

Appendix 4: Preliminary Ecological Appraisal / MKA Ecology



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Preliminary Ecological Appraisal & Preliminary Roost Assessment

Lansdowne Terraces and Guilford Street,
Bloomsbury

Site	Lansdowne Terraces and Guilford Street, Bloomsbury
Project number	154524
Client name / Address	Burd Haward Architects, 24 Wolsey Mews, London NW5 2DX

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Declaration of compliance



This Preliminary Ecological Appraisal and Preliminary Roost Assessment has been undertaken in accordance with British Standard 42020:2013 “Biodiversity, Code of practice for planning and development”. The information which we have provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology and Environmental Management’s (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bona fide opinions.

MKA Ecology Ltd is a CIEEM Registered Practice. This means that MKA Ecology Ltd are formally recognised for high professional standards, working at the forefront of our profession.

Validity of data

Unless stated otherwise the information provided within this report is valid for a maximum period of 24 months from the date of survey. If works at the site have not progressed by this time an updated site visit may be required in order to determine any changes in site composition and ecological constraints.

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1. EXECUTIVE SUMMARY

In April 2024 MKA Ecology Limited was commissioned to undertake a Preliminary Ecological Appraisal and Preliminary Roost Assessment of Lansdowne Terraces and Guilford Street, Bloomsbury. The appraisal included a habitat survey, protected species scoping survey and desktop study of protected and notable sites and species in the area. A Site visit was undertaken on 16 April 2024.

The Site comprises a single five-storey building with associated hardstanding, trees and areas of introduced shrub. The proposed development involves the refurbishment and extension of the existing Georgian Townhouses at International Hall to provide improved university accommodation. The Site is surrounded by urban buildings and infrastructure but is located adjacent to Coram's Fields, a Site of Importance for Nature Conservation (SINC).

The following ecological constraints were identified at the Site with recommendations made as follows;

- **Invasive non-native plants:** Butterfly-bush *Buddleja davidii* and cherry laurel *Prunus laurocerasus* are present within the Site and, whilst not subject to legal parameters, are listed as a species of concern on the London's Invasive Species Initiative (LISI, 2014). As such, it is recommended that instances of these species are disposed of appropriately during the proposed works; and
- **Nesting birds:** Any required building clearance works or bird box rearrangements should be undertaken outside of the bird breeding season (September – February inclusive). Should these timings not be possible, a nesting bird check by a suitably qualified ecologist should take place prior.

Ecological opportunities exist to enhance biodiversity on the Site post-development. This includes native planting, bird boxes targeted to London Priority species, the provision of bat boxes, the provision of invertebrate houses, and the inclusion of green infrastructure, such as green roofs and green walls within the final development.

A Biodiversity Net Gain (BNG) assessment and an Urban Greening Factor (UGF) assessment have been commissioned and undertaken by MKA Ecology Limited to ensure that the proposed development is able to demonstrate a significant increase in biodiversity and green infrastructure provision within the Site, which should be updated following any design revisions. A Landscape and Ecology Management Plan (LEMP) should be produced to ensure the successful establishment and long-term management of newly created habitats.

The inclusion of ecological enhancement features is in line with local and regional planning policy, as well as the National Planning Policy Framework (NPPF). Enhancements will contribute towards a net

positive change in biodiversity on-site and ensure a sustainable development that helps to achieve both local and national biodiversity targets.

2. INTRODUCTION

2.1. Aims and scope of Preliminary Ecological Appraisal and Preliminary Roost Assessment

In April 2024 MKA Ecology Limited was commissioned to undertake a Preliminary Ecological Appraisal and Preliminary Roost Assessment at Lansdowne Terraces and Guilford Street, Bloomsbury by Burd Haward Architects in order to support a planning application for the refurbishment and extension of existing Georgian Townhouses at International Hall to provide improved university accommodation.

The aims of the Preliminary Ecological Appraisal were to:

- Undertake a desktop study to identify the extent of protected and notable species and habitats within 2km of the Site;
- Prepare a habitat map for the Site;
- Identify evidence of protected species/species of conservation concern at the Site;
- Assess the potential impacts of the proposed development, using existing plans;
- Outline recommendations for further survey effort where required; and
- Outline recommendations for biodiversity enhancements.

The aims of the Preliminary Roost Assessment were to:

- Undertake a desktop study to identify the locations of known bat roosts and activity records within 2km of the Site;
- Assess the suitability of the buildings and trees at the Site for roosting bats, and record any evidence of bat presence;
- Identify likely ecological impacts relating to the proposed development;
- Assess the need for further survey effort, a European Protected Species Licence or mitigation, if required; and
- Propose any suitable habitat enhancements for bat species, if required.

2.2. Site description and context

The survey area is shown on the map in Figure 1. Within this report this area is referred to as the Site or Lansdowne Terraces and Guilford Street, Bloomsbury. The Site is located in Central London (central grid reference: TQ 30408 82197) and falls under the authority of the London Borough of Camden. It is 0.1 ha, and comprises a five-storey residential building that backs onto a central courtyard at ground level.

2.3. Proposed development

The proposed development involves the refurbishment and extension of existing Georgian Townhouses at International Hall to provide improved university accommodation.

2.4. Legislation and planning policy

This Preliminary Ecological Appraisal and Preliminary Roost Assessment has been undertaken with reference to relevant wildlife legislation and planning policy.

Relevant legislation considered within the scope of this document includes the following:

- The Environment Act 2021;
- The Wildlife and Countryside Act 1981 (as amended);
- The Conservation of Habitats and Species Regulations 2017 (as amended);
- Natural Environment and Rural Communities (NERC) Act 2006;
- The Countryside and Rights of Way (CROW) Act 2000;
- Protection of Badgers Act 1992; and
- Wild Mammals (Protection) Act 1996.

Further information is provided in Appendix 1, including levels of protection granted to the species considered in Section 3.3.

In addition to obligations under wildlife legislation, the revised National Planning Policy Framework (NPPF) updated on 19 December 2023 requires planning decisions to contribute to conserving and enhancing the local environment. Further details are provided in Appendix 1.

Given that the Site is located within London, consideration of the London Plan (2021) has been given. The London Plan contains a number of policies relating to biodiversity, a brief summary of which is set out below:

- Policy G1 Green infrastructure;
- Policy G5 Urban greening;
- Policy G6 Biodiversity and access to nature;
- Policy G7 Trees and woodlands; and
- Policy G8 Food growing.

Camden Council has produced an adopted Local Plan (2017) which contains a single policy relating to biodiversity and habitat conservation (Policy A3).

Camden Council have produced a Biodiversity Action Plan, which identifies regional priority habitats and species (Camden Council, 2017). There is also a Biodiversity Action Plan for Greater London (London Biodiversity Partnership, 2022). Additionally, Camden have produced a Biodiversity and planning guidance document (Camden Council, 2018).

Further details of these policies are provided in Appendix 1. Where relevant these are discussed in further detail in Section 5.

3. METHODOLOGIES

This Preliminary Ecological Appraisal and Preliminary Roost Assessment has been undertaken in accordance with the Chartered Institute of Ecology and Environmental Management (CIEEM) Guidelines for Preliminary Ecological Appraisal, 2nd edition (CIEEM, 2017).

3.1. Desktop study

A data search was conducted for the Site and the surrounding 10km for internationally designated sites, and the surrounding area within 2km for nationally designated sites and species records. Data was retrieved from the sources listed in Table 1.

Table 1: Sources of data for desktop study

Organisation	Data collected	Date collected
Multi-agency Geographic Information for the Countryside (MAGIC) www.magic.gov.uk	Information on local, national and international statutory protected areas.	26/04/2024
Greenspace Information for Greater London (GiGL)	Information on protected and notable sites and species within 2km of the Site (TQ 30408 82197).	29/04/2024
Ordnance Survey maps and aerial photography	Information on habitats and connectivity between the Site and the surrounding landscape	26/04/2024
Plantlife Important Plant Areas (IPAs)	Information on important plant areas within 2km of the Site.	26/04/2024
Buglife Important Invertebrate Areas (IIAs)	Information on important invertebrate areas within 2km of the Site.	26/04/2024

3.2. UK Habitat Classification

Habitats were surveyed using the standardised UK Habitat classification and mapping methodology (UKHab Ltd, 2023). Data were recorded onto a Samsung Tablet in a Geographic Information System (GIS), in this instance QField, following a modified UK Habs Colour Mapping Palette. Dominant plant species were observed and recorded within each habitat type. The plant species nomenclature follows that of Stace (2019).

The DAFOR scale is used to describe the relative abundance of species. The scale is shown in Table 2. It is important to note that where a species is described as rare this description refers to its relative abundance within the Site and is not a description of its abundance within the wider landscape.

Therefore, a species with a rare relative abundance within the Site may be common within the wider landscape.

Table 2: DAFOR scale

DAFOR code	Relative abundance
D	Dominant
A	Abundant
F	Frequent
O	Occasional
R	Rare

3.3. Protected and notable species scoping survey

As part of the Preliminary Ecological Appraisal and Preliminary Roost Assessment, an assessment of the potential for the habitats on-site to support protected or notable species was made. This assessment was based on the quality, extent and interconnectivity of suitable habitats, along with the results of the desktop study detailed in Section 3.1. This includes Species of Principal Importance as listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006), and Red and Amber listed Birds of Conservation Concern (BoCC) as per Stanbury *et al.*, 2021 (see Appendix 1).

Protected and notable species considered within the protected species scoping survey for Lansdowne Terraces and Guilford Street, Bloomsbury include the following:

- Plants and fungi: Creeping marshwort *Apium repens*, bluebell *Hyacinthoides non-scripta* and Jersey cudweed *Gnaphalium luteoalbum*.
- Invertebrates: Stag beetle *Lucanus cervus*, brown-banded carder bee *Bombus humilis* and Jersey tiger *Euplagia quadripunctaria*.
- Fish: European eel *Anguilla anguilla*, river lamprey *Lampetra fluviatilis*, brown trout *Salmo trutta* subsp. *fario*.
- Amphibians: Natterjack toad *Epidalea calamita*, great crested newt *Triturus cristatus* and common toad *Bufo bufo*.
- Reptiles: Adder *Vipera berus*, common lizard *Zootoca vivipara*, slow-worm *Anguis fragilis*, grass snake *Natrix helvetica helvetica*.
- Birds: With special reference to species listed under Schedule 1 of The Wildlife and Countryside Act 1981 (as amended) and Species of Principal Importance.
- Mammals: Badger *Meles meles*, bats (all species), water vole *Arvicola amphibius*, otter *Lutra lutra*, hazel dormouse *Muscardinus avellanarius*, hedgehog *Erinaceus europaeus*, brown hare

Lepus europaeus, harvest mouse *Micromys minutus*, polecat *Mustela putorius* and European beaver *Castor fiber*.

In each case the likelihood of presence of these protected species at the Site was classified as being either confirmed, high, moderate, low or negligible.

- Confirmed:** The species is confirmed on the Site during the Preliminary Ecological Appraisal, previous survey effort or recent records.
- High:** Habitats are available on-site which are highly suitable for this species and there are records within the desktop study. The surrounding areas also provide widespread opportunities for the species which are well connected to the Site.
- Moderate:** Some suitable habitat available on-site for the species although not of optimum quality. Species is present with the desktop study.
- Low:** Some suitable habitat available on-site for the species but this is low value and possibly of small scale or with poor connectivity. No, or very few, records returned in the desktop study.
- Negligible:** No suitable habitat available for the species, or very little poor-quality habitat.

This protected species scoping survey is designed to assess the *potential* for presence or absence of a particular species or species group, and does not constitute a full survey for these species.

3.4. Preliminary Roost Assessment

An internal and external inspection of buildings within the Site was undertaken following guidance set out in *Bat Surveys for Professional Ecologists – Good Practice Guidelines (4th edition)* (Collins, 2023). All buildings within the Site were inspected and the locations of these are shown in Figure 1.

The following features were recorded for buildings:

- Location;
- Type;
- Dimensions;
- Age;
- Construction materials; and
- Current use.

Descriptions of potential and actual access points and roosting places were recorded (including height above ground level and aspect), as well as descriptions of evidence of bats found. The following types of evidence of use by bats were recorded:

- Location and number of any live bats;
- Location and number of any bat corpses or skeletons;
- Locations and number of bat droppings;
- Notes on relative freshness, shape and size of bat droppings;
- Location and quantity of any bat feeding remains;
- Location of clean, cobweb-free timbers, crevices and holes;
- Location of characteristic staining from urine and/or grease marks;
- Location and quantity of bat-fly (Nycteribiidae) pupal cases;
- Location of known and potential access points to the roost; and
- Location of the characteristic smell of bats.

The following features were recorded for trees:

- Species; and
- Diameter at breast height.

Descriptions of suitable and actual roost features were recorded (including height above ground level and aspect), as well as descriptions of evidence of bats found.

Potential roost features recorded were:

- Woodpecker holes;
- Rot holes;
- Hazard beams;
- Other vertical or horizontal cracks and splits (such as frost-cracks) in stems or branches;
- Partially detached platy bark;
- Knot holes arising from naturally shed branches, or branches previously pruned back to the branch collar;
- Man-made holes (e.g. cavities that have development from flush cuts) or cavities created by branches tearing out from parent stems;
- Cankers (caused by localised bark death) in which cavities have developed;
- Other hollows or cavities, including butt-rots;
- Double-leaders forming compression forks with included bark and potential cavities;
- Gaps between overlapping stems or branches;
- Partially detached ivy with stem diameters in excess of 50mm; and
- Bat, bird or dormouse boxes.

The following types of evidence of use by bats were recorded for trees:

- Presence of bats;
- Bat droppings in, around or below a potential roost feature;
- Odour emanating from a potential roost feature;
- Audible squeaking at dusk or in warm weather; and
- Staining below the potential roost feature.

Buildings and trees were assessed for their bat roost suitability according to the scheme presented in Collins (2023). These categories are shown in Table 3.

Table 3: Categories to assess roost suitability in buildings and trees (adapted from Collins, 2023)

Roost suitability	Description
None	No habitat features on-site likely to be used by any roosting bats at any time of the year (i.e., a complete absence of crevices/suitable shelter at all ground/underground levels)
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 year. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions* 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 hibernation site).
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potential for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat. These structures have potential to support high conservation status roosts e.g., maternity or classic hibernation site.

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

The guidelines for categorisation of bats in England by distribution and rarity (adapted from Reason and Wray 2023) are shown in the tables below.

Table 1: Categorising bats by rarity (South-eastern/East Anglia to The Wash)

Rarity within England	Species
Rarest Annex II species and very rare	<ul style="list-style-type: none"> Alcathoe's bat <i>Myotis alcathoe</i> Barbastelle <i>Barbastella barbastellus</i>
Rarer or restricted distribution	<ul style="list-style-type: none"> Whiskered bat <i>Myotis mystacinus</i> Brandt's bat <i>Myotis brandtii</i> Leisler's bat <i>Nyctalus leisleri</i> Nathusius' pipistrelle <i>Pipistrellus nathusii</i> Serotine <i>Eptesicus serotinus</i>
Widespread in many geographies, but not abundant in all	<ul style="list-style-type: none"> Noctule <i>Nyctalus noctula</i> Daubenton's bat <i>Myotis daubentonii</i> Natterer's bat <i>Myotis nattereri</i>
Widespread	<ul style="list-style-type: none"> Common pipistrelle <i>Pipistrellus pipistrellus</i> Soprano Pipistrelle <i>Pipistrellus pygmaeus</i> Brown long-eared bat <i>Plecotus auritus</i>

Table 2: Level of importance of roost type

Geographic frame of reference	Roost type
Site, District, Local or Parish	Feeding perches Non-breeding day roosts Mating sites (excluding individual trees and swarming sites) Small numbers of hibernating bats Larger transitional roosts Maternity sites (for widespread species, unless colony atypically large)
County	Hibernation sites (excluding rarest Annex II species) Maternity sites (for widespread but not abundant in all geographies species unless colony atypically large) Autumn swarming sites (can reach regional importance depending on assemblage)
Regional	Maternity sites (depending on rarity and value of assemblage) Hibernation sites (for rarest Annex II species, depending on assemblage and size)
National/UK	Sites meeting SSSI guidelines*
International	SAC sites

*Sites meeting SSSI (Sites of Special Scientific Interest) selection guidelines include Barbastelle maternity roosts and mixed species hibernacula assemblages

3.5. Equipment

The inspection of buildings was conducted using a variety of equipment including ladders, digital video endoscope, inspection mirrors, binoculars, high-powered torch and a digital camera.

3.6. Surveyor, author and reviewer

The survey was undertaken, and report written, by Rory Roche ACIEEM, Senior Ecologist at MKA Ecology Limited and Elle Barker, Graduate Ecologist at MKA Ecology Limited. Rory has eight years' experience within the industry conducting Preliminary Ecological Appraisals and Preliminary Roost Assessments, and holds a Natural England bat licence. Elle is in her first year in the industry. The report has been drafted by Elle, and reviewed and authorised by Rory.

3.7. Date, time and weather conditions

See Table 6 below for details of the date, time and prevailing weather conditions recorded during the Site visit for the Preliminary Ecological Appraisal and Preliminary Roost Assessment.

Table 6: Date, time and weather conditions of survey visit

Date	Time of survey	Weather conditions*
16 April 2024	09.00	Wind: BF4 Cloud: 4/8 Temp: 10°C Rain: None

*Wind as per Beaufort Scale / Cloud cover given in Oktas.

3.8. Constraints

A single visit cannot always ascertain the presence or absence of a protected species. However, an assessment is made of the likelihood for protected species to occur based on habitat characteristics and the ecology of each species. Where there is potential for protected species, additional survey work may be required to ascertain their presence or absence.

Data on species records obtained from local biological records centres are sometimes only available at low spatial resolutions and are constrained by the voluntary nature of the contributions and what has been chosen to be submitted as records. While these records provide a useful indication of species

recorded in the local area, in particular protected or notable species, the data is not necessarily an accurate reflection of species assemblages or abundance in the vicinity.

Whilst the loft spaces of building B1 were accessed, a detailed assessment of these loft spaces could not be undertaken due to the small size of the spaces and so were only assessed from the hatches. As such, a precautionary approach has been undertaken when assigning bat roost potential to the buildings.

4. RESULTS

4.1. Desktop study

An ecological desktop study was completed for the Site and the surrounding 10km for internationally designated sites, and the surrounding 2km for nationally designated sites and species records. Data provided by Greenspace Information for Greater London (GiGL) identified a number of UK and European protected species, Species of Principal Importance (SPI) and Habitats of Principal Importance (HPI) (as listed under Section 41 of the NERC Act 2006), and species of conservation concern within 2km of the Site. It should be noted that this is not a comprehensive list of the distribution or extent of the local flora and fauna of conservation importance. These species records are discussed in greater detail in the protected species scoping survey section (Section 4.3 below).

Details of internationally designated sites identified within this search are displayed in Table 7 below. These consist of one Special Protection Area (SPA) and Ramsar site.

Table 7: International designated sites within 10km of Lansdowne Terraces and Guilford Street, Bloomsbury

Site name	Area (ha)	Distance and direction	Reasons for selection
Lee Valley SPA and Ramsar	451.30	7.0km NE	Designated for internationally important numbers of breeding and wintering wildfowl, especially gadwall <i>Anas strepera</i> and shoveler <i>Anas clypeata</i> , and for wintering bittern <i>Botaurus stellaris</i> .

Details of one statutorily designated site identified as part of the desktop study are displayed in Table 8 below. The site is a Local Nature Reserve (LNR).

Table 8: Statutorily designated sites within 2km of Lansdowne Terraces and Guilford Street, Bloomsbury

Site name	Area (ha)	Distance and direction	Reasons for selection
Camley Street Nature Park LNR	0.84	1.2km NW	Reserve providing natural habitat for birds, butterflies and amphibians, and a rich variety of plant life. The site also supports the presence of rare Earthstar fungi.

The desktop study identified 46 Sites of Importance for Nature Conservation (SINC). However, due to the nature of the proposed works, it is considered appropriate to only consider those immediately adjacent to or within the Site. Accordingly, only details of non-statutorily designated sites identified within 1km of the Site have been included in Table below.

Table 9: Non-statutorily designated sites within 1km of Lansdowne Terraces and Guilford Street, Bloomsbury

Site name	Area (ha)	Distance and direction	Reasons for selection
Coram's Fields SINC (Local)	2.70	Adjacent to the E	The site contains a range of habitats including scattered trees, hedgerows, introduced shrub and grassland. The east of the site contains a wildlife garden with a pond, which supports common frog <i>Rana temporaria</i> and newts.
St George's Gardens SINC (Local)	1.06	0.2km N	A public park containing amenity grassland, scattered mature trees and introduced shrub which contain insect attracting plants and provide nesting cover for blackbirds <i>Turdus merula</i> and wrens <i>Troglodytes troglodytes</i> .
Russell Square SINC (Local)	2.49	0.3km SW	The site is one of the largest squares in central London, containing amenity grassland, a variety of mature scattered trees, introduced shrubs, and a hornbeam <i>Carpinus betulus</i> hedgerow.
St Andrew's Gardens SINC (Local)	0.66	0.4km NE	A small public park comprising of mature scattered trees, introduced shrub, and grassland containing wildflowers such as lesser celandine <i>Ranunculus ficaria</i> and yarrow <i>Achillea millefolium</i> . A wildlife area along the east boundary supports a wide variety of herbaceous plants.
Calthorpe Community Garden SINC (Local)	0.44	0.4km NE	The site contains a range of habitats including scattered trees, an artificial stream, pond. An area containing a mosaic of scrub and grassland with trees with abundance of deadwood is also present, providing habitat for birds and invertebrate species.
Gordon Square SINC (Local)	0.92	0.6km E	The site is a small London square comprising amenity grassland, introduced shrub and scattered trees, and supports a variety of breeding birds.

Site name	Area (ha)	Distance and direction	Reasons for selection
Lincoln's Inn Fields SINC (Local)	2.93	0.8km SE	The site contains mature scattered trees, grassland, hedgerows and introduced shrub which provides nest sites for common bird species, including blackbird and song thrush <i>Turdus philomelos</i> .
Wilmington Square SINC (Local)	0.39	0.8km NE	The site comprises amenity grassland, introduced native shrubs and scattered native trees.
Spa Fields Gardens SINC (Local)	0.84	0.8km NE	A medium sized, recently landscaped park, the site contains a range of habitats including species-rich ornamental flower beds, amenity grassland, scattered trees and introduced shrub.
Lloyd Square SINC (Local)	0.19	0.8km NE	The site comprises amenity grassland, flower beds, introduced shrub and scattered trees.
Skinner Street Open Space SINC (Local)	0.38	1.0km NE	The site contains areas of amenity grassland and mature trees, with ruderal and scrub communities.

Coram's Fields SINC (Local) is located across the road from the Site, approximately 10m east, which could provide foraging and roosting habitat for bats and birds, along with terrestrial and aquatic opportunities for amphibians

The Site lies within a Natural England Site of Special Scientific Interest (SSSI) Impact Risk Zones (IRZ) (Natural England, 2019). Developments that fall into the below categories require Local Planning Authority (LPA) consultation with Natural England:

- Airports, helipads and other aviation proposals;
- Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 4000m²; and
- General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

Given that the proposed development doesn't fall into the above categories, no LPA consultation is necessary.

The Site does not lie within any Important Plant Areas (IPA) or Important Invertebrate Areas (IIA).

4.2. UK Habitat Classification

The Site comprises a single large building and associated hardstanding, with some ornamental planting and trees within a courtyard. More detailed species lists, along with their relative abundance, can be found in Appendix 2. The UK habitat classification survey map is provided in Figure 1, at the end of this section. Descriptions of the habitat types present along with dominant species compositions are provided below.

Buildings - u1b5 (81 – Ruderal or ephemeral, 524 – Invasive non-native species, 818 – Residential building)

The Site comprises a single five-storey residential building (Building B1, Figure 1) of brick construct (Photograph 1, Appendix 3). Building B1 has a dual pitched roof clad with slate tiles, which supports slate ridge and hip tiles, with dormer loft hatches also present (Photograph 2, Appendix 3).

The building is in good condition and is largely devoid of vegetation aside from the occasional instances of ephemeral species which have colonised in cracks on the roof. Species present include maidenhair spleenwort *Asplenium trichomanes* and butterfly-bush (Invasive Non-Native Species (INNS) 1, Figure 1; Photograph 7, Appendix 3).

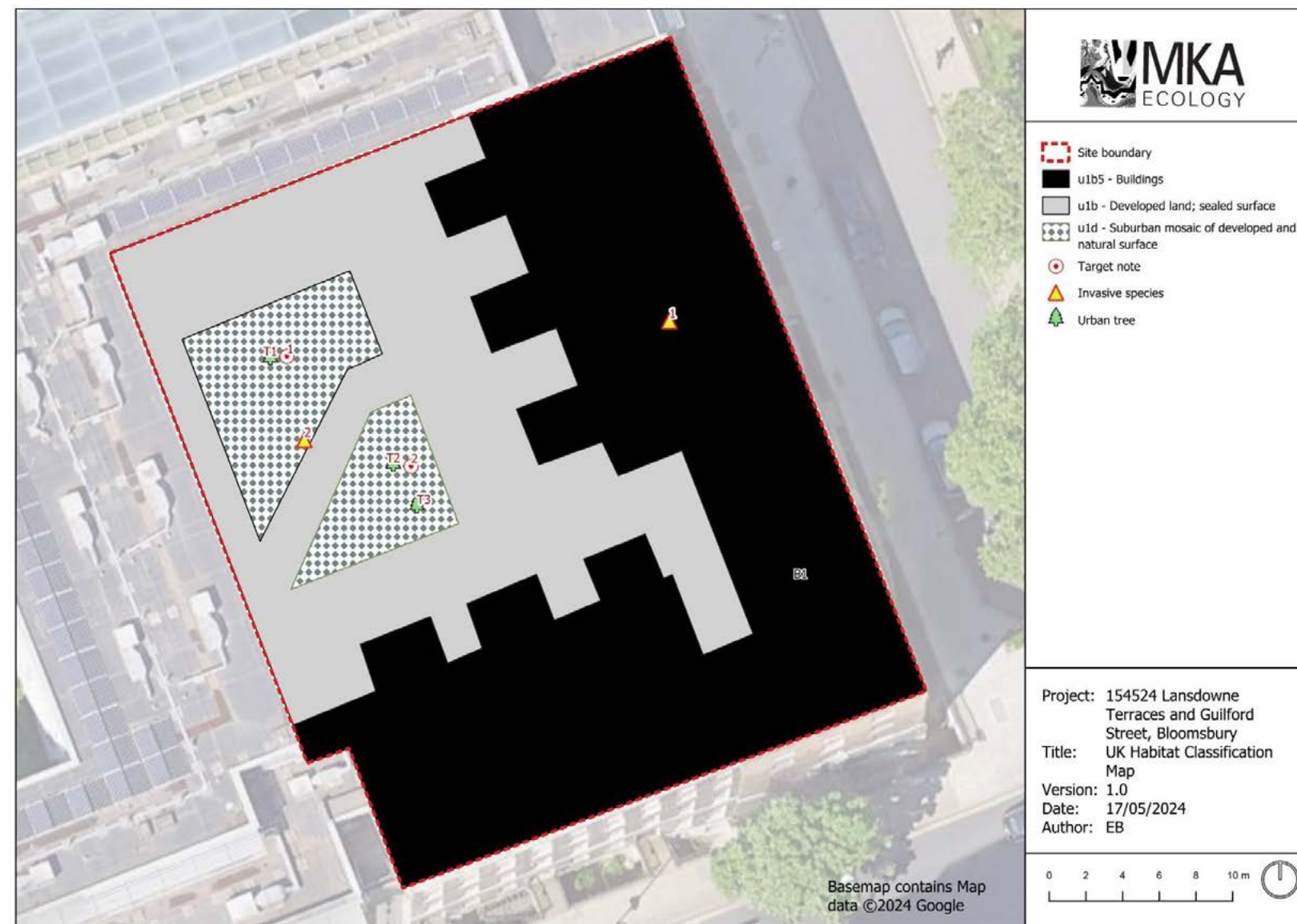
Developed land; sealed surface - u1b (845 – Ground level planters)

Building B1 backs onto a small central courtyard at ground level (Photograph 3, Appendix 3) with a paved pathway running around the edge and diagonally through its centre. Potted plants and trees are present on the hard surface of the courtyard (Photograph 3, Appendix 3).

Suburban mosaic of developed and natural surface - u1d (200 – Tree, 524 – Invasive non-native species, 845 – Ground level planters, 857 – Introduced shrub)

Within the courtyard are areas of introduced shrubs and three trees (Photograph 4, Appendix 3). Trees present include a semi-mature alder *Alnus glutinosa* and two young silver birch *Betula pendula*. Two bird boxes have been installed on the trees (Target Notes 1 and 2, Figure 1; Photographs 5 and 6, Appendix 3). Introduced shrub species include periwinkle *Vinca sp.*, tulip *Tulipa sp.* and cherry laurel (INNS2, Figure 1; Photograph 8; Appendix 3).

Figure 1: UK Habitat Classification map of Lansdowne Terraces and Guilford Street, Bloomsbury



Target Notes:

- Target Note 1: Bird box (Photograph 5, Appendix 3)
- Target Note 2: Bird box (Photograph 6, Appendix 3)

Invasive Non-native Species:

- INNS1: Butterfly-bush (Photograph 7, Appendix 3)
- INNS2: Cherry laurel (Photograph 8, Appendix 3)

4.3. Protected species scoping survey

Plants and fungi

The data search returned a number of records for protected and notable plant species within 2km of the Site. These included SPIs listed under Section 41 on the NERC Act (2006), Schedule 8 of the Wildlife and Countryside Act 1981 (as amended), as well as nationally rare and scarce, and red list species. Species of note include creeping marshwort, Jersey cudweed and bluebell. No protected or notable species were recorded within the Site. Given that the Site is dominated by built form, the likelihood of the Site supporting protected or notable plant species has assessed to be **negligible**.

The data search returned a number of records for invasive non-native species, including three-cornered garlic *Allium triquetrum* and Japanese knotweed *Fallopia japonica*. These species are listed as invasive on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), and on the London Invasive Species Initiative (LISI, 2014). Butterfly-bush (INNS1, Figure 1; Photograph 7, Appendix 3) is present on the roof of building B1 and cherry laurel (INNS1, Figure 1, Photograph 8, Appendix 3) is present within the courtyard. Whilst not listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), butterfly-bush and cherry laurel are listed as species of concern under the London Invasive Species Initiative (LISI). The presence of invasive non-native plant species on-site is **confirmed**.

Invertebrates

The data search returned a number of records for protected or notable invertebrate species within 2km of the Site; species of note include stag beetle, purple emperor *Apatura iris* and wall *Lasiommata megera*. Stag beetle is listed on Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and is a SPI on the NERC Act (2006). The closest stag beetle record was located 0.3km north dated from 2016.

The Site's small size and limited vegetation and habitats preclude it from supporting notable assemblages of invertebrates, including stag beetle. Overall, there is a **negligible** likelihood of the Site supporting protected or rare invertebrates or notable assemblages. This species group is not considered further in this report.

Fish

Three records of goldfish *Carassius auratus* were provided in the data search. The Site does not contain any waterbodies or watercourses to be able to support fish species. Therefore, this species group is not considered further in this report.

Amphibians

The desk study provided numerous records for common frog, in addition to a small number of records for common toad within 2km of the Site. The closest records of each are located 0.4km north-east and 1.3km north of the Site, respectively. No records of great created newt were provided in the desk study

and a search of Defra's MAGIC website returned no European Protected Species Licences granted for great crested newt within 2km of the Site. Reference to Ordnance survey and aerial imagery indicated the presence of no ponds within 500m of the Site and no connectivity due to the dense urban environment. Therefore, the likelihood that the Site supports amphibians has been assessed as **negligible**.

Reptiles

The desk study returned a small number of records for common lizard within a 2km radius of the Site, of which the most recent record was located 1.8km to the east of the Site dated 2021. There is no suitable habitat for reptiles on-site, and poor connectivity due to the surrounding dense urban environment. Therefore, the likelihood that the Site supports reptiles has been assessed as **negligible**.

Birds

Four species were recorded during the Site visit. These species are shown in Table 10 together with their conservation status. It is important to note that this is not a full inventory of species for the Site.

Table 10: Bird species recorded at Lansdowne Terraces and Guilford Street, Bloomsbury

Common name	Systematic name	S1 W&CA ¹	BoCC ² Status	S41 SPI ³	Local PrSp ⁴
Blackbird	<i>Turdus merula</i>	-		-	-
Feral pigeon	<i>Columba livia</i>	-	Green	-	-
Carrion crow	<i>Corvus corone</i>	-	Green	-	-
Rose-ringed parakeet	<i>Psittacula krameri</i>	-	Invasive	-	-

¹ Schedule 1 of The Wildlife and Countryside Act 1981 (see Appendix 1)
² Birds of Conservation Concern (see Appendix 1)
³ Section 41 (NERC Act 2006) 'Species of Principal Importance' (see Appendix 1)
⁴ Local Priority Species

The data search returned numerous records for protected and notable bird species within 2km of the Site, including species listed on Annex 1 of the Birds Directive, Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), Section 41 of the NERC Act (2006) and birds listed as Amber or Red under the Birds of Conservation Concern (Eaton et al., 2015). All wild birds, their active nests and eggs are protected under The Wildlife and Countryside Act 1981 (as amended), which makes it an offence deliberately, or recklessly, to kill or injure any wild bird or damage or destroy any active birds' nest or eggs. Species of note returned by the data search include swift *Apus apus*, house sparrow *Passer domesticus*, black redstart *Phoenicurus Ochruros* and herring gull *Larus argentatus*. The desk study also returned a large number of confidential records of peregrine falcon *Falco peregrinus*.

Black redstart is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) and are also listed as a London Priority Species. This species is known to be present in areas close to open

water and requires suitable areas of sparsely vegetated and stony ground for feeding. Whilst the Site is considered unlikely to support black redstart in its current state, given the location of the Site, recommendations have been set out in Section 5 below to enhance the opportunities for protected bird species post-development.

The area of flat roofing present on building B1 offers some nesting opportunities for gull species including herring gulls, which are nationally red listed. Gulls regularly nest in urban environments, especially in areas that are in close proximity to water bodies. Given building B1's flat roof and its relative proximity to the Thames, it has been assessed to be a **low** likelihood that the Site supports nesting gulls. Safeguards for nesting birds are recommended in Section 5 below. However, given the habitats present, the likelihood that the Site supports important assemblages of birds is **negligible**.

Badgers

Two confidential records of badger from 2003 were provided in the desk study. The Site contains no suitable habitat for badger. As such, the likelihood that the Site supports badger has been assessed to be **negligible**.

Other mammals

Records of aquatic mammals including European Water Vole, Eurasian otter, harbour seal *Phoca vitulina* and grey seal *Halichoerus grypus* were provided in the desk study. The Site contains no aquatic habitat and therefore these species groups are not considered further in this report.

The data search returned recent records of hedgehog within 2km of the Site, the closest of which was located 1.0km east dated from 2021. The Site contains no suitable habitat for hedgehog, and due to its urban location and lack of connectivity to any areas of suitable habitat within the wider landscape the likelihood that the Site supports protected terrestrial mammals has been assessed as **negligible**.

4.4. Preliminary Roost Assessment

Desktop study

The data search returned a number of records for bats within 2km of the Site. The majority were for common pipistrelle, but a smaller number of records were returned for soprano pipistrelle, brown long-eared bat, Daubenton's bat, Natterer's bat, Nathusius's pipistrelle, Leisler's bat, and noctule. The data search also returned records for unidentified bats (*Pipistrellus*, *Vespertilionidae*, *Chiroptera*, *Nyctalus*, *Myotis*). The nearest record returned is of a common pipistrelle located 0.3km north of the Site in 2016. A search of Defra's MAGIC website returned three European Protected Species Licences (ESPLs) granted within 2km of the Site boundary for the destruction of two common pipistrelle resting places (licence periods: 2015-2020) and the destruction of one soprano pipistrelle resting place (licence period: 2017-2022).

The habitats present within the Site offer extremely limited foraging and commuting opportunities for bats, given the Site predominately comprises built form and is surrounded by urban infrastructure. Coram's Fields SINC lies immediately to the east of the Site. This SINC may provide roosting, foraging and commuting habitat for bats of more light-tolerant species (common pipistrelle and soprano pipistrelle), however due to the lack of habitats present at the Site, the likelihood that the Site supports foraging and commuting bats has been assessed as **negligible**.

Preliminary Roost Assessment Survey

No direct evidence of roosting bats was observed during the survey work undertaken and no features of bat roost potential were recorded on any of the buildings or trees present at the Site. The likelihood that the Site supports roosting bats has been assessed to be **negligible**. Further detailed information regarding the results of the Preliminary Roost Assessment is set out below in Table 11.

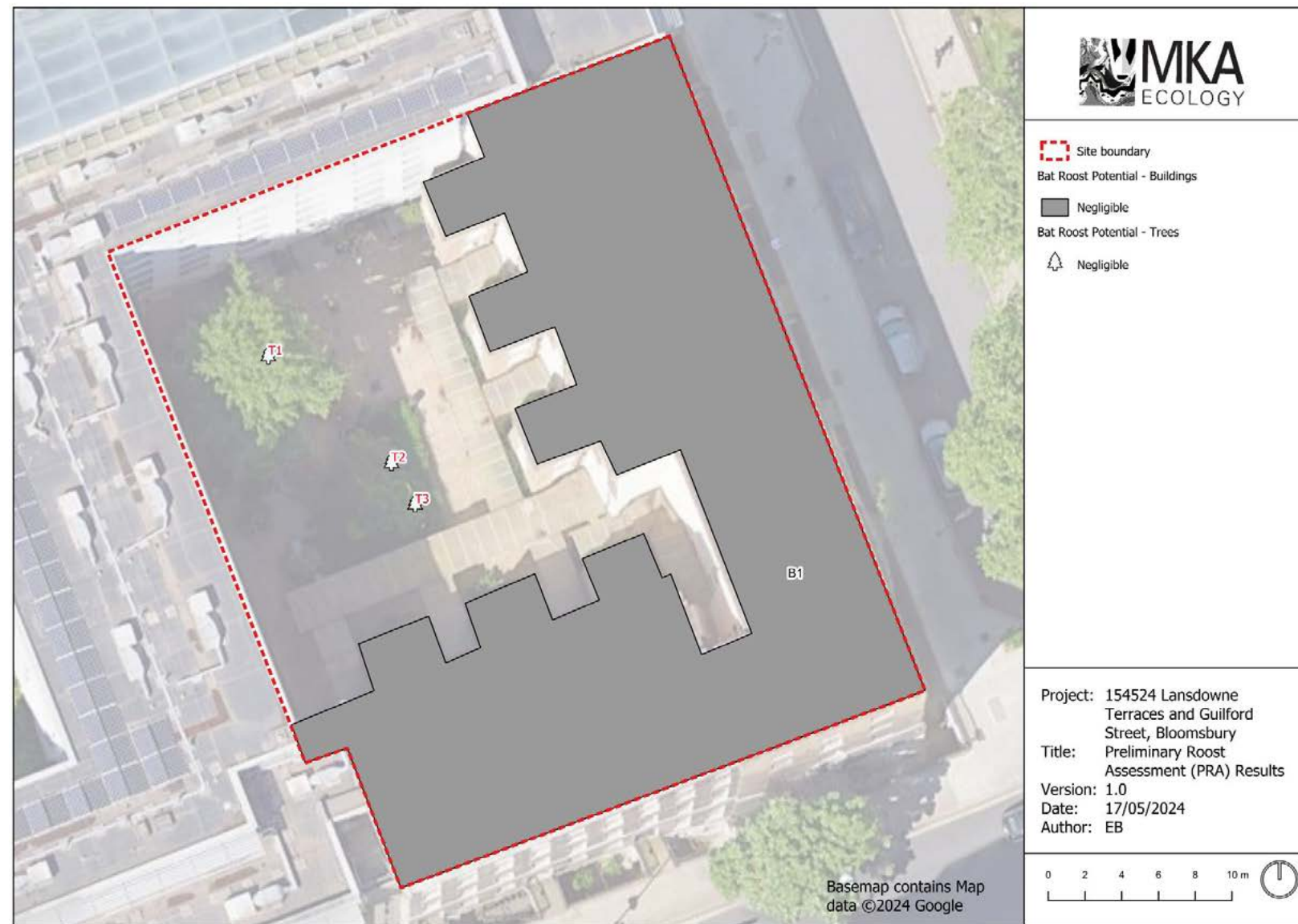
Table 11: Building inspection results

Building	Roost suitability	Description	Bat roost evidence and potential
B1	Negligible	<p>A five-storey residential building with dual pitched roof clad with slate tiles, and slate ridge and hip tiles. Lead flashing is present on the brick chimney stacks, and dormer loft hatches. The roof is well sealed with minimal signs of wear or damage.</p> <p>The structure was recorded to be in good condition at the time of survey.</p>	No direct evidence of roosting bats was identified during the inspection of building B1; no features of bat roost potential were identified on building B1.

Table 3: Tree inspection results

Tree	Species	Roost suitability	Descriptions of potential/actual roost features
1	Alder <i>Alnus glutinosa</i>	Negligible	This tree is not of sufficient size or age to contain potential roosting features. No roosting features were observed from the ground.
2	Silver birch <i>Betula pendula</i>	Negligible	This tree is not of sufficient size or age to contain potential roosting features. No roosting features were observed from the ground.
3	Silver birch <i>Betula pendula</i>	Negligible	This tree is not of sufficient size or age to contain potential roosting features. No roosting features were observed from the ground.

Figure 2: Preliminary Roost Assessment Map



5. ECOLOGICAL CONSTRAINTS, OPPORTUNITIES AND RECOMMENDATIONS

This section outlines key ecological issues for consideration, recommendations for further work and ecological enhancements where appropriate.

5.1. Ecological constraints

Off-site habitats

The Site lies within a Natural England SSSI IRZ (Natural England, 2019). Developments that fall into the below categories require LPA consultation with Natural England:

- Airports, helipads and other aviation proposals;
- Livestock & poultry units with floorspace > 500m², slurry lagoons & digestate stores > 4000m²; and
- General combustion processes >50MW energy input. Incl: energy from waste incineration, other incineration, landfill gas generation plant, pyrolysis/gasification, anaerobic digestion, sewage treatment works, other incineration/ combustion.

Given that the proposed development doesn't fall into the above categories, no LPA consultation is necessary.

Plants

Butterfly-bush and cherry laurel were recorded on-site during the survey. Whilst not listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended), butterfly-bush and cherry laurel are listed on the London Invasive Species Initiative (LISI, 2014) and are naturalised non-native species with the potential to become invasive and out-compete native plant species. Whilst there is no legal obligation to control LISI species, it is good practice to remove all instances of butterfly-bush and cherry laurel from the Site during works, with arisings disposed of as controlled waste to prevent its further spread.

Recommendation 1

Remove instances of butterfly-bush and cherry laurel from the Site and dispose of the arisings as controlled waste in order to avoid their spread.

Birds

The roof of building B1 provides nesting opportunities for gull species. Additionally, there are two bird boxes on the trees within the courtyard, however it is understood that these will be retained. All wild birds, their active nests and eggs are protected under The Wildlife and Countryside Act 1981 (as amended), which makes it an offence deliberately, or recklessly, to kill or injure any wild bird or damage or destroy any active birds' nest or eggs.

Scheduling building clearance works or bird box rearrangements between the months of September and February inclusive (i.e. outside of the bird season) would avoid impacts on breeding birds.

Where building clearance works or bird box rearrangements are required during the breeding bird season (between the months of March and August inclusive), such works can only proceed following the completion of a nesting bird check undertaken by an experienced ornithologist. Any active birds' nest identified during this check must be protected from harm until the nesting attempt is complete. This will require a buffer to be left around the nest, the size of which will depend upon the species involved (as a general rule, this will be 10m in all directions around the nest). Any buffers established as a result of the initial nesting bird check must be subjected to a second check after the original nesting attempt is completed, before such areas can be removed during the breeding bird season.

Recommendation 2

Schedule building clearance works and bird box rearrangements between the months of September and February inclusive to avoid impacts on breeding birds. Where this timing is not feasible works should be preceded by a nesting bird check.

It is strongly recommended that any potential nesting bird habitat is cleared outside the breeding bird season in order to avoid potentially lengthy delays if nests are found during nesting bird checks.

5.2. Opportunities for biodiversity enhancement

Following the issue of the NPPF (see Appendix 1), all planning decisions should aim to maintain and enhance, restore or add to biodiversity and geological conservation interests. Ecological enhancements should aim to deliver biodiversity gains for the proposed development. The Environment Act (2021) states all developments have to deliver a demonstrable increase in biodiversity value of at least 10%. In order to address the above legislation, it is recommended that a number of ecologically valuable habitats and features are incorporated into the Site design.

Recommendation 3

In line with the NPPF and Environment Act, a number of ecologically valuable habitats and features should be incorporated into the Site design so as to deliver biodiversity gains at the Site.

The planting of native species or those with a known attraction or benefit to local wildlife is recommended in landscape proposals. This will help to increase native plant species diversity, provide more ecologically valuable habitats, and result in a greater diversity of other dependent taxonomic groups.

Recommendation 4

It is recommended that native species, or those that benefit local wildlife, are incorporated into the planting scheme for the final landscaping design in order to enhance the overall value of the Site for native biodiversity.

Green infrastructure should be incorporated into the design scheme. Green infrastructure including green roofs and green walls has become a fundamental part of urban site and building design, creating floral and faunal opportunities in otherwise ecologically featureless areas of hardstanding. It is strongly recommended that all green infrastructure to be created is designed with maximum biodiversity value in mind. Such green infrastructure features have been identified as an opportunity to maximise biodiversity within urban and sub-urban areas within Policies G1 and G5 within the London Plan, as set out in Appendix 1, and so the inclusion of such features would directly address local planning policy targets.

Green roofs can be installed on any flat, or slightly sloping, roof surface and can be beneficial for a wide variety of species. The principle behind a green roof is that it is intentionally planted to some extent. Design specifications should focus upon creating a structurally diverse open mosaic habitat with a variety of substrate types and pollinator-friendly plant species. The provision of a green roof would be an attractive option for both increasing biodiversity and providing an attractive feature within the development. Further details on green roof provision within the Site is provided at Appendix 6 below.

Green walls are essentially walls with living plants growing on them, enhancing otherwise featureless areas. The process of allowing and encouraging plants to grow on and up walls allows the natural environment to be extended into urban areas. Green walls that comprise climbers and light weight support structures such as wires and trellis are relatively cheap to develop and maintain. Creating green walls by allowing climbing species to attach themselves to the actual structure of existing walls or fences is also a viable option. Fruits trees such as apples and pears can also be used to form a green wall by training them as espaliers. Further information relating to the green wall provision is provided within Appendix 6 below.

Recommendation 5

Include green infrastructure provision within the development designs in order to ensure biodiversity gains for local priority species and biodiversity in general. The provision of green roofs and green walls will address both national and local policy, as well as help meet Biodiversity Net Gain and Urban Greening Factor Targets. This will directly address Policies G1 and G5 of the London Plan, as well as Policy A3 of the Camden Local Plan.

Invertebrate houses and bee bricks provide burrowing and sheltering habitat which is important for many invertebrate species, and consideration should be given to the incorporation of these features within the landscaping design. Invertebrate houses and bee bricks are best positioned next to suitable foraging habitat to encourage use, such as species-rich flower planters and they should be placed in a south to easterly aspect. They should also be secured to a surface as movement or toppling of the houses can result in total mortality for any invertebrate larvae present. Examples of suitable invertebrate houses and bee bricks are shown in Appendix 4.

To provide further resources for invertebrates within the Site, it is recommended that deadwood features are created within the Site. The provision of such features would in turn provide benefits for a range of other species, including bats and birds. This could include rotting roots or tree stumps spread around various locations next to suitable foraging habitat. The drilling of holes or cutting of notches can add even more value for invertebrates.

Recommendation 6

Incorporate simple biodiversity enhancement measures at the Site, including the provision of invertebrate houses, bee bricks and deadwood features in proximity to suitable foraging habitat.

Enhanced opportunities for breeding birds should be incorporated into the design scheme. Bird boxes should be mounted on trees and built structures at the Site. It is recommended that integrated boxes are included within the final development and that there is a focus on swift and black redstart, together with the provision of generalist bird boxes. Swift boxes have the added advantage of being used by house sparrow. Black redstart is known to breed in disused buildings and urban areas and is listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended), and is a nationally red-listed species. All are Priority Species under the London Biodiversity Action Plan (2022), of which records were returned in the data search of the Site. Examples of suitable boxes are shown in Appendix 4 together with information concerning the correct siting of these enhancement features.

Recommendation 7

A minimum of six bird boxes should be installed at the Site, to include swift and black redstart boxes, as well as generalist boxes.

Whilst limited in its suitability for foraging and roosting bats, the greenspace within the wider landscape has some potential for use by foraging bats and evidence of roosting bats is present within the wider

landscape. The Site itself has relatively little provision for roosting bats. With this in mind, enhanced opportunities for roosting bats should also be provided at the Site through installation of bat boxes. Examples of suitable boxes are shown in Appendix 4 together with information concerning the correct siting of these enhancement features.

Recommendation 8

Provisions should be made for roosting bats at the Site post-development, to include a minimum of six integrated or wall mounted bat bricks or bat boxes and boxes mounted in trees at the Site.

It has been recommended that a Biodiversity Net Gain assessment is undertaken to ensure that the proposed development is able to demonstrate a significant increase in biodiversity within the Site. This Biodiversity Net Gain assessment has been undertaken (MKA Ecology Ltd, 2024) and will be provided alongside this report as part of the planning application for the development of the Site. It is recommended that this document be updated following any revision to the design of the Site. This will directly address the aims of the Environment Act (2021).

Recommendation 9

Ensure that the development delivers a biodiversity net gain of at least 10% and updates to the Biodiversity Net Gain assessment (MKA Ecology Ltd, 2024) are made following any design revisions.

It has been recommended that an Urban Greening Factor (UGF) assessment is undertaken to ensure that the proposed development delivers sufficient green infrastructure. The London Plan sets out targets for green infrastructure value in new urban developments. Predominantly commercial developments must achieve a UGF score of at least 0.3; residential developments must achieve a score of 0.4. Given the Site comprises a building, the current green infrastructure value of the Site is minimal. In order to address the requirements of the London Plan, a formal Urban Greening Factor assessment has been undertaken (MKA Ecology Ltd, 2024) and will be provided alongside this report as part of the planning application for the development of the Site. It is recommended that this document be updated following any revision to the design of the Site.

Recommendation 10

Ensure that the development delivers sufficient green infrastructure by undertaking an Urban Greening Factor assessment (MKA Ecology Ltd, 2024). This will ensure the proposed development will address both national and local policy. This should be updated following any design revisions.

The Environment Act (2021) states that all Biodiversity Net Gain assessments must be accompanied by an appropriate management plan that covers the next 30 years of Site management. This serves to ensure that all proposed habitats achieve the desired ecological value used in net gain calculations. It is recommended that a Landscape and Ecology Management Plan (LEMP) is produced in order to ensure legislative compliance.

Recommendation 11

Produce a Landscape and Ecology Management Plan (LEMP) covering the next 30 years to accompany the Biodiversity Net Gain assessment.

Summary of recommendations

Table 13 below summarises the recommendations made within this report, and specifies the stage of the development at which action is required. Colour coding of cells within the table is as follows:

Key:

	No action required for this species group at this stage
	Action required (see notes for details)
	Level of action required will be determined following the further survey work

Table 13: Summary of recommendations at Lansdowne Terraces and Guilford Street, Bloomsbury

Species	Pre-planning action required?	Pre-construction action required?	Construction phase mitigation required?	Enhancements proposed?
Habitats	Removal of butterfly-bush and cherry laurel, with arisings disposed of as controlled waste.	No.	No.	Native and pollinator planting. Provision of green infrastructure in the final Site designs.
Invertebrates	No.	No.	No.	Native and pollinator planting. Provision of invertebrate houses, bee bricks and deadwood features.
Bats	No.	No.	No.	Native and pollinator planting. Provision of bat boxes.

Species	Pre-planning action required?	Pre-construction action required?	Construction phase mitigation required?	Enhancements proposed?
Birds	No.	No.	Timing of works on building and/or rearrangement of bird boxes OR further survey work.	Native planting. Provision of bird boxes.

6. CONCLUSIONS

The Site comprises a single five-storey building backing onto a small courtyard, with associated hardstanding, trees and areas of introduced shrubs and is therefore considered to be of limited ecological value. It is recommended that new plants and trees in the development proposals be of native origin and are supported by native and pollinator-friendly planting. This will result in an enhancement of the ecological value of the Site post-development.

The potential protected species constraints present on Site are limited to nesting birds and invasive plant species. Butterfly-bush and cherry laurel have been identified within the Site and, therefore, it has been recommended that these species be removed sensitively and the arisings disposed of as controlled waste in order to prevent their spread. Building clearance works or bird box rearrangements should be timed sensitively in order to avoid impacts on active bird nests i.e., between September and February); in the event that works are deemed necessary during the breeding bird season, it is recommended that a nesting bird check be undertaken immediately prior to their commencement.

Although a small Site, the proposed enhancements focus on delivering new green infrastructure and providing opportunities for local priority species. A number of faunal enhancements have been suggested that could be implemented in order to further promote biodiversity at the Site, including the provision of bird boxes targeted to London Priority species, the provision of bat boxes, and the creation of heterogenous habitats for the benefit of invertebrates and subsequent predatory faunal groups. The inclusion of such features in addition to invertebrate houses, bee bricks and deadwood features will contribute to ensuring a sustainable development that helps to achieve both local and national biodiversity targets.

A BNG assessment and an UGF assessment have been recommended, commissioned and carried out MKA Ecology Limited (2024) in order to demonstrate a net gain in biodiversity of at least 10%, as mandated by The Environment Act (2021) for all planning permissions granted in England from November 2023. A LEMP should be produced alongside the BNG assessment so as to ensure the successful creation and long-term management of all habitats to be created at the Site.

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8. APPENDICES

8.1. Appendix 1: Relevant wildlife legislation and planning policy

Please note that the following is not an exhaustive list, and is solely intended to cover the most relevant legislation pertaining to species commonly associated with development sites.

Subject	Legislation (England)	Relevant prohibited actions
Amphibians		
Great crested newt <i>Triturus cristatus</i> Natterjack toad <i>Epidalea calamita</i>	Schedule 2 of Conservation of Habitats and Species Regulations (2017)	<ul style="list-style-type: none">Deliberately capture or kill, or intentionally injure;Deliberately disturb or recklessly disturb them in a place used for shelter or protection;Damage or destroy a breeding site or resting place;Intentionally or recklessly damage, destroy or obstruct access to a place used for shelter or protection; andPossess an individual, or any part of it, unless acquired lawfully.
	Schedule 5 of The Wildlife and Countryside Act 1981 (as amended)	
Reptiles		
Common lizard <i>Zootoca vivipara</i> Adder <i>Vipera berus</i> Slow-worm <i>Anguis fragilis</i> Grass snake <i>Natrix helvetica helvetica</i>	Part of Sub-section 9(1) of Schedule 5 of The Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none">Intentionally kill or injure individuals of these species (Section 9(1)).

Subject	Legislation (England)	Relevant prohibited actions
Sand lizard <i>Lacerta agilis</i> Smooth snake <i>Coronella austriaca</i>	Full protection under Section 9 of Schedule 5 of The Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none"> Deliberately or intentionally kill, capture (take) or intentionally injure; Deliberately disturb; Deliberately take or destroy eggs; Damage or destroy a breeding site or resting place or intentionally damage a place used for shelter; or Intentionally obstruct access to a place used for shelter.
Birds		
All wild birds	Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none"> Intentionally kill, injure, or take any wild bird or their eggs or nests.
'Schedule 1' birds	Schedule 1 of the Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none"> Disturb any wild bird listed on Schedule 1 whilst it is building a nest or is in, on, or near a nest containing eggs or young; or Disturb the dependent young of any wild bird listed on Schedule 1.
Mammals		
Bats (all UK species)	Schedule 2 of Conservation of Habitats and Species Regulations (2017)	<ul style="list-style-type: none"> Deliberately capture, injure or kill a bat; Deliberately disturb a bat (disturbance is defined as an action which is likely to: (i) Impair their ability to survive, to breed or reproduce, or to rear or nurture their young; (ii) Impair their ability to hibernate or migrate; or (iii) Affect significantly the local

Subject	Legislation (England)	Relevant prohibited actions
	Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	<p>distribution or abundance of the species);</p> <ul style="list-style-type: none"> Damage or destroy a bat roost; Intentionally or recklessly disturb a bat at a roost; or Intentionally or recklessly obstruct access to a roost. <p>In this interpretation, a bat roost is "any structure or place which any wild [bat]...uses for shelter or protection". Legal opinion is that the roost is protected whether or not the bats are present at the time.</p>
Badger <i>Meles meles</i>	Protection of Badgers Act 1992	<p>Under Section 3 of the Act:</p> <ul style="list-style-type: none"> Damage a sett or any part of it; Destroy a sett; Obstruct access to, or any entrance of, a sett; or Disturb a badger when it is occupying a sett. <p>A sett is defined legally as any structure or place which displays signs indicating current use by a badger (Natural England 2007).</p>
Hazel dormouse <i>Musccardinus avellanarius</i>	Schedule 2 of Conservation of Habitats and Species Regulations (2017)	<ul style="list-style-type: none"> Intentionally or deliberately capture or kill, or intentionally injure;

Subject	Legislation (England)	Relevant prohibited actions
	Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none"> Deliberately disturb or intentionally or recklessly disturb them in a place used for shelter or protection; Damage or destroy a breeding site or resting place; Intentionally or recklessly damage, destroy or obstruct access to a place used for shelter or protection; and Possess an individual, or any part of it, unless acquired lawfully.
Otter <i>Lutra lutra</i>	Schedule 2 of Conservation of Habitats and Species Regulations (2017)	<ul style="list-style-type: none"> Deliberately capture, injure or kill an otter; Deliberately disturb an otter in such a way as to be likely to significantly affect the local distribution or abundance of otters or the ability of any significant group of otters to survive, breed, rear or nurture their young; Intentionally or recklessly disturb any otter whilst it is occupying a holt; Damage or destroy or intentionally or recklessly obstruct access to an otter holt.
	Section 9(4)(b) and (c) of Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	
Water vole <i>Arvicola amphibius</i>	Section 9 of Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none"> Intentionally kill, injure or take water voles; Possess or control live or dead water voles or derivatives; Intentionally or recklessly damage, destroy or obstruct access to any structure or place used for shelter or protection; or Intentionally or recklessly disturb water voles whilst occupying a structure or place used for that purpose.

Subject	Legislation (England)	Relevant prohibited actions
<i>Crustaceans</i>		
White-clawed crayfish <i>Austropotamobius pallipes</i>	Section 9(1) of Schedule 5 of Wildlife and Countryside Act 1981 (as amended)	<ul style="list-style-type: none"> Intentionally kill, injure or take white-clawed crayfish by any method.

The Environment Act 2021

The Environment Act 2021, sets out key legislation after the UK's exit from the European Union. With the largest changes to green regulations in decades, the Act includes the establishment of an Office for Environmental Protection, targets on air pollution, water quality and biodiversity, and the enshrinement of the 25 Year Environment Plan in law. The Act also makes provisions for a mandatory 10% net gain in biodiversity for all developments covered by the Town and Country Planning Act and it also introduces a statutory requirement for Local Nature Recovery Strategies.

Full legislation text available at: <https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted>

The Conservation of Habitats and Species Regulations 2017 (as amended)

Full legislation text available at: [The Conservation of Habitats and Species Regulations 2017 \(as amended\) \(legislation.gov.uk\)](https://www.legislation.gov.uk/ukpga/2017/49/contents/enacted)

The Wildlife and Countryside Act 1981 (as amended)

Full legislation text available at: [http://www.legislation.gov.uk/ukpga/1981/69/contents](https://www.legislation.gov.uk/ukpga/1981/69/contents).

Countryside and Rights of Way Act 2000

Full legislation text available at: [http://www.legislation.gov.uk/ukpga/2000/37/contents](https://www.legislation.gov.uk/ukpga/2000/37/contents)

Protection of Badgers Act 1992

Full legislation text available at: [http://www.legislation.gov.uk/ukpga/1992/51/contents](https://www.legislation.gov.uk/ukpga/1992/51/contents)

Section 41 of Natural Environments and Rural Communities (NERC) Act 2006

Full legislation text available at: [http://www.legislation.gov.uk/ukpga/2006/16/section/41](https://www.legislation.gov.uk/ukpga/2006/16/section/41)

Many of the species above, along with a host of others not afforded additional protection, are listed on Section 41 of the NERC Act 2006.

Section 41 (S41) of the Natural Environment and Rural Communities (NERC Act 2006) requires the Secretary of State to publish a list of habitats and species that are of principal importance for the conservation of biodiversity in England. The list (including 56 habitats and 943 species) has been drawn up in consultation with Natural England and draws upon the UK Biodiversity Action Plan (BAP) List of Priority Species and Habitats.

The S41 list should be used to guide decision-makers such as local and regional authorities to have regard to the conservation of biodiversity in the exercise of their normal functions – as required under Section 40 of the NERC Act 2006. The duty applies to all local authorities and extends beyond just conserving what is already there, to carrying out, supporting and requiring actions that may also restore or enhance biodiversity.

Schedule 9 of Wildlife and Countryside Act 1981 (as amended)

In addition to affording protection to some species, The Wildlife and Countryside Act 1981 (as amended) also names species which are considered invasive and require control. Section 14 of the Act prohibits the introduction into the wild of any animal of a kind which is not ordinarily resident in, and is not a regular visitor to, Great Britain in a wild state, or any species of animal or plant listed in Schedule 9 to the Act. In the main, Schedule 9 lists non-native species that are already established in the wild, but which continue to pose a conservation threat to native biodiversity and habitats, such that further releases should be regulated.

Wild Mammals (Protection) Act 1996

Full legislation text is available at: <http://www.legislation.gov.uk/ukpga/1996/3/contents>

Under this legislation it is an offence to cause unnecessary suffering to wild mammals, including by crushing and asphyxiation. It largely deals with issues of animal welfare, and covers all non-domestic mammals including commonly encountered mammals on development sites such as rabbits, foxes and field voles.

Birds of Conservation Concern (BoCC)

This is a quantitative assessment of the status of populations of bird species which regularly occur in the UK, undertaken by the UK's leading bird conservation organisations. It assesses a total of 245 species against a set of objective criteria to place each on one of three lists – Green, Amber and Red – indicating an increasing level of conservation concern. There are currently 70 species on the Red list, 103 on the Amber list and 72 on the Green list. The classifications described have no statutory implications, and are used merely as a tool for assessing scarcity and conservation value of a given species.

National Planning Policy Framework (NPPF)

Full text is available at: <https://www.gov.uk/government/publications/national-planning-policy-framework--2>

The revised NPPF was updated on 19 December 2023 setting out the Government's planning policies for England and the process by which these should be applied. The policies within the NPPF are a material consideration in the planning process. The key principle of the NPPF is a presumption in favour

of sustainable development, with sustainable development defined as a balance between economic, social and environmental needs.

Policies 174 to 188 of the NPPF address conserving and enhancing the natural environment, stating that the planning system should:

- Contribute to and enhance the natural and local environment by protecting and enhancing valued landscapes;
- Recognise the wider benefits of ecosystem services; and
- Minimise impacts on biodiversity and provide net gains in biodiversity where possible, contributing to the Government's commitment to halt the overall decline in biodiversity.

Furthermore, there is a focus on re-use of existing brownfield sites or sites of low environmental value as a priority, and discouraging development in National Parks, Sites of Specific Scientific Interest, the Broads or Areas of Outstanding Natural Beauty other than in exceptional circumstances.

Where possible, planning policies should also

"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".

Local Planning Policy

Given that the Site is located within London, consideration of the policies relating to biodiversity within the London Plan 2021 has also been given. These include policies G1 and G5 to G8, as detailed below:

- Policy G1 Green infrastructure
 - a) *London's network of green and open spaces, and green features in the built environment, should be protected and enhanced. Green infrastructure should be planned, designed and managed in an integrated way to achieve multiple benefits.*
 - b) *Boroughs should prepare green infrastructure strategies that identify opportunities for cross-borough collaboration, ensure green infrastructure is optimised and consider green infrastructure in an integrated way.*
 - c) *Development Plans and area-based strategies should use evidence, including green infrastructure strategies, to:*
 - 1. *identify key green infrastructure assets, their function and their potential function*
 - 2. *identify opportunities for addressing environmental and social challenges through strategic green infrastructure interventions.*
 - d) *Development proposals should incorporate appropriate elements of green infrastructure that are integrated into London's wider green infrastructure network.*

- Policy G5 Urban greening
 - a) Major development proposals should contribute to the greening of London by including urban greening as a fundamental element of site and building design, and by incorporating measures such as high-quality landscaping (including trees), green roofs, green walls and nature-based sustainable drainage.
 - b) Boroughs should develop an Urban Greening Factor (UGF) to identify the appropriate amount of urban greening required in new developments. The UGF should be based on the factors set out in within the London Plan, but tailored to local circumstances. In the interim, the Mayor recommends a target score of 0.4 for developments that are predominately residential, and a target score of 0.3 for predominately commercial development (excluding B2 and B8 uses).
 - c) Existing green cover retained on site should count towards developments meeting the interim target scores set out in (B) based on the factors set out in the London Plan
- Policy G6 Biodiversity and access to nature
 - a) Sites of Importance for Nature Conservation (SINCs) should be protected.
 - b) Boroughs, in developing Development Plans, should:
 1. use up-to-date information about the natural environment and the relevant procedures to identify SINCs and ecological corridors to identify coherent ecological networks
 2. identify areas of deficiency in access to nature (i.e. areas that are more than 1km walking distance from an accessible Metropolitan or Borough SINC) and seek opportunities to address them
 3. support the protection and conservation of priority species and habitats that sit outside the SINC network, and promote opportunities for enhancing them using Biodiversity Action Plans
 4. seek opportunities to create other habitats, or features such as artificial nest sites, that are of particular relevance and benefit in an urban context
 5. ensure designated sites of European or national nature conservation importance are clearly identified and impacts assessed in accordance with legislative requirements.
 - c) Where harm to a SINC is unavoidable, and where the benefits of the development proposal clearly outweigh the impacts on biodiversity, the following mitigation hierarchy should be applied to minimise development impacts:
 1. avoid damaging the significant ecological features of the site
 2. minimise the overall spatial impact and mitigate it by improving the quality or management of the rest of the site
 3. deliver off-site compensation of better biodiversity value.

- d) Development proposals should manage impacts on biodiversity and aim to secure net biodiversity gain. This should be informed by the best available ecological information and addressed from the start of the development process.
- e) Proposals which reduce deficiencies in access to nature should be considered positively.
- Policy G7 Trees and woodlands
 - a) London's urban forest and woodlands should be protected and maintained, and new trees and woodlands should be planted in appropriate locations in order to increase the extent of London's urban forest – the area of London under the canopy of trees.
 - b) In their Development Plans, boroughs should:
 1. protect 'veteran' trees and ancient woodland where these are not already part of a protected site
 2. identify opportunities for tree planting in strategic locations.
 - c) Development proposals should ensure that, wherever possible, existing trees of value are retained. If planning permission is granted that necessitates the removal of trees there should be adequate replacement based on the existing value of the benefits of the trees removed, determined by, for example, i-tree or CAVAT or another appropriate valuation system. The planting of additional trees should generally be included in new developments – particularly large-canopied species which provide a wider range of benefits because of the larger surface area of their canopy.
- Policy G8 Food growing
 - a) In Development Plans, boroughs should:
 1. protect existing allotments and encourage provision of space for urban agriculture, including community gardening, and food growing within new developments and as a meanwhile use on vacant or under-utilised sites
 2. identify potential sites that could be used for food production.

Camden Council has produced an adopted Local Plan, which contains one policy specifically relating to biodiversity and habitat conservation:

- Policy A3 – Biodiversity

The Council will protect and enhance sites of nature conservation and biodiversity. We will:

 - a) designate and protect nature conservation sites and safeguard protected and priority habitats and species;
 - b) grant permission for development unless it would directly or indirectly result in the loss or harm to a designated nature conservation site or adversely affect the status or population of priority habitats and species;
 - c) seek the protection of other features with nature conservation value, including gardens, wherever possible;

- d) assess developments against their ability to realise benefits for biodiversity through the layout, design and materials used in the built structure and landscaping elements of a proposed development, proportionate to the scale of development proposed;
- e) secure improvements to green corridors, particularly where a development scheme is adjacent to an existing corridor;
- f) seek to improve opportunities to experience nature, in particular where such opportunities are lacking;
- g) require the demolition and construction phase of development, including the movement of works vehicles, to be planned to avoid disturbance to habitats and species and ecologically sensitive areas, and the spread of invasive species;
- h) secure management plans, where appropriate, to ensure that nature conservation objectives are met; and
- i) work with The Royal Parks, The City of London Corporation, the London Wildlife Trust, friends of park groups and local nature conservation groups to protect and improve open spaces and nature conservation in Camden.

Trees and vegetation

The Council will protect, and seek to secure additional, trees and vegetation. We will:

- j) resist the loss of trees and vegetation of significant amenity, historic, cultural or ecological value including proposals which may threaten the continued wellbeing of such trees and vegetation;
- k) require trees and vegetation which are to be retained to be satisfactorily protected during the demolition and construction phase of development in line with BS5837:2012 'Trees in relation to Design, Demolition and Construction' and positively integrated as part of the site layout;
- l) expect replacement trees or vegetation to be provided where the loss of significant trees or vegetation or harm to the wellbeing of these trees and vegetation has been justified in the context of the proposed development;
- m) expect developments to incorporate additional trees and vegetation wherever possible.

Local Priority Habitats and Species

The London Biodiversity Action Plan, led by the London Biodiversity Partnership, identified a total of 214 priority species that are under particular threat in London. The full text is available here: <https://www.qigl.org.uk/london-bap-priority-species/>

8.2. Appendix 2: UK Habitat Classification species list

Please note that these lists are intended to be incidental records and do not constitute a full botanical survey of the site. Relative abundance is given using the DAFOR scale. Please see Table for details.

Buildings - u1b5 (81 – Ruderal or ephemeral, 524 – Invasive non-native species, 818 – Residential building)

Common Name	Systematic Name	Relative abundance
Butterfly-bush	<i>Buddleja davidii</i>	R
Maidenhair spleenwort	<i>Asplenium trichomanes</i>	R

Suburban mosaic of developed and natural surface - u1d (200 – Tree, 524 – Invasive non-native species, 845 – Ground level planters, 857 – Introduced shrub)

Common Name	Systematic Name	Relative abundance
Forsythia	<i>Forsythia suspensa</i> x <i>viridissima</i> (F. x <i>intermedia</i>)	A
Red robin	<i>Photinia</i> x <i>fraseri</i>	A
Cherry	<i>Prunus</i> sp.	O
Cherry laurel	<i>Prunus laurocerasus</i>	O
Hydrangea	<i>Hydrangea</i>	O
Periwinkle	<i>Vinca</i> sp.	O
Tulip	<i>Tulipa</i> sp.	O
Alder	<i>Alnus glutinosa</i>	R
Rose	<i>Rosa</i> sp.	R
Rosemary	<i>Rosmarinus officinalis</i>	R
Silver birch	<i>Betula pendula</i>	R
Spider plant	<i>Chlorophytum comosum</i>	R

8.3. Appendix 3: Site photographs

Photograph 1: Buildings - u1b5 – Building B1



Photograph 2: Roof of building B1



Photograph 3: Developed land; sealed surface - u1b (845 – Ground level planters)



Photograph 4: Suburban mosaic of developed and natural surface - u1d (200 – Tree, 857 – Introduced shrub)



Photograph 5: Bird box (Target Note 1, Figure 1)



Photograph 6: Bird box (Target Note 2, Figure 1)



Photograph 7: Butterfly-bush (INNS1, Figure 1)



Photograph 8: Cherry laurel (INNS2, Figure 1)



8.4. Appendix 4: Faunal enhancement recommendations

Bird box recommendations

A large number of bird boxes are available, designed for the specific needs of individual species. These are normally either designed to be mounted onto trees, external walls or integrated into a building. In general, bird boxes should be mounted out of direct sunlight and prevailing winds, out of reach of predators, with suitable foraging habitat for the subject species close by. Bird boxes should also be left up over winter as they can provide useful roosting sites for birds in bad weather.


Nest boxes should be cleaned at the end of each bird breeding season. All nesting material and other debris should be removed from the box. It should then be scrubbed clean with boiling water to kill any parasites (avoid using any chemicals). Once the box is clean, it should be left to dry out thoroughly. Under the Wildlife and Countryside Act 1981 (as amended) it is an offence to disturb breeding birds and therefore annual cleaning is best undertaken from October to January when there is no risk of disturbing breeding birds.

Generalist boxes

Boxes to attract garden birds and woodland breeding species such as tits, nuthatch, redstart and pied flycatcher can be placed in gardens, orchards, woodlands and a wide variety of other habitats. The species of birds attracted to the box will depend upon the size of the entrance hole (see table below).

Boxes should be fixed two to five metres up a tree or wall, out of the reach of predators such as domestic cats. Unless there are trees or buildings, which give permanent shelter, it is best facing between north and east.

General		
Example	Description	Picture
Bird Brick Houses Integrated bird box	http://www.birdbrickhouses.co.uk/brick-nesting-boxes/integrated-bird-box/ Integrated into outside skin of 75mm and most 3" brickwork courses. Comes with a variety of hole sizes to suit particular bird species.	
Entrance Hole	Species	

28mm	Blue-, Marsh-, Coal- and Crested Tit, Wren.	
34mm	Great-, Blue-, Marsh-, Coal- and Crested Tit, Nuthatch, Pied Flycatcher, House Sparrow	
40mm	Redstart and Black Redstart	
50m	Starling	
60m	Spotted Flycatcher	
Schwegler No. 1B General Purpose Nest box	www.schwegler-nature.com Suitable for various garden and woodland birds, created with different sized entrance holes to avoid competition between species. Other variations (e.g. 2M) can be free hanging, to deter predators.	
Entrance Hole	Species	
26 mm	Blue-, Marsh-, Coal- and Crested Tit, possibly Wren. All other species are prevented from using the nest box due to this smaller entrance hole	
32 mm	Great-, Blue-, Marsh-, Coal- and Crested Tit, Redstart, Nuthatch, Pied Flycatcher, Tree and House Sparrows.	
Oval	Redstart; also used by species that nest in the diameter 32 mm boxes. However, because more light enters the brood chamber, it is preferred by Redstarts.	




Swift boxes


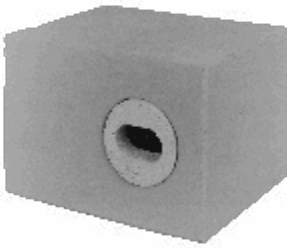


Swifts are colonial nesters and it is important to have several nest sites in one area. It is recommended that most buildings should have between 4 and 10 nest provisions. Swifts also feed almost exclusively on the aerial plankton of flying insects and airborne spiders of small to moderate size, so therefore require habitats which support these invertebrates.

Nest boxes designed for swifts should be installed at least 5m high, around the eaves of the building or under deeply overhanging eaves to allow swifts to drop into the air to forage. The boxes should be positioned away from climbing plants to avoid access for predators such as rodents.

Swifts typically nest in flat spaces within buildings or within a crevice or cavity. The ideal nest box should have an oval or rectangular hole around 30mm (h) x 65mm (w). The internal dimensions of the box should be approximately 400mm (w) x 200mm (d) x 150mm (h).

Swifts can be attracted to areas that they have not previously colonised using ‘swift response calls’. Audio CDs are available for this purpose and are available on the Schwegler website (www.schwegler-nature.com).

Swift		
Example	Description	Picture
Swift S Brick	<p>Introduction — S Brick (actionforswifts.com)</p> <p>Swift S bricks provide excellent nesting opportunities for swifts whilst fitting into the brickwork seamlessly without compromising the appearance of the building.</p> <p>The swift boxes will likely require an attraction call system for swifts. This can be set on timer and replays the tape of birds calling to attract them to the nest site, There is no set system for this, but assembly of parts can be achieved quite easily as outlined at this website: http://actionforswifts.blogspot.com/p/attraction-call-systems-for-swifts.html. The system can be purchased for about £30.</p>	 
lbstock Swift Box	<p>www.lbstock.com</p> <p>This swift brick can be built into a wall on new buildings.</p>	


Swift		
Example	Description	Picture
Woodstone Build-in Swift Box	<p>https://gardenature.co.uk</p> <p>This nest box is made from a concrete and wood fibre mix. It can be mounted on a wall, or it can be built into the fascia of a wall. The front of the Woodstone swift box can be removed for cleaning.</p> <p>It should be fitted at least 5 metres above the ground ensuring there is an unobstructed flight path for birds entering and leaving the box.</p>	
Schwegler Brick Box Type 25	<p>www.schwegler-nature.com</p> <p>This brick design can be built into the wall of the new development and the external surface, excluding the hole, can be rendered to match the surrounding wall.</p>	
Triple Genesis Swift Nest Box	<p>https://www.wildcare.co.uk/</p> <p>It can be mounted on an external wall to provide three swift nesting sites.</p>	
Swift box model 30	<p>http://actionforswifts.blogspot.com/p/diy-swift-box-designs.html</p> <p>This box is suitable for any location as it has a double thickness, waterproof roof (made of uPVC). The 30° sloping roof should deter predators.</p>	

Swift		
Example	Description	Picture
Schwegler Swift Box Number 18	www.schwegler-nature.com This Swift Box No. 18 is ideally suited for creating Swift colonies under overhanging eaves.	

Black redstart boxes

Nest boxes that aim to attract black redstarts should be open-fronted and placed in a hidden location, such as under ledges, balconies, utility units and overhangs. These boxes are designed to allow access for smaller bird but prohibit access to species such as feral pigeon.

Nest boxes should be cleaned at the end of each bird breeding season. All nesting material and other debris should be removed from the box. It should then be scrubbed clean with boiling water to kill any parasites (avoid using any chemicals). Once the box is clean, it should be left to dry out thoroughly. Under the Wildlife and Countryside Act 1981 it is an offence to disturb breeding birds and therefore annual cleaning is best undertaken from October to January when there is no risk of disturbing breeding birds.


Example	Description	Picture
Brick Box 1HE	www.gardennature.co.uk With its special narrowing entrance, this nest box is suitable for black redstart but is also suitable for pied wagtail, and occasionally house sparrow This lightweight nest box is suitable to be built in or on external walls.	

Vivara Pro Barcelona WoodStone Open Nest Box	www.nhbs.com This nest box is made mix of concrete and FSC certified wood fibres and is suitable for black redstart as well as wrens, robins, pied and grey wagtails, song thrushes and blackbirds.	
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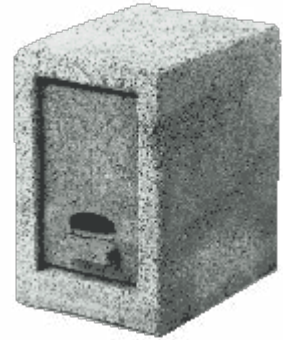
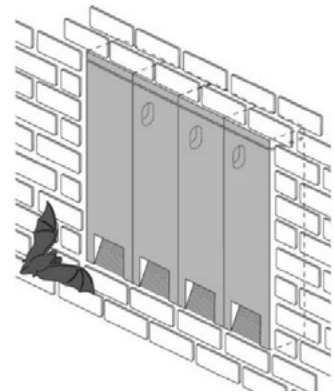


Bat box recommendations



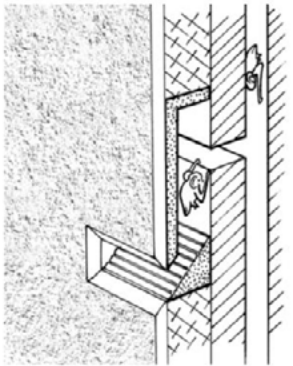
A wide range of bat boxes are available to suit a variety of species and design requirements. Bat boxes can be mounted externally on buildings, built directly into the wall structure or mounted on trees (dependent on box design).

Boxes are more likely to be inhabited if they are located where bats feed and it may help to place the box close to features such as tree lines or hedgerows, which bats are known to use for navigation and can provide immediate cover for bats leaving the roost. Boxes should be placed in areas sheltered from strong winds and are exposed to the sun for part of the day. Access to any bat roosting features should not be lit and should also be at a reasonable height to avoid predation (at least 2m if possible, preferably 4-5m).

Example	Description	Picture
Schwegler General Purpose Bat Box 2F	www.schwegler-nature.com Height: 33 cm Weight: approx. 3.8 kg External diameter: 16 cm Installation: Hanging A general purpose box, suitable for all species.	

Example	Description	Picture
Schwegler General Purpose Bat Box 2F with Double Front Panel	<p>www.schwegler-nature.com</p> <p>Height 33 cm Weight: approx. 4.1 kg External diameter: 16 cm Installation: Hanging</p> <p>This box is suitable for crevice dwellers, such as Nathusius' pipistrelle, Daubenton's bat and common pipistrelle.</p>	
Schwegler 1FF	<p>www.schwegler-nature.com</p> <p>Dimensions: 14(d) x 27(w) x 43(h) cm Weight: 9.9 kg Installation: Hanging</p> <p>This box is suitable for crevice dwellers, such as Nathusius' pipistrelle, Daubenton's bat and common pipistrelle.</p> <p>This box minimises temperature fluctuations in spring and autumn and is self-cleaning.</p>	
Schwegler 1FQ	<p>www.schwegler-nature.com</p> <p>Dimensions: 60(h) x 35(w) x 9(d) cm Weight: 15.8kg Installation: Attached to most external brick, timber or concrete walls at least 3m high. Can also be placed inside roof space</p> <p>This box is ideal for all types of bats that inhabit buildings. The box is weather-resistant and is also temperature controlled and self-cleaning. The front panel of the box can also be painted during manufacture, to match an existing colour.</p>	



Example	Description	Picture
Brick Box Type 27	<p>www.schwegler-nature.com</p> <p>Dimensions: 26.5(h) x 18(w) x 24(d) cm Weight: 9.5kg Installation: Can be flush with outside wall and rendered or covered so only the entrance hole is visible.</p> <p>This box is ideal for all types of bats that inhabit buildings.</p>	
Schwegler 2FR	<p>www.schwegler-nature.com</p> <p>Dimensions: 47(h) x 20(w) x 12.5(d) Weight: 9.8kg Installation: Can be installed on external walls – either flush or beneath a rendered surface in concrete and, during renovation work, under wooden panelling or in building cavities. Several tubes should be installed together (recommended three).</p> <p>This box is ideal for all types of bats that inhabit buildings. By installing boxes side by side a colony roosts can be created with any size requirement. This box has three different environmental partitions inside, attracting different species. The box is self-cleaning.</p>	 
Schwegler 1WI	<p>www.schwegler-nature.com</p> <p>Dimensions: 55(h) x 35(w) x 9.5(d) cm Weight: 15kg Installation: Attached to most types of external brick, timber or concrete walls. It can be installed flush-mounted and rendered over or simply against the wall. It should be installed at a height of at least 3m.</p>	


Example	Description	Picture
	<p>This box typically attracts building-inhabiting bat species like pipistrelles or serotine bat.</p> <p>This box is weather-resistant and designed for both winter hibernation and larger colonies in summer, including nursery roosts.</p>	
Schwegler 1MF (Swift and Bat)	<p>www.schwegler-nature.com</p> <p>Dimensions: 46(h) x 43(w) x 22.5(d) cm. Weight: approx. 24 kg Installation: The box can be hung against any types of wall of any type of building, between 6-7m above ground level.</p> <p>This box is designed for nesting swifts, however the recess in the rear panel creates a space between the wall of the building and the box, making it ideal for bats that inhabit building, such as common pipistrelle. Whilst the box may require cleaning, the back recess for bats requires no maintenance.</p>	
Schwegler 1FE	<p>www.schwegler-nature.com</p> <p>Dimensions: 30(h) x 30(w) x 8(d) cm. Weight: approx. 5.1 kg. Installation: Installation of multiple units is recommended. The box can be integrated into insulation or masonry. It can also be attached to the underlying structure to cover existing cavities, allowing bats to still see them. Install at least 3m above the ground.</p> <p>This is a general purpose box, suitable for all species. There is a maintenance-free access panel for installing on or in the surface of exterior walls. The open rear enables bats to continue to use existing nesting sites in walls.</p>	 

Invertebrate Houses

A wide variety of bug hotel features are available, some catering to specific needs of certain species (for example providing hollow nesting tubes for mining bees) and some providing a range of different habitat types for many different invertebrates. Off-the-shelf products are available, but there is also the opportunity to create bespoke designs which are in-keeping with the development surrounds and add aesthetic interest. Waste and redundant materials from the construction process can also be incorporated into designs. The table below shows some examples of custom-built bug hotels.

Design and/or purchase of a bug hotel should be undertaken in consultation with an ecologist to ensure an appropriate range and quality of habitats for invertebrates are created. Bug hotels should be positioned close to vegetation in a sheltered sunny position, facing east or south-east.

Example	Description	Picture
Schwegler Clay and Reed Insect House	<p>www.schwegler-nature.com</p> <p>Dimensions: 290 x 225 x 205 mm Weight: 5.7 kg Material: Schwegler woodcrete, clay, and reeds An attractive insect nest which can be hung in any sunny, sheltered spot. Reeds on either side of a clay central section provide a range of environments to suit different insects.</p>	
BeePot Bee Hotel	<p>www.nhbs.com</p> <p>Dimensions: 285 x 195 x 200 mm Weight: 8 kg Material: Concrete Doubles as a nesting place for solitary bees with space for pollinator friendly planting.</p>	



Example	Description	Picture
Bug Hotel	www.nhbs.com Dimensions: 240 x 130 x 160 mm Weight: 1.6 kg Material: FSC Certified Exterior Grade Plywood with Bamboo inserts. A simple hanging bug hotel designed to attract and shelter insects including ladybirds, lacewings and solitary bees	

Bee bricks

Bee bricks will increase the diversity of habitats available for invertebrates year-round. Bee bricks should be placed in a warm sunny spot on a south-facing wall at a minimum height of 1m, with no vegetation obstructing the holes. It is recommended that bee-friendly plants should be located nearby so that the bees using the bricks have food, otherwise it is unlikely that the brick will be used.

Bee Brick	Bee Brick NHBS Practical Conservation Equipment Bee Bricks should be placed in a warm sunny location on a south-facing wall at a minimum height of 1m, with no vegetation obstructing the holes. It is recommended that bee-friendly plants should be located nearby so that the bees using the bricks have food, otherwise it is unlikely that the brick will be used.	
Bee Block	Bees Block NHBS Practical Conservation Equipment Can be used stand alone or be incorporated within the construction of walls.	

Deadwood features

Example	Description	Picture
'Stag beetle loggery	https://ptes.org/9-top-ways-to-help-stag-beetles-in-your-garden/ Large volume deadwood dug into the soil (a minimum of 500mm depth) to provide food for the larvae of deadwood specialists such as stag beetles.	 <p>Build a log pyramid If you don't already have stumps or mature trees and shrubs, you can provide a home for stag beetles by building a log pyramid.bury logs from a broadleaved tree upright in the soil, with up to 50cm under the ground.</p> <p>(image credit – PTES, 2021)</p>
Artificial rot hole	Once felled, an artificial cavity can be carved easily with a chainsaw to create a rot hole. The ensuing pool and rotting wood provide habitat for a number of specialist invertebrates. These examples were targeted at a pinewood specialist in Caledonian forests in Scotland, but are of equal value to other species in lowland England. Taylor <i>et al.</i> (2021) British Wildlife 32 (8) p547	 <p>(image credits - Athayde Tonhasca via Scotlandsnature.blog, 2020)</p>

8.5. Appendix 5: Habitat creation recommendations

Pollinator-friendly planters

A wide range of pollinator-friendly wildflower seed mixes are available. It is important to select a seed mix containing species with a wide range of flowering times, to ensure planters provide pollen and nectar resources for invertebrates throughout the growing season. Mixtures containing some or all of the species listed in the table below are recommended. Mixtures with a high proportion of grass species should be avoided; the grasses will outcompete the flower species and dominate the planter.

Common name	Systematic name	Flowering season
Aster	<i>Aster sp.</i>	Late summer
Bird's-foot trefoil	<i>Lotus corniculatus</i>	Late spring-summer
Bugle	<i>Ajuga reptans</i>	Spring
Bush vetch	<i>Vicia sepium</i>	Late spring-summer
Catmint	<i>Nepeta sp.</i>	Late spring-late summer
Chamomile	<i>Chamaemelum nobile</i>	Late spring-summer
Common Knapweed	<i>Centaurea nigra</i>	Summer-late summer
Cowslip	<i>Primula veris</i>	Spring
Germander Speedwell	<i>Veronica chamaedrys</i>	Late spring-summer
Grape hyacinth	<i>Muscari sp.</i>	Late spring-summer
Kidney Vetch	<i>Anthyllis vulgaris</i>	Late spring-summer
Lavender	<i>Lavandula sp.</i>	Late summer
Lungwort	<i>Pulmonaria officinalis</i>	Early spring
Marjoram	<i>Origanum majorana</i>	Summer-early autumn
Meadow cranesbill	<i>Geranium pratense</i>	Summer
Oxeye Daisy	<i>Leucanthemum vulgare</i>	Late spring-summer
Salad Burnet	<i>Sanguisorba minor</i>	Late spring-summer
Scabious	<i>Scabiosa sp.</i>	Late summer
Selfheal	<i>Prunella vulgaris</i>	Summer-early autumn
Toadflax	<i>Linaria vulgaris</i>	Summer-early autumn

8.6. Appendix 6: Green infrastructure recommendations

Green roofs

It is recommended that any new buildings are designed to include green roofs, with such features being sown with drought tolerant specimens that would rely on rainwater topped up by incidental watering by facilities, unless an inbuilt irrigation system could be incorporated. Examples of green shelters and cycle stores are shown in Figures 1 to 2 below.

Figure 1. Example of green roofed cycle store
<http://greenroofshelters.co.uk/>



Figure 2. Example of green roofed shelter
<http://greenroofshelters.co.uk/>



By choosing a good mix of drought-tolerant foodplants, as well as some bare ground, green roofs can be very cheap and extremely effective in boosting biodiversity. The key is to connect their functionality with the landscaping across the rest of the site. The green roofed areas are also suitable for ground-nesting pollinators along with a suite of supplementary pollen, nectar and foliage provision that wouldn't compete with the more robust planting at ground level, comprising a mix of sedums with a mix of annual/biennial species in order to ensure a self-sustaining pattern of bare ground and seasonal cover. Such species could comprise Viper's Bugloss *Echium vulgare*, Common Centaury *Centaureum erythraea*, Yellow Rattle *Rhinanthus minor*, Mignonette *Reseda sp.* and Borage *Borago officinalis*, along with some low-growing hardy species such as Dog Violet *Viola riviniana* and Germander Speedwell *Veronica chamaedrys*.

Green walls

It is recommended that a green wall system be installed within the Site. Green walls are walls with vegetation growing on them, enhancing otherwise featureless areas of bare wall. They may be natural, such as brick or stone-built walls which have been naturally colonized by lichens, mosses, ferns and flowering plants or they can be large scale engineered green walls. The process of allowing and

encouraging plants to grow on and up walls allows the natural environment to be extended into urban areas.

Green walls can provide a food source for invertebrates on which, in turn, other invertebrates and birds may feed. They also provide breeding and nesting habitat for invertebrates, birds (including house sparrow, a London biodiversity action plan priority species) and possibly bats and are ideal for including artificial animal breeding structures such as nest boxes or bat roosting boxes. Green walls can mimic natural rock faces of cliff and rock slopes and provide resting and feeding places for birds, invertebrates and even small mammals. Climbers provide nesting habitat for birds such as wrens, blackbirds, song thrushes and house sparrows. The combination of green walls with green roofs provides a route for wildlife between habitats at ground and roof level.

Green walls that comprise climbers and light weight support structures such as wires and trellis are relatively cheap to develop and maintain. The installation of trellises and wires on walls can aid vegetation growth and limit direct contact between the wall and plants. However, creating green walls by allowing climbing species to attach themselves to the actual structure of existing walls is also a viable option. Fruits trees such as apples and pears can also be used to form a green wall by training them as espaliers.

Careful choice of species and the orientation of these walls will increase the potential of a living wall to harbour other forms of wildlife. For north facing walls, the shade and relative cold offered in these positions, along with the potential for dry soil caused by the wall's 'rain shadow', requires careful consideration of shade tolerant species, such as ivy *Hedera Helix* and hydrangea *Hydrangea sp.* to ensure success. Creating green walls from climbing species such as ivy and hydrangea is often a cheap and simple process, as these species naturally cling to existing wall structures with small roots. Ivy is also a valuable food source for innumerable invertebrates which feed on its leaves, flowers and nectar, and it also provides valuable over-wintering and hibernation habitat.

Engineered green walls, or 'vertical gardening', provide an opportunity for impressive visual impact whilst providing a living vertical habitat with biodiversity value. They may be either designed as a large structure attached to a wall containing a variety of planted species and an irrigation system which provides the plants with water and nutrients, or as a hanging wall at the top of a building where plants are allowed to hang down from suspended planters, entailing no direct contact between the plants and the wall. Whilst providing impressive displays many engineered green walls comprise mainly non-native plants and can be expensive to maintain and as such their inclusion needs careful consideration.

