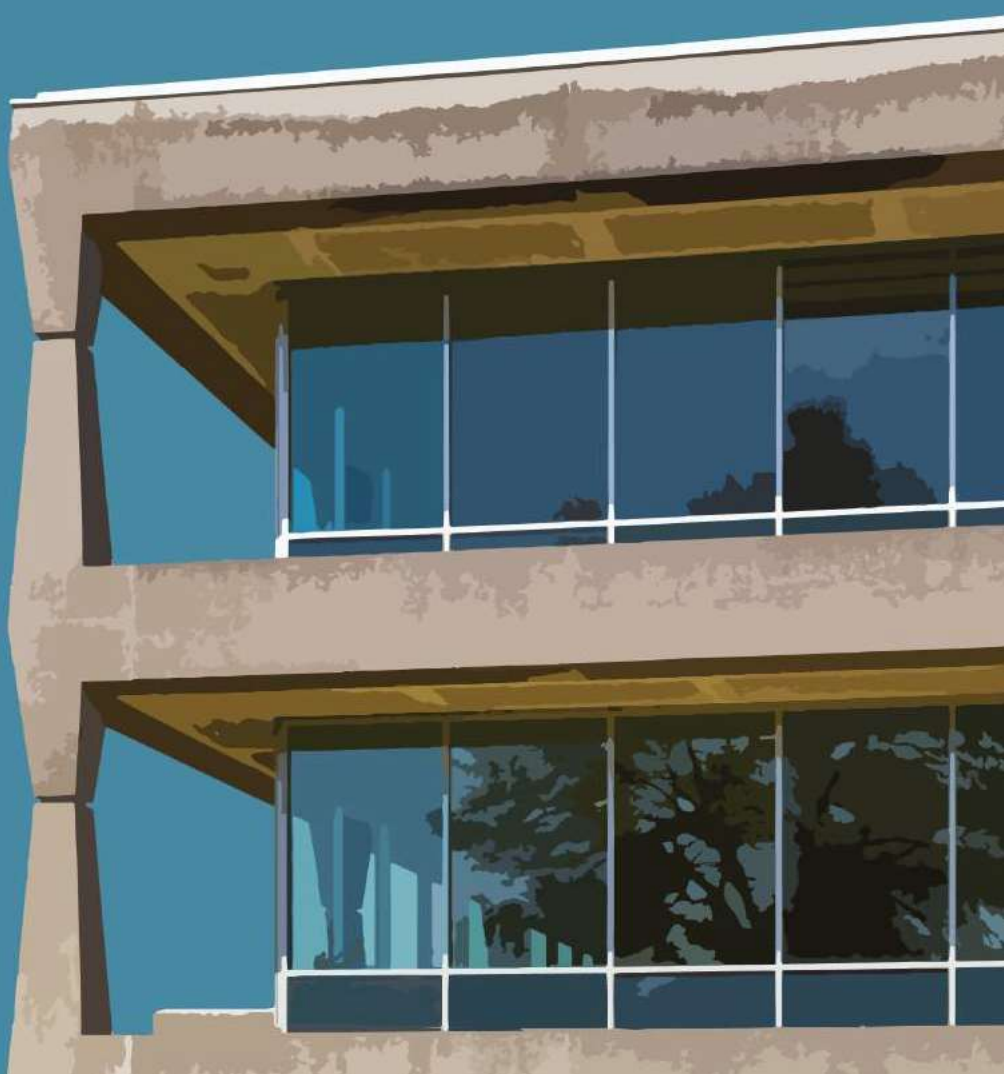
Hayes Park

Preliminary Ecological Appraisal

May 2023



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Client: Shall Do Hayes Developments Limited

Project: Hayes Park

Report: Preliminary Ecological Appraisal

QUALITY ASSURANCE

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1.0 EXECUTIVE SUMMARY

Greengage Environmental Ltd was commissioned to undertake a Preliminary Ecological Appraisal by Shall Do Hayes Developments Limited ('the Applicant') of a site known as Hayes Park, Hayes End Road, Hayes, UB4 8FE ('the site') in the London Borough of Hillingdon.

This document is a report of this survey and has been produced to support a planning submission for the site which seeks a change of use of the existing buildings to provide new homes (Use Class C3), together with internal and external works to the buildings, landscaping, car and cycle parking, and other associated works.

The survey area extends to approximately 3.73 hectares and comprises two former Grade II listed office buildings, associated carparking, access driveways and footpaths surrounded by low-cut well maintained grassland, introduced shrub, scattered trees and species poor hedgerow.

This survey aimed to establish the ecological value of this site and the presence/likely-absence of notable and/or legally protected species in order to inform appropriate mitigation, compensation and enhancement actions in light of proposed development works.

The desktop study and site survey identified value for a number of notable and protected species and habitats including:

- Hayes Shrub Site of Importance for Nature Conservation (SINC) lies immediately off-site to the north-east;
- Biodiversity Action Plan (BAP) habitat Woodland and Parkland lies immediately off-site;
- Low potential for foraging badger onsite;
- Low potential for foraging bats on site;
- Moderate potential for nesting birds within the scattered trees on site;
- Moderate potential for invertebrates using the standing deadwood and bug hotels on site;
- Low potential for foraging, sheltering and hibernating hedgehog associated with the introduced shrub and modified grassland on-site.

Potential to support all other protected and notable species is considered negligible. The Hayes SINC and rough grassland immediately off-site has higher value for foraging, sheltering badger, bats, reptiles hedgehog and invertebrates including UK BAP species stag beetle.

Impacts upon Hayes Shrub SINC should be mitigated through the production of a Construction Environment Management Plan (CEMP), detailing control measures to avoid and mitigate potential impacts during site construction. Operational impacts upon the SINC associated with increased footfall are not expected as the majority of SINC is not accessible to the public and footfall is unlikely to significantly increase beyond historical levels when the main building was previously used as an office. Furthermore, proposals seek to create compensatory open greenspace for recreation. Therefore, no additional mitigation is required.

It is understood that proposals seek to retain the grassland habitat of value for foraging badgers and that the development will be set back over 30m from the woodland ensuring no disturbance or damage to potential setts within the woodland. Therefore, no foreseeable impacts on badgers are predicted.

During construction, any excavations should have planks or ramps within them to allow any animals falling into the excavations to climb out. Barriers around the construction site should have gaps under fences to allow hedgehog, badger and foxes through these areas without becoming trapped. Any pipes over 100mm in diameter should be capped off at night to prevent animals entering.

Whilst there is negligible potential for reptiles on site, immediately off-site has moderate potential for individual reptiles to occur within rough grassland. Given the close proximity to site, a precaturionary phased clearance is recommended between March and October (outside the hibernation season) using handheld tools. In the unlikely event that any reptiles are found, works should be stopped and the ecologist notified, who will move the animals to areas outside the development area.

There was one tree on site with moderate potential for roosting bats. This tree will be retained but could be subject to disturbance through increases in artificial lighting levels as part of the development. Further bat surveys were undertaken which confirmed likely absence of roosting bats (ref: 552014ltMay23FV00_Bats)

A bat sensitive lighting scheme has been recommended to ensure light levels on site do not exceed current levels and features of value for foraging off-site such as the woodland SINC edge are reduced where possible.

It is understood that the majority of trees are to be retained however any tree or vegetation clearance works should be undertaken outside of the breeding bird season (March–August, inclusive). If this is not possible an ecologist must check for active nests a maximum of 48 hours before the works to confirm the presence/likely absence of nests.

The bug hotels and deadwood should be retained on site. Any deadwood requiring removal should be undertaken outside of stag beetle 'season' and overseen by a suitably qualified ecologist. The deadwood and any stag beetles or larvae should be moved to areas of suitable retained habitat such as the woodland.

Introduced shrub on site provides potential hibernation habitat for hedgehogs. As such, hedgehogs should be watched for during site clearance and any hedgehogs discovered should be translocated to other suitable habitat that is not earmarked for clearance.

Recommendations to enhance the site's ecological value post-development have been outlined. The enhancement measures discussed include wildlife friendly landscaping, native tree and shrub planting, implementation of bird and bat boxes, invertebrate habitat features and hedgehog friendly landscaping.

Assuming these recommendations are implemented effectively, then no adverse impacts on biodiversity within or adjoining the site are predicted, and the site is likely to achieve net gains for biodiversity.

All of the above key ecological mitigation, compensation and enhancement actions should be detailed within an Ecological Management Plan (EMP) for the site, which could be secured through planning condition.

2.0 INTRODUCTION

Greengage was commissioned to undertake a Preliminary Ecological Appraisal by Shall Do Hayes Developments Limited ('the Applicant') of a site known as Hayes Park, Hayes End Road, Hayes, UB4 8FE ('the site') in the London Borough of Hillingdon ('the site').

This document is a report of this survey and has been produced to support a planning submission for the site which seeks a change of use of the existing buildings to provide new homes (Use Class C3), together with internal and external works to the buildings, landscaping, car and cycle parking, and other associated works.

The PEA aimed to establish the ecological value of this site and the presence/likely-absence of notable and/or legally protected species in order to inform appropriate mitigation, compensation and enhancement actions in light of proposed development works.

2.1 SITE DESCRIPTION

The survey area extends to approximately 3.73 hectares and is centred on National Grid Reference TQ 08887 82434, OS Co-ordinates 508887, 182434.

The site forms part of the Hayes Park Business Estate which encompasses three former office buildings, associated carparking and soft landscaping. This report supports the development associated with Hayes Park Central and Hayes Park South buildings, which includes two concrete Grade II listed former office buildings associated carparking, access driveways and footpaths surrounded by low-cut well-maintained grassland, introduced shrub, scattered trees and species poor hedgerow.

Immediately off-site to the north-east is a woodland that comprises a part of the Hayes Shrub Site of Importance for Nature Conservation (SINC). To the east is a large expanse of rough grassland parkland habitat before residential housing. To the south lies horse-grazed fields and arable fields abut the north and western boundaries.

In the wider context the site lies within the heavily residential London Borough of Hillingdon. Notable greenspace is concentrated north of the site and includes Local Nature Reserves (LNRs) Yeading Brook Meadows LNR 1.09km northeast, Yeading Meadows LNR 1.16km east and Yeading Woods (LNR) 1.49km north, a patchwork of open greenspace, arable fields and pockets of woodland.

3.0 METHODOLOGY

The PEA (which included an Extended Ecological Phase 1 Survey) was undertaken in accordance with guidance in the UK Habitat Classification System (UKHab)[1] and the Chartered Institute of Ecological and Environmental Management (CIEEM) (2017) Guidelines for Preliminary Ecological Appraisal[2], in accordance with BS42020:2013: Biodiversity[3]. The overall assessment consisted of:

- Site specific biological information gained from statutory and non-statutory consultation; and
- A site walkover, protected species scoping assessment and phase 1 habitat survey.

The site-specific consultation provided the ecological context for the site survey carried out on the 8th April 2022.

The survey boundary and existing site is shown at Figure A.1.

Greengage undertook the site walkover during dry and sunny weather conditions. Features within the site boundary and accessible features immediately bordering it were evaluated and the extent and distribution of habitats and plant communities were recorded and supplemented with target notes on areas or species requiring further commentary. Fauna using the area were recorded and areas of habitat suitable for statutorily protected species were identified where present, with an active search carried out for evidence of such use.

3.1 DESKTOP REVIEW

A review of readily available ecological information and other relevant environmental databases (included Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) website[4]) was undertaken for the site and its vicinity. A biological records search from Greenspace Information for Greater London (GiGL) were reviewed to identify the location and citations of local non-statutory designated sites and presence of records for notable and protected species. This provided the overall ecological context for the site, to better inform the site survey.

3.2 ON SITE SURVEYS

Flora

The extent and distribution of different habitats on site were identified and mapped according to the standard UKHab methodologies, supplemented with target notes describing the dominant botanical species and any features of interest. Any present protected plant species and invasive/non-natives were also noted. A habitat map has been produced to illustrate the results, as shown at Figure A.1 (Appendix A).

Fauna

The site survey specifically included assessments to identify the potential value for notable, rare and protected species at site. This involved identifying potential habitats in terms of refugia, breeding sites and foraging areas in the context of species known to be present locally and regionally.

The likelihood of occurrence is ranked as follows:

- Negligible - While presence cannot be absolutely discounted, the site includes very limited or poor-quality habitat for a particular species. The site may also be outside the known national range for a species;
- Low - On-site habitat is poor to moderate quality for a given species, with few or no information about their presence from desk top study. However, presence cannot be discounted due to the national distribution of the species or the nature of on-site and surrounding habitats;
- Moderate - The on-site habitats are of moderate quality, providing most or all of the key requirements for a species. Several factors may limit the likelihood of occurrence, habitat severance, habitat disturbance and small habitat area;
- High - On-site habitat of high quality for given species. Site is within a regional or national stronghold for that particular species with good quality surroundings and good connectivity; and
- Present - Presence confirmed for the survey itself or recent, confirmed records from information gathered through desk top study.

The species surveyed for included:

Badger (*Meles meles*)

The potential for badger to inhabit or forage within the study area was assessed. Evidence of badger activity includes the identification of setts (a system of underground tunnels and nesting chambers), grubbed up grassland (caused by the animals digging for earthworms, slugs, beetles etc.), badger hairs, paths, latrines and paw prints.

Bat Species (*Chiroptera*)

The site visit was undertaken in daylight and the evaluation of bat potential comprised an assessment of natural features on site that aimed to identify characteristics suitable for bat roosts, foraging and commuting. In accordance with Bat Conservation Trust's Good Practice Guidelines[5] and methods given in English Nature's (now Natural England) Bat Mitigation Guidelines[6] consideration was given to:

- The availability of access to roosts for bats;
- The presence and suitability of crevices and other places as roosts; and
- Signs of bat activity or presence.

Definite signs of bat activity were taken to be:

- The bats themselves;

- Droppings;
- Grease marks;
- Scratch marks; and
- Urine spatter.

Signs of possible bat presence were taken to be:

- Stains; and
- Moth and butterfly wings.

Features with potential as roost sites include mature trees with holes, crevices or splits (the most utilised trees being oak, ash, beech, willow and Scots pine), caves, bridges, tunnels and buildings with cracks or gaps serving as possible access points to voids or crevices.

Additionally, linear natural features such as tree lines, hedgerows and river corridors are often considered valuable for commuting and semi-natural habitats such as woodland, meadows and waterbodies can provide important foraging resources. Consideration was given to the presence of these features both immediately within and adjacent to the assessment area.

Great Crested Newt (*Triturus cristatus*)

An assessment was carried out to identify any potential habitats that may support great crested newt (GCN) and other native amphibians. The aquatic and terrestrial habitats required generally include small, still ponds or water bodies suitable for breeding; and woodland or grassland areas where there is optimal invertebrate prey potential.

Reptiles

The potential for reptile species on site was assessed during the walkover survey. Possible species include grass snake (*Natrix natrix*), smooth snake (*Coronella austriaca*), adder (*Vipera berus*), common and sand lizard (*Lacerta vivipara* and *L. agilis*) and slow worm (*Anguis fragilis*). These native reptile species generally require open areas with low, mixed-height vegetation, such as heathland, rough grassland, and open scrub or, in the case of grass snake, waterbody margins. Suitable well drained and frost-free areas are needed so they can survive the winter.

Dormouse (*Muscardinus avellanarius*)

During the walkover survey the potential for dormouse to be present on site was assessed. This included observations for suitable habitat such as well-layered woodland, scrub and linking hedgerows, particularly those comprised of species offering suitable food sources such as honeysuckle and hazel, in addition to direct evidence such as characteristically gnawed hazelnuts, chewed ash keys and honeysuckle flowers, or nests.

Water Vole (*Arvicola terrestris*)

Water vole potential was assessed during the walkover survey. The potential is identified by the presence of ditches, rivers, dykes and lakes with holes and runs along the banks. Latrines, footprints or piles of food can also be noted.

Otter (*Lutra lutra*)

Where desktop review or consultation indicates the presence of otter in a river catchment, the presence of water bodies with good cover and potential holt (den) sites would be noted. Spraint, footprints or food remains can also be noted.

Birds

During the walkover survey, the potential for breeding, wintering and migratory birds was assessed. In particular, this includes areas of trees, scrub, heathland and wetlands that could support nests for common or notable species.

Invertebrates

As part of the walkover survey the quality of invertebrate habitat and the potential for notable terrestrial and aquatic invertebrate species was considered. There is a wide variety of habitats suitable for invertebrates including wetland areas, heathland, areas of bare sandy soil, ephemeral brownfield vegetation and meadows.

Biodiversity Action Plan priority species/ Species of Principal Importance

Where consultation and desk-study indicates the presence of BAP priority species (Species of Principal Importance) not protected by statute, effort was made to establish the potential for the site to support these species.

3.3 SURVEYORS

Laura Thomas, who undertook the site visit and wrote this report, has an undergraduate degree in Biology (BSc Hons) and a Master's degree in Evolutionary and Behavioural Ecology. Laura has over 3 years' experience in the commercial sector.

Stephanie Harper, who reviewed this report, has a Bachelor's degree in Environmental Biology (BSc Hons), a Natural England Level 1 class bat licence and over 16 years' experience in ecological surveying and assessment.

This report was written by Laura Thomas and reviewed and verified by Stephanie Harper who confirms in writing (see the QA sheet at the front of this report) that the report is in line with the following:

- Represents sound industry practice;
- Reports and recommends correctly, truthfully and objectively;
- Is appropriate given the local site conditions and scope of works proposed; and

- Avoids invalid, biased and exaggerated statements.

3.4 CONSTRAINTS

The PEA was undertaken during an optimal time of year during ideal conditions by a suitably qualified ecologist. All external areas of the site were freely accessible. It was not possible to conduct an internal inspection of the buildings and this has been taken into consideration when recommending further surveys. This is unlikely to significantly impact findings, as the building has a flat roof and was overall in good condition, with no features observed providing access to the interiors. Overall, the lack of internal access is not considered a significant constraint.

No significant constraints that stand to impact conclusions drawn in this report therefore presented themselves.

4.0 RESULTS

4.1 DESKTOP REVIEW

Designations

Consultations with the local biological record centres (GiGL) and the MAGIC dataset have confirmed that there are no statutory designations of national or international importance within the boundary of the site or within 5km.

There are two Sites of Special Scientific Interest (SSSIs) within a 5km radius and three Local Nature Reserve (LNR) within a 2km radius, with the nearest being Yeading Brook Meadows LNR 1.09km north-east.

Records from GiGL also identified 11 non-statutory Sites of Importance for Nature Conservation (SINCs) within 2km of the site boundary. SINCs are recognised by LPAs as important wildlife sites.

Table 4.1 below gives the locations and descriptions of a selection of the nearest/most relevant local designations.

Table 4.1 Statutory and Non-Statutory Designated Sites within Search Radius

Site Name	Approximate Location	Description
Statutory Designations		
Fray's Farm Meadows (SSSI)	4.4km north west	Fray's Farm Meadows are one of the last remaining examples of relatively unimproved wet alluvial grassland in Greater London and the Colne Valley. The meadows contain a variety of grassland communities which range from the grazed grassland of sweet vernal-grass Anthoxanthum odoratum, crested dog's-tail Cynosurus cristatus and perennial rye-grass Lolium perenne through to areas of tall sedge dominated marshy grassland with lesser pond sedge Carex acutiformis and reed-grass Glyceria maxima. The linear features of the site -ditches, hedges and railway embankment - add further habitat diversity, and contribute to the richness of plants and animals present. In addition to the commoner sedges and grasses the meadows contain a number of species characteristic of old grassland such as lady's smock Cardamine pratensis and large bird's trefoil lotus uliginosus. Also found are plants like ragged robin Lychnis flos-cuculi, and marsh marigold Caltha palustris which are becoming increasingly uncommon in the London

Site Name	Approximate Location	Description
		area due to habitat destruction. Purple loosestrife Lythrum salicaria and common skullcap Scutellaria galericulata grow along ditch banks while water plantain Alisma plantago-aquatica, water cress Rorippa nasturtium-aquaticum, water forget-me-not Myosotis scorpioides and amphibious bistort Polygonum amphibium are amongst the common plants in the ditches. The Fray's River has a similar flora to the ditches but also includes arrow-head Sagittaria sagittifolia. The entomological interest of the site is well documented with a good variety of dragonflies and butterflies recorded from this section of the Colne Valley. The meadows also provide good cover for waders and wildfowl throughout the year and wintering species include Jack snipe, snipe, lapwing, teal and shoveler. With the loss of washland areas throughout London the site becomes increasingly valuable as a relict habitat.
Denham Lock Wood (SSSI)	4.8km north west	Woods of alder Alnus glutinosa and crack willow Salix fragilis dominate a major part of the site and also form a scattered understorey within a derelict plantation of poplar. On the more waterlogged ground the willow characteristically occurs as a dense tangle of fallen and leaning trees. These support assemblages of epiphytic mosses, ferns and herbs and add to the varied woodland structure. In drier parts a shrub layer is present comprising mainly hazel coppice Corylus avellana. Other shrubs such as grey willow Salix cinerea and the locally uncommon guelder rose Viburnum opulus also occur and in places form a transitional carr between the woodland and open mire. The open areas of flood plain mire are characterised by plant communities typical of a rich fen habitat. A mix of greater pond-sedge Carex riparia and lesser pond-sedge Carex acutiformis is widely dominant and locally occurs in association with common reed Phragmites australis and reed canary-grass Phalaris arundinacea. Other well-represented species include meadowsweet Filipendula ulmaria, purple loosestrife Lythrum salicaria, and common comfrey Symphytum officinale. These communities grade into a more open sedge-dominated sward on the waterlogged soils under the carr and woodland. In places where the watertable falls there is a particularly diverse woodland herb flora which

Site Name	Approximate Location	Description
		shows an interesting pattern of plant associations. Included among the range of species present are bugle Ajuga reptans, male-fern Dryopteris filixmas, herb robert Geranium robertianum, dog's mercury Mercurialis perennis, bramble Rubus fruticosus, red campion Silene dioica and shade tolerant plants of the open mire habitat. Derelict drains support other herbs such as marsh-marigold Caltha palustris, an uncommon species in Greater London due to the decline of similar wetland areas.
Yeading Brook Meadows (LNR & SINC)	1.09km north-east	Yeading Brook Meadows lies in the valley of the Yeading Brook and comprises mainly of grassland, with some hawthorn hedges and scrub. The grassland is of varying quality with areas of rich sward including pepper saxifrage (Silaum silaus), sneezewort (Achillea ptarmica) and common bird's foot trefoil (Lotus corniculatus), along with 17 common species of grass. The site is most noted for the presence of narrow-leaved water-dropwort.
Yeading Meadows (LNR)	1.16km east	The site covers an area of 29.96 hectares and is managed by the London Wildlife Trust. The hundred-year-old oak plantation over hazel coppice which forms Ten Acre Wood adjoins the flower rich Yeading Brook Meadows. The woodland is mostly oak, planted in the late 19th Century with an understory of mainly hawthorn and hazel. Hobby occasionally nest in summer, kingfisher can be seen along the Yeading Brook, Roesel's bush cricket and long winged conehead are found in the meadows as well as gatekeeper butterflies.
Yeading Woods (LNR)	1.49km north	Yeading Woods lie in the valley of the Yeading Brook and contains a range of habitats such as ancient semi-natural woodland, pedunculate oak plantation, mesotrophic grassland, ponds, flooded tanks of a former sewage works and a system of ditches. Common frogs, common toads, great crested and smooth newts and grass snakes have been recorded on the site.
Non-Statutory		
Hayes Shrub (SINC of	Present on the edge of the site boundary.	This woodland, covering an area of 8.04 hectares, which lies within Hayes Business Park, comprises a mixture of native and exotic tree species, and appears to have some ancient

Site Name	Approximate Location	Description
Borough Grade II Importance)		woodland characteristics. Habitat present on site includes ancient woodland, marsh/swamp, pond/lake, scrub and secondary woodland. Mature and regenerating pedunculate oak is widespread, other species include hornbeam, hazels and cherry-laurel. Non-native trees include cypress, bay and tulip tree. Hairy brome (Bromus ramosus) and false oat-grass (Arrhenatherum elatius) are common on the woodland floor, where violets grow abundantly. The woodland incorporates a seasonal marshy pond (formerly ornamental, now naturalised) and various seasonal ditches. Flora of the damper areas includes locally abundant remote sedge (Carex remota), water starwort (Callitriche sp.), soft rush (Juncus effusus), yellow flag (Iris pseudacorus) and common water plantain (Alisma plantago-aquatica). Roe deer have been reported from the site in recent years. The woodland is within a security fence surrounding Hayes Business Park, and is inaccessible to the general public.
Uxbridge Road Scrub, Hayes (SINC of Borough Grade II Importance)	0.66km south	Uxbridge Road Scrub covers an area of 1 hectare and is an inaccessible area of impenetrable scrubland, shelter for a range of birds and mammals and a breeding site for shade loving insects such as certain craneflies and ground beetles. There are a number of ash trees and there is dense ivy cover on the ground and on shaded tree-trunks. A number of hazels grow near the roadside, but otherwise the dense scrub is dominated by common hawthorn and cherry laurel. There are many elm suckers, and occasional oak saplings.
Home Covert, Lowdham Field and Pole Hill Open Space (SINC of Borough Grade II Importance)	0.83km north-west	This site has areas of woodland, grassland and other open space with free public access, comprising an area of 26.4 hectares. Habitat present on site includes amenity grassland, bare ground, hedge, pond/lake, ruderal, scattered trees, scrub, secondary woodland, semi-improved neutral grassland, tall herbs and unimproved neutral grassland.
St Mary's Wood End (SINC of	1.30km south-east	St Mary's, Wood End covers an area of 6.8 hectares and is a complex of open spaces with a good variety of wildlife habitats. Habitat present includes amenity grassland, bare

Site Name	Approximate Location	Description
Local Importance)		ground, hedge, planted shrubbery, pond/lake, roughland, scattered trees, scrub, secondary woodland, semi-improved neutral grassland, tall herbs and vegetated wall/tombstones. This complex of open spaces around St Mary's Church, the Beck Theatre and Grassy Meadows Day Centre provides valuable access to nature in an area lacking in accessible wildlife sites.

Biodiversity Action Plans

UK Biodiversity Action Plans (BAPs) have been developed which set priorities for nationally important habitats and species. To support the BAPs, Species/Habitat Statements (otherwise known as Species/Habitat Action Plans) were produced that provide an overview of the status of the species and set out the broad policies that can be developed to conserve them. A list of priority species of conservation importance was also developed.

The UK BAP was succeeded in 2012 by the UK-Post 2012 Biodiversity Framework which informed the creation of the Biodiversity 2020 strategy; England's contribution towards the UK's commitments under the United Nations Convention of Biological Diversity.

Despite this, the UK BAP priority species lists and conservation objectives still remain valid through integration with local BAPs (which remain valid), and in the form of the Habitats and Species of Principle Importance list (as required under section 41 of the Natural Environment and Rural Communities (NERC) Act).

The following UK BAP priority habitats were present at site or in the immediate vicinity:

- Woodland located immediately off-site within Hayes Shrub SINC next to the site's eastern boundary; and
- Standing Water located 20m north of site, in a seasonal marshy pond and associated seasonal ditches within Hayes Shrub SINC.

Greater London BAP

Local Biodiversity Action Plans (LBAPs) ensure that national action plans (the UK BAP/Biodiversity 2020) are translated into effective action at the local level and establish targets and actions for locally characteristic species and habitats.

The London Biodiversity Partnership wrote the London Biodiversity Action Plan (BAP) for important habitats and species within the Greater London area. The London BAP lists four priority habitats and 11 Habitat Action Plans (HAPs) for habitats of importance to nature conservation within Greater London. In addition, Species Action Plans (SAPs) focus on conservation of individual species or groups of species in London. Notable features of the London BAP that are of relevance to this report are:

- Parks and urban greenspace HAP;

- The onus placed on the importance of built structures to local wildlife HAP;
- Woodland HAP;
- Standing Water HAP;
- Bats SAP;
- Bird species including house sparrow (Passer domesticus) SAPs;
- Reptiles including adder (Vipera berus), common lizard (Zootoca vivipara), slow worm (Anguis fragilis) and grass snake (Natrix helvetica) SAP; and
- Stag beetle (Lucanus cervus) SAP.

Species Record

The information provided in the biological data search from GiGL identified records of a number of protected and BAP priority species within 2km search radius of the site. Among others, these include the following species of relevance to the site:

- Badger (Meles meles) (only one record from 1980);
- Amphibians including common toad (Bufo bufo) and great crested newt (Triturus cristatus);
- Reptiles including slow-worm, grass snake and common lizard;
- Birds including lesser redpoll (Acanthis cabaret), skylark (Alauda arvensis), swift (Apus apus), kingfisher (Alcedo atthis), cuckoo (Cuculus canorus), house martin (Delichon urbicum), reed bunting (Emberiza schoeniclus), linnet (Linaria cannabina), house sparrow, black redstart, whinchat (Saxicola rubetra), starling (Sturnus vulgaris) and lapwing (Vanellus vanellus);
- Terrestrial mammals (excl. bats) including water vole and hedgehog (Erinaceus europaeus).
- Bats including noctule (Nyctalus noctula), common pipistrelle (Pipistrellus pipistrellus), soprano pipistrelle (Pipistrellus pygmaeus) and serotine (Eptesicus serotinus);
- Invertebrates including stag beetle and S41 NERC lepidoptera (moths and butterflies) including woodland species white admiral (*Limenitis camilla*); and
- No records of dormice.

The species listed above are primarily those known to be in the area that may be impacted by any proposals at the site, or that stand to benefit as a consequence of potential ecological enhancements at the site and inform site-specific mitigation and enhancement recommendations described in the following chapter.

Detailed Description of Site: Habitats

The habitats presented across the assessment site consist of the following UKHab categories, as mapped at Figure A.1:

- Developed Land; Sealed Surface;

- Modified grassland;
- Species Poor Hedgerow;
- Introduced shrub;
- Rural trees.

Developed Land; Sealed Surface

Hardstanding comprised associated access roads, car parking spaces and pavements. The building to the south has a central courtyard.

Buildings

There are two three storey, Grade II listed former office buildings made from concrete with almost floor to ceiling windows and a flat roof.

Figure 4.1 The southern building on site.

Modified Grassland

There were areas of modified grassland surrounding the former office buildings. These were low-cut, well maintained and had less than 9 species per m2. Species present included perennial rye grass (Lolium perenne) common daisy (Bellis perennis), yarrow (Achillea millefolium), dandelion (Taraxacum officinale), oxlip (Primula elatior), cats' ear (Hypochaeris radicata), slender thistle (Carduus pycnocephalus), hawkweed (Crepis sp.), bristly oxtongue (Helminthotheca echioides), common nettle (Urtica dioica), ground ivy (Glechoma hederacea), buttercup (Ranunculus sp.) and red dead nettle (Lamium purpureum).

Figure 4.2 Modified grassland across the site with scattered trees and standing deadwood tree stump

Introduced Shrub

There is ornamental planting associated predominantly with the perimeters of carparking and along the northern and eastern boundary. Species include young manna ash (Fraxinus ornus), bird cherry (Prunus padus), field maple (Acer campestre), cherry, alder (Alnus glutinosa) trees as well as shrubs such as box hedger (Buxus sp.), laurel (Laurus sp.), privet and ivy.

Figure 4.3 Ornamental planting

Scattered Trees

There are scatted trees across the modified grassland, the majority of which are non-native. Species include sweetgum gum (Liquidamber sp.), Atlas cedar (Cedrus atlantica), red oak (Quercus rubra), Wellingtonia, London plane (Platanus x hispanica), field maple, tulip tree (Liriodendron tulipifera), paper bark birch (Betula papyrifera), oak, silver maple (Acer saccharinum), Corsican Pine (Pinus nigra), Wellingtonia (Sequoiadendron giganteum), lime (Tilia sp.).

Figure 4.4 Scattered trees across site.

Species poor hedgerow

There is a yew hedgerow, beech hedgerow and privet hedgerow both partially along the western boundary.

Figure 4.5 Species poor hedgerow

Detailed description of Site: Species

Badger

The modified grassland provides value for foraging badger although no evidence of foraging was observed and no potential setts or any other mammal excavations were identified on site.

Overall, the site is therefore considered to have low potential to support foraging badgers, and there is a confirmed absence of badger setts on site.

Immediately off-site, the Hayes Scrub SINC provides moderate potential for badger setts and foraging.

Bats

Foraging

The majority of habitat on site comprised building/hardstanding and modified grassland which are unlikely to provide significant numbers of invertebrate prey items for foraging bats. The areas of introduced shrub and trees are unlikely to sustain sufficient invertebrate prey populations. Furthermore, there are streetlights lining the roads surrounding the building and within the car parking areas that would likely deter some bat species from foraging.

Overall, the site has low potential to support foraging bats.

Higher value for foraging exists immediately off-site within area of woodland forming a part of Hayes Shrub SINC which is likely to attract invertebrate prey species of value for foraging bats.

Roosting

The buildings comprise concrete and were in good condition leaving no cracks or crevices to provide roosting opportunities for bats. Scattered trees in general were young or lacking in cracks or crevice with exception to one tree on site which possess several cavities that could be used by a number of

roosting bats. It is within the centre of a mini roundabout and therefore likely subject to light pollution which reduces its potential slightly.

Overall, there is moderate potential for roosting bats associated with the tree.

Outside the redline boundary, on the building associated with Hayes Park North there is damaged brickwork underneath a window which provides a small crevice that could be suitable for individual bats. Overall, this feature was considered to have low potential. There is also a tree on the edge of the wider site with large cavities and has potential to support a number of roosting bats. It was also likely subject to light pollution and considered to have moderate potential.

Great Crested Newt

There are no ponds on site for breeding populations of great crested newts and the majority of site comprised building/hardstanding and low cut modified grassland which is unsuitable terrestrial habitat for GCN.

There is one seasonal pond within 500m of the site which lies in the woodland SINC which also has terrestrial habitat. The pond is located within 100m from the site boundary.

A Habitat Suitability Index (HSI) was undertaken on this pond which identified it as 'poor' suitability for GCN. Furthermore, the pond is isolated and has no other ponds within 500m to sustain healthy populations of GCN.

Table 4.2 Habitat Suitability Index results

SI Description	SI Value
Geographic location	1
Pond area	0.2
Pond permanence	0.1
Water quality	0.67
Shade	0.6
Water fowl effect	1
Fish presence	1
Pond Density	0.1
Terrestrial habitat	1
Macropyhyte cover	1
HIS Score	1
Pond Suitability	0.49

Overall, there is negligible potential for great crested newts on site.

Reptiles

The modified grassland was well maintained and cut to a low-sward height resulting in unsuitable habitat for reptiles. The shrub habitat on site is surrounded by hardstanding or low-cut amenity grassland reducing suitability for reptiles.

Overall, there is negligible potential for reptiles on site.

Off-site, the large expanse of grassland and woodland path associated with the SINC to the north and east has moderate value for reptiles.

Dormouse

The site is within the known UK distribution of dormice and whilst the woodland on site provides some value for dormice, there are no records of dormice within 2km of site and the site and the adjacent arable fields are surrounded by London boroughs which prevents dispersal onto site.

Therefore, the site is considered to have negligible potential to support dormice.

Water Vole and Otter

There are no suitable waterbodies on site or within the immediate vicinity to support riparian mammals. Furthermore, there are no records of otter within 2km and the latest record for water vole was in 1966.

As such, the potential for the site to support water vole and/or otter is negligible.

Birds

No evidence of nesting birds was seen during the site visit, however, there is good potential nesting habitat for bird species associated with the large scattered trees on site.

Overall, there is high potential for nesting birds on site.

Invertebrates

The habitats on site are likely to only be of value for a range of common invertebrate species, with the reasonably low floral diversity present unlikely to support notable invertebrates. There is a standing deadwood within the modified grassland. Furthermore, there were two 'bug hotels' identified during the walkover which could provide value for solitary bees.

Overall, there is moderate potential to support notable invertebrates on site.

Invasive species

Cotoneaster sp. was identified on site and Rhododendron sp. within the woodland. It is not clear whether the Rhododendron within the woodland fell within the site boundary/ownership, however.

Overall, there is confirmed presence of invasive species on site.

Other BAP Species

The woodland and introduced shrub provides potential hibernation and sheltering habitat for hedgehog and the modified grassland provides foraging resources.

Overall, the site is considered to have moderate potential to support hedgehogs.

5.0 EVALUATION AND DISCUSSION

5.1 BASELINE SUMMARY

The assessment site and its surroundings have potential to support the following ecological receptors of note, which could therefore be impacted upon by any future prospective development proposals, as indicated in Table 5.1 below. Comment on further recommendations for each receptor is provided; further detail and discussion can be found at paragraph 5.2 onward:

Table 5.1 Baseline Summary

Receptor	Presence/Potential Presence	Comments
Designated Sites: Statutory	Present, nearest site 1.09km north-east	There are two SSSI's within 5km and, three LNR within 2km (Yeading Brook Meadows 1.09km north-east, Yeading Meadows 1.16km east and Yeading Woods 1.49km north). Given the distance between the development footprint and all sites further than 1km away, construction phase of the development is not considered to have any impact upon these sites. However, as the proposals seek to create residential units, there is potential for the operational phase of the scheme to cause an increase in recreational pressure on the statutory sites in question. Recommended measures to address these impacts are provided in the section below.
Designated Sites: Non-Statutory	Present immediately off site	The closest non-statutory site is Hayes Scrub SINC, a woodland area which lies just outside of the development boundary to the north-east and extends further out with no significant geographical barrier. Proposals should accordingly embed measures which address potential impacts of pollution events during construction and operation. Mitigation and compensation measures to minimise any impact upon the non-statutory sites is provided below.
Notable/Rare habitats	Present immediately off site	The Woodland associated with the SINC off site along the north and eastern boundary

Receptor	Presence/Potential Presence	Comments
		meets the definition of BAP priority woodland habitat. Due to the proximity of the development to these habitats, recommendations have been made below to protect the woodland habitat during construction.
Badger	• Low potential to support foraging badgers on site. • Confirmed absence of badger setts on site. • Immediately off-site, moderate opportunities for Badgers in Hayes Scrub SINC.	No evidence of use of the site by badgers was observed during the survey. The woodland habitat has potential to support badgers, albeit there is a lack of records within 2km, although this remains over 30m from the where the development will take place and therefore, there are no foreseeable negative impacts upon badgers associated with the proposed development. General guidance for protection of mammals during construction is provided below.
Foraging bats	• Low	The main value for foraging and commuting bats is associated with the woodland that forms a part of the Hayes Scrub SINC. It is understood that this is to be retained. Proposals could result in an increase in light spill onto the woodland and woodland edge. Measures to minimise the impacts and compensate for the loss are provided in the section below.
Roosting bats	• Moderate potential within the tree located immediately south off site. • Low potential within damaged brickwork on the eastern façade of the main building onsite.	Two trees have been identified as having moderate potential for bats. It is understood that both trees are to be retained. One of the trees is central within the development and could be subject to increase in light spill. An additional roosting feature was identified along the site boundary within damaged brickwork on the building associated with the Hayes Park North development. Bat emergence/re-entry surveys are recommended to confirm the presence/likely absence of roosting bats.

Receptor	Presence/Potential Presence	Comments
		Without consideration, increase in lighting or re-development of the adjacent building therefore, has the potential to disturb or destroy roosts. Data from this survey will be used to identify a detailed approach to mitigation.
Reptiles	Negligible on site Moderate off-site	Whilst reptiles are unlikely to use the heavily managed grassland on site. Dispersing reptiles could be subject to injury or death from construction vehicles and machinery. No further surveys are recommended however as a precautionary phased clearance in the direction of retained/newly created suitable habitat is recommended. Further details are provided below.
Birds	High	Habitats suitable to support nesting birds are present on site in the form of scattered trees and woodland providing opportunities for nesting. Birds and their nests are protected from being killed/injured/damaged/destroyed (Appendix B). It is understood that the woodland and the majority of scattered trees are to be retained. Should vegetation be required, clearance could impact nesting birds through the killing and injury of adult and young birds, the destruction of active nests and the loss of nesting and foraging habitat. Measures to minimise the impacts and compensate for the loss are recommended in the section below.
Invertebrates	Moderate	There is potential to harm or kill stag beetle if deadwood onsite is damaged or destroyed as part of development works. No further surveys are recommended. Deadwood on site should be retained in its current location where possible. If required to be relocated, this should be done by hand by an ecologist under a watching brief.

Receptor	Presence/Potential Presence	Comments
		The Bug hotels should also be retained on site and could be moved to proposed areas of wildlife friendly landscaping. Enhancement recommendations have been made to increase the value of site for invertebrates.
Invasive species	Confirmed presence	The survey confirmed Cotoneaster sp. and Rhododendron sp. on site. Without mitigation the invasive species can spread and outcompete native species. No further surveys are required however measures to remove invasive species are provided below.
Hedgehog	Moderate	Hedgehogs have limited protection under the Wildlife and Countryside Act (1981) and Wild Mammals (Protection) Act (1996) respectively (Appendix B) which protects them from intentional injury or death. They are also afforded protection under the NERC act as a S41 Species. These Acts require the species to be protected during site works. Furthermore, given their status as a s41 species, their conservation is a material consideration in the planning process. Measures to protect hedgehog from harm during site clearance and retain suitable habitat on site for the species, allowing continued connectivity, are described below.

5.2 DISCUSSION AND RECOMMENDATIONS

Discussion is provided below on the key ecological receptors that stand to be impacted/benefit from proposed works; high level commentary on appropriate mitigation, compensation and enhancement actions is also provided.

An Ecological Management Plan (EMP) and Construction Environmental Management Plan (CEMP) should be produced and implemented for the site providing greater detail on the below, which should be secured through planning condition in accordance with BS 42020: 2013 Biodiversity.

Designated sites

Statutory

The construction phase of the development is not expected to have any impact upon the SSSI's due to being located almost 5km away or LNRs due to being located more than 1km away.

The operational phase however may result in increased recreational impacts upon the LNRs in question due to an increase in local population as a result of the development. It is therefore important for provision of communal greenspace to be provided within the proposed development and for residents to be encouraged to make use of more suitable amenity space such as local parks, reducing the chance of increased footfall at the LNRs.

Non-Statutory

In the absence of mitigation, the Hayes Scrub SINC, located just off-site, is at risk of increased levels of pollution such as dust deposition and noise pollution/vibration and sediment run off during construction. A Construction Environment Management Plan (CEMP) document should accordingly be produced, to be secured through planning condition. This document should detail the control measures that will be implemented to avoid and mitigate potential impacts during site construction.

It is understood that some of the SINC is fenced off and therefore access for residents would not be permitted. However, there is an existing path partially into the SINC. Historically, the building was used as an office building with 285 associated car parking spaces. The proposals seek to develop approximately 124 units, so it is likely to bring similar levels of footfall to historical levels, where the SINC was likely previously used by office workers during lunch breaks. There is also an abundance of surrounding open space for walking and dog walking which should be designed and managed appropriately post development to ensure residents are encouraged to utilise alternative greenspace. It is therefore considered unlikely that the proposed development will result in significant adverse impacts upon local non-statutory designated site.

BAP Priority Habitats

Due to the close proximity of the woodland associated with the adjacent SINC to the area proposed for development, measures to protect these habitats from the proposed development should be included within the above-mentioned CEMP document.

Badger

Mitigation should firstly aim to avoid impacts to potential badger setts by incorporating a buffer of 30m around the woodland, within which no development activities should take place. This is likely to be achievable due to the distance of the proposed development and the woodland. Assuming this is possible, no further scoping survey is required.

It is possible that badgers forage across the site and therefore could enter the construction area during the construction process. As a precaution, site works should be sufficiently secured overnight so that

badgers do not wander into construction zones, and any trenches should be covered or have a ramp so that any badgers and other animals that fall in are able to escape. Any fuels and chemicals on site must be safely stored on site in designated areas at least 30m from the woodland.

The majority of badger foraging habitat such as the modified grassland will be retained. Furthermore, the proposals should seek to enhance these areas with wildflower meadow planting and berry producing hedgerow/shrub planting.

Bats

Foraging and Commuting

It is understood that the majority of valuable habitat such as the scatted trees will be retained. Any impacts in the form of habitat loss should be compensated for through the provision of wildlife friendly landscaping. Proposals should enhance habitats through native planting and the creation of wildflower meadow areas and tree planting, both of which will provide higher value foraging and commuting habitat for bats.

The development proposals will include lighting on site and in the absence of mitigation, could lead to an increased level of external lighting. Lighting should be designed in line with guidance provided by the Institute of Lighting Professionals (ILP) and BCT (2019)[7] and Stone (2013)[8] Specifically:

- Consider avoidance of metal halide and fluorescent light sources;
- Warmth of luminaires - any external areas should incorporate light at a <2700K where possible, with peak wavelengths higher than 550nm;
- Use of screens/hoods to make any external lighting as directional as possible, to avoid light spill on any natural features such as the woodland and retained trees;
- Height of lighting column - where possible, external lights should be as low to the ground as possible; and
- Lighting controls - appropriate controls to minimise the duration lights are illuminated should be installed.
- There should be no increase in light levels over the woodland associated with Hayes Scrub SINC.

By providing enhanced foraging habitat through landscaping proposals and minimising the impacts of external lighting, impacts upon foraging and commuting bats should be sufficiently minimised.

Roosting

One of the mature trees with features for bats sits along the site boundary approximately 100m from the central building on site. It is understood that this tree is to be retained and the sensitive lighting strategy described above should avoid increasing and if possible, reduce light levels onto this tree.

The other two features are much closer to the development footprint and have potential to be impacted. In accordance with The Bat Conservation Trust (BCT) guidelines, two emergence/re-entry survey is recommended to determine the presence/likely absence of roosting bats within the tree with

moderate potential and one emergence/re-entry survey to determine presence/likely absence in the damaged brickwork (Figure B.1). This survey should be undertaken between May – August inclusive. The results of this survey will inform an approach to mitigation and compensation for roosting bats.

Reptiles

The majority of grassland habitat on site will be retained. Phased clearance of the grassland area should take place on a warm day between March and early October, when reptiles are most active. Clearance should take place using hand-held machinery and tools (e.g. strimmers) and be done in two phases. The first cut should take the vegetation down to 10cm in the direction of habitat either due for retention or the site peripheries, following 24 hours the cut should be taken to ground level.

Scrub / woody vegetation should be cleared using hand-held machinery and tools (e.g. strimmers). Any rubble or debris should be lifted by hand and removed immediately (not stockpiled onsite). This will allow any animals (such as reptiles) present within and beneath these features to disperse from the Site without being harmed. The main works may then proceed using large vehicles / plant / machinery. If any reptiles are discovered, works should be temporarily halted and the project ecologist contacted for advice prior to recommencing work.

Birds

Impacts upon nesting birds can be fully avoided through timing of works. Vegetation clearance should be undertaken outside of the nesting bird season (taken to run from March to August inclusive). If clearance cannot be avoided within this period, it must only take place after a Suitably Qualified Ecologist (SQE) has confirmed the absence of nesting birds a maximum of 48 hours before scheduled works are to take place.

To compensate for the loss in nesting bird habitat, landscaping proposals should include native tree and shrub planting. Compensatory planting should focus on the provision of winter berry producing species that could include holly, rowan and blackthorn, as well as species with dense shrubby growth (elder, hazel, dog rose and hawthorn) within which birds may construct nests. This will not only provide nesting opportunities, but also deliver a vital food resource for birds over the winter months.

Invertebrates

The bug hotels should be retained on site and could be moved to areas proposed for wildlife friendly landscaping.

Deadwood on site should be retained in its current location where possible. If an area of deadwood is required to be moved to facilitate development, A Suitably Qualified Ecologist (SQE) should be present to oversee the removal which should be carefully dismantled by hand so that any stag beetle or their larvae can be moved safely to areas of suitable habitat such as the retained woodland.

Clearance should not take place between mid-May and August inclusively. This is the period when adults emerge from the soil beneath logs or stumps. Larvae can take up to six years to pupate underground and so, if present, are almost impossible to avoid during site clearance works.

To further enhance the site for stag beetles and other invertebrates, a stag beetle loggery should be created using wood from the site. The loggery should be positioned within the remaining woodland area on site.

Invasive species

Proposals should include the removal and appropriate disposal of Cotoneaster sp. and any Rhododendron sp. within the site boundary. This should be undertaken by a qualified contractor with extensive experience in working with Schedule 9 INNS

Hedgehog

In order to minimise the potential for killing or injuring of hedgehogs (and other small to medium sized mammals) during site clearance, removal of shrubs and scrub should be undertaken carefully. The vegetation should be checked for mammals before clearance. Should any hedgehogs be found, they should be moved to a suitable area of habitat that is not subject to clearance.

During construction any pipes over 100mm in diameter should be capped off at night to prevent animals entering.

Compensatory shrub habitats to provide shelter and foraging opportunities for hedgehog should be provided within the landscaping design.

Biodiversity Enhancements

In accordance with the National Planning Policy Framework, local policy drivers and recent changes to the legislative context, (Appendix C), proposals should seek to provide measurable net gains in biodiversity. These should aspire to a minimum of 10% net gain in biodiversity, which should be evidenced through a Biodiversity Impact Assessment (BIA) using the Natural England Biodiversity 3.0 metric[9] or similar.

To enable proposals to deliver the desired net gains, the following measures should be considered for incorporation into the landscaping plans:

- SuDS in the form of rain gardens, with plant species selected for their drought resilience as well as submergence capacity.
- Wildlife-friendly landscaping, including native trees and shrubs and herbaceous planting should be included within the proposed areas of landscaping. Species included should be native and known value for wildlife. Tree species should be native and be selected for the ecosystem services they provide, such as carbon sequestration, drought tolerance and pollution tolerance;

- Native tree and shrub planning should be incorporated across the site. Species including field maple (Acer campestre), hornbeam (Carpinus betulus), wild cherry (Prunus avium), rowan (Sorbus aucuparia), dog rose (Rosa canina), hazel (Corylus avellana), hawthorn (Crataegus monogyna), blackthorn (Prunus spinosa), small-leaved lime (Tilia cordata) and silver birch (Betula pendula). Berry producing shrubs will provide additional foraging habitat for any badgers within the locality;
- Herbaceous planting should also be incorporated where possible within the landscape design. Species should be selected from RHS Plants for Pollinators Guide [10].
- Bat boxes and bird boxes targeting house sparrow, swift, house martin and black redstart should be attached onto suitable newly planted trees and retained trees around the site;
- Invertebrate habitat features in the form of habitat panels, bee bricks and bug hotels should be integrated across the site in sunny areas. Loggeries should be placed in shady areas amongst trees to provide forage and shelter for saproxylic invertebrates such as stag beetles, in larval stage;
- Brash and log piles within areas of wildflower meadow should be included to provide sheltering opportunities for reptiles; and
- Connectivity for species such as hedgehog should be provided through provision of 13cmx13cm gaps in fencing and walls throughout the site. Suitable ground floor landscaping should provide corridors for movement and locations for foraging for species such as hedgehog.

The development presents the opportunity to benefit a range of taxa through incorporation of ecological features and provision of new habitats that would encourage species to the site. Assuming appropriate mitigation and compensation actions are followed, alongside enhancements described above it should be possible to deliver an increase in value for biodiversity.

Key actions should be included within EMP documents for the site which could be secured through planning condition.

6.0 SUMMARY & CONCLUSION

Greengage was commissioned by the Applicant to undertake a PEA of the site in order to establish the ecological value of this site and its potential to support notable and/or legally protected species.

The PEA identified value for a number of notable and protected species and habitats including:

- Confirmed presence of Hayes Shrub Site of Importance for Nature Conservation (SINC) which lies partially on site and extends north-east;
- Confirmed presence of BAP priority woodland habitat associated with Hayes Shrub SINC;
- Moderate potential for foraging badger onsite, confirmed absence of badger setts onsite, and moderate potential for badger setts and foraging opportunities within the Hayes Shrub SINC and wider site;
- Moderate potential for foraging bats on site associated with the SINC woodland and scattered trees;
- Moderate potential for roosting bats within two trees on site with numerous bat features and low potential in a building abutting the site boundary (associated with Hayes Park North);
- High potential for nesting birds associated within the woodland and scatted trees on site;
- Moderate potential for invertebrates such as stag beetle within the woodland and pollinators associated with the bug hotels on site; and
- Moderate potential for BAP species foraging, sheltering and hibernating hedgehog, associated with woodland, introduced shrub and modified grassland on site.

Key mitigation, compensation and enhancement actions are described to enable legislative and policy compliance (see context at Appendix C), aiming to achieve net gains in biodiversity for the site.

Key actions should be included within EMP and CEMP documents for the site which could be secured through planning condition.

APPENDIX A SITE PLAN AND HABITAT MAP

Figure A.1 Site plan and habitat map

HAYES PARK

- Red Line Boundary
- Existing trees
- Developed land; sealed surface
- Introduced shrub
- Modified grassland
- Buildings
- Native Hedgerow (h2NE5)

Drawn by: Laura Thomas
Date: [13/06/2022]

Reviewed by: Steph Harper
Date: [13/06/2022]

Project number: 552240
Sources: Google Satellite

Greengage

APPENDIX B SITE PHOTOGRAPHS

Figure B.1 Modified grassland, carparking and introduced shrub on site

Figure B.2 Modified grassland and mature scattered tree

Figure B.3 Mature scattered tree in the centre of the modified grassland

Figure B.4 Tree feature on site for bats

Figure B.5 Bug hotel

Figure B.6 Pond off-site

APPENDIX C RELEVANT LEGISLATION AND POLICY

C.1 LEGISLATION

Current key legislation relating to ecology includes The Environment Act[11] Wildlife and Countryside Act 1981 (as amended)[12]; The Conservation of Habitats and Species Regulations 2019 ('Habitats & Species Regulations')[13], The Countryside and Rights of Way Act 2000 (CRoW Act)[14], and The Natural Environment and Rural Communities Act, 2006[15].

The Environment Act, 2021

The Environment Act, 2021 will mandate the requirement for new development in England to deliver a minimum 10% biodiversity net gain (BNG), as measured by the agreed metric (the current relevant version being the Natural England metric 3.0), secured through planning condition as standard (as per schedule 14 of the Act). Approach to the delivery of BNG must follow the mitigation hierarchy, with avoidance of impact and on-site compensation/gains prioritised, ahead of the use of offsite biodiversity unit offsets, or the purchase of biodiversity credits.

The Act introduces the condition that no development may begin unless a biodiversity net gain plan has been submitted and approved by the local planning authority (LPA).

The Act also amends requirements of the NERC Act, 2006, adding the need to not just conserve, but enhance biodiversity through planning projects. Furthermore, it introduces the need for the LPA to have regard to relevant local nature recovery strategies and relevant species/protected site conservation strategies, when making their decision.

Under the Act, the enhancements must be maintained for at least 30 years.

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

The Conservation of Habitats & Species Regulations replace The Conservation (Natural Habitats, etc.) Regulations 1994 (as amended)[16], and transpose Council Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Fauna and Flora ('EU Habitats Directive')[17], and Council Directive 79/409/EEC on the Conservation of Wild Birds ('Birds Directive')[18] into UK law (in conjunction with the Wildlife and Countryside Act).

Regulation 43 and 47 respectively of the Conservation of Habitats & Species Regulations makes it an offence (subject to exceptions) to deliberately capture, kill, disturb, or trade in the animals listed in Schedule 2 (European protected species of animals), or pick, collect, cut, uproot, destroy, or trade in the plants listed in Schedule 5 (European protected species of plant). Development that would contravene the protection afforded to European protected species requires a derogation (in the form of a licence) from the provisions of the Habitats Directive.

Regulation 63 (1) states: 'A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which —

(a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects); and

(b) is not directly connected with or necessary to the management of that site;

must make an appropriate assessment of the implications for that site in view of that site's conservation objectives.'

Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (as amended) is the principal mechanism for the legislative protection of wildlife in Great Britain. This legislation is the means by which the Convention on the Conservation of European Wildlife and Natural Habitats[19] (the 'Bern Convention') and the Birds Directive and EU Habitats Directive are implemented in Great Britain.

The Countryside and Rights of Way Act 2000

The Wildlife and Countryside Act has been updated by the CRoW Act. The CRoW Act amends the law relating to nature conservation and protection of wildlife. In relation to threatened species it strengthens the legal protection and adds the word 'reckless' to the offences of damaging, disturbing, or obstructing access to any structure or place a protected species uses for shelter or protection, and disturbing any protected species whilst it is occupying a structure or place it uses for shelter or protection.

The Natural Environment and Rural Communities Act 2006

The Natural Environment and Rural Communities Act 2006 states that every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity. Biodiversity Action Plans provide a framework for prioritising conservation actions for biodiversity.

Section 41 of the Natural Environment and Rural Communities Act requires the Secretary of State to publish a list of species of flora and fauna and habitats considered to be of principal importance for the purpose of conserving biodiversity. The list, a result of the most comprehensive analysis ever undertaken in the UK, currently contains 1,149 species, including for example, hedgehog (Erinaceus europaeus), and 65 habitats that were listed as priorities for conservation action under the now defunct UK Biodiversity Action Plan[20] (UK BAP). Despite the devolution of the UK BAP and succession of the UK Post-2010 Biodiversity Framework[21] (and Biodiversity 2020 strategy[22] in England), as a response to the Convention on Biological Diversity's (CBD's) Strategic Plan for Biodiversity 2011-2020[23] and EU Biodiversity Strategy (EUBS)[24], this list (now referred to as the list of Species and Habitats of Principal Importance in England) will be used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under section 41 of the Natural Environment and Rural Communities Act 2006 'to have regard' to the conservation of biodiversity in England, when carrying out their normal functions.

Biodiversity Action Plans

Non-statutory Biodiversity Action Plans (BAPs) have been prepared on a local and regional scale throughout the UK over the past 15 years. Such plans provide a mechanism for implementing the government's broad strategy for conserving and enhancing the most endangered ('priority') habitats and species in the UK for the next 20 years. As described above the UK BAP was succeeded in England by Biodiversity 2020 although the list of priority habitats and species remains valid as the list of Species of Principal Importance for Nature Conservation.

Regional and local BAPs are still valid however and continue to be updated and produced.

Detail on the relevant BAPs for this site are provided in the main text of this report.

Legislation Relating to Nesting Birds

Nesting birds, with certain exceptions, are protected from intentional killing, destruction of nests and destruction/taking of eggs under the Wildlife and Countryside Act 1981 (as amended) and the CRoW Act. Any clearance of dense vegetation should therefore be undertaken outside of the nesting bird season, taken to run conservatively from March to August (inclusive), unless an ecologist confirms the absence of active nests prior to clearance.

Legislation Relating to Bats

All UK bats and their roosts are protected by law. Since the first legislation was introduced in 1981, which gave strong legal protection to all bat species and their roosts in England, Scotland and Wales, additional legislation and amendments have been implemented throughout the UK.

Six of the 18 British species of bat have Biodiversity Action Plans (BAPs) assigned to them, which highlights the importance of specific habitats to species, details of the threats they face and proposes measures to aid in the reduction of population declines.

Although habitats that are important for bats are not legally protected, care should be taken when dealing with the modification or development of an area if aspects of it are deemed important to bats such as flight corridors and foraging areas.

The Wildlife & Countryside Act 1981 (WCA) was the first legislation to provide protection for all bats and their roosts in England, Scotland and Wales (earlier legislation gave protection to horseshoe bats only.)

All eighteen British bat species are listed in Schedule 5 of the Wildlife and Countryside Act, 1981 and under Annexe IV of the Habitats Directive, 1992 as a European protected species. They are therefore fully protected under Section 9 of the 1981 Act and under Regulation 43 of the Conservation of Habitats and Species Regulations 2017, which transposes the Habitats Directive into UK law. Consequently, it is an offence to:

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;

- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; and
- Intentionally or recklessly obstruct access to a bat roost.

This legislation applies to all bat life stages.

The implications of the above in relation to the proposals are that where it is necessary during construction to remove trees, buildings or structures in which bats roost, it must first be determined that work is compulsory and if so, appropriate licenses must be obtained from Natural England.

Legislation Relating to Reptiles

All species of reptile native to the UK are protected to some degree under national and/or international legislation, which provides mechanisms to protect the species, their habitats and sites occupied by the species.

Sand lizards and smooth snakes are European protected species and are afforded full protection under Section 9 of the Wildlife and Countryside Act 1981 and Regulation 43 of the Conservation of Habitats and Species Regulations 2017. However, these species are rare and highly localised. Their occurrence is not considered as relevant in this instance, as the ranges and specialist habitats of these species do not occur at this site.

The remaining widespread species of native reptiles (adder, grass snake, slow worm and viviparous lizard) are protected under part of Section 9(1) and all of Section 9(5) of the Wildlife and Countryside Act 1981. They are protected against intentional killing and injury and against sale, transporting for sale etc. The habitat of these species is not protected. However, in terms of development, disturbing or destroying reptile habitat during the course of development activities while reptiles are present is likely to lead to an offence under the Wildlife and Countryside Act 1981. It is therefore important to identify the presence of these species within a potential development site. If any of these species are confirmed, all reasonable measures must then be taken to ensure the species are removed to avoid the threat of injury or death associated with development activities.

Each species of native reptile has specific habitat requirements but general shared features include a structurally diverse habitat that provides for shelter, basking, foraging and hibernating.

All reptiles are BAP species and as such are also of material consideration in the planning process due to the NPPF.

C.2 PLANNING POLICY

National

National Planning Policy Framework

The National Planning Policy Framework (NPPF) 2021[25] sets out the Government's planning policies for England, including how plans and decisions are expected to apply a presumption in favour of

sustainable development. Chapter 15 of the NPPF focuses on conservation and enhancement of the natural environment, stating plans should 'identify and pursue opportunities for securing measurable net gains for biodiversity'.

It goes on to state: 'if significant harm to biodiversity resulting from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated, or, as a last resort, compensated for, then planning permission should be refused'. Alongside this, it acknowledges that planning should be refused where irreplaceable habitats such as ancient woodland are lost.

Regional

The London Plan[26]

Policy G1 Green infrastructure

1. London's network of green and open spaces, and green features in the built environment such as green roofs and street trees, should be protected, planned, designed and managed as integrated features of green infrastructure.
2. Boroughs should prepare green infrastructure strategies that integrate objectives relating to open space provision, biodiversity conservation, flood management, health and wellbeing, sport and recreation.
3. Development Plans and Opportunity Area Planning Frameworks should:
    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.
4. Development proposals should incorporate appropriate elements of green infrastructure that are integrated into London's wider green infrastructure network.

Policy G5 Urban greening

5. 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.
6. 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 Table 8.2, 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).
7. 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 Table 8.2.

Policy G6 Biodiversity and access to nature

8. Sites of Importance for Nature Conservation (SINCs) should be protected.
9. Boroughs, in developing Development Plans, should:
    a. use up-to-date information about the natural environment and the relevant procedures to identify SINCs and ecological corridors to identify coherent ecological networks
    b. 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
    c. 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
    d. seek opportunities to create other habitats, or features such as artificial nest sites, that are of particular relevance and benefit in an urban context
    e. ensure designated sites of European or national nature conservation importance are clearly identified and impacts assessed in accordance with legislative requirements.
10. 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:
    a. avoid damaging the significant ecological features of the site
    b. minimise the overall spatial impact and mitigate it by improving the quality or management of the rest of the site
    c. deliver off-site compensation of better biodiversity value.
11. 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.
12. Proposals which reduce deficiencies in access to nature should be considered positively.

Policy G7 Trees and woodlands

13. 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.
14. In their Development Plans, boroughs should:
    a. Protect 'veteran' trees and ancient woodland where these are not already part of a protected site
    b. Identify opportunities for tree planting in strategic locations
15. Development proposals should ensure that, wherever possible, existing trees of quality are retained [Category A and B]. 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.

London Environment Strategy 2018[27]

The Mayor's Environment Strategy was published in May 2018. This document sets out the strategic vision for the environment throughout London. Although not primarily a planning guidance document, it does set strategic objectives, policies and proposals that are of relevance to the delivery of new development in a planning context, including:

Objective 5.1 Make more than half of London green by 2050

Policy 5.1.1 Protect, enhance and increase green areas in the city, to provide green infrastructure services and benefits that London needs now.

This policy states:

"New development proposals should avoid reducing the overall amount of green cover and, where possible, seek to enhance the wider green infrastructure network to increase the benefits this provides. […] New developments should aim to avoid fragmentation of existing green space, reduce storm water run-off rates by using sustainable drainage, and include new tree planting, wildlife-friendly landscaping, or features such as green roofs to mitigate any unavoidable loss".

This supports the 'environmental net gain' approach promoted by government in the 25 Year Environment Plan.

Proposal 5.1.1.d The London Plan includes policies to green streets and buildings, including increasing the extent of green roofs, green walls and sustainable drainage.

Objective 5.2 conserving and enhancement wildlife and natural habitats

Policy 5.2.1 Protect a core network of nature conservation sites and ensure a net gain in biodiversity

This policy requires new development to include new wildlife habitat, nesting and roosting sites, and ecologically appropriate landscaping will provide more resources for wildlife and help to strengthen ecological corridors. It states:

"Opportunities should be sought to create or restore priority habitats (previously known as UK Biodiversity Action Plan habitats) that have been identified as conservation priorities in London [and] all land managers and landowners should take BAP priority species into account".

Hillingdon Local Plan[28]

Built Environment

Policy BE1: Built Environment

The Council will require all new development to improve and maintain the quality of the built environment in order to create successful and sustainable neighbourhoods, where people enjoy living and working and that serve the long-term needs of all residents. All new developments should:

1. Achieve a high quality of design in all new buildings, alterations, extensions and the public realm which enhances the local distinctiveness of the area, contributes to community cohesion and a sense of place;

2. Be designed to be appropriate to the identity and context of Hillingdon's buildings, townscapes, landscapes and views, and make a positive contribution to the local area in terms of layout, form, scale and materials and seek to protect the amenity of surrounding land and buildings, particularly residential properties;

3. Be designed to include "Lifetime Homes" principles so that they can be readily adapted to meet the needs of those with disabilities and the elderly, 10% of these should be wheelchair accessible or easily adaptable to wheelchair accessibility encouraging places of work and leisure, streets, neighbourhoods, parks and open spaces to be designed to meet the needs of the community at all stages of people's lives;

4. In the case of 10 dwellings or over, achieve a satisfactory assessment rating in terms of the latest Building for Life standards (as amended or replaced from time to time);

5. Improve areas of poorer environmental quality, including within the areas of relative disadvantage of Hayes, Yiewsley and West Drayton. All regeneration schemes should ensure that they are appropriate to their historic context, make use of heritage assets and reinforce their significance;

6. Incorporate a clear network of routes that are easy to understand, inclusive, safe, secure and connect positively with interchanges, public transport, community facilities and services;

7. Improve the quality of the public realm and provide for public and private spaces that are attractive, safe, functional, diverse, sustainable, accessible to all, respect the local character and landscape, integrate with the development, enhance and protect biodiversity through the inclusion of living walls, roofs and areas for wildlife, encourage physical activity and where appropriate introduce public art;

8. Create safe and secure environments that reduce crime and fear of crime, anti-social behaviour and risks from fire and arson having regard to Secure by Design standards and address resilience to terrorism in major development proposals;

9. Not result in the inappropriate development of gardens and green spaces that erode the character and biodiversity of suburban areas and increase the risk of flooding through the loss of permeable areas;

10. Maximise the opportunities for all new homes to contribute to tackling and adapting to climate change and reducing emissions of local air quality pollutants. The Council will require all new development to achieve reductions in carbon dioxide emission in line with the London Plan targets through energy efficient design and effective use of low and zero carbon technologies. Where the required reduction from on-site renewable energy is not feasible within major developments, contributions off-site will be sought. The Council will seek to merge a suite of sustainable design goals, such as the use of SUDS, water efficiency, lifetime homes, and energy efficiency into a requirement measured against the Code for Sustainable Homes and BREEAM. These will be set out within the Hillingdon Local Plan: Part 2- Development Management Policies Local Development Document (LDD). All developments should be designed to make the most efficient use of natural resources whilst safeguarding historic assets, their settings and local amenity and include sustainable design and construction techniques to increase the re-use and recycling of construction, demolition and excavation waste and reduce the amount disposed to landfill;

11. In the case of tall buildings, not adversely affect their surroundings including the local character, cause harm to the significance of heritage assets or impact on important views. Appropriate locations for tall buildings will be defined on a Character Study and may include parts of Uxbridge and Hayes subject to considering the Obstacle Limitation Surfaces for Heathrow Airport. Outside of Uxbridge and Hayes town centres, tall buildings will not be supported. The height of all buildings should be based upon an understanding of the local character and be appropriate to the positive qualities of the surrounding townscape.

Support will be given for proposals that are consistent with local strategies, guidelines, supplementary planning documents and Hillingdon Local Plan: Part 2- Development Management Policies.

Policy EM7: Biodiversity and Geological Conservation

The Council will review all the Borough grade Sites of Importance for Nature Conservation (SINCs). Deletions, amendments and new designations will be made where appropriate within the Hillingdon Local Plan: Part 2- Site Specific Allocations Local Development Document. These designations will be based on previous recommendations made in discussions with the Greater London Authority.

Hillingdon's biodiversity and geological conservation will be preserved and enhanced with particular attention given to:

1. 1. The conservation and enhancement of the natural state of:

- Harefield Gravel Pits
- Colne Valley Regional Park
- Fray's Farm Meadows
- Harefield Pit

2. The protection and enhancement of all Sites of Importance for Nature Conservation. Sites with Metropolitan and Borough Grade 1 importance will be protected from any adverse impacts and loss. Borough Grade 2 and Sites of Local Importance will be protected from loss with harmful impacts mitigated through appropriate compensation.

3. The protection and enhancement of populations of protected species as well as priority species and habitats identified within the UK, London and the Hillingdon Biodiversity Action Plans.

4. Appropriate contributions from developers to help enhance Sites of Importance for Nature Conservation in close proximity to development and to deliver/assist in the delivery of actions within the Biodiversity Action Plan.

5. The provision of biodiversity improvements from all development, where feasible.

6. The provision of green roofs and living walls which contribute to biodiversity and help tackle climate change.

7. The use of sustainable drainage systems that promote ecological connectivity and natural habitats.

REFERENCES

[1] *Butcher, B., Carey, P., Edmonds, R., Norton, L. and Treweek, J. (2020) The UK Habitat Classification User Manual Version*
[2] *CIEEM (2017); Guidelines for Preliminary Ecological Appraisal, 2nd Edition. Chartered Institute of Ecology and Environmental Management, Winchester.*
[3] *BSI (2013); British Standard 42020:2013: Biodiversity – Code of practice for planning and development, BSI Standards Publication*
[4] *MAGIC (2019); Interactive Map. (Partnership project involving six government organisations: Defra (Department for Environment, Food and Rural Affairs); English Heritage; Natural England; Environment Agency; Forestry Commission; Department for Communities and Local Government). Available at: www.magic.gov.uk.*
[5] Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London
[6] *English Nature, (2004); Bat Mitigation Guidelines. English Nature.*
[7] *Institution of Lighting Professionals and Bat Conservation Trust (2018), Bats and Artificial Lighting in the UK; Bats and the Built Environment Series.*
[8] *Stone, E.L (2013) Bats and lighting: Overview of current evidence and mitigation guidance.*
[9] *Natural England (2021). The Biodiversity Metric 3.0 (JP039). Available at: http://publications.naturalengland.org.uk/publication/6049804846366720*
[10] *RHS Plants for Pollinators (2021) Plants for Pollinators advice and downloadable lists / RHS Gardening*
[11] *GOV.UK. (2021). Environment Act 2021. Available at: https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted*
[12] *HM Government, (1981); Part I and Part II of Wildlife and Countryside Act (as amended). HMSO*
[13] *HM Government, (2017); The Conservation of Habitats and Species Regulations 2017. Statutory Instrument 2017 no. 490 Wildlife Countryside. OPSI*
[14] *HM Government, (2000); The Countryside and Rights of Way Act. HMSO*
[15] *HM Government, (2006); Natural Environment and Rural Communities Act 2006. HMSO*
[16] *HM Government, (1994); The Conservation (Natural Habitats, &c.) Regulations. HMSO*
[17] *CEC (Council of the European Communities), (1992); Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora*
[18] *The European Parliament And Of The Council, (30 November 2009); Directive 2009/147/EC On The Conservation Of Wild Birds (Codified Version)*
[19] *CEC (Council of the European Communities), (1979); Convention on the Conservation of European Wildlife and Natural Habitats (Bern, 19.IX.1979). EC*
[20] *UK Biodiversity Action Plan (2007). UKBAP Priority Species and Habitats. http://www.ukbap.org.uk/newprioritylist.aspx*
[21] *JNCC and Defra (on behalf of the Four Countries' Biodiversity Group) (2012). UK Post-2010 Biodiversity Framework. July 2012. Available from: http://jncc.defra.gov.uk/page-6189*
[22] *Defra (2011). Biodiversity 2020: A strategy for England's wildlife and ecosystem services*
[23] *Convention on Biological Diversity (CBD) (2010). Decision X/2 Strategic Plan for Biodiversity 2011-2020, including Aichi Biodiversity Targets. Available at https://www.cbd.int/decision/cop/?id=12268*
[24] *European Commission (2012). Our life insurance, our natural capital: an EU biodiversity strategy to 2020 European Parliament resolution of 20 April 2012 on our life insurance, our natural capital: an EU biodiversity strategy to 2020 (2011/2307(INI))*

[25] *GOV.UK. (2021). National Planning Policy Framework. [online] Available at: https://www.gov.uk/government/publications/national-planning-policy-framework--2*

[26] *Greater London Authority (2021) The London Plan: The Spatial Development Strategy for Greater London (GLA)*

[27] *Greater London Authority (2018). London Environment Strategy 2018. London: Greater London Authority.*

[28] *Hillingdon Local Plan (2012) https://www.hillingdon.gov.uk/media/3080/Local-Plan-Part-1---Strategic-Policies/pdf/Local_Plan_Part_1_Strategic_Policies_15_feb_2013_a_1_1.pdf?m=1598370401647*