

*ecological support, management &
solutions*



Olde Oak

Newport

Preliminary Ecological Appraisal

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Table of Contents

EXECUTIVE SUMMARY	4
1.0 INTRODUCTION	5
1.1 BRIEF	5
1.2 SITE DESCRIPTION & LOCATION.....	6
1.3 PROPOSED DEVELOPMENT	6
2.0 RELEVANT LEGISLATION AND POLICY	7
2.1 LEGISLATION	7
2.1.1 <i>The Conservation of Habitats and Species Regulations (2017)</i>	7
2.1.2 <i>The Wildlife and Countryside Act (1981) (as amended)</i>	7
2.1.3 <i>The Countryside and Rights of Way Act (2000)</i>	7
2.1.4 <i>NERC Act</i>	7
2.1.5 <i>Protection of Badgers Act</i>	7
2.2 POLICY	8
2.2.1 <i>National</i>	8
2.2.2 <i>Local- Newport Local Development Plan</i>	10
3.0 METHODOLOGY	11
3.1 FIELD SURVEY	11
3.1.1 <i>Habitats</i>	11
3.1.2 <i>Bats</i>	11
3.1.3 <i>Badger</i>	11
3.2 ASSESSMENT METHODOLOGY	11
3.2.1 <i>Introduction</i>	11
3.2.2 <i>Valuation</i>	12
3.3 LIMITATIONS	12
4.0 ECOLOGICAL BASELINE	13
4.1 VEGETATION SURVEY RESULTS	13
4.1.1 <i>Improved Grassland</i>	13
4.1.2 <i>Scattered Trees</i>	13
4.1.3 <i>Hard Standing</i>	14
4.1.4 <i>Ornamentals</i>	14
4.1.5 <i>Hedgerow</i>	15
4.1.6 <i>Buildings</i>	15
4.2 BAT SURVEY RESULTS	15
4.2.1 <i>Buildings</i>	15
4.2.2 <i>Trees</i>	17
4.3 BADGERS	17
4.4 REPTILES.....	17
4.5 BREEDING AND NESTING BIRDS.....	17
5.0 LIKELY ECOLOGICAL IMPACTS IN ABSENCE OF MITIGATION	18
5.1 INTRODUCTION.....	18
5.2 SITE PREPARATION AND CONSTRUCTION.....	18
5.2.1 <i>Impacts to Habitats</i>	18

5.2.2 Impacts to Wildlife	18
5.3 SITE OPERATION	18
5.3.1 Impacts to Wildlife	18
6.0 RECOMMENDATIONS & OUTLINE MITIGATION PROPOSALS	19
6.1 INTRODUCTION	19
6.2 BATS	19
6.2.1 Emergence surveys	19
6.2.2 Sensitive Lighting	19
6.2.3 Roof Underlining	20
6.2.4 Breeding and Nesting Birds	21
6.3 ENHANCEMENTS	21
6.3.1 Planting	21
6.3.2 Hedgehogs	21
6.3.3 Bat and Bird Bricks	22
7.0 REFERENCES	23

Executive Summary

A residential development of 6 houses is proposed at the Olde Oak, Newport for which full planning permission is sought.

Ecosupport Ltd was instructed by Punch Partnerships to undertake a Preliminary Ecological Appraisal (PEA) of 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:

- Extended Phase I Habitat Survey (April 2019)
- Preliminary Roost Assessment (buildings) (April 2019)

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 bats to be roosting within the PH
- Breeding and nesting birds

In the absence of any mitigation measures, the proposed development is anticipated to result in likely adverse effects (significance level to be determined following additional survey work).

Suitable mitigation measures will be outlined within reports that will accompany this document following the conclusion of the additional survey work recommended.

1.0 INTRODUCTION

1.1 Brief

Ecosupport Ltd was commissioned by Punch Partnerships to conduct a PEA of the Olde Oak Public House (PH), and associated grounds. 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:

- 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 appropriate
- Make recommendations for any necessary ecological avoidance, mitigation and compensation measures where possible at a PEA stage
- Make recommendations for site ecological enhancements as per planning policy

NB If the development does not take place within 24 months of this report then the findings of this survey will no longer be considered valid and should be repeated.

This survey takes no account of seasonal variation or fluctuations in the presence of any species that might take up residence following this report. Lack of signs of a particular species does not confirm its absence, merely that there was no indication of its presence at the time of survey.

1.2 Site Description & Location

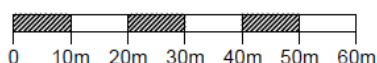
The site comprises of the Olde Oak PH (now partially converted to a café) and associated grounds located off Ruskin Avenue, Newport, NP10 0AA (centered on OS grid reference ST2737288797) (**Fig 1**). The site is bounded by a small lane to the north, Ruskin Avenue to the west, a private carpark to the south and residential dwellings to the east. The surrounding environ is urban with the site located within the suburbs of Newport.

Figure 1. Location plan of the site with redline boundary.



Location Plan

1:1250 scale



1.3 Proposed Development

It is understood the development entails the demolition the PH to make way for the construction of 6 new dwellings with associated gardens and parking spaces.

2.0 RELEVANT LEGISLATION AND POLICY

2.1 Legislation

2.1.1 *The Conservation of Habitats and Species Regulations (2017)*

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.

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).

2.1.3 *The Countryside and Rights of Way Act (2000)*

This 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 *NERC Act*

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.

2.2 Policy

2.2.1 National

The revised National Planning Policy Framework (NPPF) (Ministry of Housing, Communities and Local Government, 2019) outlines a number of more robust measures to ensure the impacts of development upon the Country's biodiversity interests are appropriately mitigated against whilst also seeking to achieve a 'net gain'. The key policy test relating to developments and biodiversity is outlined below.

Chapter 15. Conserving and Enhancing the Natural Environment

170. Planning policies and decisions should contribute to and enhance the natural and local environment by:

- a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);*
- b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;*
- c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;*
- d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;*
- e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and*
- f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.*

171. Plans should: distinguish between the hierarchy of international, national and locally designated sites; allocate land with the least environmental or amenity value, where consistent with other policies in this Framework; take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure; and plan for the enhancement of natural capital at a catchment or landscape scale across local authority boundaries.

172. Great weight should be given to conserving and enhancing landscape and scenic beauty in National Parks, the Broads and Areas of Outstanding Natural Beauty, which have the highest status of protection in relation to these issues. The conservation and enhancement of wildlife and cultural heritage are also important considerations in these areas, and should be given great weight in National Parks and the Broads. The scale and extent of development within these designated areas should be limited. Planning permission should be refused for major development⁵⁵ other than in exceptional circumstances, and where it can be demonstrated that the development is in the public interest. Consideration of such applications should include an assessment of:

- a) the need for the development, including in terms of any national considerations, and the impact of permitting it, or refusing it, upon the local economy;*
- b) the cost of, and scope for, developing outside the designated area, or meeting the need for it in some other way; and*
- c) any detrimental effect on the environment, the landscape and recreational opportunities, and the extent to which that could be moderated.*

173. Within areas defined as Heritage Coast (and that do not already fall within one of the designated areas mentioned in paragraph 172), planning policies and decisions should be consistent with the special character of the area and the importance of its conservation. Major development within a Heritage Coast is unlikely to be appropriate, unless it is compatible with its special character.

Habitats and Biodiversity

174. To protect and enhance biodiversity and geodiversity, plans should:

- a) 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*
- b) 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.*

175. When 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 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 on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;*
- 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 reasons⁵⁸ and a suitable compensation strategy exists; and*
- d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.*

176. The following should be given the same protection as habitats sites:

- a) potential Special Protection Areas and possible Special Areas of Conservation;*
- b) listed or proposed Ramsar sites; and*
- c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.*

177. The presumption in favour of sustainable development does not apply where development requiring appropriate assessment because of its potential impact on a habitats site is being planned or determined.

2.2.2 Local- Newport Local Development Plan

Policies CE8 (Locally Designated Nature Conservation and Geological Sites) and GP5 (General Development Principles- Natural Environment) of the Newport Local Development Plan (2011- 2026) state the following pertinent to protecting local biodiversity interests:

Policy CE8- Locally Designated Nature Conservation Geological Sites

'Proposals affecting locally designated sites will only be permitted where:

- i) there would be no overall loss of the nature conservation resource for which the site has been designated;*
- ii) there would be no significant adverse effect on the geological interest of the site;*
- iii) appropriate mitigation or compensatory measures can be achieved.'*

Policy GP5- General Development Principles- Natural Environment

'Development will be permitted where, as applicable:

- i) the proposals are designed and managed to protect and encourage biodiversity and ecological connectivity, including through the incorporation of new features on or off site to further the UK, Welsh and/or Newport biodiversity action plans;*
- ii) the proposals demonstrate how they avoid, or mitigate and compensate negative impacts to biodiversity, ensuring that there are no significant adverse effects on areas of nature conservation interest including international, European, national, Welsh section 4232 and local protected habitats and species, and protecting features of importance for ecology;*
- iii) the proposal will not result in an unacceptable impact on water quality;*
- iv) the proposal should not result in the loss or reduction in quality of high quality agricultural land (grades 1, 2 and 3a);*
- v) there would be no unacceptable impact on landscape quality;*
- vi) the proposal includes an appropriate landscape scheme, which enhances the site and the wider context including green infrastructure and biodiversity networks;*
- vii) the proposal includes appropriate tree planting or retention where appropriate and does not result in the unacceptable loss of or harm to trees, woodland or hedgerows that have wildlife or amenity value.'*

3.0 METHODOLOGY

3.1 Field Survey

3.1.1 Habitats

The field survey work which forms the basis of the findings of this report was carried out by Lyndsey McBean BSc (Hons) PGCert GradCIEEM (the author), project ecologist with Ecosupport Ltd.

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

3.1.2 Bats

An assessment was made of the suitability of the buildings and trees on site to support roosting bats based on the presence of any Potential Roost Features (PRFs) during April 2019. 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 (including the loft space of the building on site). The survey conformed to current best practice guidance as described *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (Collins, 2016) and was carried out by Lyndsey McBean (class level 1 licence number 2018 – 38386 – CLS – CLS).

3.1.3 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 and determining any potential foraging and commuting usage. In accordance with the *Badgers and Development: A Guide to Best Practice and Licensing* (Natural England, 2011) guidance, the survey accounted for the site itself and all land within 30m from the site 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 Assessment Methodology

3.2.1 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.

3.2.2 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.

3.3 Limitations

A full inspection of the loft space(s) of the PH could not be completed at the time of survey due to unstable loft flooring, therefore internal evidence of bat presence may have been missed (the risks of this was however considered low due to the nature of the buildings construction). All other areas of the development footprint were covered and there were not considered to be any other significant limitations of the survey.

4.0 ECOLOGICAL BASELINE

4.1 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:

- Improved grassland
- Scattered trees
- Hard standing
- Ornamentals
- Hedgerow
- Buildings

4.1.1 Improved Grassland

Improved grassland bordered the grounds of the PH and dominated the PH garden (**Fig 2**). Forb species present were dominated by common lawn grasses including; Dandelion (*Taraxacum officinale*), Common Daisy (*Bellis perennis*), Cuckooflower (*Cardamine pratensis*), Creeping Buttercup (*Ranunculus repens*), Ribwort Plantain (*Plantago lanceolate*), Common Mouse-ear (*Cerastium fontanum*), Groundsel (*Senecio vulgaris*), Curled Dock (*Rumex crispus*), Ground Ivy (*Glechoma hederacea*), Silverweed (*Potentilla anserine*), Wild Strawberry (*Fragaria vesca*) and Ragwort (*Jacobaea vulgaris*).

Figure 2. Improved grassland to the rear of the PH.



4.1.2 Scattered Trees

One Silver Birch (*Betula pendula*) was situated in the south western corner of the site and 2 Cherry trees (*Prunus* spp) were located to the north west of the PH garden. Scattered Buddleia (*Buddleja* spp) bordered the PH in multiple locations.

4.1.3 Hard Standing

Hard standing consisted of a bordering red brick pavement (**Fig 3**) and a tarmac bin storage area to the north of the PH (**Fig 4**). There was some encroaching Dandelion in both areas.

Figure 3. Red brick pavement bordering the PH.



Figure 4. Tarmac bin area to the north of the PH.



4.1.4 Ornamentals

Various scattered ornamental species bordered the north and south of the PH.

4.1.5 Hedgerow

An intact ornamental Cherry Laurel (*Prunus laurocerasus*) hedgerow separates the bin area from the improved grassland to the north of the PH (**Fig 5**).

Figure 5. Intact Cherry Laurel hedgerow to the north of the PH.



4.1.6 Buildings

The final habitat type on site was buildings with this consisting of the PH. Further descriptions of this building are provided in **Table 1** below.

4.2 Bat Survey Results

4.2.1 Buildings

The findings of the Preliminary Roost Assessment (PRA) of the building on site is outlined in **Table 1** below.

Table 1. Results of the PRA undertaken of the PH.

Building	Fig	Description of Construction	PRFs / Evidence of Occupation	Assessed Roost Potential
PH	Figure 6. View of the north western externals of the PH.  Figure 7. Internal loft space of the PH. 	Brick constructed PH with a bitumen felt roof (Fig 6). UPVC soffits and boarding border the PH in multiple locations. The western section of the PH has a butterfly roof with the eastern (now containing the café) having a flat roof. A UPVC porch is attached to the western face of the building. The internal loft space is lined with largely intact wooden sarking and supported by steel beams (Fig 7) with the gables consisting of exposed brick. No wooden beams are present.	Large sections of missing mortar under coping bricks on the southern side; large sections of missing mortar between bricks in wall on the southern side that have the potential to lead into a cavity; gaps in soffit. The bitumen felt roof was intact and sealed and did not offer any access points for bats.	Low

4.2.2 Trees

The trees on site were either immature and/ or did not support any PRFs and are therefore considered to hold **Negligible** potential for roosting bats.

4.3 Badgers

No evidence of foraging or commuting mammals was found within the site and no mammals burrows were identified. Due to the urban nature of the surrounding environ and bordering habitat, it is unlikely Badgers will use the site. The site is considered to hold **Negligible** potential for Badgers.

4.4 Reptiles

Although the grassland on site is currently unmanaged, the forb species present indicate the habitat has been highly managed until recently. This, in combination with the urbanised surrounding habitats and the deficiency of suitable sheltering habitat, mean the site is considered to hold **Negligible** potential for reptiles.

4.5 Breeding and Nesting Birds

The scattered trees and hedgerow offer limited onsite nesting opportunities for common breeding and nesting birds. Due to these limited opportunities, the site is considered to hold **Low** 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 current proposals (although only outline) will involve the loss of trees, hedgerow and the PH. The PH has the potential to support roosting bats and the hedgerow and scattered trees have the potential to support local common breeding and nesting birds. The loss of habitat would have a **low adverse impact** to habitat of local value.

The proposals for the development include the planting of new hedgerows and planting of scattered trees which will provide an increase in nesting opportunities for breeding and nesting birds post-development. Therefore, there will be a **low positive impact** on ecology in the local area.

As the outline proposals involve the creation of gardens for the new dwellings, it is not anticipated there will be a loss of grassland habitat on site. Therefore, a **neutral impact** is likely.

5.2.2 Impacts to Wildlife

Site clearance will result in the clearing of onsite scattered trees and hedgerow which has the potential to disturb nesting birds and damage their nests. Therefore, an **adverse impact is likely**.

The PH has been identified as having a low potential to support roosting bats therefore there is the potential for direct impacts to bat roosts present within the building, including risk of injury / death and loss of roost. It is considered an **adverse impact is likely** if bats are found to be roosting within the building.

5.3 Site Operation

5.3.1 Impacts to Wildlife

As the plans currently entail the introduction of more scattered trees and hedgerows, there will be a net gain of nesting and breeding bird habitat on site and this will have a **likely positive impact** upon local breeding and nesting birds.

Without mitigation, the demolition of the PH will result in the loss of possible bat roosting opportunities onsite and this will have a **possible adverse impact** upon local bats.

6.0 RECOMMENDATIONS & OUTLINE MITIGATION PROPOSALS

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 proposed mitigation and compensation is appropriate and proportionate.

6.2 Bats

6.2.1 Emergence surveys

Based on the **Low** roost assessment of the PH, one dusk emergence survey will be required in line with the best practice guidance (**Table 2**) (Collins (ed) 2016) to identify the presence/absence of bat roosts and characterise any roost present.

Table 2. Best practice guidance of bat surveys for different roost suitability's (Collins (ed) 2016).

Low Roost Suitability	Moderate Roost Suitability	High Roost Suitability / Known Roost
One survey visit. One dusk emergence or dawn re-entry survey.	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey*.	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third could be either dusk or dawn.
May – August	May – September with at least one of the surveys between May - August	May – September with at least two surveys between May and August

If bats are recording roosting an appropriate mitigation strategy will be produced. A license will then be required from Natural England to allow the building to be legally demolished. This would be submitted once planning permission is granted.

6.2.2 Sensitive Lighting

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, ie 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).

Figure 8. (a) Shield 'barn doors' (b) cowl hood; (c) shield and; (d) external louvre Images from ILP (2018).



6.2.3 Roof Underlining

In-line with Natural England (2015) guidance roofing felt should be utilised as opposed to Breathable Roof Membrane (BRM) or other fibrous materials for all roofing works as there is considerable evidence to suggest that such material poses a threat to bats occupying a structure due to entanglement in the fibres (Natural England, 2015).

6.2.4 Breeding and Nesting Birds

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

6.3 Enhancements

6.3.1 Planting

As a general enhancement, any landscape planting will aim for a 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 (*Illex 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.

6.3.2 Hedgehogs

The landscaping areas around the dwellings will have a Hedgehog home incorporated (such as the Igloo Hedgehog home or Hogitat Hedgehog house). This will be provided within or adjacent to areas of planted / retained trees / shrubs and will provide a rapidly declining species with a place to shelter / hibernate.

Should close-board fencing be installed at property boundaries provision will be made to promote site connectivity and extended 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, such as the ecology buffer strips. Small signage could be installed at these points to ensure they remain open upon completion of the development. The People's Trust for Endangered Species provide such signage, the purchase of which also supports conservation efforts (**Figure 9**).

Figure 9. Hedgehog habitat connectivity (PTES, 2017).



6.3.3 Bat and Bird Bricks

To act as biodiversity enhancement, the newly built dwellings will include one Swift brick and one bat brick. The Ibstock 'Eco Home for Swifts' brick will be installed (**Fig 10**) as this is a discreet and attractive box ideal for new dwellings. The box should be installed under the eaves or in high walls in shaded areas out of direct sunlight and away from windows. The installation of such boxes has also been shown to be beneficial for House Sparrows (*Passer domesticus*) which are a nationally declining species. The bat brick used should be the ibstock bat brick B as this is available in a variety of different brick colours and requires no maintenance (**Fig 11**). Both boxes should be positioned as close to the eaves as possible and away from windows.

Figure 10. Ibstock eco home for swifts that will be incorporated into the newly built dwellings.



Figure 11. The Ibstock bat brick 'B' that will be incorporated into the newly built dwellings.



7.0 REFERENCES

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