

MKA
ECOLOGY

Preliminary Ecological Appraisal

Brook Drive, Green Park, Reading

Site	Brook Drive, Green Park, Reading
Project number	135122
Client name / Address	Overbury, Maxis 1, Western Road, Bracknell, Berkshire, RG12 1RT

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Declaration of compliance

This Preliminary Ecological Appraisal 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 November 2022 MKA Ecology Ltd was commissioned to undertake a Preliminary Ecological Appraisal of Brook Drive, Green Park, Reading. 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 25th November 2022.

The Site is a commercial office building surrounded by hardstanding and car parking areas. There is an area of modified grassland present to the north-west, with scattered trees, introduced planting and hedges also present. The proposed development is for improvements to the existing office unit, including additional security fencing and exterior lighting.

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

- **Off-site habitats:** Foudry Brook lies adjacent to the Site, which comprises habitats of ecological value including a lake surrounded by marginal vegetation and mature trees which are likely to support protected species. Standard construction procedures should be followed to minimise impacts from pollutants (such as surface run-off, dust, wind-blown litter), to avoid impacts on these adjacent habitats. These measures should be detailed in a Construction Environmental Management Plan (CEMP).
- **On-site habitats:** The scattered trees and hedgerows onsite provide ecological value, with the hedgerows being classified as a Habitat of Principal Importance (NERC, 2006). The trees and hedgerows should be retained where possible, protected during works and enhanced with additional planting. These measures should be detailed in a CEMP.
- **Nesting birds:** The scattered trees, hedgerows, introduced planting and buildings on Site provide suitable habitat for nesting birds. It is recommended that clearance work avoids the bird breeding season which runs from March to August. Vegetation clearance works undertaken between the months of March and August will require an experienced ornithologist to conduct a nesting bird check before any works commence.
- **Commuting and foraging bats:** Whilst the habitats onsite are of negligible value for bats, the woodland and brook which lie directly to the north-west provide potentially valuable commuting and foraging habitat for bats. A sensitive lighting scheme should be developed to detail the use of appropriate luminaries and directed lighting, to avoid light spill onto these habitats. If light spill onto these habitats is unavoidable, bat activity surveys will be required to fully assess the value for commuting and foraging bats and to inform mitigation measures required.
- **Roosting bats:** Three trees onsite are of moderate potential to support roosting bats. If the proposed development is predicted to directly impact these trees, or indirectly through increased lighting, a bat box check should be undertaken by a licenced ecologist to ascertain the boxes use by roosting bats and inform any required mitigation or further survey effort.

- **Badger:** Suitable foraging and sett building habitat is present onsite and within the Zone of Influence, however no evidence of badgers was noted during the site visit. Badger activity can significantly change over a short period of time and so a pre-commencement check is recommended immediately prior to construction. This should be included within the CEMP.
- **Hedgehog:** The introduced planting and hedgerows provide some foraging and nesting opportunities for hedgehog. Hedgehog are listed as a Species of Principal Importance under the NERC Act (2006) and therefore of consideration within the planning process. If any hedgehogs are found during works, they should be moved offsite, so to not be further impacted by works. The proposed fencing should include hedgehog highways to maintain hedgehog movement across the site.

Opportunities exist to enhance biodiversity on the Site post-development. It is recommended native species should be incorporated into the landscape design. The native species hedgerow should be retained and protected during works, and enhanced with additional planting where possible. In addition, simple measures such as the provision of bird and bat boxes, the inclusion of a bee lawn, as well as invertebrate features have been recommended to further enhance the site.

The recommendations outlined within this report will ensure that the proposals are in compliance with the National Planning Policy Framework and will also contribute to ensuring a sustainable development that helps to achieve both local and national biodiversity targets.

2. INTRODUCTION

2.1. Aims and scope of Preliminary Ecological Appraisal

In November 2022 MKA Ecology Ltd was commissioned to undertake a Preliminary Ecological Appraisal at Brook Drive, Green Park, Reading by Overbury PLC in order to support a planning application for works to the existing commercial office unit, including improvements to security and access.

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 close proximity 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;
- Detail recommendations for further survey effort where required; and
- Detail recommendations for biodiversity enhancements.

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 Brook Drive, Green Park, Reading. It is located south of Reading, within Berkshire (grid reference: SU 70238 69753) and falls under the authority of Reading Borough Council. A large commercial office building dominates the Site, surrounded by hardstanding and car parking areas. There is an area of modified grassland present to the north-west, with scattered trees, introduced planting and hedges present.

2.3. Proposed development

The proposed development is for improvements to the existing commercial office unit, including security fencing, access gate, exterior lighting and the creation of additional berms. The area of modified grassland and small sections of non-native hedge are likely to be impacted.

Improvement works to the building had commenced prior to the site visit.

2.4. Legislation and planning policy

This Preliminary Ecological Appraisal 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 20 July 2021 requires planning decisions to contribute to conserving and enhancing the local environment. Further details are provided in Appendix 1.

Reading Borough Council has produced an adopted Local Plan (Reading Borough Council, 2019) which covers a number of policies relating to biodiversity and habitat conservation, including:

- EN12: Biodiversity and the green network
- EN14: Trees, hedges and woodlands

Where relevant these are discussed in further detail in Section 5.

3. METHODOLOGIES

This Preliminary Ecological Appraisal 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 area within 2km. 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.	24/11/2022
Thames Valley Environmental Records Centre (TVERC)	Information on protected and notable sites and species within 2km of the Site (SU 70238 69753).	24/11/2022
Ordnance Survey maps and aerial photography	Information on habitats and connectivity between the Site and the surrounding landscape	24/11/2022
Plantlife Important Plant Areas Buglife Important Invertebrate Areas	Information on hotspots of diversity for plants and invertebrates and populations of internationally threatened plant and invertebrate species.	24/11/2022

Reading Borough Council planning portal was also referred to in order to understand the scope of further development surrounding the Site.

3.2. UK Habitat Classification

Habitats were surveyed using the standardised UK Habitat classification and mapping methodology (UK Habs) (Butcher *et al.*, 2020). Data were recorded onto a Samsung Tablet in a Geographic Information System (GIS), in this instance QField, following a modified UK Habs Colour Mapping Pallet. 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, 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 Brook Drive, Green Park, Reading include the following:

- Plants and fungi: Bluebell *Hyacinthoides non-scripta*, lizard orchid *Himantoglossum hircinum*.
- Invertebrates: Stag beetle *Lucanus cervus*, white-letter hairstreak *Satyrrium w-album*, cinnabar *Tyria jacobaeae*, white ermine *Spilosoma lubricipeda*.
- Fish: Atlantic salmon *Salmo salar*, brown trout *Salmo trutta subsp. fabio*, European eel *Anguilla anguilla*.
- 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 onsite 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. Surveyor, author and reviewer

The survey was undertaken, and report written, by Rebecca Haines Qualifying CIEEM, Graduate Ecologist at MKA Ecology Ltd. Rebecca has one years' experience undertaking ecological appraisals. The report has been reviewed by Felix Bird, Senior Ecologist at MKA Ecology Ltd, and authorised by Will O'Connor CEcol MCIEEM, Director and Principal Ecologist at MKA Ecology Ltd. Felix has four years' experience as a consultant ecologist and Will has over 15 years' experience as a consultant ecologist.

3.5. Date, time and weather conditions

See Table 3 below for details of the date, time and prevailing weather conditions recorded during the site visit for the Preliminary Ecological Appraisal.

Table 3: Date, time and weather conditions of survey visit

Date	Time of survey	Weather conditions*
25/11/2022	10:30	Wind: 1 Cloud: 0 Temp: 9°C Rain: None

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

3.6. 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.

The assessment was undertaken outside the optimum period of April to the end of September. However, within the scope of the study it was possible to identify key habitats present and assess their likelihood of supporting a greater range of species.

4. RESULTS

4.1. Desktop study

An ecological desktop study was completed for the Site and the surrounding 2km for local and national sites and up to 10km for international sites. A search for data provided by Thames Valley Environmental Records Centre (TVERC) identified some UK and European protected species, Species and Habitats of Principal Importance (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).

No internationally statutorily designated sites or nationally designated sites were identified within 10km or 2km of the Site respectively as part of the desktop study.

Details of non-statutorily designated sites identified as part of the desktop study are displayed in Table 4 below. These consist of seven Local Wildlife Sites (LWS) and one Biodiversity Opportunity Area (BOA).

Table 4: Non-statutorily designated sites within 2km of Brook Drive, Green Park, Reading

Site name	Area (ha)	Distance and direction	Reasons for selection
Holy Brook LWS	4.5	1.9km N	A chalk river, a Habitat of Principal Importance (NERC, 2006), supporting a variety of wetland species.
Burghfield Gravel Pits LWS	177.7	1.6km W	An extensive area of gravel pits with wooded areas, islands and marginal vegetation. Attracts a good variety of wildfowl and bird species listed under Schedule 1 of the Wildlife and Countryside Act 1981 (as amended) including barn owl <i>Tyto alba</i> , bearded tit <i>Panurus biarmicus</i> , Cetti's warbler <i>Cettia cetti</i> , fieldfare <i>Turdus pilaris</i> , goldeneye <i>Bucephala clangula</i> , goshawk <i>Accipiter gentilis</i> , green sandpiper <i>Tringa ochropus</i> , green shank <i>Tringa ochropus</i> , kingfisher <i>Alcedo atthis</i> , Mediterranean gull <i>Ichthyaetus melanocephalus</i> , pintail <i>Anas acuta</i> , redwing

Site name	Area (ha)	Distance and direction	Reasons for selection
			<i>Turdus iliacus</i> , scaup <i>Aythya marila</i> , and whimbrel <i>Numenius phaeopus</i> .
Pinge Wood LWS	5.7	1.7km SW	Lowland mixed deciduous woodland, a Habitat of Principal Importance (NERC, 2006). The canopy is predominately oak <i>Quercus robur</i> with frequent ash <i>Fraxinus excelsior</i> , with 12 ancient woodland indicators recorded.
Great Lea Pond LWS	1.5	1.4km SE	Mosaic of silted pools and bare mud, shaded by willow scrub which is grading into secondary woodland. A good population of water-violet <i>Hottonia palustris</i> is present throughout the pools.
Fobney Island LWS	11.2	1.3km N	Island between the Kennet and Avon Canal and the Kennet overflow. Habitats are comprised of standing water bodies bounded by grassland and ruderal habitats, creating a wetland mosaic.
Kennet Valley East BOA	Not available	0.8km W	The Kennet Valley from Newbury to Reading, comprising chalk river, reedbeds, fen, wet woodland, lowland meadow and standing water.
River Kennet/Kennet & Avon Canal LWS	9.5	1.3km N	Contains sections of high-quality chalk river. An important wildlife corridor running into Reading and providing valuable riverine habitat. Also noted for supporting water vole, European eel and a rich invertebrate assemblage.
Fobney & Kennet Valley Meadows Complex LWS	154	1.8km N	A series of meadows within a floodplain. Habitats of Principal Importance (NERC, 2006) present include floodplain grazing marsh, wet woodland and lowland fen.

Brook Drive, Green Park, Reading is located towards the southern edge of Reading, within a commercial business park. Foudry Brook runs adjacent to the Site to the north-west and approximately 40m to the east, separated by a road. The wider landscape is dominated by commercial buildings and residential housing within the town of Reading, interspersed with a connecting network of rivers and canals. The M4 motorway lies 0.4km to the south, after which the landscape opens up to arable fields.

The majority of the designated sites in the surrounding area are selected for supporting habitats and species associated with riverine and floodplain areas. The Site predominantly comprises hardstanding and buildings, with a small area of modified grassland and scattered trees, so is unlikely to support

species associated with these designated sites. The wetland and woodland found adjacent to the Site are similar to the habitats present within the nearby designated sites, and therefore may support associated species.

The Site lies within Natural England Site of Special Scientific Interest (SSSI) Impact Risk Zones (Natural England, 2019). Only large infrastructure such as industrial or agricultural development that could cause air pollution or aviation proposals require LPA consultation with Natural England. No consultation is therefore necessary for the present development.

The Site does not lie in any Plantlife Important Areas (IPAs). It is located immediately adjacent to the Buglife Important Invertebrate Area (IIA) of West Berkshire IIA, however the full IIA profile is not yet available. Buglife IIAs are not designated sites but used as a tool to identify the areas which support the most threatened and declining species to help develop co-ordinated approaches to securing sustainable invertebrate populations.

The Reading Borough Council planning portal returned several applications within close proximity to the Site. These mainly consist of minor external amendments to existing commercial buildings.

4.2. UK Habitat Classification

The Site was found to comprise hardstanding and buildings, with some scattered trees and hedges present and a small area of modified grassland and introduced planting. 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)

A large commercial office building dominates the Site. The three-storey building is predominantly glass clad, with a flat roof. (Appendix 3, Photograph 1). There are several small outbuildings also present, including storage compounds.

Developed land; sealed surface (u1b)

The area to the east of the main building comprises a hardstanding concrete surface, used as a car parking area (Appendix 3, Photograph 2).

Modified grassland (g4)

An area of regularly mown lawn is present to the west of the main building, dominated by annual meadow-grass *Poa annua* with frequent Yorkshire fog *Holcus lanatus* (Appendix 3, Photograph 3). Other species present include daisy *Bellis perennis* and white clover *Trifolium repens*. There are several scattered mature trees present towards the western edge of the lawned area (Appendix 3, Photograph 4), including white poplar *Populus alba* and silver birch *Betula pendula*.

Secondary codes relevant to this habitat type:

- 66 Frequently mown
- 11 Scattered trees

Suburban/mosaic of developed/natural surface (u1d)

Several areas of planting are present throughout the Site (Appendix 3, Photograph 5), planted with a mix of introduced shrubs including Wilson's honeysuckle *Lonicera nitida* and Japanese barberry *Berberis thunbergii*. There are several berms present within the lawn, planted with non-native golden-twig dogwood *Cornus sericea* 'Flaviramea' (Appendix 3, Photograph 6).

Secondary codes relevant to this habitat type:

- 1150 Flower bed
- 1160 Introduced shrub

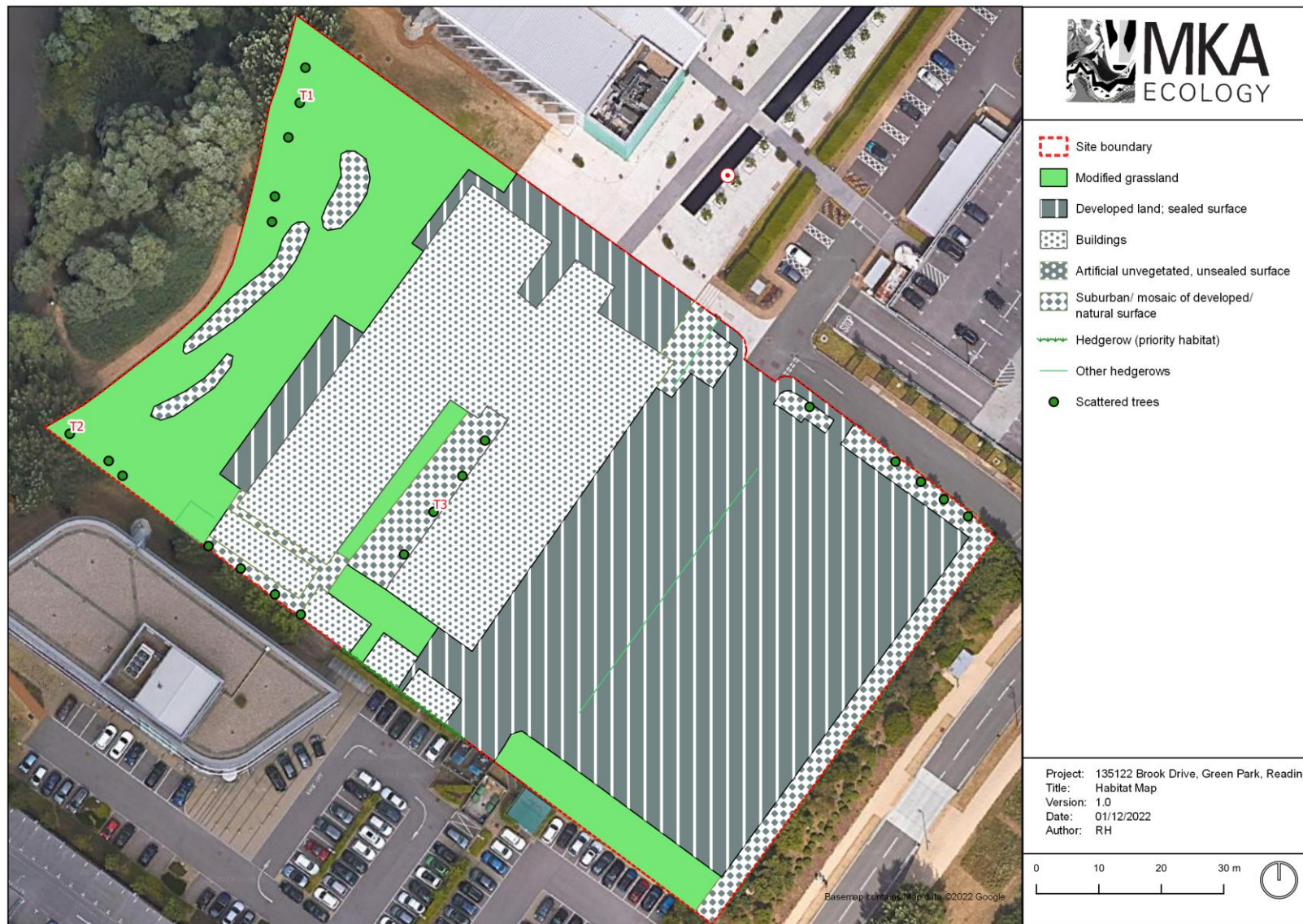
Hedgerow (priority habitat) (h2a)

A section of beech *Fagus sylvatica* hedge running along a short section of the southern boundary (Appendix 3, Photograph 7). This is a Habitat of Principal Importance listed on Section 41 of the Natural Environment and Rural Communities (NERC) Act (2006).

Other hedgerows (h2b)

Small sections of non-native hedgerow present throughout the Site, comprising Portuguese laurel *Prunus lusitanica* (Appendix 3, Photograph 8).

Figure 1: UK Habitat Classification map of Brook Drive, Green Park, Reading



4.3. Protected species scoping survey

Plants and fungi

The data search returned a number of records of protected and notable plant species within 2km of the Site, including bluebell and lizard orchid, both protected under the Schedule 8 of the Wildlife and Countryside Act 1981 (as amended).

The Site is dominated by hardstanding areas, buildings and regularly mown modified grassland, which do not provide suitable habitat for protected and notable plant species. Additionally, the areas of introduced planting are limited in size and species diversity. Overall, the likelihood of protected or notable plant species being present onsite is **negligible**, however Foudry Brook which lies offsite but within the zone of influence comprises habitats of much higher value, such as woodland and marginal vegetation and may support notable plants and fungi.

Invertebrates

The data search returned several notable invertebrates within 2km of the Site, including species listed under Section 41 of the NERC Act (2006) such as the cinnabar moth, and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) such as stag beetle and white-letter hairstreak butterfly.

Although there are small areas of introduced planting onsite, these are limited in extent and diversity. The dominance of hardstanding and buildings, which provide no opportunities for invertebrates, mean the risk of this Site supporting protected or notable invertebrate species, or significant or important assemblages is **negligible**. Offsite habitats within the zone of influence, including the woodland and marginal vegetation may support notable invertebrates.

Fish

The data search returned several records of protected and notable fish species within 2km of the Site, including species listed under Section 41 of the NERC Act (2006) such as brown trout and European eel. There are no aquatic habitats present onsite, therefore the likelihood of the Site supporting protected or notable species of fish is **negligible**. Foudry Brook, which lies offsite but within the zone of influence comprises aquatic habitats which may support protected or notable species of fish.

Amphibians

The data search returned records of smooth newt *Lissotriton vulgaris*, common frog *Rana temporaria*, common toad and great crested newt. The most recent record of great crested newt was from 2011, 1.1km south-east of the Site.

A search of Defra's MAGIC website returned no European Protected Species Licences (EPSL) granted for great crested newt within 2km of the Site.

There are no waterbodies present within the Site boundary. A search of Ordnance Survey maps identified three ponds within 500m of the Site. The closest of which is Foudry Brook which lies adjacent to the Site to the north-west. This section of the Brook has been landscaped to form a lake-like feature, and is currently used as a fishing lake and is considered unsuitable to support great crested newt. The remaining waterbodies are isolated from the Site by major roads and large areas of hardstanding which form significant barriers to potential newt dispersal. The records of great crested newt in the desktop study are also separated from the Site by the M4 motorway, which also acts as a major barrier to newt movement.

The introduced planting and hedgerows may offer limited sub-optimal terrestrial habitat. However, due to the age and location of records in the desktop study, the isolation of the Site from any potential breeding ponds and the limited amount of suitable terrestrial habitat onsite, the likelihood of amphibians being present is considered to be **negligible**.

Reptiles

The data search returned several records of slow-worm and grass snake within 2km of the Site, the most recent of which are from 2020 and 2019 respectively.

The majority of the Site is comprised of hardstanding and buildings, which are unsuitable for reptiles. The small areas of introduced planting provides some low-quality foraging and basking habitat, however this is limited in extent. Foudry Brook lies adjacent to the Site, a linear feature which has the potential to be used by grass snake. However, due to the lack of good-quality habitat present onsite, the likelihood of reptiles being present onsite is considered to be **negligible**.

Birds

The data search returned numerous records of protected and notable bird species, including species listed on Schedule 1 of the Wildlife and Countryside Act 1981 (as amended). Species returned by the data search that are listed on Schedule 1 of the Wildlife and Countryside Act, such as osprey *Pandion haliaetus*, merlin *Falco columbarius*, and kingfisher *Alcedo atthis*, are unlikely to breed onsite due to a lack of suitable habitat. Fieldfare *Turdus pilaris*, redwing *Turdus iliacus* and brambling *Fringilla montifringilla* were also returned in the desk study, but are also unlikely to breed on site due to its southern geographical location.

The data search did return records of Schedule 1 listed Cetti's warbler, a species associated with wetland habitats. The marginal vegetation within the zone of influence around Foudry Brook may provide some suitable habitat for this species. Overall the risk of specially protected species being present onsite is **negligible** but there is a **low** risk of presence within the zone of influence.

Three species were recorded during the site visit. These species are shown in Table 5 together with their conservation status. It is important to note that this is not a full inventory of species for the Site.

Table 5: Bird species recorded during site visit at Brook Drive, Green Park, Reading

Common name	Systematic name	S1 W&CA ¹	BoCC ² Status	S41 SPI ³	Local PrSp ⁴
Mallard	<i>Anas platyrhynchos</i>	-	Amber	-	-
Blackbird	<i>Turdus merula</i>	-	Green	-	-
Woodpigeon	<i>Columba palumbus</i>	-	Amber	-	-

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 scattered trees, hedgerows, areas of introduced planting and buildings are suitable for nesting birds. Therefore, the risk of common and widespread species nesting onsite is **high**, however the risk of a significant breeding assemblage is **negligible**. The risk of the Site supporting a notable overwintering assemblage is **negligible**, due to the lack of berry-rich plant species and the small size of the Site.

Bats

The data search returned several records of bat species within 2km of the Site, these include; common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus*, brown long-eared bat *Plecotus auritus*, Daubenton's bat *Myotis daubentonii*, Leisler's bat *Nyctalus leisleri*, Nathusius's pipistrelle *Pipistrellus nathusii*, noctule *Nyctalus noctula*, and serotine *Eptesicus serotinus*.

A search of Defra's MAGIC website returned four EPSLs granted for bats within 2km of the Site.

The buildings onsite are considered to be of **negligible** suitability to support roosting bats, due to a lack of potential bat roost features. Several mature trees are present that are of sufficient size and age to contain potential bat roost features. No features were recorded, as such these trees are considered to have **negligible** potential to support roosting bats. An artificial bat box was present on one tree (T1) (Appendix 3, Photograph 9) and bird nest boxes on two others (T2) (Appendix 3, Photograph 10) and (T3) (Appendix 3, Photograph 11). These trees are therefore considered to have **moderate** potential to support roosting bats.

The woodland and brook, which lie directly to the north-west of the Site, provide potentially valuable commuting and foraging habitat for bats. The scattered trees present onsite act as a commuting feature between the surrounding habitats. Overall, the habitats onsite have been assessed as having **negligible** suitability to support foraging and commuting bats, however the woodland and Foudry Brook adjacent to the Site is of **moderate** suitability.

Badger

The data search returned numerous records of badger within 2km of the Site, the most recent being from 2021.

No evidence of badger activity was recorded during the Site visit. The grassland and areas of introduced planting provide foraging habitat and the berms present within the grassland provide some sub-optimal opportunities for set building. Overall, the likelihood of the Site supporting badger is deemed to be **low**. However, suitable habitat for sett building is present within 30m of the Site, adjacent to Foudry Brook.

Hedgehog

The data search returned several records of hedgehog within 2km of the Site. The introduced planting and hedgerows provide some foraging and nesting opportunities but the majority of the Site comprises hardstanding and buildings, which do not provide any opportunities. Overall, due to the lack of suitable habitats present onsite, the likelihood of the Site supporting hedgehog is considered to be **low**. However, the woodland present adjacent to the Site provides much higher ecological value, and may support hedgehog.

Other mammals

The habitats onsite do not provide suitable habitat for other protected and notable mammal species such as, harvest mouse, brown hare, water vole or otter, records of which were returned from the data search. Therefore, the likelihood of the Site supporting these species is **negligible**. However, Foudry Brook which lies offsite but within the zone of influence comprises habitats of much higher value, such as woodland and marginal vegetation and may support other protected and notable mammal species.

5. ECOLOGICAL CONSTRAINTS, OPPORTUNITIES AND RECOMMENDATIONS

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

Off-site habitats

Foudry Brook lies directly to the north-west of the Site, which comprises habitats of ecological value including a lake surrounded by marginal vegetation and mature trees which are likely to support protected species. Standard construction procedures should be followed to minimise impacts from pollutants (such as surface run-off, dust, wind-blown litter), to avoid impacts on these adjacent habitats.

Mitigation measures to be adopted throughout the construction phase of the development include:

- Measures to minimise dust arising, when necessary, including the use of dust control machinery and wet machinery;
- Measures to prevent pollution / contamination events through surface run-off; and
- Measures to minimise other pollution events such as noise, vibration and wind-blown litter.

These measures should be included within a Construction Ecological Management Plan (CEMP).

Recommendation 1

Develop a CEMP to detail ecological protection measures during construction

On-site habitats

The majority of the Site comprises buildings and hardstanding of negligible ecological value. The scattered trees and hedgerows are of higher ecological value, with the native species hedgerow constituting a Habitat of Principal Importance (NERC, 2006).

Policy EN14 of the Reading Borough Council Local Plan states “*Individual trees, groups of trees, hedges and woodlands will be protected from damage or removal where they are of importance, and Reading’s vegetation cover will be extended...*” In line with this policy, the trees and hedgerows should be retained and protected during works, and enhanced with additional planting where possible. Native tree and shrub planting should be incorporated into the landscaping plans. Heras fencing should be installed around the retained trees and hedgerows, to protect from accidental damage during construction. These measures should be detailed within a CEMP.

Recommendation 2

Retain and protect existing trees and hedgerows, in line with Policy EN14 of the Local Plan. Install Heras fencing around retained habitats. Include native planting within the Site design.

Birds

The scattered trees, hedgerows, introduced planting and buildings onsite provide suitable habitat for breeding birds. 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 vegetation removal works between the months of September and February inclusive (i.e. outside of the bird season) would avoid impacts on breeding birds.

Where vegetation clearance works 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 3

Schedule vegetation clearance works 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.

Roosting bats

Three trees were assessed as having moderate potential to support roosting bats (T1, T2 and T3), due to the presence of an artificial bat and bird boxes. Impacts to bat roosts during development can occur directly as well as indirectly, through increased noise, lighting, dust and vibration.

All bat species are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 2 of Conservation of Habitats and Species Regulations 2017 (as amended). Bats are also Species of Principal Importance listed on Section 41 of the NERC Act (2006).

It is an offence to deliberately disturb a bat, damage or destroy a bat roost, intentionally or recklessly disturb a bat at a roost, or obstruct access to a roost.

The trees with moderate bat roost suitability (T1, T2 and T3) are not expected to be removed to facilitate works. If the proposed development is predicted to directly impact these trees, or indirectly through increased lighting, a bat box check should be undertaken by a licenced ecologist to ascertain the boxes use by roosting bats and inform any required mitigation or further survey effort.

Recommendation 4

Avoid impacts, including light spill, upon T1, T2 or T3. If this is not feasible a box check should be undertaken by a licenced ecologist to confirm the presence/absence of roosting bats.

Foraging and commuting bats

Foudry Brook and the riparian habitat directly adjacent to the Site are likely to act as an important foraging and commuting resource for local bat populations. Additional lighting of key foraging habitat would cause disturbance to these populations as it would impair their ability to survive or breed by reducing prey availability.

Bat roosting behaviour, commuting and foraging activity can additionally be dramatically affected by artificial lighting (BCT, 2018). It is strongly recommended that any proposed exterior lighting is designed and managed appropriately to ensure that the area remains suitable for foraging bats. A sensitive lighting scheme should be developed to allow suitable roosting and foraging areas for bats. The adjacent habitat, as well as the trees with bird and bat boxes should receive lighting that is as close to complete darkness as possible (0.4 lux, on a vertical plane; 0.2 lux, on a horizontal plane). More information on sensitive lighting is provided in Appendix 6.

Recommendation 5

Light pollution from any lighting should be minimised both during and after the construction phase. A sensitive lighting scheme should be developed to allow for suitable roosting and foraging areas for bats within the Site with maximum use of appropriate luminaries and directed lighting. Foudry Brook and the riparian habitats should remain unlit.

Badger

Suitable foraging and sett building habitat is present onsite and surrounding Foudry Brook, within 30m of the Site, as well as records indicating presence in the surrounding area, however no evidence of badgers was noted during the Site visit.

Badger setts and badgers occupying a sett are protected under the Protection of Badgers Act 1992.

Badger activity can significantly change over a short period of time and so a pre-commencement check of the habitats adjacent to Foudry Brook, adjacent to the Site is recommended immediately prior to works beginning to ensure badger have not colonised the area where works will take place.

Recommendation 6

Undertake a pre-commencement badger check prior to any works.

Hedgehog

The introduced planting and hedgerows provide some foraging and nesting opportunities for hedgehog. Hedgehog are listed as a Species of Principal Importance under the NERC Act (2006) and therefore of consideration within the planning process. If any hedgehogs are found during works, they should be moved offsite, so to not be further impacted by works.

The current Site plans include the installation of additional security fencing. This includes sections of chain mesh fencing and static bollards. It is unlikely that the chain link will be of a suitable hole size to accommodate hedgehog. The installation of boundary fences can impact on hedgehogs through loss of habitat connectivity. At least one 13cm x 13cm hole should be installed at the bottom of each chain mesh fence (with a focus on fences separating the Site from suitable habitat to the north-west, and excluding fences adjacent to roads), in order to maintain connectivity for hedgehogs between properties. These should be installed in a way that protects hedgehog from accidental damage from metal components.

Recommendation 7

Maintain habitat connectivity for hedgehog through the installation of at least one 13cm x 13cm hole at the bottom of each boundary fence.

Opportunities for biodiversity enhancement

Following the issue of the National Planning Policy Framework (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 site.

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 8

It is recommended that native British species are incorporated within the planting scheme for the final landscaping design in order to enhance the overall value of the site for biodiversity, in line with the requirements of the NPPF.

There is the opportunity to incorporate species-rich hedgerow planting within the proposals, along the new fencing and boundaries of the Site. The inclusion of hedgerows will improve the connectivity of the Site with the surrounding landscape. To achieve a species-rich state, the hedgerow should comprise a minimum of five native woody hedgerow species.

Recommendation 9

It has been recommended species-rich hedgerows are incorporated into the proposals to improve the connectivity of the Site.

A number of simple measures to improve biodiversity at the Site can be implemented. The amenity grassland habitat onsite provides an opportunity to create a bee lawn that can act as an important resource for bumblebees and other insect pollinators, which in turn provides benefits for other species within the ecosystem, including reptiles and bats. A bee lawn can be created by over-seeding the lawn with suitable plants such as selfheal *Prunella vulgaris* or bird's-foot-trefoil *Lotus corniculatus* and by reducing the mowing height and frequency. For more detailed information about the creation of a bee lawn please refer to Appendix 7.

Additionally, the creation of deadwood features at the site will be particularly valuable for invertebrates as a foraging resource, which in turn benefits a range of other species such as hedgehogs and reptiles. This could include rotting roots or tree stumps spread around various locations. The drilling of holes or cutting of notches can add even more value for invertebrates. One of the proposed new berms onsite should be designed to create an invertebrate mound and planted with a native wildflower mix. For more detailed information about the creation of invertebrate features refer to Appendix 5.

Recommendation 10

Incorporate simple biodiversity enhancement measures at the site, including the creation of a bee lawn, provision of deadwood features and an invertebrate mound.

Enhanced opportunities for breeding birds should be incorporated into the design scheme. Bird boxes should be mounted on retained mature trees, fences and built structures at the Site. It is recommended that there is focus on swift *Apus apus*, together with the provision of generalist bird boxes. Examples of suitable boxes are shown in Appendix 4 together with information concerning the correct siting of these enhancement features.

Recommendation 11

A minimum of six bird boxes should be installed at the site, to include three swift boxes to be installed on the building and three generalist bird boxes to be fixed to existing and retained mature trees.

The wider landscape has the potential for use by foraging bats. With this in mind, enhanced opportunities for roosting bats should also be provided at the Site through installation of bat boxes.

Recommendation 12

Provisions should be made for roosting bats at the site post-development, to include a minimum of four bat boxes, to be mounted on retained mature trees next to Foudry Brook.

Summary of recommendations

Table 6 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 6: Summary of recommendations at Brook Drive, Green Park, Reading

Species	Pre-planning action required?	Pre-construction action required?	Construction phase mitigation required?	Enhancements proposed?
Off-site habitats	No	CEMP	Follow standard construction procedures.	No
Habitats	Retain trees and native hedgerows, a Habitat of Principal Importance (NERC, 2006), additional native planting.	No	Install protective fencing around retained habitats	Native planting
Bats	Bat boxes and native planting Sensitive lighting scheme	No	Sensitive lighting scheme	Bat boxes and native planting

Species	Pre-planning action required?	Pre-construction action required?	Construction phase mitigation required?	Enhancements proposed?
Birds	Bird boxes and native planting	No	Timing of works for vegetation removal Incorporate integrated bird boxes into new buildings	Bird boxes and native planting
Badger	No	Pre-commencement check	TBC	TBC
Hedgehog	Design hedgehog holes in each boundary fence.	No	Care taken during works for potential hedgehog	No

6. CONCLUSIONS

The Preliminary Ecological Appraisal undertaken at Brook Drive, Green Park, Reading found the Site to comprise mostly hardstanding and buildings. Scattered trees, modified grassland and introduced planting are present at the Site. A native species hedgerow is also present and is classified as a Habitat of Principal Importance (NERC Act, 2006).

The habitats present have the potential to support protected species, including bats and nesting birds. A sensitive lighting scheme has been recommended to avoid light spill onto the adjacent Foudry Brook and riparian habitats, to avoid impacts on commuting, foraging and roosting bats.

The scattered trees, hedges, areas of introduced planting and the existing buildings have potential to support nesting birds, sensitive timing of works has been suggested to avoid impacts on this protected species group. The introduced planting and hedgerows provide suitable habitat for hedgehog, it has been recommended hedgehog highways are installed on all new boundary fences, to maintain habitat connectivity for this species.

Development at the Site provides an opportunity for biodiversity enhancement. Recommended enhancements the planting of additional native trees and hedgerows. The inclusion of simple enhancement measures, such as bird and bat boxes, bee lawns, deadwood features and an invertebrate mound are also recommended.

These ecological enhancements offer an opportunity to provide habitats for wildlife which will contribute to sustainable development that helps to achieve both local and national biodiversity targets.

7. REFERENCES

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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)	- 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; and - Possess 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)	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)	• 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.
<i>Birds</i>		
All wild birds	Wildlife and Countryside Act 1981 (as amended)	• 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)	• 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.
<i>Mammals</i>		
Bats (all UK species)	Schedule 2 of Conservation of Habitats and Species Regulations (2017)	• 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)	distribution or abundance of the species); • Damage or destroy a bat roost; • Intentionally or recklessly disturb a bat at a roost; or • Intentionally or recklessly obstruct access to a roost. In this interpretation, a bat roost is "<i>any structure or place which any wild [bat]...uses for shelter or protection</i>". Legal opinion is that the roost is protected whether or not the bats are present at the time.
Badger <i>Meles meles</i>	Protection of Badgers Act 1992	Under Section 3 of the Act: • 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. A sett is defined legally as any structure or place which displays signs indicating current use by a badger (Natural England 2007).
Hazel dormouse <i>Muscardinus avellanarius</i>	Schedule 2 of Conservation of Habitats and Species Regulations (2017)	• 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)	- 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)	- 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)	- 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)	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/2017/10/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 20 July 2021 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 Policy

EN12: Biodiversity and the green network

- a) *The identified Green Network, the key elements of which are shown on the Proposals Map, shall be maintained, protected, consolidated, extended and enhanced. Permission will not be granted for development that negatively affects the sites with identified interest or fragments the overall network. The Green Network comprises:*
- *Sites with identified biodiversity interest - Local Wildlife Sites, Local Nature Reserves, Biodiversity Opportunity Areas, protected and priority species and their habitats, Priority and Biodiversity Action Plan habitats, and the River Thames and all its tributaries (including the River Kennet and the Kennet & Avon Canal); and*
 - *Areas with potential for biodiversity value and which stitch the Green Network together – designated Local Green Space and open green spaces, and existing and potential Green Links.*

New development shall demonstrate how the location and type of green space, landscaping and water features provided within a scheme have been arranged such that they maintain or link into the existing Green Network and contribute to its consolidation. Such features should

be designed to maximise the opportunities for enhancing this network. All new development should maximise opportunities to create new assets and links into areas where opportunities are as yet unidentified on the Proposals Map.

- b) *On all sites, development should not result in a net loss of biodiversity and geodiversity, and should provide a net gain for biodiversity wherever possible. Development should:*
- Protect and wherever possible enhance features of biodiversity interest on and adjacent to the application site, incorporating and integrating them into development proposals wherever practicable; and*
 - Provide new tree planting, wildlife friendly landscaping and ecological enhancements (such as wildlife ponds, bird and bat boxes) wherever practicable. In exceptional circumstances where the need for development clearly outweighs the need to protect the value of the site, and it is demonstrated that the impacts cannot be: 1) avoided; 2) mitigated or; 3) compensated for on-site; then new development will provide off-site compensation to ensure that there is “no net loss” of biodiversity. Provision of off-site compensation shall be calculated in accordance with nationally or locally recognised guidance and metrics. It should not replace existing alternative habitats, and should be provided prior to development.*

EN14: Trees, hedges and woodlands

Individual trees, groups of trees, hedges and woodlands will be protected from damage or removal where they are of importance, and Reading’s vegetation cover will be extended. The quality of waterside vegetation will be maintained or enhanced.

New development shall make provision for tree retention and planting within the application site, particularly on the street frontage, or off-site in appropriate situations, to improve the level of tree coverage within the Borough, to maintain and enhance the character and appearance of the area in which a site is located, to provide for biodiversity and to contribute to measures to reduce carbon and adapt to climate change. Measures must be in place to ensure that these trees are adequately maintained.

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 2 for details.

Modified grassland (g4)

Common Name	Systematic Name	Relative abundance
Annual meadow-grass	<i>Poa annua</i>	D
Daisy	<i>Bellis perennis</i>	F
Dove's-foot crane's-bill	<i>Geranium molle</i>	F
White clover	<i>Trifolium repens</i>	F
Yorkshire-fog	<i>Holcus lanatus</i>	F
Spear thistle	<i>Cirsium vulgare</i>	R

Scattered trees (11)

Common Name	Systematic Name	Relative abundance
Field maple	<i>Acer campestre</i>	F
Silver birch	<i>Betula pendula</i>	F
White poplar	<i>Populus alba</i>	F
Domestic pear	<i>Pyrus communis</i>	O
Silver maple	<i>Acer saccharinum</i>	R

Suburban/mosaic of developed/natural surface (u1d)

Common Name	Systematic Name	Relative abundance
Boxed-leaved honeysuckle	<i>Lonicera ligustrina</i> var. <i>pileate</i>	F
Golden-twigh dogwood	<i>Cornus sericea</i> 'Flaviramea'	F
Wilson's honeysuckle	<i>Lonicera nitida</i>	F
Japanese barberry	<i>Berberis thunbergii</i>	O

Hedgerow (priority habitat) (h2a)

Common Name	Systematic Name	Relative abundance
Beech	<i>Fagus sylvatica</i>	D

Other hedgerows (h2b)

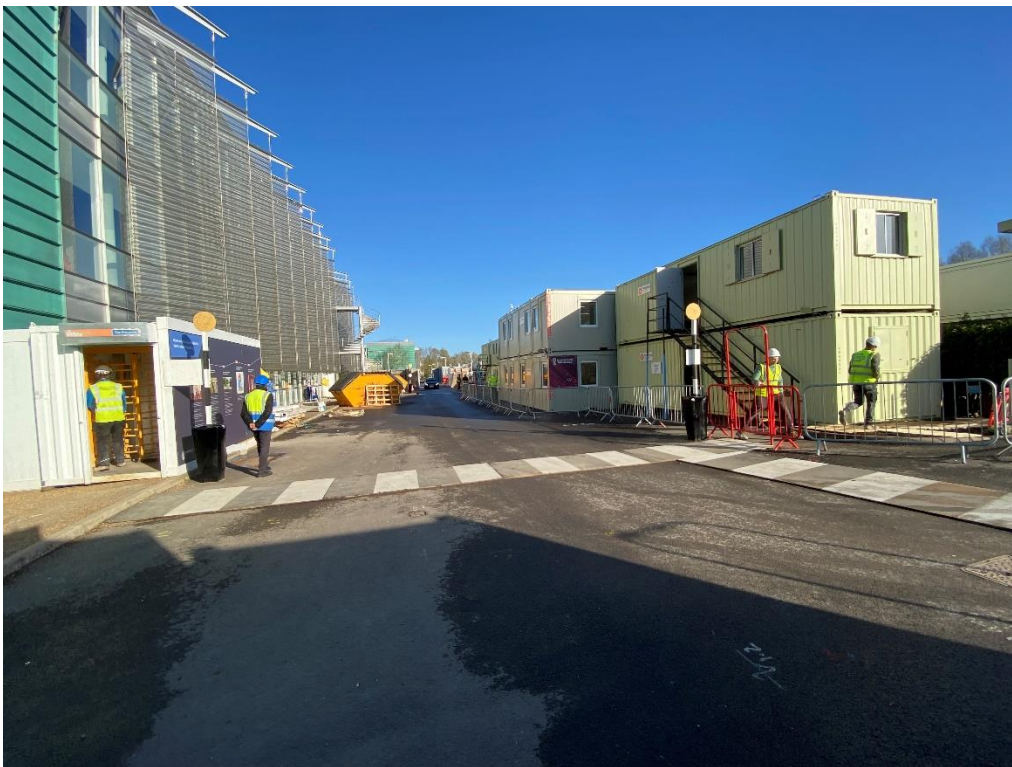
Common Name	Systematic Name	Relative abundance
Portuguese laurel	<i>Prunus lusitanica</i>	D

8.3. Appendix 3: Site photographs

Photograph 1: Buildings (u1b5)



Photograph 2: Developed land; sealed surface (u1b)



Photograph 3: Modified grassland (g4)



Photograph 4: Scattered trees



Photograph 5: Suburban/mosaic of developed/natural surface (u1d)



Photograph 6: Suburban/mosaic of developed/natural surface (u1d)



Photograph 7: Hedgerow (priority habitat) (h2a)



Photograph 8: Other hedgerows (h2b)



Photograph 9: T1 (moderate bat potential)



Photograph 10: T2 (moderate bat potential)



Photograph 11: T3 (moderate bat potential)



8.4. Appendix 4: Bird and bat box 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 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
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).

Example	Description	Picture
Schwegler Swift Box Number 18	This Swift Box No. 18 is ideally suited for creating Swift colonies under overhanging eaves. https://www.schwegler-natur.de/portfolio_1408366639/mauersegler-nest-nr-18/?lang=en	

Photograph 12: Suitable swift box location onsite



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.	
Schwegler General Purpose Bat Box 2F with Double Front Panel	www.schwegler-nature.com Height 33 cm Weight: approx. 4.1 kg External diameter: 16 cm Installation: Hanging This box is suitable for crevice dwellers, such as Nathusius' pipistrelle, Daubenton's bat and common pipistrelle.	

Example	Description	Picture
Schwegler 1FF	www.schwegler-nature.com Dimensions: 14(d) x 27(w) x 43(h) cm Weight: 9.9 kg Installation: Hanging This box is suitable for crevice dwellers, such as Nathusius' pipistrelle, Daubenton's bat and common pipistrelle. This box minimises temperature fluctuations in spring and autumn and is self-cleaning.	

8.5. Appendix 5: Invertebrate recommendations

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.	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.  (image credit – PTES, 2021)
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	 (image credits - Athayde Tonhasca via Scotlandsnature.blog, 2020)

Invertebrate mound

In a flat landscape, mounds away from areas of high traffic can create different microclimate areas of bare ground that invertebrates and other species can colonise and use. They also create wind shelters and thermal micro-climates. These areas can be created with areas of sand and seeded with a wildflower mix to make them more aesthetically pleasing.

Further information on the creation of an invertebrate mound can be found at:
http://www.magnificentmeadows.org.uk/assets/pdfs/How_to_create_an_earth_mound_for_wildlife.pdf

8.6. Appendix 6: Sensitive lighting recommendations

Artificial lighting has been shown to have a negative impact on bats (BCT, 2018). It can cause bats to desert or become entombed within a roost, affect feeding behaviour and create barriers which bats cannot cross. There are several factors to consider within a sensitive lighting scheme in order to minimise light spill onto features identified as important for bats during previous survey effort.

Avoid lighting the key habitats and features

Where possible, there should be no artificial lighting on any roost entrances or associated flight paths, as well as habitats or features used by large numbers of bats, rare species or highly light-averse species. An unlit 'dark zone' should be created around the features of importance through the careful placement of artificial lighting and structures such as walls or fences. It is important to remember that there is no legislation requiring a road or area to be lit.

Appropriate luminaire recommendations

Bats are particularly sensitive to blue, green and UV light and therefore luminaires should be selected which emit "warm white" light (2700K to 3000K) and wavelengths with peaks greater than 550nm. LED lights should be used where possible as they fit these criteria and have other advantageous characteristics such as sharp cut-offs, usability at lower intensities and dimming capabilities.

Column height and timing

Column height should be carefully considered in order to minimise light spill. Luminaires should always be mounted on the horizontal and only luminaires with an upward light ratio of 0% and with good optical control should be used. Low-level lighting from bollards should be avoided where possible, and specialist bollard or low-level downward directional luminaires should only be used as directed by the lighting professional. Any external security lighting should be set on motion sensors and short (one minute) timers.

Internal lighting

Where possible, the site design should minimise the number and size of windows facing the features of importance. Where windows are required, recessed lighting should be used rather than pendant lighting to minimise light spill. Furthermore, factory-tinted glazing treatments can be used to minimise internal light transmission.

8.7. Appendix 7: Bee lawn

Lawn spaces are important habitats and resources for many pollinators including bees, butterflies, hoverflies and beetles, which in turn provide resources for other species such as reptiles and bats. A bee lawn would be specifically cultivated to attract insect pollinators to your garden. A bee lawn can be created by planting a seed mix containing flowering plants that are low-growing, attractive to pollinators and are also resistant to relatively frequent mowing. This would create a shorter, neater alternative to a wildflower meadow, but still contain a wide variety of pollinator friendly plants. The flowers to be planted should be a variety of shapes, colours and sizes to increase the diversity of pollinators which will be attracted including, but not limited to, bumblebees, solitary bees, flies and butterflies.

Mowing this area approximately once every three weeks and raising the mower blades to their highest level (around 8cm is optimal) will allow these flowering plants to grow and thrive for the entire summer period.

Pre-made seed mixes for bee lawns are already available from a limited number of online sellers. Most wildflower mixes sold online are made up of taller meadow species that would not be suitable for a short garden lawn. One available lawn seed mix is the 'Wild Flower lawn seed mix' provided by Wild Flower Lawns and Meadows (<https://www.wildflowerlawnsandmeadows.com/>). This includes many suitable flowering plants but also includes species such as common spotted orchid (*Dactylorhiza fuchsia*) which does not respond well to frequent mowing and can take 3-4 years to germinate and flower. Another provider selling a wildflower mix designed for lawns is John Chambers Wildflower Seed (<https://www.johnchamberswildflowers.co.uk/>). This mix contains many optimal flower species, and is sold both as a 100% wildflower mix and a mix including grass seeds (80% grass, 20% wildflower). However, if you were to buy the mix that includes grasses, the species of grasses contained in the mix are not specified, and with 80% of the seed being grass, there is a risk of the wildflowers being lost within the lawn.

Finally, if you have a pre-existing list of flowering plants that you would want in a bee lawn, there are websites which allow you to create your own bespoke seed mix to suit the particular area you are planting, one such website is <https://www.phoenixamenity.co.uk/>.



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