findings within the tubes (Dormice locations are indicated in **Fig 19**). With a Dormouse nest identified in one nest tube on site, they must be considered to be present within all suitable habitats.

Table 9. Results of the Dormouse nest tubes survey work on site carried out between May – October 2023.

Survey No	Date	Other Occupancy	Dormice				Dormice Evidence
			GEC	GEO	Juvenile	Adult	
1	18/05/2023	-	-	-	-	-	No evidence of Dormice identified.
2	12/06/2023	-	-	-	-	-	No evidence of Dormice identified.
3	06/07/2023	-	-	-	-	-	No evidence of Dormice identified.
4	08/08/2023	-	-	-	-	-	No evidence of Dormice identified.
5	12/09/2023	-	-	-	-	-	Tube 33 had a very well woven ball shape of leaves and grass considered to be a Hazel Dormouse nest. Tubes 32 and 31 contained loose green leaves.
6	19/10/23	-	-	-	-	-	Tube 33 had a very well woven ball shape of leaves and grass considered to be a Hazel Dormouse nest. Tubes 32 and 31 contained loose green leaves.

Figure 19. Location of evidence of Dormice (yellow circle = nest) on site during the nest tube surveys conducted in 2023.

Figure 20. View of the Dormouse nest found in tube 33 (taken October 2023).

4.6.3 Evaluation

A Dormouse nest was recorded within a nest tube along the eastern boundary which indicates there is population in the local area that are using the site. No confirmed evidence of Dormice utilising the site for breeding purposes was recorded, although, breeding will be assumed due to the suitability of the habitat. Dormice are relatively common and widespread within West Sussex and have been recorded in suitable habitat across the county. Therefore, the site is considered to be of ***county value*** for this species (CIEEM, 2018).

4.7 Great Crested Newt

4.7.1 Pre-existing Information

SxBRC returned 17 records for Great Crested Newt (*Triturus cristatus*) within 2 km of the site.

4.7.2 HSI Assessment

A HSI assessment was carried out on the two ponds present within the site itself. Pond 3 was not assessed as it is isolated from the site by the A24 which is considered to be a significant barrier of dispersal by GCN. Pond 4 was not assessed as it was not accessible. Pond 1 (**Fig 21**) was found to have low levels of water during the walkover and to be completely dry throughout the survey season. It scored a HSI of 0.40563 and therefore was considered to be of '**Poor**' Suitability. Pond 2 (**Fig 22**) scored a HSI of 0.60558 and therefore was considered to be of '**Average**' suitability for GCN.

Figure 21. View of Pond 1 present on site (taken March 2023).

Figure 22. View of Pond 2 present on site (taken March 2023).

4.7.3 eDNA survey

Pond 2 returned an 'Average' HSI result and as such was subject to an environmental DNA (eDNA) sampling survey in April 2023. The results of the eDNA sampling returned a negative result for the presence of GCN (SureScreen Scientifics, 2023) (**Fig 23**). It is considered ***unlikely*** that GCN are present within the offsite ponds. Therefore, ***highly unlikely*** GCN would be negatively impacted by proposed development.

Figure 23. Results of the eDNA test conducted on pond 2 on site in May 2023 (SureScreen Scientifics, 2023).

SureScreen Scientifics

Folio No: E16663
Report No: 1
Purchase Order: 367293
Client: ECOSUPPORT LTD
Contact: Ollie

TECHNICAL REPORT

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

SUMMARY

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

RESULTS

Date sample received at Laboratory: 21/04/2023
Date Reported: 02/05/2023
Matters Affecting Results: None

Lab Sample No.	Site Name	O/S Reference	SIC	DC	IC	Result	Positive Replicates
1112	South water	-	Pass	Pass	Pass	Negative	0

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

Reported by: Chris Troth **Approved by:** Jackson Young

4.8 Breeding Birds

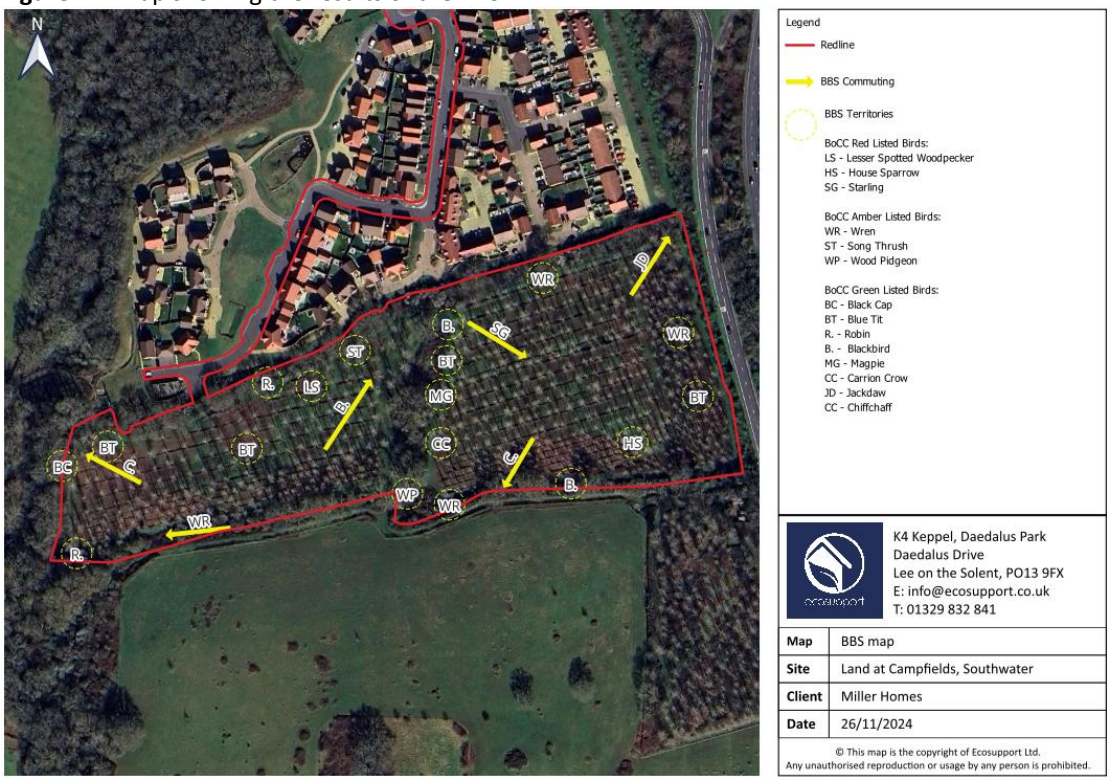
A total of 14 bird species were recorded during the Breeding Bird Surveys within or just beyond the site boundaries.

Of the species observed, 6 appear on the Birds of Conservation Concern (BoCC) as declining (red or amber lists) (Eaton et al., 2015) and / or are listed as Species of Principle Importance (SoPI) under the NERC Act (2006). The notable species recorded on site are detailed in **Table 10** with maps of the territories shown in **Figure 24**.

Table 10. Protected bird species, BoCC Red and Amber listed species and Species of Principle Importance recorded on site.

Species	Legal/Conservation Status	Number of Pairs, nest locations, Males holding territory on site
Lesser Spotted Woodpecker (*Dryobates minor*)	BOCC (red)	1 territory noted on site with a pair observed foraging. Woodpecker holes were also noted but no activity was seen.
House Sparrow *(Passer domesticus)*	BOCC (red)	1 territory noted on site with a pair observed foraging.
Starling *(Sturnus vulgaris)*	BOCC (red)	1 individual seen commuting.
Wren *(Troglodytes troglodytes)*	BOCC (amber)	3 territories noted with courting behaviour observed.
Song Thrush *(Turdus philomelos)*	BOCC (amber)	1 territory noted.
Wood Pidgeon (*Columba palumbus*)	BOCC (amber)	1 territory noted with nest building activity observed.

Figure 24. Map showing the results of the BBS.



A total of 3 Red-listed and 3 Amber-listed Birds of Conservation Concern were recorded as using the site as a resource, or likely using the site. Of these, 5 species were found to be nesting/breeding or likely to be nesting/breeding within the entire site. Red and Amber-listed species recorded on site with their SOS status description and approximate numerical range in Sussex (SOS, 2014) is as follows:

Species SOS Status Description Approximate Numerical Range (Breeding Pairs)
Lesser Spotted Woodpecker – Scarce, 11 - 100

House Sparrow – Very Common, 5001 – 30,000
Starling – Common, 1001 - 5000
Wren – Abundant, 30,000+
Song Thrush – Very Common, 5001 – 30,000
Wood Pidgeon – Abundant, 30,000+

The status of these Red-listed and Amber-listed species known to be actually nesting/breeding, attempting to nest on site or indeed suspected as likely nesting are still regarded as either 'Abundant", 'Very Common', 'Common' or 'Scarce' within the County of Sussex. This status classification is based on the species having an average number of breeding pairs of 30,000+ for abundant, 5001-30,000 for Very Common, 1001-5000 for Common species, and 11 – 100 for Scarce species annually within the County. Given the relatively small, single figure numbers of breeding or suspected breeding pairs within the site, it is not considered that the displacement of these numbers of 'abundant, very common or common' Red and Amber listed bird species would be significantly detrimental to the overall County populations. However, the Lesser Spotted Woodpecker is Scarce within the county and therefore, the displacement of this species would have an adverse impact on the county level for breeding birds. The proposals for the site do include the retention of areas of woodland and woodland creation and enhancement which will provide suitable environments for the species to re-establish in the area. On a more local level there will be a reduction in nesting and foraging resources within the site however, due to the considered low number of BoCC Red & Amber listed nesting pairs/territories present on site and the categorisation of the species using the site as a nesting and foraging resource during the nesting season, the site is considered to be of Low ecological value to breeding and nesting birds and it is not considered that the loss of bird populations and the communities present would be significantly detrimental on a County level.

A number of the Red & Amber listed species recorded on site are likely to be adaptive to the proposed housing scheme and associated landscaping and open space creation, these include, House Sparrows and Wrens. These species will adapt fairly readily to semi urban landscapes. With appropriate retention of habitats, linear features and the inclusion of suitable nesting features it would be considered reasonable that the housing proposal can provide suitable environments for these species to re-establish territories in the future.

5.0 ZONE OF INFLUENCE

The Zone of Influence is defined by CIEEM as being the areas / resources that may be affected by the biophysical changes caused by activities. The Zone of Influence is based on the sensitivity of the receptor to any biophysical changes which could occur and the extent to which those changes could occur.

5.1 Construction Phase

5.1.1 Change in Land Use

The change of use of the site will result in the physical structure of the present site being altered by the proposed development. Site preparation activities will include some earthworks and earth stripping associated with a phased construction. Therefore, the zone of influence is predicted to extend across the development footprint. Therefore, all protected species and habitats within the development footprint and along the boundary have the potential to be disturbed.

5.1.2 Noise Pollution

Noise disturbance occurs as a result of plant operation, traffic movements, and movements of site personnel associated with the continued extraction, crushing, screening and tipping within the application area.

When ground cover or normal unpacked earth is present between the source and receptor, the ground becomes absorptive to noise energy and is called a soft site. This can reduce in-air noise over distance. As these conditions are present on site is considered that the noise from construction will not travel far past the development boundary. This will be aided by the presence of screening vegetation around the boundary of the site. The retention of perimeter vegetation and reinforcing planting of hedgerows will reduce noise levels outside of the development footprint. It is therefore considered that the zone of influence for noise will be within the development boundary itself and 50m outside of the boundary.

5.1.3 Air Pollution

Particulates associated with the construction phase of this development will come from three main sources. The vehicles on site, from exhaust emissions, the contact of tyres on the road surface or dust blowing from materials carried via vehicles, stripping of topsoil/vegetation and excavation of footings for the new properties.

The zone of influence for air pollution, particularly dust, will depend on the time of year/weather condition within which works are carried out. For example, in dry conditions there may be dust generated by activities taking place during the construction phase, where as in wet weather less dust will be generated. It is also dependant on the wind speed at the time of the activity as this determines how far the air pollution will be transported and indeed the direction.

Fugitive dust from development sites is typically deposited within 100-200m of the source; the greatest proportion of which comprise larger particles (greater than 30 microns) is

deposited within 100m (Greater London Authority, 2006). Therefore, the zone of influence for air pollution during construction will be the development footprint itself with a 200meter buffer.

5.1.4 Water Pollution

The impact area is related to releases of pollutants to a water body will depend on the type of water body (e.g. stream, river or lake), the volume and flow of that water body, the nature of the pollutant and the chemical characteristics of the water body. Currently, full drainage testing has not been undertaken on site, however as there are two ponds on site, there is potential for impacts caused by water pollution on site, and through further afield through any connected ponds/ditches.

5.2 Operational Phase

The zone of influence associated with the operational phase is extended beyond the site boundaries due to the nature of the development resulting in an increase in human activity and disturbance in the direct vicinity and further afield.

5.2.1 Human Disturbance

A study found that 38% of walking trips were for personal errands, 28% were for exercise, 21% were for recreation or leisure and 5% for work. The average trip length was 2.1km (National Highway Traffic and Safety Administration and the Bureau of Transportation Statistics, 2002). With this in mind the zone of influence for disturbance in the form of people on foot will be 2.1km.

5.2.2 Light Pollution

This impact of lighting will be confined within the development footprint itself. There is the possibility of light spilling into adjacent land however by retaining and enhancing existing vegetation it is considered this will minimal. The created roads will also not be adopted. Therefore, the zone of influence will encompass the development footprint with a one meter buffer along the outside of the boundary.

5.2.3 Air

Pollution will arise from the increased level of traffic and vehicles associated with a housing development. It is outside of the expertise of this report to model the spatial patterns of air dispersion and deposition for various chemicals to allow for close delineation of the area of influence. Therefore, a general consideration of the impacts on nearby notable ecological features will be taken into account.

5.2.4 Noise

The site is currently screened by vegetation. The retention of this and additional planting will continue to provide screening for wildlife populations. As there are already levels of noise associated with nearby housing development and road networks it is not considered noise generation will be significantly increased. Similarly, as the noise associated with this development will not be continuous and will not reach high levels, it is considered unlikely that the zone of influence for this development in operation will extend 10m from development boundary.

6.0 LIKELY ECOLOGICAL IMPACTS IN ABSENCE OF MITIGATION

6.1 Introduction

The CIEEM guidelines (CIEEM 2018) require that the potential impacts of the proposals should be considered in absence of mitigation. In order for a significant adverse effect to occur, the feature being affected must be at least of local value. However, in some cases, features of less than local value may be protected by legislation and/or policy and these are also considered within the assessment. Although significant effects may be identified at this stage of the assessment, it is often possible to provide appropriate mitigation.

6.2 Site Preparation and Construction

6.2.1 Impacts to Habitats

The proposals will predominantly involve the loss of the areas of modified grassland, scrub and plantation woodland which are all habitats considered to be of ***Site - Local*** significance. Additionally, the works will be taking place close to retained mature trees and could therefore result in damage by machinery, particularly by root compaction. Therefore, it is considered that the loss of habitat and potential indirect effects across site would have an ***adverse impact*** to habitats of ***Local*** value.

6.2.2 Impacts to Wildlife

6.2.2.1 Bats

The site has been identified as being of regional importance for commuting and foraging bats with nationally rare Barbastelle bats recorded on site. The works will result in a loss of foraging resources (grassland / scrub) and any disruption to commuting routes (from external lighting) would likely have a ***moderate adverse impact*** at the ***County*** level of significance.

6.2.2.2 Reptiles

A 'Low' population of Slow Worm and Common Lizard were recorded on site and will be directly impacted upon by the proposed development. Without mitigation procedures put in place, this would result in the direct harm of individuals and a reduction in the local population. This would therefore be contrary to the provisions of the Wildlife & Countryside Act (1981) and would create a significant adverse impact to local reptile populations. This will have a ***moderate adverse impact*** at the ***Local*** level of significance.

6.2.2.3 Breeding & Nesting Birds

Whilst the tree lines situated around the site boundaries will largely be retained, areas of Bramble scrub and plantation woodland will require removal and this has the potential to directly impact nests and/or create disturbance. Therefore, it is considered the development will result in a ***minor adverse impact*** at the ***Local*** level of significance.

6.2.2.4 Dormice

The presence of Dormice was established on-site and some areas of suitable habitat will require removal in order to deliver the development (hedgerow / scrub). Without mitigation procedures put in place, this would result in the direct harm of individuals and a reduction in the local population. This would therefore be contrary to the provisions of the Conservation

of Species and Habitats Regulations (2019). This will have a ***moderate adverse impact*** at the ***County*** level of significance.

6.2.2.5 Badgers

The proposed works may require the creation of some excavations. This may lead to Badgers and other mammals becoming trapped or injured during the works. Therefore, in the absence of mitigation an ***adverse impact is possible*** at the ***site level.***

6.3 Site Operation

6.3.1 Impacts to Wildlife

The development may result in an increase in lighting within the general area from streetlights and external lights on the new houses. This can affect the behaviour, particularly foraging, of nocturnal wildlife. Therefore, an ***adverse impact is possible*** on Badgers, Dormice and bats (should they be present on site).

Noise associated with the new dwellings may create additional disturbance to Dormice, as they are nocturnal, it is anticipated that this will most likely occur for a short period of time during the early evening, when residents typically return home, to when it gets dark (particularly during the warmer summer evenings). Furthermore, other impacts may also include an increase in external lighting associated with the development and in increase of predation upon Dormice by cats.

6.3.2 Impacts on Designated Sites

The site is within 2 km of a number of LWS. Therefore, the development may result in an increase in visitor pressure upon these designated sites. As the LWS are currently accessible to the public and are likely managed for recreation e.g Southwater Country Park and considering the size of the development, it is considered there will only be a ***minor impact*** on these sites.

7.0 RECOMMENDED MITIGATION, COMPENSATION & ENHANCEMENTS

7.1 Introduction

The below sections outline the recommended measures to mitigate against any identified impact and where required provide proportionate compensation. In addition to this, measures to provide species specific ecological enhancements are provided with recommendations for habitat enhancements outlined in the BNG report that will accompanying this application.

7.2 Protection of Hedgerows, Trees & Ancient Woodland

Prior to construction works commencing the retained trees will be protected from damage during the works. All the site boundaries including the buffers outside the area of impact will be fenced using Heras fencing or similar to prevent access by machinery. Where any large mature trees are present, this will be protected using standard arboricultural tree protection measures which include protection of the canopy and prevents root compaction. Access will not be permitted behind this fencing by construction personnel.

7.3 CEMP

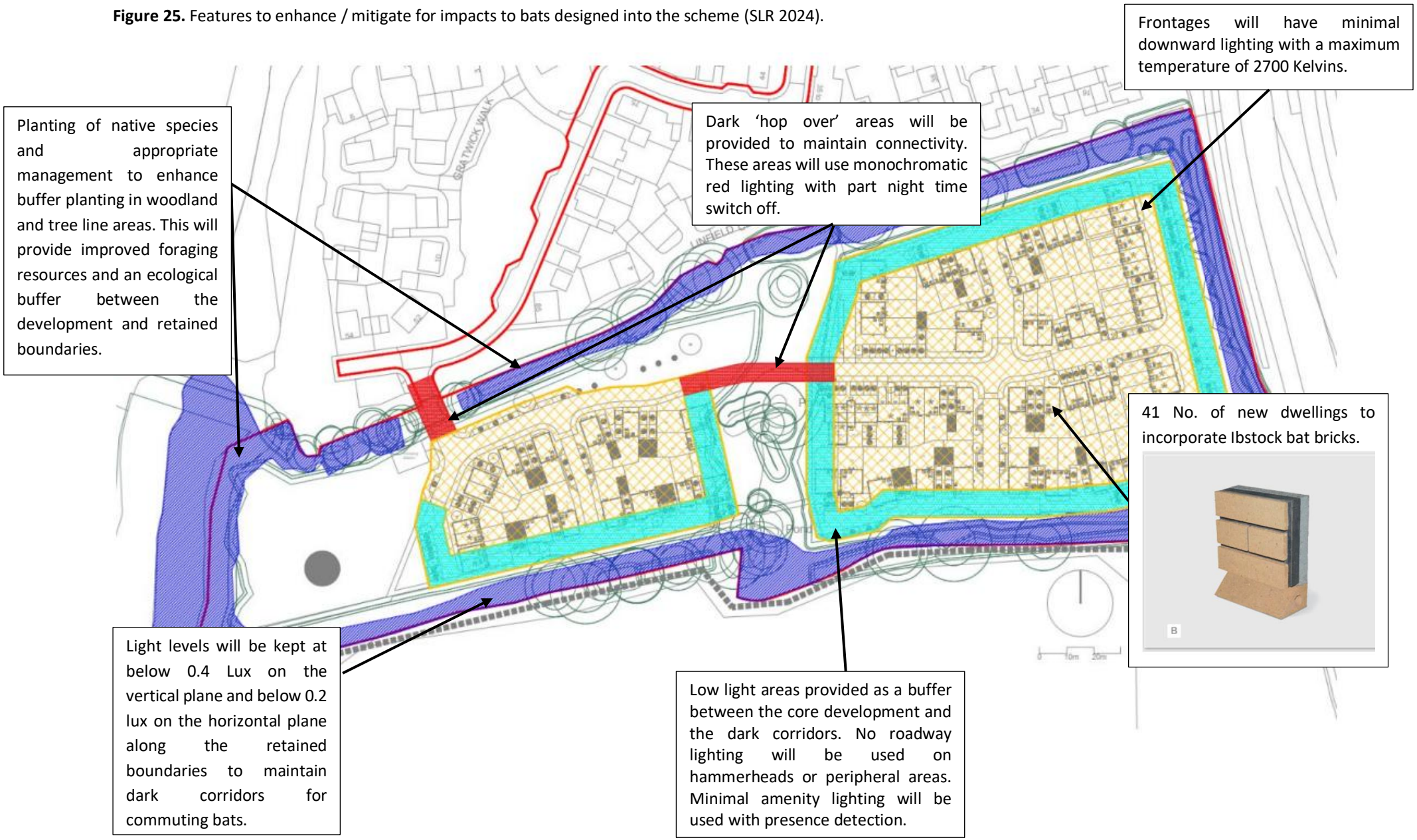
A Construction Environmental Management Plan (CEMP) will be created for the proposed development. The CEMP will include details on mitigation methods to address the minor potential for atmospheric or aquatic pollution as well as the materials to be used and reduction of noise and visual impacts on the adjacent ancient woodland.

7.4 Bats

7.4.1 Site Design

The layout has retained the areas of most importance for the commuting bats along the site boundaries (particularly along the south and west), with new planting used to enhance existing boundaries and to create buffers between the development and the retained boundaries. Lighting will be kept to a level below 0.4 Lux along the buffers provided along the site boundaries, thus limiting the disturbance to foraging and commuting bats (particularly Barbastelles) and maintaining connectivity across the site. A number of areas will also be enhanced through planting of a number of new shrubs, trees and shade tolerant herbaceous species to generate an understorey. **Fig 25** below provides an overview of the proposed site design.

Figure 25. Features to enhance / mitigate for impacts to bats designed into the scheme (SLR 2024).



7.4.2 Sensitive Lighting

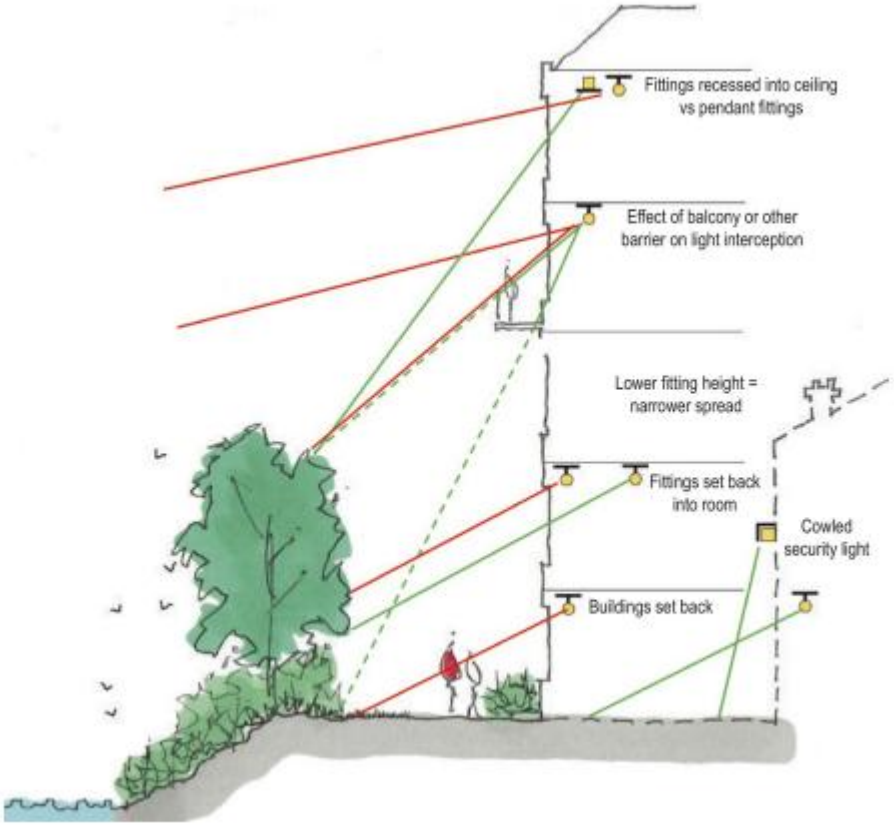
A document (*Guidance Note 08/23 Bats and Artificial Lighting in the UK*) produced via a collaboration between the Institute of Lighting Professionals (ILP) and the Bat Conservation Trust (BCT), which outlines the latest recommendations to minimise the impacts of increased artificial lighting on bats. The key recommendations within this document have been outlined below and will be implemented as far as is practicable.

'Light sources, lamps, LEDs and their fittings come in a myriad of different specifications which a lighting professional can help to select. However, the following should be considered when choosing luminaires and their potential impact on Key Habitats and features:

- *All luminaires will lack UV elements when manufactured. Metal halide, compact fluorescent sources should not be used*
- *LED luminaires will be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability*
- *A warm white light source (2700Kelvin or lower) will be adopted to reduce blue light component*
- *Light sources will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012)*
- *Internal luminaires can be recessed (as opposed to using a pendant fitting - See **Figure 26**) where installed in proximity to windows to reduce glare and light spill*
- *Waymarking inground markers (low output with cowls or similar to minimise upward light spill) to delineate path edges (see Case Study 1)*
- *Column heights will be carefully considered to minimise light spill and glare visibility. This should be balanced with the potential for increased numbers of columns and upward light reflectance as with bollards*
- *Only luminaires with a negligible or zero Upward Light Ratio, and with good optical control, should be considered - See ILP GN01*
- *Luminaires will always be mounted horizontally, with no light output above 90° and/or no upward tilt*
- *Where appropriate, external security lighting will be set on motion sensors and set to as short a possible a timer as the risk assessment will allow. For most general residential purposes, a 1 or 2 minute timer is likely to be appropriate*
- *Use of a Central Management System (CMS) with additional web-enabled devices to light on demand Use of motion sensors for local authority street lighting may not be feasible unless the authority has the potential for smart metering through a CMS*
- *The use of bollard or low-level downward-directional luminaires is strongly discouraged. This is due to a considerable range of issues, such as unacceptable glare, poor illumination efficiency, unacceptable upward light output, increased upward light scatter from surfaces and poor facial recognition which makes them unsuitable for most sites. Therefore, they should only be considered in specific cases where the lighting professional and project manager are able to resolve these issues. See Case Study 6*

- *Only if all other options have been explored, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed. However, due to the lensing and fine cut-off control of the beam inherent in modern LED luminaires, the effect of cowls and baffles is often far less than anticipated and so should not be relied upon solely'*

Figure 26. Internal lighting mitigation options (ILP 2023)



7.4.3 Trees

The trees identified on site as having suitability for roosting bats are currently to be retained during the development however, if they are to be removed they will need to be subject to a ground level roost assessment along with any further trees identified for removal. This should ideally be done over winter when the trees are not in leaf (and the PRFs are more visible). If any trees that require removal are identified as supporting PRFs, a further aerial based inspection of PRF's may then be required to determine the suitability for roosting bats, as well as emergence surveys.

7.5 Reptiles

7.5.1 Passive dispersal

As a low number of reptiles were found all within the boundary habitats and central tree line (which are being retained during the development), a passive dispersal methodology is considered proportionate. Any potentially suitable habitat that needs to be cut will be done so using a 2-stage strim under supervision of a suitably qualified ecologist. Any reptiles found

during the clearance will be relocated into the retained buffer vegetation by the ecologist. During the first stage, the vegetation will be cut down to a height no lower than 10cm. Cutting will occur directionally, starting from the outside of the suitable areas towards the boundaries (that are to be retained) to encourage reptiles into the most suitable area of habitat (**Fig 27**), with the purpose to minimise the area requiring fencing as per **Fig 28**. A second cut (the following day) will take it right down to ground level. These works will be done prior to the installation of reptile fencing which will be installed to prevent reptiles from dispersing towards the development area. This will be undertaken during the active reptile period (April – September) when temperatures are above 12ºC with sunshine.

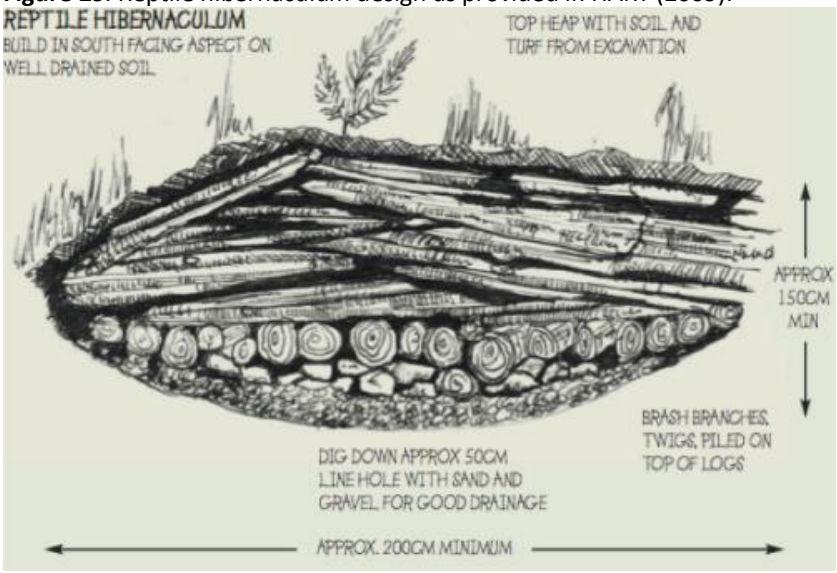
Figure 27. Indicative site layout with direction of passive dispersal (red arrows) clearance that will be undertaken. The approximate location of the 2 No hibernacula are shown by the yellow stars.

Figure 28. View of the location of the semi-permanent exclusion fencing to be installed on site (yellow dashed line).

7.5.2 Habitat Enhancement

Based on the nature of the existing habitats within the boundary habitats (i.e. areas of bordering scrub/hedgerows), the only potential enhancement anticipated would be the creation of 4 No wood-based hibernacula to provide reptiles with a suitable area to hibernate within (approximate locations shown in **Fig 27**). This will be created following the specification outlined within Reptile Habitat Management: Guidelines for Landowners (HART, 2009) (**Fig 29**).

Figure 29. Reptile hibernaculum design as provided in HART (2009).



It is not considered any other specific habitat enhancements measures will be necessary as the site already supports suitable habitat borders within which reptiles are present.

7.4.3 Proptection of the Retained Habitat

Once the passive dispersal has been completed and the site is due to commence building works, the edge of the retained areas will have a line of Heras fence or similar placed in front of it. Signage will be placed on this fence with phrases such as:

Protected Reptile Habitat, Do Not Disturb

This level of protection will remain in place for the duration of the construction works and the ecologist will make quarterly visits to the site to check on the integrity of the reptile fence and ensure any repairs are made as necessary.

7.6 Breeding & Nesting Birds

There will be a loss of breeding bird habitat as a result of the proposals as there will be a loss of plantation woodland. However, this loss will be offset by new woodland planting around the buffers of the development.

In order to avoid disturbance of breeding and nesting birds or damage to their nests, the clearance of any trees / woodland / scrub / longer grassland should take place prior to or after the bird-nesting season (March – September). If this is not possible, the area to be cleared should be thoroughly checked by an ecologist immediately prior to clearance. If any active nests are found, they should be left undisturbed with a suitable buffer of undisturbed vegetation (ca. 5m) until nestlings have fledged.

7.7 Dormice

7.7.1 European Protected Species Licence

The proposed plans will require removal of sections of hedgerow / mature trees and bramble scrub on-site. This habitat may contain Dormice, as a Dormouse nest was found (**Fig 19**) and all of this habitat is contiguous with the habitat to be directly impacted upon. Therefore, Dormice should be assumed to be present within all areas of the site. Therefore, a European Protected Species Licence (EPSL) will be required for any works impacting the hedgerows / mature trees and bramble scrub and such works must be carried out under the EPSL.

7.7.2 Vegetation Clearance

It is expected that a total of 0.284ha of suitable Dormouse habitat in the form of woodland and Bramble scrub will be cleared under a single stage / two stage methodology along with 0.07km of treeline (see **Fig 30** for location of sensitive vegetation removal). Approximately 3.2ha of plantation woodland will be cleared also (which was considered unsuitable habitat for Dormice). Any Dormice discovered during the works will be either be left undisturbed in place (if deemed safe by the ecologist) or will be relocated to a similar location to where they were found in retained habitat (e.g. if the animal is found within leaf litter, then the animal will be placed in leaf litter). 9 No. Dormouse nest boxes will be placed into treelines along the eastern and western boundaries as close to the works as possible to act as receptors in the unlikely event of any Dormice being found (**Fig 31**).

Figure 30. Proposed areas of suitable habitat to be cleared on site (orange = treeline, red = Bramble scrub) with white arrows indicating direction of single-stage/ two stage clearance.

Figure 31. Indicative locations of the 9 No. Dormouse boxes on site (white circles).

7.7.2.1 Clearance Methodology

The following methodologies outline both a single stage option and two stage option for the clearance work to be carried out once a NE EPSL has been granted.

Single stage:

- Fingertip search of all vegetation to be cleared, by the licenced ecologist, immediately prior to clearance commencing (on the same day and every day clearance occurs).
- Prior to works commencing, the named ecologist or accredited agent will provide all site operatives with a toolbox talk to inform them of the potential presence of dormice, their legal status, means of identification, habitat requirements, the methodologies required to avoid impacts on the species and what they should do if a dormouse is found. A written record that this has been undertaken, signed by attendees, will be kept and made available to Natural England should it be required.
- Hand tools will be utilised to sensitively cut vegetation down to ground level in ***a single stage***. This will be undertaken in a directional fashion to passively encourage Dormice to move away from the works area towards retained, suitable hedgerow / treeline habitat. Where areas of scrub are being cut, this will be done directionally towards the retained habitats. All arisings will be chipped on site immediately.
- Cut material will be removed from the areas and chipped and removed from site or area of working operations.
- 6 Dormouse nest boxes will be placed into the areas of retained hedgerow / treeline around the site to act as receptors in the event of any Dormice being found (**Fig 31**).
- Works will take place outside of the core breeding periods (June - September inclusive) and avoid the hibernation period (late November – March) and as such, the most appropriate timings would be April - May and late September - October

- ***No more than 50m² of habitat will be cleared in a single day***

Two Stage methodology

Clearance of the vegetation within the site will be carried out sympathetically and under the supervision of a Licenced Ecologist (LE) who will search for nests by hand and capture Dormice (if necessary) before and during clearance works. If any active animals are discovered during the works then these animals will be captured and placed, with their original nest where present, within previously erected nest boxes (outlined above). If any hibernation nests/potential hibernation nests are identified during the first stage of the clearance over winter, these will be left undisturbed, with vegetation retained in a buffer around the nest, due to the vulnerable nature of hibernating or torpid Dormice. All arisings / cuttings will also be removed from site each day following a hand search by the licenced ecologist to prevent re-occupation.

- The licenced ecologist will deliver a toolbox talk to the vegetation clearance contractors, detailing the sensitive measures required. The ecologist will then supervise all vegetation clearance. No clearance will be undertaken without the supervision of the ecologist.
- To avoid any impacts to Dormice the removal of all vegetation will adopt a two staged approach with the upper sections removed over winter (when Dormice may be hibernating in the lower parts) and the trunk and roots removed during spring.

<u>Winter clearance</u>

This should remove sufficient vegetation to persuade Dormice emerging from hibernation in April or May to move to more appropriate habitat nearby. Once emergence is complete, by the end of May, full clearance of the area can continue. Winter clearance should thus be planned as a two- stage process.

Trees and shrubs within the area in question should be cut down between November and March inclusive, to avoid both the bird nesting season and the majority of the period when Dormice might be found in nests above ground. Clearance should be done by hand and in a sensitive manner, to minimise the likelihood of disturbing or killing hibernating Dormice. Similarly, the process of removing the cut material should, as far as possible, be designed to protect Dormice hibernating on the ground. This can involve such techniques as:

- Sacrificing a single ‘haul- route’, which has first been cleared by hand if necessary;
- Using a long-reach mechanical grab and/or limiting the number of ‘drag-lines’ along which stems are removed; and/or
- Directional felling to minimise the ground impact.

In addition to the above, all vegetation being removed, and the ground beneath, will first be hand searched as far as possible to identify the presence of any hibernation nests. Similarly, any proposed drag/haul routes will first be searched by hand before such usage commences. If any hibernation nests are identified, these will be retained and protected and, if present within a haul/drag routes these will be re-routed to avoid the retained nest.

Spring clearance

Once the above works have been completed, the roots will be removed using hand tools where possible or with a digger using a toothed bucket under the supervision of the licenced ecologist from mid-April onwards (provided the temperatures have been warm enough for Dormice to emerge from hibernation at the discretion of the ecologist).

7.7.3 Minimising Disturbance

Prior to construction works commencing the retained scrub / tree lines / hedgerow will be protected from damage during the works. They will be fenced using Heras fencing or similar to prevent access by machinery. Where large mature trees are present, they will be protected using standard arboricultural tree protection measures which include protection of the canopy and prevention of root compaction. Access will not be permitted behind this fencing by construction personnel. This will protect Dormouse habitat from direct damage/disturbance and dust. Signage will also be added (on top of the usual warnings for tree protective fencing) stating things such as:

Protected Dormouse Habitat

It is an Offence to Damage / Disturb this Habitat

This will also provide protection for wildlife species, including Badgers, that may be using the margins of the site as well as bats, invertebrates, reptiles and other mammals. No vehicles will enter the protective ring fencing and no materials will be stored within their circumference. All protective fencing must be in place prior to any construction machinery arriving on site, before any works on site get underway, and will remain in place until all work is completed. This will minimise the level of disturbance within the boundary habitat / buffer areas during the works and ensure the habitats and any wildlife species that may be using them are protected.

7.7.4 Habitat Compensation / Connectivity

The permanent loss of approximately 0.284ha of Bramble and the loss of 0.012km of treeline will be compensated for through enhancement of treeline and woodland planting site enhancing 0.306ha/0.379km of treeline through woodland planting gapping up of areas to improve connectivity. Connectivity will be maintained over footpaths through the treeline by using trellis planted with climbers to create a continuous canopy.

The clearance of the vegetation won't result in any fragmentation of habitat, with connectivity maintained around the boundaries of the site.

7.7.5 Mitigating Operational Impacts

7.7.5.1 Lighting

A sensitive lighting scheme for the site will be implemented as described in **Section 6.3.2** which includes specific recommendations for lighting types to mitigate against the impact of artificial lighting on nocturnal species. Where there is any light spill into the newly created and retained boundary habitats, this is also kept to a minimum level of no higher than 0.5 Lux. By

extension, this strategy also ensures the boundary vegetation areas being used by Dormice (and the new planting) will also avoid any additional light spill.

7.7.5.2 Cat Predation

To minimise the risks of cat predation once the houses have been completed and the new occupants moved in, thorny species (such as *Crataegus monogyna*) will be planted up within the retained scrub / newly planted mixed scrub on site and along the boundaries of the treelines at a minimum density of 1 per linear metre. As these species mature, they will provide a natural deterrent to cats moving into wooded areas on site.

7.7.5.3 Dormouse Boxes

As iterated in the above sections, prior to the commencement of vegetation removal, at least 9 No Dormouse boxes will be installed by a suitably qualified ecologist in suitable habitat to be retained to enhance the site for Dormice (as per **Fig 31**). The boxes will be checked at years 1 – 10 post clearance works by a licenced ecologist and the data submitted to the National Dormouse Monitoring Programme (NDMP).

7.7.6 Newly Planted Areas

Scrub / tree planting will be carried out within the application site prior to the commencement of works that will compensate for the loss of vegetation suitable for Dormice. These areas will require appropriate management, detailed and secured by the eventual EPS licence, to ensure they remain suitable for use by Dormice.

Figure 32. Proposed areas of Dormouse compensation planting (green = woodland enhancement, circles = planted trellises).

7.7.7 Responsibility

The plants will be managed for a minimum period of 12 months by the developer post completion of development, covering the first part of the establishment period. Ownership / management responsibilities for the POS will then be transferred to a management company which is as yet unappointed.

7.8 Badgers

Although no evidence of Badgers was recorded on site, the site does have potential for foraging and commuting Badgers. Therefore, a walkover of the site is recommended to be undertaken by a suitably qualified ecologist in search of recent Badger activity immediately prior to works commencing. In the case evidence of recent Badger activity was identified, further survey works may be required to assess the status of any potential Badger setts on site.

Further to this, during the construction phase, any open excavations left overnight should either be covered to prevent commuting Badgers falling in or escape ladders should be used to prevent them from becoming trapped. Any open pipework should be checked and then capped nightly.

7.9 Biodiversity Net Gain (BNG)

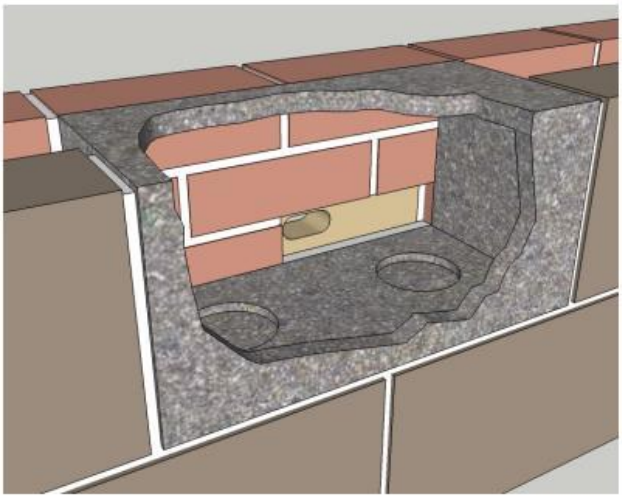
A BNG Assessment has been completed for the development (and will be updated as proposals are finalised) with the results presented in a dedicated report.

7.10 Enhancements

7.10.1 Birds

To act as biodiversity enhancement, Swift bricks will be incorporated into the new dwellings in a 1:1 ratio to the number of units (82 bricks). The 'CJ Wildlife Swift maxi nesting box' (**Fig 36**) with entrance via a CJ Wildlife 'Cambridge Swift full-face brick' will be used (The Cambridge System is a concept comprising an entrance piece and a nest box embedded in the cavity and inner leaf. It is particularly suited to gable ends at roof-space level). If this model is not suitable for the building specifications, an alternative swift box with internal floor space exceeding 400cm squared must be used. A list of swift boxes can be found on the RSPB website via the following link (https://www.rspb.org.uk/globalassets/downloads/about-swifts/swift-bricks.pdf) however it is worth noting that some of these do not have an internal floor space exceeding 400cm squared and are therefore not considered appropriate.

Figure 36. A schematic of how the Cambridge full face Swift brick leads into a cavity created by the prior installation of the Swift maxi nesting box.



7.10.2 Bats

Half of the newly built dwellings (41 No. in total) will also have Ibstock bat bricks (**Fig 37**) integrated within the external brick work. These features are entirely self-contained and available in a variety of different colours to match different construction materials. They should ideally be placed on an elevation which will benefit from some degree of sunlight exposure and be located away from windows.

Figure 37. Ibstock bat brick 'B' which will be integrated into the gable walls of half of the new dwellings on site.

7.10.3 Hedgehogs

To ensure permeability for small mammals across the site, the garden fences of the properties will ensure at least 2 gaps are present within the gravel boards / bases of each fence line to allow for movement of Hedgehogs between gardens and into the wider area. The gaps should be at least 15 cm high by 15 cm wide with permeability for small mammals.

Small signage could be installed at these points to ensure they remain open upon completion of the development. The People's Trust for Endangered Species provide such signage, the purchase of which also supports conservation efforts (**Fig 38**).

Figure 38. Example of Hedgehog Highway signage to be placed above fence gaps provided to allow movements between gardens.

8.0 conclusion

An Ecological Impact Assessment was undertaken of the site known as 'Land at Campfields, Southwater' in relation to the proposed development with new dwellings, areas of landscaping (including for the purpose of BNG). The site has been identified as having a confirmed presence of foraging and commuting bats of regional value, confirmed low populations of Slow Worms (*Anguis fragilis*) and Common Lizards (*Zootoca vivipara*) and confirmed presence of Hazel Dormice and Birds of Conservation Concern (BoCC). A Licence will be required from NE for any works impact the Dormice habitat. A moderate potential for foraging and commuting badgers has also been identified. The site layout has been designed so that buffers will be retained to maintain foraging and community habitat for bats and suitable habitat for reptiles and Hazel Dormice. Precautionary measures have also been recommended to reduce any impacts.

9.0 REFERENCES

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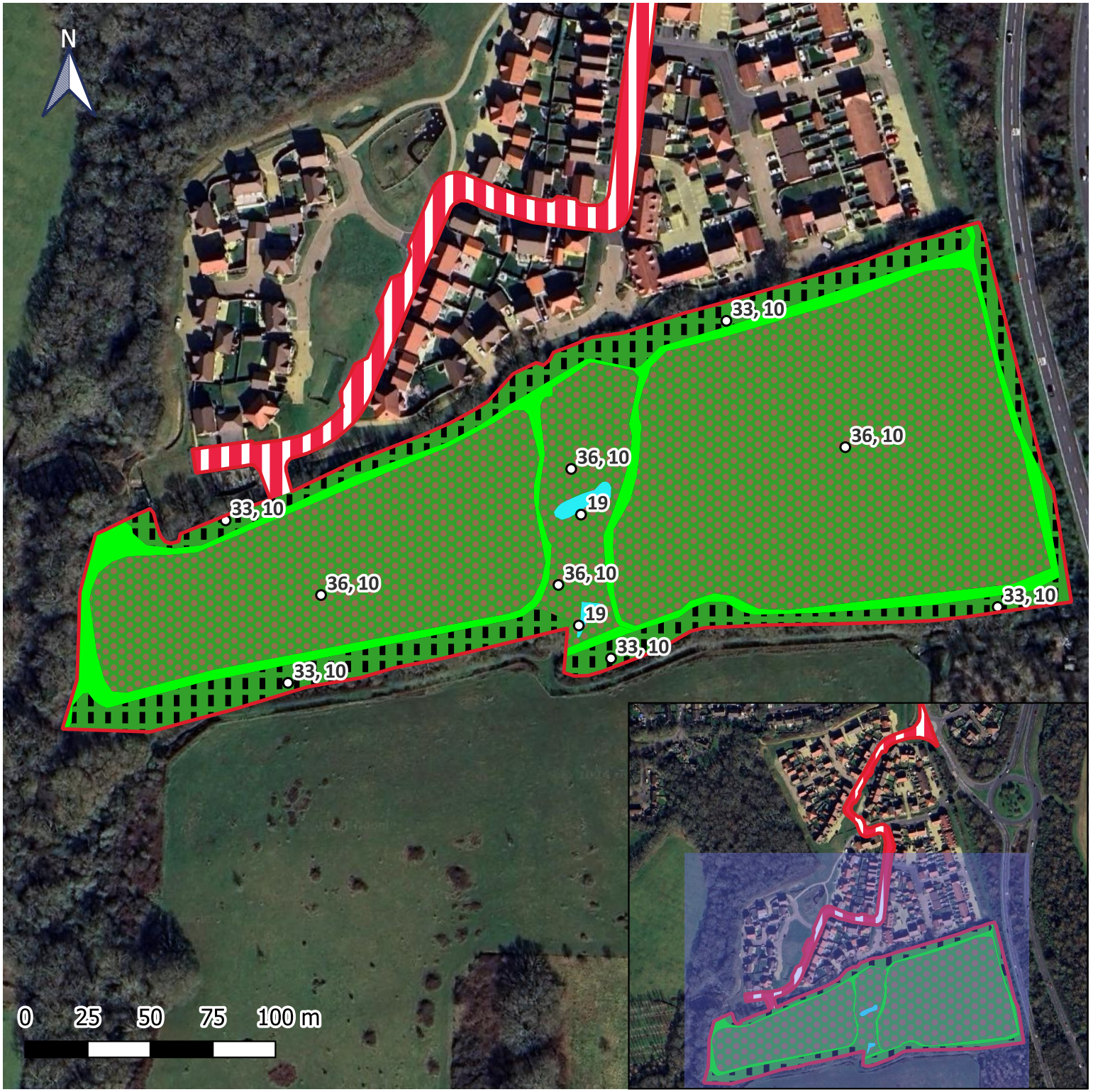

Legend

- Site Boundary
- Modified grassland (g4)
- Other woodland-broadleaved (w1g)
  Secondary code(s):
  10 - Scattered scrub
  36 - Plantation
- Developed land. sealed surface (u1b)
- Standing open waters and canals (r1)
  Secondary code(s):
  19 - Pond
- Line of trees (33)
  Secondary code(s):
  10 - Scattered scrub

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Map	UK Habs Map
Site	Campsfield, Southwater
Client	Miller Homes
Date	01/04/2025