



Land at Boorley Gardens

Preliminary Ecological Appraisal
(PEA)

Author(s):

Lewis Lakudzala BSc (Hons), MRes

Client:

Halebourne Group

13th March 2024

Report	Preliminary Ecological Appraisal (PEA)
Site Name	Land at Boorley Gardens
Author(s)	Lewis Lakudzala BSc (Hons), MRes
Checked by	Lyndsey Barratt BSc (Hons) PGCert MCIEEM
Client	Halebourne Group
Date of Issue	24 th November 2023
Revision(s)	13 th March 2024 – 4.2 / 4.5.2 / 5.2.2 / 7.0 / 8.0
Status	Final for submission

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Executive Summary

Ecosupport Ltd was instructed by Halebourne Group to undertake a Preliminary Ecological Appraisal (PEA) of Land at Boorley Gardens, Botley. This land parcel was previously part of a reserve matters application granted in 2022 (RM/19/86658), however this document pertains to a new application under different ownership. The PEA 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:

- Walkover Survey with UK Habs Habitat Assessment (September 2023)
- Preliminary Roost Assessment (Trees) (September 2023)
- Biodiversity Net Gain (BNG) Metric 4.0 Assessment (November 2023)

Following the conclusion of the above survey work the proposed works may be subject to adverse impacts in the absence of suitable mitigation / compensation:

- Moderate potential for foraging and commuting Bats
- Moderate potential for breeding and nesting Birds
- Moderate potential for foraging and commuting Badgers

In the absence of any mitigation measures, the proposed development is anticipated to result in **minor adverse impacts**. Measures have been outlined within **section 6.0** of to mitigate where impacts identified by the proposed development.

1.0 INTRODUCTION

1.1 Brief

Ecosupport Ltd was instructed by Halebourne Group to undertake a Preliminary Ecological Appraisal (PEA) of Land at Boorley Gardens, Botley (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 where possible at PEA stage.

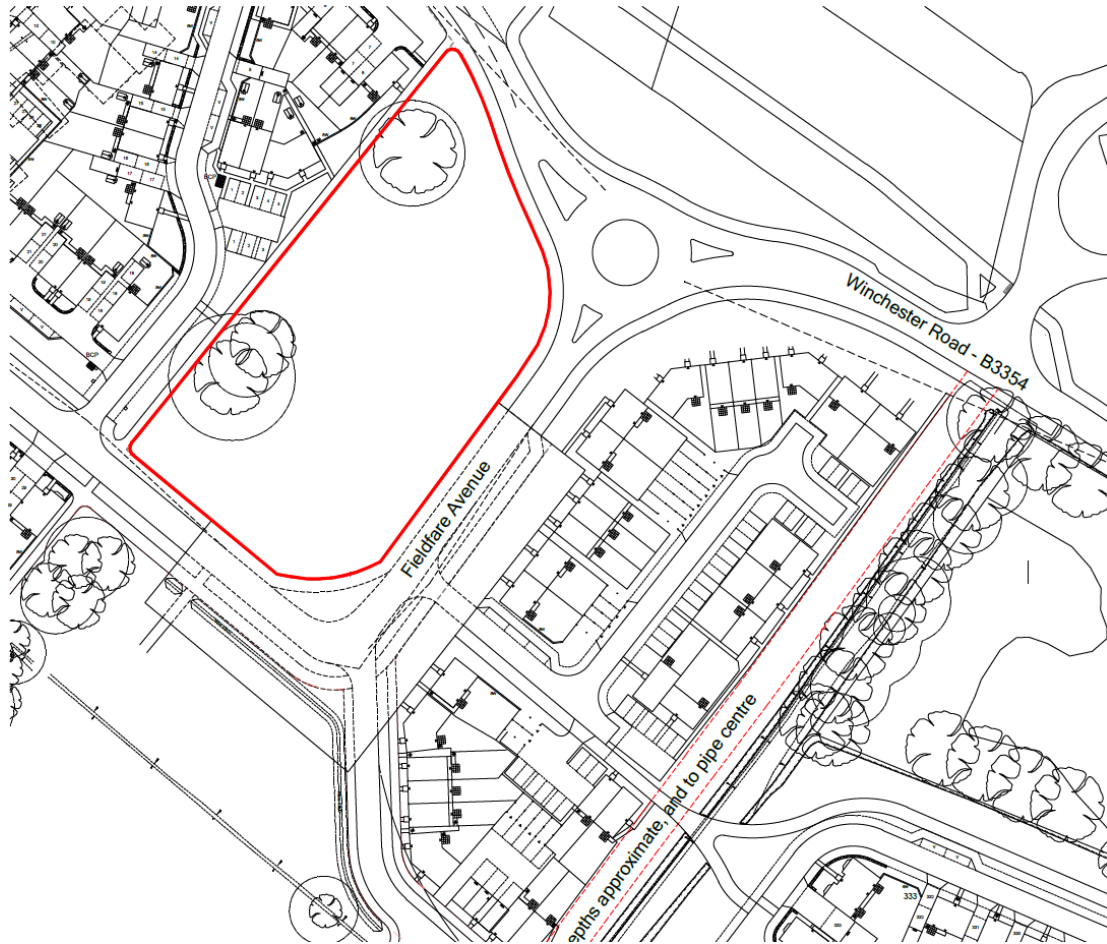
NB: If the works do not take place within 18 months of this report¹ then the findings of this survey will no longer be considered valid and may require updating.

1.2 Site Description & Location

The site comprises of a parcel of land located within an existing development site located in Hedge End, Botley, Hampshire, SO32 2BX (centered on OS grid reference SU 5037114996) (**Fig 1**). The parcel consists of grassland with mature trees and disturbed ground around the boundaries as a result of construction activities. The site is bound by Fieldfare Avenue and an active development to the south with Winchester Road bordering the site to the east. A large grassland parcel and agricultural buildings bound the site to the north. The wider environ is mixed with grassland parcels and scattered mature trees located to the west, but residential and commercial development present to the east.

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

Figure 1. Location plan for the site with redline boundary shown (Halebourne Group, 2023).



1.3 Proposed Development

It is understood that the development entails the construction of a care home and associated landscaping.

2.0 RELEVANT LEGISLATION AND POLICY

2.1 Legislation

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

The Conservation of Habitats and Species Regulations 2019 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 is 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)

The Natural Environment and Rural Communities (NERC) Act 2006 requires that public bodies have due regard to the conservation of biodiversity. This means that Planning authorities must consider biodiversity when planning or undertaking activities. Section 41 of the Act lists species found in England which were identified as requiring action under the UK Biodiversity Action Plan and which continue to be regarded as conservation priorities under the *UK Post – 2010 Biodiversity Framework*.

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) (2023) 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 – Eastleigh Borough Council (2022)

The Eastleigh Borough Local Plan 2016 – 2036 has a number of policies relating to ecology with the relevant ones listed below;

'General Approach

1. The Council will work with statutory and voluntary agencies and developers, and will determine planning applications, to:

a. protect, conserve and enhance all:

i. international, national and local nature conservation designations;

and

ii. networks of natural habitats and features, including the Local Ecological Network, Priority Biodiversity Areas and Priority Biodiversity Links, watercourses, wetland complexes, woodland trees, and trees and hedgerows important to biodiversity and local character; and facilitate their adaptation to climate change wherever possible;

b. assist in achieving national, county and local biodiversity targets as set out in Biodiversity Action Plans (BAPs);

c. seek a net gain of biodiversity on all development sites (including sites for redevelopment) through the protection, enhancement and connection of existing and provision of new habitats and features of nature conservation interest compatible with the native biodiversity characteristics of the Borough, having regard to local geodiversity and soils; and

d. contribute to major elements of the PfSH Green Infrastructure Strategy and other strategies for the provision and enhancement of multifunctional green infrastructure including green routes, ecological networks and biodiversity enhancements (see strategic policy S9).

International Designations

2. Development which is likely (either individually or in combination with other developments) to adversely affect the integrity of an international or European nature conservation site will not be permitted subject only to imperative reasons of overriding public interest and securing any necessary compensatory measures in the absence of alternative solutions. A 'project level' Habitat Regulations Assessment will be required where there are likely significant effects or uncertainty. Any mitigation measures required to ensure no adverse impact must be implemented at the appropriate time.

3. The Council will work with PfSH, Natural England, the Environment Agency and other wildlife organisations to develop and implement with developers a strategic approach to the

protection and enhancement of international and European sites from the direct and indirect effects of development. Within Eastleigh Borough this will include:

a. implementing:

i. the Solent Recreation Mitigation Strategy (requiring contributions from residential developments within 5.6 kilometres of the Solent Special Protection Area to the Strategy); and

ii. the interim and any future New Forest Recreation Mitigation Strategy if required; or alternative agreed site specific measures to address recreational disturbance;

b. preserving the water quality and flows within the Itchen and Hamble, Southampton Water and Solent;

c. protecting the River Itchen SAC, in particular the maintenance and where appropriate restoration of habitats and qualifying species to favourable conservation status (as defined by article 1 of the Habitats Directive); and

d. seek contributions towards measures set out in the Southern Damselfly Conservation Strategy (or other strategy) specifically to deliver biodiversity net gain.

National and Local Designations

4. Development will not be permitted if it is likely (either individually or in combination with other developments) to have a direct or indirect adverse effect on a Site of Special Scientific Interest (SSSI), Site of Importance for Nature Conservation (SINC) or Local Nature Reserve (LNR) as shown on the policies map (or on a more recent plan provided by the Hampshire Biodiversity Information Centre) unless it can be demonstrated that:

a. there are no alternative solutions;

b. the adverse effects are unavoidable;

c. measures are taken to mitigate or, as a last resort, compensate for the adverse effects;

d. there is an overall biodiversity net gain; and

e. if there are any residual adverse effects which cannot be avoided, mitigated or compensated, the benefits of the development must clearly outweigh the adverse effects on the nature conservation value of the site and any broader impacts on national and local designations.

Priority habitats, protected and priority species and the local ecological network

5. Development will not be permitted if it is likely (either individually or in combination with other developments) to have a direct or indirect adverse effect on priority

habitats, protected or priority species, or on the local ecological network unless it can be demonstrated that:

- a. there are no alternative solutions;*
- b. the adverse effects are unavoidable;*
- c. measures are taken to mitigate or, as a last resort, compensate for the adverse effects;*
- d. there is an overall biodiversity net gain; and*
- e. if there are any residual adverse effects, the benefits of the development clearly outweigh the adverse effects on priority habitats, priority and protected species, and the local ecological network.*

Irreplaceable habitats

6. Development will not be permitted if it results in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees), unless there are wholly exceptional reasons and a suitable compensation strategy exists.

Buffers

7. Buffers free from development will be provided to designated sites to avoid/mitigate impacts, including recreational impact and impacts on edge habitats, and to maintain dark skies.

Surveys

8. Development will not be permitted unless it can be demonstrated that:

- a. there have been thorough habitat and species surveys;*
- b. the great crested newt strategic survey and strategy have been considered in all developments within 500m of a great crested newt pond; and*
- c. the strategic bat trapping survey has been considered in all developments within the locality of a woodland or connected habitat networks.'*

2.3 Biodiversity Action Plans & UK Post-2010 Biodiversity Framework

The UK Post-2010 Biodiversity Framework (JNCC & DEFRA, 2010) supersedes the UK Biodiversity Action Plan 1992-2012 (UKBAP), setting out goals relating to nature conservation at a UK scale, for example the reduction and reversal in the decline of threatened species and improving the status of biodiversity. The specific habitats and species contained within the UKBAP continue to be regarded as conservation priorities under the UK Post-2010 Biodiversity Framework and are required to be a material consideration in the planning process under the 2021 NPPF.

3.0 METHODOLOGY

3.1 Desk Study

3.1.1 Designated sites

A search for designated sites within 1km of the site was undertaken using freely available online resources.

3.1.2 Waterbodies

Any ponds located within 500m 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 work which forms the basis of the findings of this report was carried out by Lewis Lakudzala BSc (Hons) MRes on the 26th September 2023.

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 4.0 calculation. Where appropriate primary habitat codes were used although for some habitat types, the use of secondary habitat codes was necessary as well.

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

An assessment was made of the suitability of the trees on site to support roosting bats based on the presence of any Potential Roost Features (PRFs) during September 2023. This involved the use of 8 x 42 close focus binoculars and a high-powered torch (where required) for a more detailed inspection of any features. The survey conformed to current best practice guidance as described in *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, 2023) and was conducted by Lewis Lakudzala.

Table 1. Guidelines for assessing the potential suitability of a built structure for roosting bats (reproduced from BCT (Collins (ed) 2023).

Suitability	Description of Roosting Habitats
Negligible	No obvious habitat features on site likely to be used by roosting bats; however, a small element of uncertainty remains as bats can use small and apparently unsuitable features on occasion.
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically at any time of the year. 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 larger numbers of bats (i.e., unlikely to be suitable for maternity and not a classic cool/stable hibernation site, but could be used by individual hibernating bats ³ .
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions ² and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only, such as maternity and hibernation – the categorisation described in this table is made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure 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 ² and surrounding habitat. These structures have the potential to support high conservation status roosts, e.g., maternity or classic cool/stable hibernation site.
2 For example, in terms of temperature, humidity, height above ground level, light levels or levels of disturbance. 3 Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten et al., 2016 and Jansen et al., 2022). Common pipistrelle swarming has been observed in the UK (Bell, 2022 and Tomlinson, 2020) and winter hibernation of numbers of this species has been detected at Seaton Delaval Hall in Northumberland (National Trust, 2018). This phenomenon requires some research in the UK, but ecologists should be aware of the potential for larger numbers of this species to be present during the autumn and winter in prominent buildings in the landscape, urban or otherwise.	

3.3 Assessment Methodology

3.3.1 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). Although this assessment does not constitute a formal Ecological/ Environmental Impact Assessment, the CIEEM guidelines provide a useful framework for assessing ecological impacts at any level.

3.3.2 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.

3.4 Biodiversity Net Gain

3.4.1 Establishing Pre-intervention Biodiversity Units

For the purposes of this report the Defra 4.0 metric has been utilized for the establishment of pre-intervention and post intervention biodiversity units for the site.

3.4.2 Establishing Pre-intervention Biodiversity Units

The Defra metric in effect achieves a pre - intervention (i.e. prior to any works having been undertaken) biodiversity unit score for a given site through the multiplication of the following factors:

Area of habitat x distinctiveness x condition x strategic significance x ecological connectivity = No of biodiversity units

The calculations of pre-intervention units are based on the habitat types and associated conditions identified during the onsite phase 1 habitat assessment. In the absence of the provision of exact areas/measurements, the areas of pre-invention habitats were estimated using a combination of the phase 1 survey/ habitat assessment and satellite imagery, and therefore some margin of error is anticipated within the enclosed calculations. Notwithstanding this, every effort has been made to ensure the calculations are as accurate as possible, and it is considered that this document provides a good indication of the potential net change following the proposed development, and therefore it is not considered to have a significant impact on the findings of this report.

NB the information on how the scores / multipliers are applied for distinctiveness, condition, strategic significance and ecological connectivity are outlined within the User Guide (Crosher et al., 2021) associated with the metric and are not re-produced here.

3.4.3 Establishing Post Intervention Biodiversity Units

Once the pre-intervention (before impact) number of Biodiversity Units (BUs) has been calculated following the steps outlined in the previous section, a new set of multipliers / scores are added to those used for the pre-intervention calculation to establish the post intervention unit score based on the nature of the works being conducted. The formula used is as follows:

Area of habitat x distinctiveness x condition x strategic significance x connectivity x difficulty to create x time to target condition x off site risk (this multiplier is only required when enhancements / compensation is being proposed off site) = No of BUs

NB the full workings as calculated within the Defra 4.0 metric tool can be provided if required.

3.5 Limitations

3.5.1 Habitat Assessment

The survey was conducted outside of the optimal season for vascular flowering plants, however 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.

3.5.2 Preliminary Roost Assessment (Trees)

Due to heras fencing around the mature oaks along the northern boundary, the preliminary roost assessment (PRA) had to be carried out from a distance, therefore some PRFs may not have been visible. This is not considered to impact the recommendations within the report as all trees are to be retained under current proposals. In the case that any trees are to be removed, A full PRA will be carried out.

3.5.3 Biodiversity Net Gain

As the site is located within the larger Boorley Green development, some of the grassland on site has been damaged through construction related activities (**See 4.2.2**). As a result, the baseline habitats in the BNG have been assessed as those that were present in December 2021 prior to the commencement of construction.

4.0 ECOLOGICAL BASELINE

4.1 Designated Sites

No statutory designated sites are within 1km of the site.

No non-statutory designated sites are within 1km of the site.

4.2 Vegetation Survey Results

The vegetation within the site has been described below using the UK Habs Habitat Definitions Version 2.0 (UKHab Ltd., 2023). The below species noted 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:

- Modified grassland (g4) – *with scattered rushes (14), scattered trees (32)*
- Artificially unvegetated, unsealed surface (u1c) - *with ruderal / ephemeral (81), with bare ground (510)*

4.2.1 Modified grassland (g3c) – *with scattered rushes (14)*

The main habitat on site came in the form of modified grassland (**Figures 2a** and **2b**) which was present on the majority of the site, including the vegetated bund. Where the site was previously used as horse pasture until 2018 the site had since developed into grassland. Species diversity was similar between the main parcel and vegetated bund, with Rushes (*Juncaceae*), and False Oat Grass (*Arrhenatherum elatius*) common throughout these areas. The grassland supported Field Wood Rush (*Luzula campestris*), False Oat Grass (*Arrhenatherum elatius*), Common Sorrel (*Rumex acetosa*), Redshank (*Persicaria maculosa*), Willowherb (*Chamerion angustifolium*), Great Willowherb (*Epilobium hirsutum*), White Clover (*Trifolium repens*), Cow's Parsley (*Anthriscus sylvestris*), Common Poppy (*Papaver rhoeas*), Fleabane (*Pulicaria dysenterica*), Marsh Thistle (*Cirsium palustre*), Curled Dock (*Rumex crispus*), Common Nettle (*Urtica dioica*), Dandelion (*Taraxacum agg.*) and Prickly Sow-thistle (*Sonchus asper*).

Figure 2a. View of the modified grassland on the vegetated bund on the south of the site taken September 2023).



Figure 2b. View of the modified grassland on the north of site (taken September 2023).



Three mature Oak (*Quercus robur*) were present along the northern boundary of the site (Figure 3).

Figure 3. View of a mature Oak along the northern boundary of site (taken September 2023).



4.2.2 Artificially unvegetated, unsealed surface (u1c) - with ruderal / ephemeral (81), with bare ground (510)

The second habitat on site was artificially unvegetated, unsealed surface, which was present on the western side of the site as a result of construction activities (**Fig 4**). This area had been mostly cleared therefore supported mostly bare ground (510), however small amounts of establishing ruderal species were present (81). Species recorded include Common Nettle, Ragwort and Thistle (*Cirsium* sp.)

Figure 4. View of the artificially unvegetated, unsealed surface on the west of site (taken September 2023).



4.3 Bat Survey Results

4.3.1 Pre-existing Data

There were 7 records of bats recorded within 2km of the site with species including Common Pipistrelle (*Pipistrellus pipistrellus*) (2), Soprano Pipistrelle (*Pipistrellus pygmaeus*) (2), Serotine (*Eptesicus serotinus*) (1), Daubenton's Bat (*Myotis daubentonii*) (1), and Brown Long-eared Bat (*Plecotus auritus*) (1).

4.3.2 Previous Survey Work (2019)

The phase II bat surveys conducted as part of the previous reserve matters application (RM/19/86658), which included the Land at Boorley Gardens site, recorded bat activity dominated by Common Pipistrelle with occasional Soprano Pipistrelle (*Pipistrellus pygmaeus*) and single registrations of Long-eared bats (*Plecotus sp.*) and *Myotis sp.* The highest level of activity was recorded along Ford Lake brook.

In addition to the species recorded during the activity transects low numbers of Noctule (*Nyctalus noctula*), Serotine (*Eptesicus serotinus*), Leislars (*Nyctalus leisleri*), Barbastelle (*Barbastella barbastellus*) and Nathusius Pipistrelle (*Pipistrellus nathusii*) calls were also recorded.

4.3.3 Trees

No trees on site were identified to support potential for roosting bats, however it should be considered that the PRA was carried out from distance due to heras fencing. In the case that any trees are to be removed, an updated preliminary roost assessment will be required.

4.3.4 Buildings

There were no buildings located within the redline boundary of the site.

4.3.5 Foraging and Commuting habitat

Habitat features on site such as the mature trees and grassland provide a valuable resource for foraging and commuting bats. It should however be considered that the site is an active construction site and therefore supports high levels of light in addition to foot and vehicular traffic continuously, including during nighttime.

Based on the nature of the habitats on site and those immediately surrounding the site, in addition to bat records identified, the site is considered to be of **Moderate potential** for foraging and commuting bats.

4.4 Badgers

4.4.1 Pre-existing Information

No Badger (*Meles meles*) records were identified within the 1km search radius.

4.4.2 Site Assessment

During the walkover no evidence of Badgers was recorded on site although the grassland and mature trees can be considered to provide a suitable foraging habitat for badgers. Taking this into account, the site is considered to support **Moderate** for foraging and commuting badgers.

4.5 Reptiles

4.5.1 Pre-existing Information

There were 3 records of Reptiles recorded within 1km of the site with species including Slow Worm (*Anguis fragilis*) (1), Grass Snake (*Natrix helvetica*) (1), Common Lizard (*Zootoca vivipara*) (1).

4.5.2 Site Assessment

The grassland on site supported the structure and heterogeneity favoured by reptile species, however it is considered unlikely that reptiles are present on site due to historic use and isolation. The site was previously part of a larger development that was subject to a PEA in 2018 which identified unsuitable habitat for reptiles on the site (RM/19/86658). Due to this development the habitats around the site have since been cleared and reptile exclusion fencing erected along the northern boundary. As a result, the habitats on site have been isolated since 2019 and support no connectivity to suitable reptile habitat. As the isolation of the habitats occurred prior to the habitats on site becoming suitable for reptiles it is considered unlikely that reptiles are present on site, as there are significant barriers to movement. Taking all of this into account, and the reptile records identified within 1km, the site is considered to be of **Negligible potential** for reptile species.

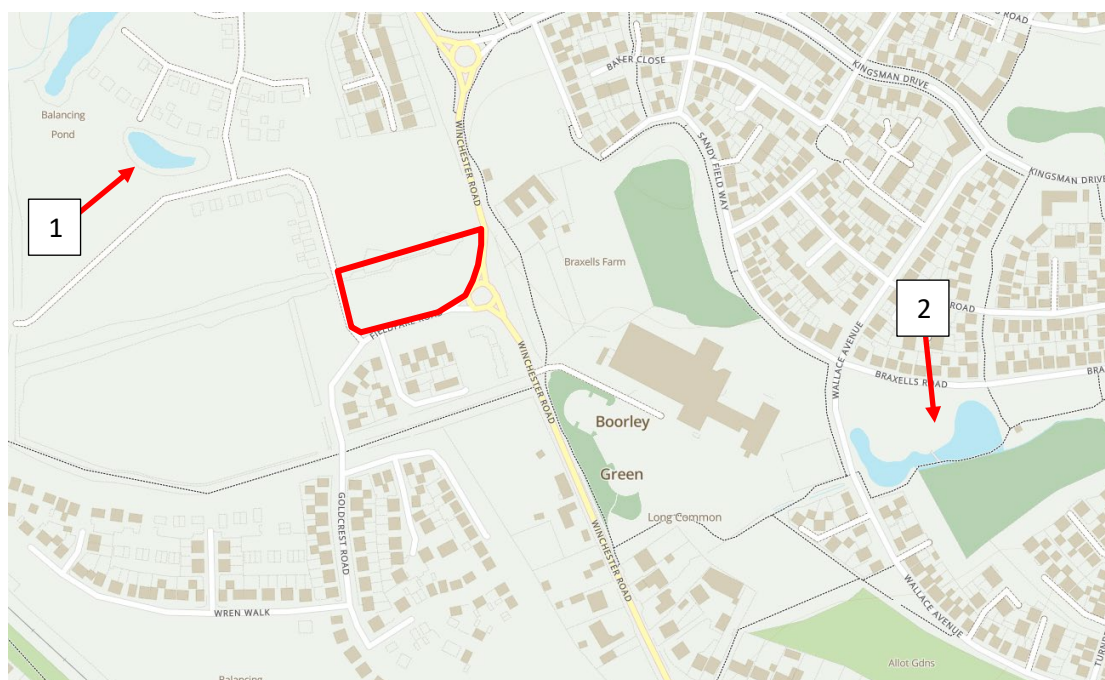
4.6 Great Crested Newts

4.6.1 Pre-existing Information

There was 1 record of Great Crested Newt (*Triturus cristatus*) presence within 1km of the site, located approximately 0.8km to the north of site.

4.6.2 Waterbodies

Two waterbodies were found within 500m of the site located on site to the northwest and east of the site (**Fig 5**). It should be noted that GCN were not recorded on site as part of the adjacent reserved matters application (RM/19/86658) and the associated exclusion fencing has remained in perpetuity since this time. In combination with the isolation created through construction activities as mentioned in **section 4.5.2**, the site does not support connectivity to the waterbodies identified within 500m of the site.

Figure 5. Waterbodies recorded within 500m of the site.

4.6.3 Site Assessment

The grassland habitats on site support the structure and heterogeneity favored by terrestrial GCN with a varied sward and tussocky structure. There is however no connectivity to the waterbodies within 500m of the site due to exclusion fencing and fragmentation caused by construction activities and Winchester Road B3354. The site is therefore considered to support **Negligible** potential for terrestrial GCN.

4.8 Breeding and Nesting Birds

4.8.1 Pre-existing Information

There were 1477 records of 295 different species of birds of conservation concern within 1 km of the site including a number of records for red listed species (the full list will not be reproduced here due to the number of records).

4.8.2 Site Assessment

The mature trees offer a variety of nesting opportunities for a range of breeding and nesting birds. Therefore, the site is considered to be of **Moderate potential** for breeding and nesting birds.

5.0 LIKELY ECOLOGICAL IMPACTS IN ABSENCE OF MITIGATION

5.1 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.

5.2 Site Preparation and Construction

5.2.1 Impacts to Habitats

The habitats on site, such as the artificial unvegetated, unsealed surface (bare ground), are of limited ecological value. However, the mature trees and modified grassland are of a greater ecological value, so in the absence of mitigation, **adverse impacts are possible** to habitats at the **site-local level**

5.2.2 Impacts to Wildlife

5.2.1.1 Bats

Suitable habitat for foraging and commuting bats was also identified in the form of three mature oak trees along the northern boundary. Construction works directly adjacent to these could result in the disturbance of foraging habitat and commuting routes, however it should be considered that the site is highly disturbed as it is located within a construction site (active since 2021). In the absence of mitigation, this is considered to have a likely **negligible adverse impact** at the **local level**.

5.2.1.2 Birds

At this stage it is understood the mature trees on site are to be retained. Therefore, proposals will have an **negligible adverse impact** on breeding and nesting birds.

5.2.1.3 Mammals

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 **local level**.

5.3 Site operation

5.3.1 Impacts to Wildlife

The development will result in an increase in lighting within the general area. Therefore, an **adverse impact is likely** on nocturnal species such as bats, birds and badgers.

5.3.2 Impacts to Designated Sites

There were no statutory or non-statutory designated sites within proximity of the site, and the site is not located within the impact zone of any internationally designated sites. Therefore, the proposals will have a **negligible adverse impact** upon sites at the **county - international level**.

6.0 RECOMMENDATIONS

6.1 Introduction

The below sections outline a number of recommendations for further survey work required to fully assess the potential ecological impacts of the development and ensure and proposed mitigation and compensation appropriate and proportionate. In addition to this, measures are outlined to protect the existing features of value and provide enhancements post development.

6.2 Bats

6.2.1 Phase II Survey Work

Although previous surveys were carried out in 2019, the species assemblages on site would be unlikely to change significantly due to the removal of connectivity and the location of the site within an active development site, which supports high levels of disturbance caused by construction activities. No additional survey work is therefore considered necessary in regard to bats.

A precautionary approach will be adopted to minimise the impacts to bats during works.

6.2.2 Precautionary Working Method

Timing

As there are no roosts identified on site, no timing restrictions will be required (Reason and Wray, 2023). If, however, any bats are encountered during works which may indicate a roost of higher importance, timing restrictions may be required.

Supervision

Prior to any works getting underway the licensed bat worker will give a Toolbox talk which will detail best practice methods of tree felling / removal if any trees are to be removed under current proposals. Personnel will be educated on signs of bats and that, in the unlikely event a bat is found whilst the licensed ecologist is not on site, that all works should stop immediately until the licensee returns to site.

Capture (if required)

If during the sensitive removal of construction materials bats are discovered, the supervising ecologist will place the individuals into a holding bag (a soft cloth bag with closure-strings and with seams on the outside (Mitchell-Jones and McLeish, 2004)) to ensure the bat keeps calm and will not take flight during daylight hours. They will then immediately transport the bat to the bat box where the bat will be released and left undisturbed. During this time, the licensed bat worker will be wearing appropriate bat handling gloves to ensure the bat does not come to any harm. The licensed bat worker will have ample experience in handling a variety of bats and is confident in doing so.

6.2.3 Trees

If any trees are to be removed under the current proposals an updated ground level roost assessment should be undertaken. If any trees that require removal have been identified as supporting PRFs, emergence / dawn re-entry surveys will be required to ascertain if they support any bat roots.

6.2.4 Roof underlining

In-line with Natural England guidance non-bitumen coated roofing membrane that has passed a 'snagging propensity test' (2022) or bitumen roofing felt (2015) should be utilised as opposed to Breathable Roof Membrane (BRM) for all roofing works as there is considerable evidence to suggest that BRM poses a threat to bats occupying a structure due to entanglement in the fibres (Natural England, 2015).

6.2.5 Sensitive Lighting

A document (*Guidance Note 08/23 Bats and Artificial Lighting at night*) has been 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 provided there are no conflicts with any legal limits of illumination (in which case a suitable compromise should be reached).

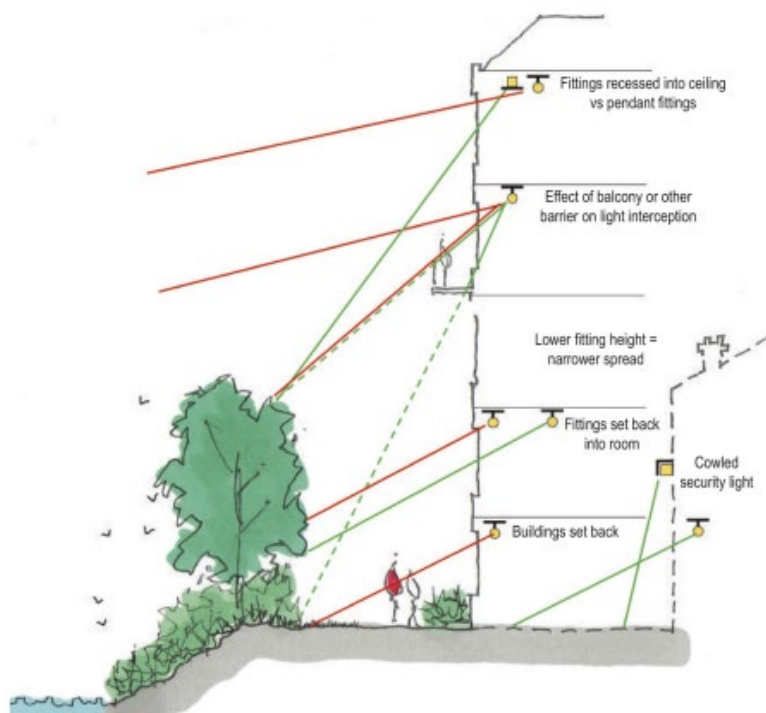
'Light sources, lamps, LEDs and their fittings come in a myriad of different specifications which a lighting professional can help to select. However, the following should be considered when choosing luminaires and their potential impact on Key Habitats and features:

- *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 6**) 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 6. Internal lighting mitigation options (ILP 2023)



6.3 Breeding and Nesting Birds

In order to avoid disturbance of nesting birds or damage to their nests, all demolition and habitat removal works will be undertaken outside of the bird nesting season (typically March – August dependent on weather). If this is not possible, sections to be cleared should be thoroughly checked by a suitability qualified ecologist immediately prior to clearance. If any

active nests are found they should be left undisturbed with a suitable buffer of vegetation (5m) until the nestlings have fledged.

6.4 Badgers

Prior to the beginning of construction, an updated walkover will be carried out to ensure no setts have been formed since the initial walkover. 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.

6.5 Protection of Retained Trees / Hedgerows

Prior to construction works commencing the retained trees and hedgerows 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 the large mature tree is 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.

6.6 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 potential for atmospheric or aquatic pollution as well as the materials to be used and reduction of noise and visual impacts on any adjacent SINC's and nearby designated sites.

6.7 Enhancements

6.7.1 Tree / Shrub Planting

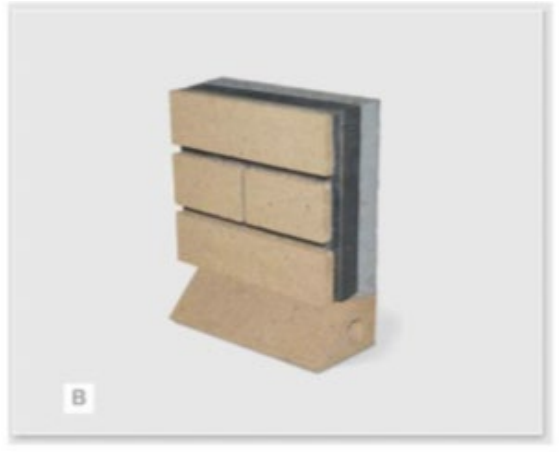
As a general enhancement, any new landscape planting will aim for a minimum 70:30 ratio in favour of native species over non-natives and ornamentals (in line with the CIEEM guidance outlined within Smith & Day (2012)). Species that can be considered within any planting include: Rowan (*Sorbus aucuparia*), Alder (*Alnus glutinosa*), Hazel (*Corylus avellana*), Holly (*Ilex aquifolium*), Silver Birch (*Betula pendula*), Small-leaved Lime (*Tilia cordata*) and Willow (*Salix* spp.). Non-natives and ornamentals should only be given a bias in formal locations where aesthetics is a priority.

Planting a mixture of flowering plants, trees (including fruit trees) and shrubs encourages a diversity of insects to sustain bats. It is beneficial that the flowers vary in colour (although pale flowers are more easily seen in poor light and so attract insects at dusk), fragrance, shape, amount of nectar and time of flowering. (It is important to provide native flowering plants, shrubs and trees throughout spring, summer and autumn). Flowers with 'landing platforms' for insects increase opportunities for insects and in turn foraging bats and these will be included within marginal habitats where appropriate.

6.7.2 Bat Bricks

It is recommended that the new building should incorporate three bat bricks or suitable alternative. The bat bricks used should be the ibstock bat brick B as they are available in a variety of different brick colours and requires no maintenance (**Fig 7**). These should also be positioned as close to the eaves as possible, away from windows and in a position that will receive some direct sunlight.

Figure 7. The Ibstock bat brick 'B' that will be incorporated into the converted derelict buildings.



6.8.3 Bat Boxes

To enhance the site for roosting bats, two Schwegler 2F general purpose bat boxes will be erected on suitable retained trees around the site (**Fig 8**). This bat box is designed as a summer roosting space for crevice-dwelling species such as Pipistrelles. The bat box maintains a stable temperature inside and is painted black to absorb warmth. This box should be erected 3-6m high and in an open, sunny position (preferably facing a southern elevation). Once the works have been completed this box should be left in perpetuity to provide an additional long-term enhancement for local bats.

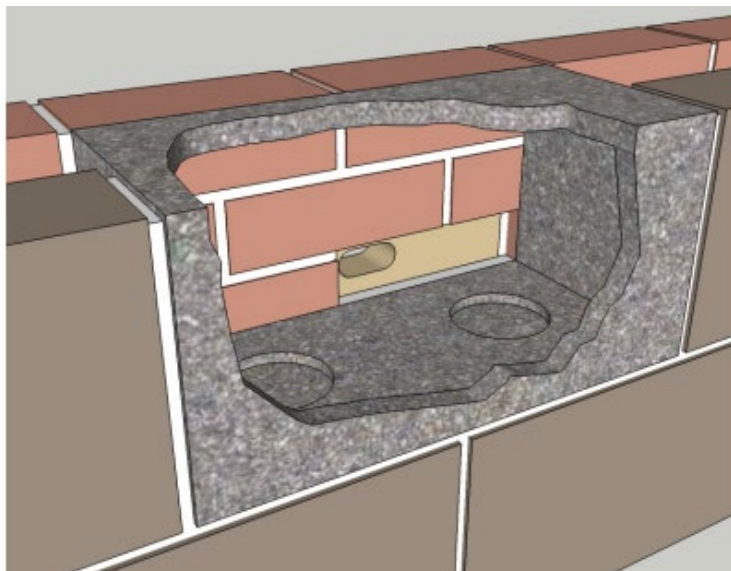
Figure 8. Schwegler 2F bat box (general purpose)



6.7.3 Bird Bricks

To act as biodiversity enhancement, the new building should include at least three Swift bricks or suitable alternative. The 'CJ Wildlife Swift maxi nesting box' (**Fig 9**) with entrance via a CJ Wildlife 'Cambridge Swift full-face brick' (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 9. 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.



7.0 BIODIVERSITY NET GAIN (BNG)

Section 7.2 outlines the Condition Assessment undertaken with reference to the Biodiversity Metric 4.0 Technical Annex (Natural England, 2023). For these assessments, the current habitats on site were categorised according to UK Hab (2023) classifications.

7.1 Habitats

The following habitats were recorded on site:

Broad Habitat	Habitat Type	UK Habs Code	Area (hectares)
Grassland	Modified Grassland	g4	0.663
Individual Trees	Urban Tree	n/a	0.122

7.2 Condition Assessments

The following tables outline the Condition Assessments undertaken for the site. Due to damage to the site as a result of construction activities that commenced in 2021 the condition assessments below are based on the habitat that were present on site in December 2020. Species composition of the habitats found on site can be found in **section 4.2**. No significant changes in species composition are believed to have occurred since this survey.

7.2.1 Modified Grassland (g4)

Condition Sheet: GRASSLAND Habitat Type (low distinctiveness)			
UK Habitat Classification (UKHab) Habitat Type(s)			
Grassland - Modified grassland			
Site name and location	Land at Boorley Gardens	On-site or off-site	On-site
Limitations (if applicable)	N/A	Survey reference (if relating to a wider survey)	
Grid reference	SU 5038015001	Habitat parcel reference	
Habitat Description			
Modified grassland on site			
N.B. the condition assesment for this habitat is based on the habitat that was present in December 2020, prior to construction activities.			
Condition Assessment Criteria		Criterion passed (Yes or No)	Notes (such as justification)
A	There are 6-8 vascular plant species per m² present, including at least 2 forbs (this may include those listed in Footnote 1). Note - this criterion is essential for achieving Moderate or Good condition. Where the vascular plant species present are characteristic of medium, high or very high distinctiveness grassland, or there are 9 or more of these characteristic species per m² (excluding those listed in Footnote 1), please review the full UKHab description to assess whether the grassland should instead be classified as a higher distinctiveness grassland. Where a grassland is classed as medium, high, or very high distinctiveness, please use the relevant condition sheet.	No	Based on aerial imagery and historic use it is unlikely for the parcel to support 6-8 species per m2. Site recently had ceased use as a horse pasture which likely subject the area to heavy grazing and regular management.
B	Sward height is varied (at least 20% of the sward is less than 7 cm and at least 20% is more than 7 cm) creating microclimates which provide opportunities for vertebrates and invertebrates to live and breed.	No	Sward height likely to be similar

C	Some scattered scrub (including bramble <i>Rubus fruticosus</i> agg.) may be present, but scrub accounts for less than 20% of total grassland area. Note - patches of scrub with continuous (more than 90%) cover should be classified as the relevant scrub habitat type.	Yes	No scrub present on aerial imagery or during most recent PEA
D	Physical damage is evident in less than 5% of total grassland area. Examples of physical damage include excessive poaching, damage from machinery use or storage, erosion caused by high levels of access, or any other damaging management activities.	Yes	Small amount of physical damage likely present from grazing but amount likely less than 5%. No damage visible on aerial imagery
E	Cover of bare ground is between 1% and 10%, including localised areas (for example, a concentration of rabbit warrens) ² .	Yes	No bare ground visible on aerial imagery
F	Cover of bracken <i>Pteridium aquilinum</i> is less than 20%.	Yes	No bracken present on aerial imagery or during recent PEA
G	There is an absence of invasive non-native plant species ³ (as listed on Schedule 9 of WCA ⁴).	Yes	No invasive species present during most recent PEA
Essential criterion achieved (Yes or No)			No
Number of criteria passed			5
Condition Assessment Result (out of 7 criteria)	Condition Assessment Score	Score Achieved x/✓	
Passes 6 or 7 criteria including passing essential criterion A	Good (3)		
Passes 4 or 5 criteria including passing essential criterion A	Moderate (2)		
Passes 3 or fewer criteria; OR Passes 4 - 6 criteria (excluding criterion A)	Poor (1)	X	

7.2.2 Individual trees

Condition Sheet: INDIVIDUAL TREES Habitat Type			
Habitat Type(s)			
Individual trees – Urban trees			
Habitat Description			
Three individual mature oak trees along northern boundary			
Individual trees (description applied to the urban or rural environment): Young trees over 7.5 cm in diameter at breast height whose canopies are not touching.			
Urban Perimeter / Linear Blocks and Groups (description applied to the urban environment only): Groups or stands of trees (size requirement as defined above) within and around the perimeter of urban land. This includes those along urban streets, highways, railways and canals, and also former field boundary trees incorporated into developments. Canopies must overlap continuously. Groups of urban trees that don't match the descriptions for woodland may be assessed within this category.			
Site name and location	Land at Boorley Gardens	On-site or off-site	On-site
Limitations (if applicable)	N/A	Survey reference (if relating to a wider survey)	
Grid reference		Habitat parcel reference	
Condition Assessment Criteria		Criterion passed (Yes or No)	Notes (such as justification)
A	The tree is a native species (or at least 70% within the block are native species).	YES	Mature oak (3)
B	The tree canopy is predominantly continuous, with gaps in canopy cover making up <10% of total area and no individual gap being >5 m wide (individual trees automatically pass this criterion).	YES	No gaps recorded in canopy
C	The tree is mature (or more than 50% within the block are mature).	YES	All oak trees on site are mature
D	There is little or no evidence of an adverse impact on tree health by human activities (such as vandalism, herbicide or detrimental agricultural activity). And there is no current regular pruning regime, so the trees retain >75% of expected canopy for their age range and height.	YES	No signs of adverse impacts identified
E	Natural ecological niches for vertebrates and invertebrates are present, such as presence of deadwood, cavities, ivy or loose bark.	NO	No ecological niches identified

F	More than 20% of the tree canopy area is oversailing vegetation beneath.	YES	
Number of criteria passed		5	
Condition Assessment Result (out of 6 criteria)	Condition Assessment Score	Score Achieved x/✓	
Passes 5 or 6 criteria	Good (3)	X	
Passes 3 or 4 criteria	Moderate (2)		
Passes 2 or fewer criteria	Poor (1)		
Note that 'Fairly Good and Fairly Poor' condition categories are not available for this broad habitat type.			

7.3 Biodiversity Net Gain Results

In accordance with the assessed condition assessment completed of habitats during the walkover, and the proposed site plan produced by ADG Architects (2023), calculations for the net gain to biodiversity completed in Defra Metric 4.0 has **achieved a net gain of 15.48% (or +0.45 habitat units)** with all trading rules satisfied. As there are no linear features on site there is no change to hedgerow units.

Figure 10. Screenshot taken from the Defra Metric 4.0 calculation headline results.

On-site baseline	Habitat units	2.94	
	Hedgerow units	0.00	
	Watercourse units	0.00	
On-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	3.39	
	Hedgerow units	0.00	
	Watercourse units	0.00	
On-site net change (units & percentage)	Habitat units	0.45	15.48%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%
Off-site baseline	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site post-intervention (Including habitat retention, creation & enhancement)	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Off-site net change (units & percentage)	Habitat units	0.00	0.00%
	Hedgerow units	0.00	0.00%
	Watercourse units	0.00	0.00%
Combined net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	0.45	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Spatial risk multiplier (SRM) deductions	Habitat units	0.00	
	Hedgerow units	0.00	
	Watercourse units	0.00	
FINAL RESULTS			
Total net unit change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	0.45	
	Hedgerow units	0.00	
	Watercourse units	0.00	
Total net % change (Including all on-site & off-site habitat retention, creation & enhancement)	Habitat units	15.48%	
	Hedgerow units	0.00%	
	Watercourse units	0.00%	
Trading rules satisfied?	Yes ✓		

A post-development habitat plan is displayed in Appendix II.

7.4 Proposed Created Habitats

Following a consultation with Halebourne Group, in order to minimise the loss of biodiversity on site, the following habitats are being provided / created (please refer to the landscape areas plan in **Appendix II** below for information on the locations of these habitats on site):

7.4.1 Species-rich Grassland

7.4.1.1 Habitat Creation

0.124ha of species rich grassland is to be created around the boundaries of the site. Recommended grass species for this habitat type may include Perennial Rye-grass (*Lolium perenne*), Common Bent (*Agrostis capillaris*), False Oat-grass (*Arrhenatherum elatius*), Yorkshire-fog (*Holcus lanatus*), Rough Meadow-grass (*Poa trivialis*) and Cock's-foot (*Dactylis glomerata*). Herb planting may include Yarrow (*Achillea millefolium*), Ribwort Plantain (*Plantago lanceolata*), Red Clover (*Trifolium pratense*), Common Knapweed (*Centaurea nigra*), Bird's-foot Trefoil (*Lotus corniculatus*), Common Mouse-ear (*Cerastium fontanum*), Meadow Buttercup (*Ranunculus acris*), Self-heal (*Prunella vulgaris*).

7.4.1.2 Management

The areas of wildflower grassland on site are to be established through the sowing of a wildflower mixture such as Emorsgate EM4 – Meadow Mixture for Clay Soils or Emorsgate EM6 – Meadow Mixture for Chalk and Limestone Soils.

The below management methods will be followed:

Wildflower areas do not require any additional watering or fertilizer. Cutting a meadow and removing the clippings retains low nutrient levels in the soil and suppresses coarse grasses which would otherwise out-compete the wildflowers. It is recommended the wildflower grassland undergoes two annual cuts. The growth should be cut back to a height of 50-75mm. The cut grass should be dried on site. Cuttings should be left in situ for approximately one week, after this the arisings are to be removed from site.

First year management: Perennial species take at least a full year to establish. For newly sown areas the first summer will be dominated by annual weeds arising from the soil seed bank and by grass growth. This should be controlled by mowing throughout the first year to minimise competition and weed seed production.

Management Once Established: During the second year it is recommended that the wildflower areas are left to flower and will be cut in mid-summer. However, this should not be cut in May or early June due to nesting birds. Mowing in mid-June brings a premature end to the flowers and can compromise nesting birds, which do not fledge until late July, insects and other wildlife. If some mowing has to take place at this time, sections should be cut at different dates to prolong the overall flowering season and give wildlife a chance to move. The second annual cut should be undertaken during late Autumn.

Grassland which is consistently cut late in the season, in August and September, year on year reduces species diversity as late cutting gives more time for coarse grasses and other

dominant plants to grow unchecked. To maintain maximum diversity and flowering interest the buffer should be managed in sections at different times from late June to the end of August. Varying the mowing times from year to year is the best way to maintain a diverse balanced sward.

7.4.2 Modified Grassland

7.4.2.1 Habitat Creation

The grassland areas directly adjacent to the building will be sown with Emorsgate EL1 – Flowering Lawn Mixture. This seed mixture includes but is not limited to Common Knapweed (*Centaurea nigra*), Birdsfoot Trefoil (*Lotus corniculatus*), Ribwort Plantain (*Plantago lanceolata*), Cowslip (*Primula veris*), Meadow Buttercup (*Ranunculus acris*), Tufted Vetch (*Vicia cracca*), Common Bent (*Agrostis capillaris*), Crested Dogstail (*Cynosurus cristatus*) and White Clover (*Trifolium repens*). The species recommended in **Section 7.4.1.1** should also be considered. The sowing of these seeds will be completed either during the spring or the autumn when the temperatures are warm, and the ground is dry. The seed must be surface sown at an even distribution throughout the entire landscaped area.

7.4.2.2 Management

During the first year the landscaped areas must be regularly maintained to a height of 40-60mm every 3-4 weeks during the growing season to prevent the establishment of weeds. All arisings must be taken from site to prevent the addition of too many nutrients into the soil. If necessary, glyphosate-based weed killer can be used to spot treat any areas with dense patches of Nettles or Bramble.

Once the seed is established after the first year, a management regime will be adopted to allow the flowering of herbaceous species to provide maximum benefit to local wildlife. Mowing is to be relaxed from late June for 4 – 8 weeks. However, regular mowing is expected within this habitat area which will cause sward height structure to vary throughout the management periods, cutting no lower than 25-40mm. All arisings should be collected and moved from the site.

7.4.3 Individual Trees

In addition to the 3 mature Oak trees that are to be retained, 3 individual small trees will be planted within the site, not inclusive of any ornamental or non-native species.

Recommended species planting of tree/shrub species may include:

- Hazel (*Corylus avellana*)
- Hawthorn (*Crataegus monogyna*)
- Blackthorn (*Prunus spinosa*)
- Field Maple (*Acer campestre*)
- Oak (*Quercus robur*)
- Rowan (*Sorbus aucuparia*)
- Silver Birch (*Betula pendula*)
- Wild Cherry (*Prunus avium*)

7.4.3.1 Management

Mycorrhizal Treatment

To ensure a successful establishment of the newly planted trees, it is recommended that mycorrhizal treatment to the tree roots is conducted **during the planting**, this would reduce the risk of tree mortality and increase the long-term tolerance of these trees to periods of drought or adverse soil conditions thus ensuring a higher chance of successful long-term establishment.

Weed Management

All newly planted trees must have a 1-metre exclusion zone whereby weeds are routinely and pro-actively removed for the **first 2 – 3 years**. Outlined within the section below, bark mulch is recommended around each tree and will act as an effective management method to also suppress weed colonisation.

Tree Protection (Tree Guards & Rabbit Mesh Guards)

All trees must have a form of tree guards installed to act as a form of protection from extreme weather or excessive foraging from wildlife. It is recommended that the mesh is approximately 12.5mm x 12.5mm aperture of 0.61m in height; however, due to the suitability on site and the surrounding habitats, this site may be at risk of Roe Deer. Therefore, it is recommended that the form of tree guards suitable to mitigate excessive foraging from this species is installed at a height above 1.2m and comprised of a guard such as weld mesh tree shelter or a suitable alternative.

During aforementioned weed removal, all aspects of the tree guards should also be routinely checked to ensure they are maintained in good condition and are firmly positioned within the soil. If the guards begin to split, they must be removed and disposed of responsibly and consequently replaced where required.

The trees and newly planted shrubs on site will also be protected through the implementation of mesh rabbit guards, along with bark mulch at the base to suppress any grass and weed colonisation. Monthly inspections on the newly planted trees will be undertaken, with weed removal / tree guard replacement as required. The bark mulch will also be maintained at a minimum level of 50mm for the **first 2 years** of establishment.

Selective Thinning

Once the newly planted trees / shrubs are established, selective thinning of retained or established trees will be conducted to promote regeneration and a vigorous, dense regrowth. Such work must be undertaken during the period October – February to avoid the breeding bird season. It is considered likely a botanical survey will identify areas of highest botanical value and this will influence the location of thinning, conducted by a suitably qualified botanist.

Where practical to do so, as determined by the arborist, some potential selected trees may be cut at 3-5m height and the standing stumps will be left in situ to rot as habitat for saprophytic invertebrates and a resource for woodland birds such as Woodpeckers and

Nuthatch.

Rotational Coppicing

Occasional rotational coppicing may be required of the newly planted or retained trees on site to prevent overcrowding and promote natural new growth. All Hazel present on site will be managed on a rotational coppicing scheme. This involves cutting young trees down to a low level to promote new growth and prevent over-shading. This will be rotationally implemented, with only a small portion approximately 30% of Hazel coppiced **every 3 years** during winter months (November to March), but only once the Hazel has grown to a size that will be beneficial and appropriate.

Coppice management is best carried out on a rotation of approximately **every 6-10 years** for each tree, with timing staggered for plants to ensure there is continued connectivity at any given time. Retain some of the dead wood. Include some larger horizontal trunks and limbs as well as log piles and discarded brash. Leave wood piles in shady areas.

Invasive Species

Any invasive species, such as Japanese Knotweed (*Fallopia japonica*) Himalayan Balsam (*Impatiens glandulifera*), Rhododendron (*Rhododendron ponticum*), Giant Hogweed (*Heracleum mantegazzianum*), will be removed from the site, as these could have deleterious effects on native species. The removal of such species would open-up ground for restoration for natural re-generation. Invasive species will generally be removed by a combination of cutting back and removal of cut material from the site, followed by treatment of stumps, roots or regrowth using an approved systemic herbicide (such as glyphosate). This process may need to be repeated over the course of several years.

Contractors will need to be shown the locations of the species and mark these where needed to help avoid native species being removed accidentally. Areas of bare ground created by this work will be left for natural regeneration (described below).

Replacement of Trees, Shrubs and Natural Regeneration

Recommendations may also include that any plants (newly planted or retained) that are removed, die or become seriously damaged or defective during the 30-year monitoring period shall be replaced like for like in the next planting season. If any of the plants fail, they will be replaced like-for-like.

Similarly, scope for tree and shrub species to establish by natural regeneration should be permitted where possible e.g. by creating space for new regeneration around existing specimens of the desired trees and shrub species. Ash regeneration could be an important part of the mix, it should not be cut out or destroyed unless suffering from Ash Dieback, and would benefit from being protected.

Monitoring

All the newly planted and retained trees within the site in communal areas (i.e., excluding all trees within privately owned gardens) are to be managed post-development for a period of at

least 30 years. As part of the management regime, it is recommended that there are tree inspections done with the frequency determined by a suitably experienced arborist.

These inspections will be carried out by a suitably experienced arborist **during late winter – early spring of each year when required**. These monitoring visits will assess the general health of the trees and determine if any remedial action is required, including noting any presence of disease. As part of these monitoring visits, the arborist will produce a monitoring report which will be sent to the LPA outlining the results and appropriate recommendations (i.e. remedial works, removal /replacement).

NB Please note, all mature trees recommended for removal, remedial works or selective thinning will need to be surveyed for (potential roost features PRFs) that may be suitable for roosting bats. If any trees have PRFs, it is recommended they are retained if possible and alternative trees are selected where possible. This will be conducted by a suitably qualified ecologist.

8.0 CONCLUSION

The findings of this PEA are in line with the original survey effort undertaken 2018 and 2020 (Ecosupport). The site is considered to be of limited ecological value due to previous use as cattle pasture, which ceased in 2018. The habitat types and management are considered to be in accordance with those previously recorded and therefore the suitability and potential for legally protected and/or notable species is unchanged.

The key features are the mature oak trees along the northern boundary which support potential for nesting birds. The trees are to be retained under current proposals. Habitats on site consist of unmanaged modified grassland which has formed from the previous cattle pasture as a result of no management.

During the PEA for the RM application (RM/18/84466) the site was assessed to support negligible potential for reptiles due to unsuitable structure from on-going management activities (Ecosupport, 2019). In 2019, reptile exclusion fencing was erected along the northern boundary and Fieldfare Avenue has since been constructed along the south, isolating the site from any suitable habitat and serving as a barrier to movement for reptiles. The site has remained isolated since 2019 with the reptile fencing intact on the most recent visit (September 2023).

The site was previously recorded supporting improved pasture fields with a similar assemblage of species, likely due to continual management (Ecosupport, 2018). Species diversity recorded during the most recent walkover is considered to be attributed to the disturbance of the habitat, as a result of construction, rather than the intrinsic value of the grassland. The habitat on site is therefore considered to be in line with the UK Habitat classification of modified grassland (g4).

The site is located within an active construction site (Phase 2 reserved matters application RM/18/84466), therefore has been subject to a high degree of disturbance and degradation since construction began in 2020. Due to this, a large portion of the site has been stripped of any vegetation cover. The habitats assessed within the baseline BNG calculations are those that were present on site in December 2020 prior to construction. Through the implementation of species rich grassland and tree planting, the site has achieved a biodiversity net gain of 15.48% (or +0.45 habitat units) with all trading rules satisfied.

Measures have been outlined within the report to avoid as many impacts as possible in the first instance through sensitive design. Previous surveys and site assessments have concluded protected species are absent from the site and therefore unlikely to be negatively impacted.

To ensure the proposals result in gains for biodiversity, enhancements will be implemented through appropriate planting and provision of nesting/roosting opportunities for birds and bats. If the recommendations within this report are followed the scheme has the potential to result in an overall gain to biodiversity.

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Legend

-  redline
-  Retained tree
-  Newly planted tree
-  Building
-  Hard standing
-  Species poor grassland
-  Species rich grassland



K4 Keppel, Daedalus Park
Daedalus Drive
Lee on the Solent, PO13 9FX
E: info@ecosupport.co.uk
T: 01329 832 841

Map	Post development map
Site	Land at Boorley Gardens
Client	Halebourne Group
Date	04/12/2023

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Legend

 redline

 Other neutral grassland (g3c)
Secondary code(s)
(14) - Rushes common

 Artificial unvegetated unsealed surface (u1c)
Secondary code(s)
(81) - Ruderal / ephemeral
(510) - Bare ground



K4 Keppel, Daedalus Park
Daedalus Drive
Lee on the Solent, PO13 9FX
E: info@ecosupport.co.uk
T: 01329 832 841

Map Pre development UK Habs Map

Site Land at Boorley Gardens

Client Halebourne Group

Date 24/11/2023

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