ecosupport

PROFESSIONAL ECOLOGICAL SOLUTIONS

ECOLOGY

TREE PROTECTION FENCING

SITE PREPARATION & CLEARANCE

HABITAT MANAGEMENT & ENHANCEMENT

Report	Preliminary Ecological Appraisal
Site Name	Meadows Hall, Richmond
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Client	RHP (Richmond Housing Partnership)
Date of Issue	Amended 23rd June 2022
Status	**Final Copy**

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Table of Contents

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Executive Summary

Ecosupport Ltd was instructed by RHP (Richmond Housing Partnership) to undertake a Preliminary Ecological Appraisal (PEA) of Meadows Hall, Richmond (here after referred to as 'the site') 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:

- Preliminary Ecological Appraisal (December 2021)
- Preliminary roost assessment of trees (December 2021)

The following important ecological features were identified on site following the conclusion of the above survey work and may be subject to adverse impacts in the absence of suitable mitigation / compensation:

- Potential for breeding and nesting birds

In the absence of any mitigation measures, the proposed development is anticipated to result in, ***likely minor adverse effects*** at the ***local level.*** Suitable mitigation measures, recommendations and enhancements to improve the ecological value of the site are outlined within **section 6.0** of this document.

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1.0 INTRODUCTION

1.1 Brief

Ecosupport Ltd was commissioned by RHP (Richmond Housing Partnership) to conduct a Preliminary Ecological Appraisal (PEA) of Meadows Hall, Richmond (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 report[1] then the findings of this survey will no longer be considered valid and may require updating.

1.2 Site Description & Location

The majority of the site comprises of hardstanding with some dense scrub and boundary trees at Meadows Hall, Richmond, London, TW10 6LN (centred on OS grid reference (TQ 18388 74930) (**Fig 1**). The western aspect of the site is bound by Church Road and all other aspects of the site are bound by residential dwellings and associated gardens. The immediate surrounding environ is largely urban and predominantly comprised of residential dwellings and associated gardens.

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

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Figure 1. Redline boundary of area to be impacted (Google Maps 2021).

1.3 Proposed Development

The proposals will entail the construction of 13 units with associated access and infrastructure (**Fig 2**).

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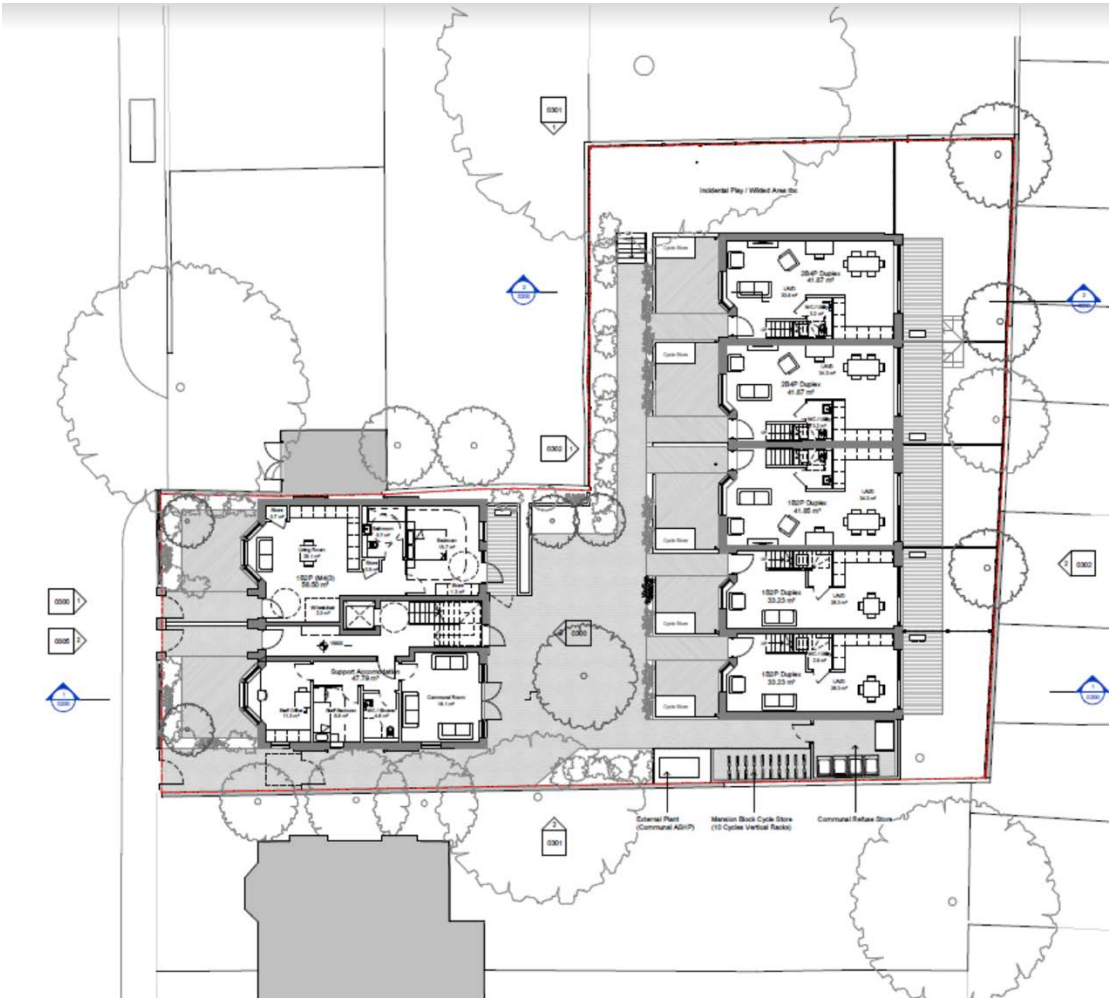
Figure 2. Proposed development plan (Wimshurst Pelleriti 2022).



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2.0 RELEVANT LEGISLATION AND POLICY

2.1 Legislation

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

This 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.

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*).

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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 sett 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.

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2.2 Policy

2.2.1 National Planning Policy Framework (NPPF) 2021

Section 15 of the National Planning Policy Framework (NPPF) 'Conserving and enhancing the natural environment' states that planning policies and decisions should contribute to and enhance the natural environment. They should do this by protecting and enhancing sites of biodiversity and minimising impacts on and providing net gains for biodiversity, including establishing coherent ecological networks.

The plan states to protect and enhance biodiversity plans should identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks. This includes the hierarchy of international, national and locally designated sites of importance for biodiversity, wildlife corridors and stepping stones that connect them. Plans should identify the protection and recovery of priority species and opportunities for securing measurable net gains for biodiversity.

When determining planning applications, local planning authorities should apply the following principles:

- if significant harm to biodiversity resulting from a development cannot be avoided, adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused;
- development on land within or outside a Site of Special Scientific Interest, 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;
- 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; and
- 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

London Borough of Richmond Upon Thames Local Plan Adopted July 2018

Policy LP 15 : Biodiversity

A. The Council will protect and enhance the borough's biodiversity, in particular, but not exclusively, the sites designated for their biodiversity and nature conservation value, including the connectivity between habitats. Weighted priority in terms of their importance will be afforded to protected species and priority species and habitats including National Nature Reserves, Sites of Special Scientific Interest (SSSI) and Other Sites of Nature Importance as set

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out in the Biodiversity Strategy for England, and the London and Richmond upon Thames Biodiversity Action Plans. This will be achieved by:

1. protecting biodiversity in, and adjacent to, the borough's designated sites for biodiversity and nature conservation importance (including buffer zones), as well as other existing habitats and features of biodiversity value;
2. supporting enhancements to biodiversity;
3. incorporating and creating new habitats or biodiversity features, including trees, into development sites and into the design of buildings themselves where appropriate; major developments are required to deliver net gain for biodiversity, through incorporation of ecological enhancements, wherever possible;
4. ensuring new biodiversity features or habitats connect to the wider ecological and green infrastructure networks and complement surrounding habitats;
5. enhancing wildlife corridors for the movement of species, including river corridors, where opportunities arise; and
6. maximising the provision of soft landscaping, including trees, shrubs and other vegetation that support the borough-wide Biodiversity Action Plan.

B. Where development would impact on species or a habitat, especially where identified in the relevant Biodiversity Action Plan at London or local level, or the Biodiversity Strategy for England, the potential harm should:

1. firstly be avoided (the applicant has to demonstrate that there is no alternative site with less harmful impacts),
2. secondly be adequately mitigated; or
3. as a last resort, appropriately compensated for.

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.

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3.0 METHODOLOGY

3.1 Desk Study

3.1.1 Waterbodies

Any ponds located within 250m of the proposed development were searched for using Ordnance Survey maps and available aerial images.

3.1.2 Designated sites

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

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 Madison Errington, an Assistant Ecologist with Ecosupport on the 20th December 2021.

The Phase 1 Habitat survey (JNCC, 2010) methodology was adopted which is a method of classifying and mapping wildlife habitats in Great Britain. It was originally intended to provide "...*relatively rapidly, a record of semi-natural vegetation and wildlife habitat over large areas of the countryside*". The standard Phase 1 Habitat survey methodology has been 'extended' in this report to include the following:

- Floral species lists for each identified habitat;
- Descriptions of habitat structure, the evidence of management and a broad assessment of habitat condition;
- Mapping of additional habitat types (e.g. hardstanding);
- Identification of Priority Habitats under Section 41 of the NERC Act;
- Evidence of, or potential for, the presence of certain species/groups

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 extended 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

The trees located within the development site were assessed for any potential to support roosting and resting bats by externally searching for Potential Roost Features (PRFs) (which may include fissures / cracks in branches, platey bark, occluded wounds, Ivy with a stem

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diameter of > 50mm). The methods outlined within *Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd Edition* (Collins (ed) 2016) were followed and the assessment was conducted by Madison Errington of Ecosupport in December 2021 (acting under the license of Adam Jessop NE class level 2 bat licence number 2015-13366-CLS-CLS).

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 Limitations

There were not considered to be any limitations of the survey results with all areas of the site to be impacted upon accessible. Although the survey was undertaken outside of the optimal period for flowering vascular plants, given the nature of the habitats on site and the surrounding environment this is not considered to be a significant limitation.

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4.0 ECOLOGICAL BASELINE

4.1 Desk Study

4.1.1 Waterbodies

Following a review of Magic Maps and aerial imagery there were no ponds located within 250m of the site.

4.1.2 Designated sites

Richmond Park SAC, SSSI and NNR are all located approximately 917m to the south-east of the site (**Fig 3**).

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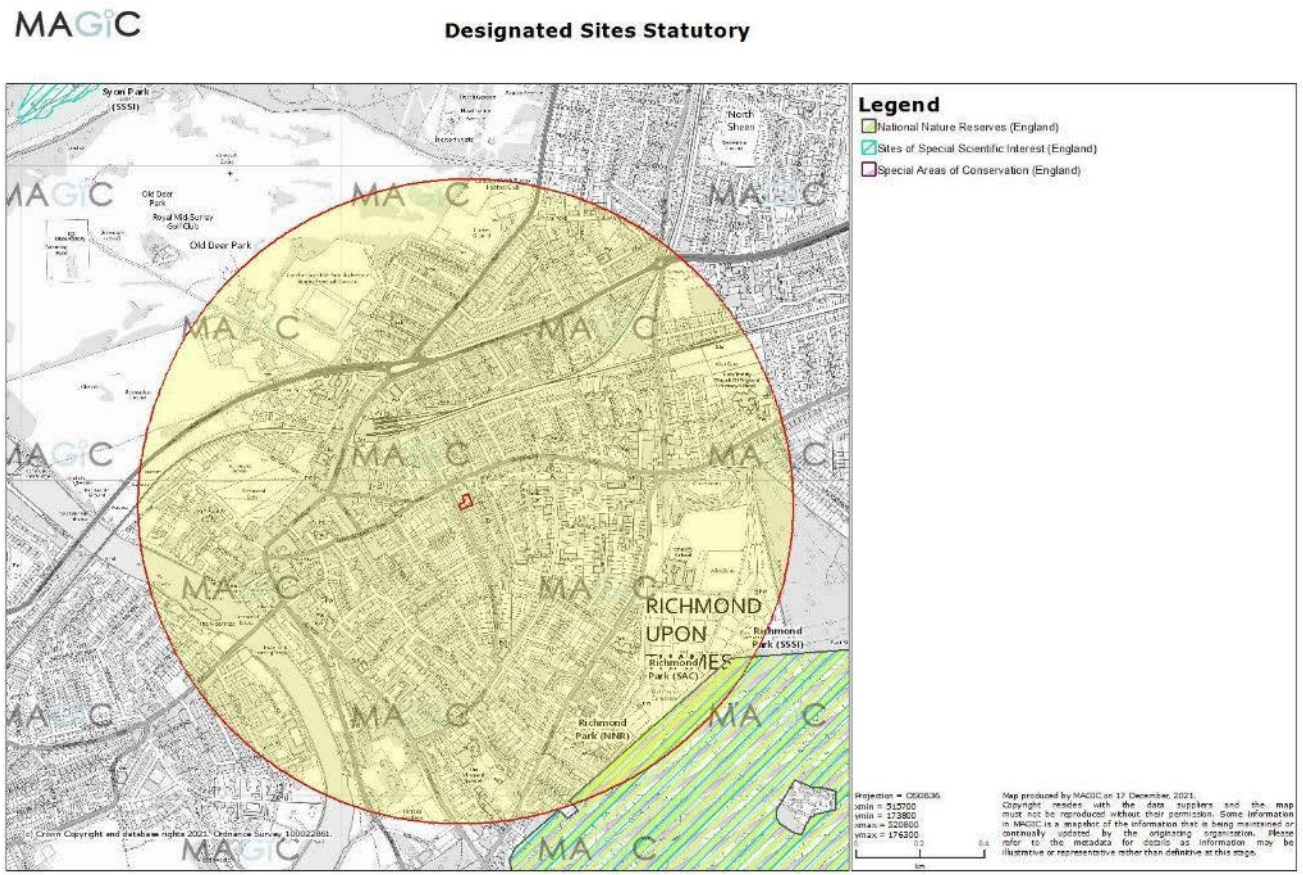
Figure 3. Designated sites within 1km of the site (Magic Maps 2021)



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4.2 Vegetation Survey Results

The vegetation within the site has been described below using the broad Phase I habitat classification terminology as described with JNCC (2010). 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:

- Hard standing
- Scrub
- Boundary trees

4.2.1 Hardstanding

The dominant habitat on site is hardstanding (**Figs 4 & 5**), species noted include: Fleabane (*Pulicaria dysenterica*), Creeping Thistle (*Cirsium arvense*) and Bramble (*Rubus fruticosus*). The area had scattered scrub around the edges of the habitat which is detailed below.

Figure 4. Area of hardstanding at the entrance to the site

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Figure 5. Area of hardstanding at the eastern side of the site

4.2.2 Scrub / ruderal

Present adjacent to the south-western boundary of the site is a small area of low lying scrub and ruderal vegetation (**Fig 6**), with some scrub and ruderal vegetation also present along the north-eastern boundary (**Fig 7**). This was dominated by Bramble (*Rubus fruticosus*) with occasional Broad Leaved Dock (*Rumex obtusifolius*), Ivy (*Hedera helix*), Nettles (*Urtica dioica*), Milkweed (*Euphorbia peplus*), *Campanula* sp. and Teasel (*Dipsacus fullonum*). The southern boundary had a large *Cotoneaster* sp. Shrub present adjacent to the brick wall (**Fig 9**). Additionally, scattered scrub and ruderal was present along most of the remaining boundaries of the hardstanding (**Fig 8**), species noted included: *Buddleja* sp., Ivy, Bramble, Fleabane, Wood Spurge (*Euphorbia amygdaloides*) and Green Alkanet (*Pentaglottis sempervirens*).

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Registered in England & Wales 06240750 Vat: 228431418

Figure 6. Area of dense scrub along the north-western boundary

Figure 7. Area of dense scrub and felled tree along the north-eastern boundary

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Figure 8. Area of scattered scrub along the southern boundary

Figure 9. Cotoneaster shrub present along the southern boundary

4.2.3 Scattered trees

The majority of the site is bound by Ivy-covered brick walls, however the area of dense scrub along the north-western boundary has two immature Lawson cypress (*Chamaecyparis lawsoniana*) trees present. The north-eastern boundary has three immature Pear trees (*Pyrus communis*), and the southern boundary has a mature Lawson cypress, a mature Pear and

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three immature Lawson cypress trees present. The trees have potential to support nesting birds and are therefore considered to be of **site value**.

Figure 8. Two scattered immature Lawson cypress trees along the north-western boundary

Figure 9. Immature Pear tree along the north-eastern boundary

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Figure 10. Mature Lawson cypress, one mature Pear and further three immature scattered Lawson cypress trees along the south-eastern boundary

4.3 Bat Survey Results

4.3.1 Preliminary Roost Assessment (trees)

A screenshot of the trees proposed for removal on site (as per the Design Review Panel, Wimshurst Pelleriti 2021) is shown below in **Fig 11**.

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Figure 11. Screenshot from the Design Review Panel (2021) indicating the trees that are proposed for removal.

A full assessment of the trees was not undertaken on site as it is understood that they are largely to be retained as part of the proposed plans. Only an assessment of the trees proposed to be removed was undertaken. These were largely small in diameter and lack the age and size to support roosting bats. The only mature tree proposed to be removed is tree 15 (**Fig 11**), the mature Pear, which was ivy-covered but in good condition and did not have any PRF's for bats. Tree 12 (**Fig 11**) the mature Lawson cypress, proposed to be retained was assessed also as in good condition and did not have any PRF's for bats. Therefore all trees to be impacted upon were considered to be of ***Negligible potential*** for bats.

4.4 Badgers

During the walkover no evidence of badgers was noted on site and given the surrounding habitats and urbanised nature of the site, there is considered to be ***Negligible*** potential for foraging and commuting badgers on site.

4.5 Reptiles

The habitats on site do not provide the variety of thermal niches, structure and heterogeneity typically required by reptiles. Additionally the site is isolated from areas of suitable reptile habitats due to the highly urbanised nature of the site. Furthermore, there are no records of

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reptile presence from within the 1 km search radius. The site was therefore considered to have ***Negligible*** potential for reptiles.

4.6 Breeding & Nesting birds

The data search returned a moderate number of records of birds of conservation concern for within 1km of the site. The scattered trees provide some suitable nesting habitat for birds, however due to the limited extent of the habitats on site and the urbanised surroundings this is limited to typical garden birds. The site is therefore considered to have potential for nesting and breeding garden birds and with the site considered to be of value at the **site value** only.

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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 not 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 proposals will involve the loss of two areas of dense scrub and the loss of some scattered trees to the north-western and south-eastern boundary. There is also a mature tree present along the south-eastern boundary of the site which may be indirectly impacted upon through root compaction in the absence of mitigation. Therefore an ***adverse impact is possible*** at the ***Local Level***.

5.2.2 Impacts to Wildlife

The trees on site have been identified as holding potential for breeding and nesting birds. The removal of individual trees and scrub may lead to the disturbance or harm of individual nesting birds. Therefore a ***minor adverse impact is possible*** at the ***Local Level.***

The development will result in an increase in lighting within the general area and from external lights on the dwellings. This can affect the behaviour, particularly foraging, of nocturnal wildlife. Therefore, an ***adverse impact is likely*** on nocturnal species at a ***local level***.

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

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6.0 MITIGATION, RECOMMENDATIONS & COMPENSATION

6.1 Introduction

The below sections outline a number of recommendations for proposed mitigation measures that are required. 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 Sensitive Lighting for Foraging and Commuting Bats

A new document (*Guidance Note 08/18 Bats and Artificial Lighting in the UK*) has recently 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). '*Luminaires come in a myriad of different styles, applications and specifications which a lighting professional can help to select. The following should be considered when choosing luminaires:*

- *All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used. LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.*
- *A warm white spectrum (ideally <2700Kelvin) should be adopted to reduce blue light component.*
- *Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).*
- *Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.*
- *The use of specialist bollard or low-level downward directional luminaires to retain darkness above can be considered. However, this often comes at a cost of unacceptable glare, poor illumination efficiency, a high upward light component and poor facial recognition, and their use should only be as directed by the lighting professional.*
- *Column heights should be carefully considered to minimise light spill.*
- *Only luminaires with an upward light ratio of 0% and with good optical control should be used – See ILP Guidance for the Reduction of Obtrusive Light.*
- *Luminaires should always be mounted on the horizontal, i.e. no upward tilt.*
- *Any external security lighting should be set on motion-sensors and short (1min) timers.*
- *As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed* (**Fig 8**).

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Figure 8. (a) Shield 'barn doors' (b) cowl hood; (c) shield and; (d) external louvre Images from ILP (2011).

6.3 Birds

In order to avoid disturbance of nesting birds or damage to their nests, clearance of any vegetation will be undertaken outside of the bird nesting season (typically March – August dependant on weather). If this is not possible, sections to be cleared should be thoroughly checked by an SQE immediately prior to clearance. If any active nests are found they should be left undisturbed with a suitable buffer of vegetation (5 m) until the nestlings have fledged.

6.4 Mammals

During the construction phase, any open excavations left overnight should either be covered to prevent commuting mammals from 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 trees

All the existing trees that are to be retained should be protected from damage during the works. All the trees should be fenced using Heras fencing or similar to prevent access by machinery. Where large mature trees are present, they should be protected using standard arboricultural tree protection measures which include protection of the canopy and prevents root compaction.

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6.6 Enhancements

6.6.1 Hedgehog

A new Hedgehog home will be incorporated (such as the Igloo Hedgehog home or Hogitat Hedgehog house). This will be provided adjacent to the existing boundary vegetation along the western boundary of the site. This will provide Hedgehogs with additional sheltering opportunities.

In addition, any new fencing will be made to promote site connectivity and extend foraging ranges and opportunities for European Hedgehog. Holes measuring 5 square inches will be made at the base of fences into and between each garden and the surrounding habitats to allow movement of hedgehogs.

6.6.2 Bird bricks / boxes

To act as biodiversity enhancement, the newly built Mansion Block and The Mews Block will each include three Swift bricks. The 'CJ Wildlife swift maxi nesting box' (**Fig 12**) with entrance via a CJ Wildlife 'Cambridge swift full face brick' (**Fig 13**) is recommended as it provides ideal nesting opportunities for swifts and the full face brick is available in different colours and can also be painted if necessary to blend in with the surrounding brickwork. 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 12. CJ Wildlife swift maxi nesting box will be integrated into the newly built extension.

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Figure 13. Cambridge swift full face brick will be integrated into the newly built extension

Additionally a sparrow terrace box will be installed onto the northern aspect of each of the new residential blocks (as it will be shaded for the majority of the day. This will be installed 3-5m above ground level (**Fig 11**).

Figure 11. Wooden sparrow terrace box

1x Vivara Pro Seville 32mm woodstone nest box and 1x Vivara Pro Seville 28mm woodstone nest box, will be installed onto retained trees on the boundaries of the site at a height greater than 3m (to reduce the predation risk from cats). This will provide ideal nesting opportunities for a variety of garden nesting bird species.

6.6.3 Bat bricks

The newly built Mansion Block and The Mews Block will also include 3 bat bricks each. The bat bricks used should be the ibstock bat brick B as they are available in a variety of different brick

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colours and requires no maintenance (**Fig 14**). 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 14. The Ibstock bat brick 'B' that will be incorporated into the newly built dwellings.

6.6.4 Planting

6.6.4.1 Green Roof

To contribute towards a net gain in biodiversity post-development, each of the cycle storage units will support 'biodiverse' extensive green roofs planted using the Lindum Wildflower for Green Roofs vegetation layers. These green roofs will support a mixture of wildflowers and grasses growing in a moisture retentive biodegradable felt (**Fig 15**), with wildflower species including Cat's Ear, Cowslip (*Primula veris*), Lady's Bedstraw (*Galium verum*), Meadow Buttercup (*Ranunculus acris*), Red Campion (*Silene dioica*), Ribwort Plantain, Salad Burnet (*Sanguisorba minor*), Self Heal (*Prunella vulgaris*), Yarrow and Yellow Rattle (*Rhinanthus minor*). These roofs are low maintenance making them ideal for housing developments with only 1-2 cuts required a year and a drainage layer both preventing water-logging but also acting as a reservoir during periods of drought. Green roofs are considered to be beneficial to invertebrates (especially wild bees, beetle and spiders), birds and bats (Grant & Gedge, 2019).

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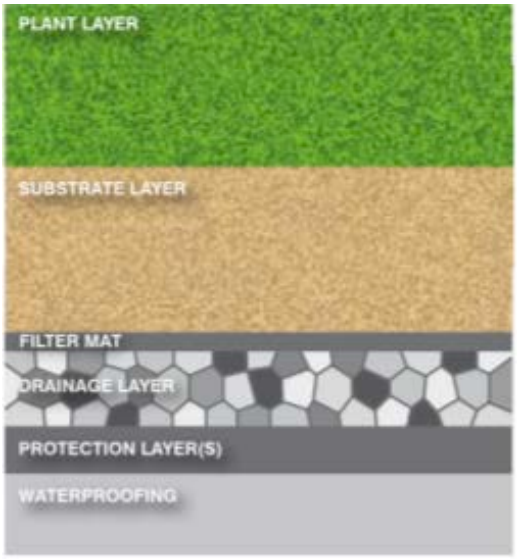
Figure 15. Typical Lindum wildflower green roof structure as provided by Lindum Ltd.



6.6.4.2 Native Planting

To improve the biological value of the site and compensate for the loss of scrub / scattered trees, small native species trees and shrubs will be planted along the boundaries of the site. Species recommended for their small size and aesthetic value include Holly (*Ilex aquifolium*), Hawthorn (*Crataegus monogyna*), Elder (*Sambucus nigra*), Dogwood (*Cornus sanguinea*), Spindle (*Euonymus europaeus*), Wild Cherry (*Prunus avium*), Bullace (Prunus domestica ssp. Insititia), Dog Rose (*Rosa canina*) and Guelder Rose (*Viburnum opulus*).

Flower beds will be planted with a mix of native and non-native species which will provide a food resource for pollinating insects, which will provide an increased food resource for a range of other species. Species recommended to be included are Lavender, Stinking Hellebore (*Helleborus foetidus*), Marjoram (*Origanum vulgare*), Valerian (*Valeriana officinalis*) and Broom (*Cytisus scoparius*).

6.6.5 Insect Bricks

Three insect brick will be installed onto both The Mansion Block and The Mews Block. These will be located adjacent to retained / planted vegetation wherever possible to increase the likelihood of them being used.

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7.0 REFERENCES

The measures outlined within this report will ensure that the existing features of ecological value to be retained are protected, whilst also providing an overall increase of the value of the site for biodiversity. The proposed planting will ensure that there is an improved resource for insects and birds with indirect benefits for a range of other species which feed on insect, whilst the bird boxes, bat bricks and hedgehog homes will provide new opportunities for nesting, roosting and shelter for these species.

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