



QA**Avondale Drive – Preliminary Ecological Appraisal**

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1.0 EXECUTIVE SUMMARY

- 1.1 Greengage Environmental Ltd was commissioned to undertake a Preliminary Ecological Appraisal (PEA) by The London Borough of Hillingdon of a site known as Avondale Drive in Hayes, London Borough of Hillingdon.
- 1.2 This document is a report of this survey and has been produced to support a planning submission for the site which seeks:
- Development in outline (with all matters reserved) for residential floorspace (Class C3) to comprise: demolition of all existing buildings and structures; erection of new buildings; new pedestrian and vehicular accesses; associated amenity space, open space, landscaping; car and cycle parking spaces; plant, refuse storage, servicing area and other works incidental to the proposed development; and
 - Detailed planning consent for Block A comprising 30 residential units (Class C3); new pedestrian access; associated amenity space and landscaping; cycle parking, refuse storage, and other associated infrastructure.
- 1.3 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 the proposed development works.
- 1.4 The survey area extended approximately 1.07 hectares and predominantly comprised common and widespread habitats that included areas of hardstanding, buildings, amenity grassland, introduced shrub and scattered trees.
- 1.5 The site survey, alongside data received from the desk study confirmed that the site has the potential to support the following notable and protected species:
- Low potential to support roosting, foraging and commuting bats;
 - Moderate potential to support nesting birds; and
 - Low potential to support hedgehog (*Erinaceus europaeus*).
- 1.6 A single emergence survey is recommended on five buildings to be undertaken between May-September. Appropriate mitigation and compensation measures can then be determined upon completion of this further work.
- 1.7 Further survey work for all other protected species is not considered necessary, however mitigation measures to protect nesting birds and hedgehog are detailed in section 5 of this report.
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- 1.8 Furthermore, measures to remove Cotoneaster (*Cotoneaster sp.*), a non-native/invasive plant species listed on schedule 9 of the Wildlife and Countryside Act (1981) (as amended) is included within this report.
- 1.9 A second, less impactful, invasive plant species cherry laurel (*Prunus laurocerasus*) was also identified on site, these species fall within category three of the London Invasive Species Initiative (LISI) meaning it requires a coordinated effort to control. Mitigation measures for its removal are also included within this report.
- 1.10 Mitigation measures in relation to the protection of Yeading Brook Site of Importance for Nature Conservation (SINC) during the construction phase of the development should be detailed within a Construction Environment Management Plan (CEMP), which can be secured through planning condition, and set out as guiding principles in the Illustrative Demolition and Phasing Strategy (including Demolition and Construction Method Statement), prepared by Martin Arnold and the Outline Construction Logistics Plan, prepared by Markides.
- 1.11 The measures included within the design to enhance the site's ecological value post-development include:
- Biodiverse green roof;
 - Green wall using trellis system;
 - Bird boxes, targeting house sparrow (*Passer domesticus*) and swift (*Apus apus*);
 - Bat boxes;
 - Invertebrate habitat features including bee boxes, posts and insect hotels;
 - Wildlife friendly landscaping; and
 - Hedgehog nesting boxes and fencing.
- 1.12 The successful implementation of these enhancements should result in Biodiversity Net Gain (BNG) on site, meaning the proposals will fall in line with local and emerging national policy. The BNG of the site should be evidenced and calculated using the Defra Metric 3.0 Methodology.
- 1.13 All ecological enhancements should be described in greater detail alongside appropriate management specifications within an Ecological Management Plan (EMP) which can also be secured through planning condition.
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2.0 INTRODUCTION

- 2.1 Greengage was commissioned to undertake a Preliminary Ecological Appraisal (PEA) by The London Borough of Hillingdon of a site known as Avondale Drive in Hayes, London Borough of Hillingdon.
- 2.2 This document is a report of this survey and has been produced to support a planning submission for the site which seeks to implement the regeneration of the existing residential estate with associated green infrastructure delivery.
- 2.3 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 the proposed development works.

SITE DESCRIPTION

- 2.4 The area surveyed extends to approximately 1.07 ha and is centred on National Grid Reference TQ 10706 80281.
- 2.5 The site predominantly comprised hardstanding, buildings, amenity grassland, introduced shrub and scattered trees.
- 2.6 The site is located to the east of Hayes, with Hayes & Harlington train station 1.2km to the south west and Southall train station 1.8km to the east.
- 2.7 Avondale Drive immediately borders to the south and the Paddington to Reading train line borders to the east. To the north of site lies the school playing fields and Yeading Brook Site of Importance for Nature Conservation (SINC).
- 2.8 The wider site surrounding area predominantly residential, with an abundance of playing fields, pocket parks, private gardens and tree lined streets forming a suburban green mosaic which connects the site to more substantial areas of greenspace, such as Minet Country Park, located 100m to the east.

3.0 METHODOLOGY

- 3.1 The PEA (which included an Extended Ecological Phase 1 Survey) was undertaken in accordance with guidance in the Joint Nature Conservation Committee (JNCC) (2010) Handbook for Phase 1 Habitat Survey¹ and the Chartered Institute of Ecological and Environmental Management (CIEEM) (2017) Guidelines for Preliminary Ecological Appraisal², in accordance with BS42020:2013: Biodiversity³. 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.
- 3.2 The site-specific consultation provided the ecological context for the site survey carried out on the 7th May 2021.
- 3.3 The survey boundary and existing site is shown at Figure 1.
- 3.4 Greengage undertook the site walkover during warm and dry 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.

DESK TOP REVIEW

- 3.5 A review of readily available ecological information and other relevant environmental databases (included Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) website⁴) was undertaken for the site and its vicinity. In addition, a biological records search from Greenspace Information for Greater London (GiGL) was 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 Phase 1 Survey.

ON SITE SURVEYS

Flora

- 3.6 The extent and distribution of different habitats on site were identified and mapped according to the standard Phase 1 Survey 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 1.

Fauna

- 3.7 The Phase 1 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.
- 3.8 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.
- 3.9 The species of relevance surveyed for included:

Bat Species (Chiroptera)

- 3.10 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*⁴ and methods given in English Nature's (now Natural England) *Bat Mitigation Guidelines*⁵ 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.
- 3.11 Definite signs of bat activity were taken to be:
- The bats themselves;
 - Droppings;

- Grease marks;
 - Scratch marks; and
 - Urine spatter.
- 3.12 Signs of possible bat presence were taken to be:
- Stains; and
 - Moth and butterfly wings.
- 3.13 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.
- 3.14 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.

Birds

- 3.15 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.

Biodiversity Action Plan priority species/ Species of Principal Importance

- 3.16 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.

London Invasive Species Initiative (LISI) Species

- 3.17 During the walkover, species under the London Invasive Species Initiative⁷ (LISI) was surveyed on site.

SURVEYORS

- 3.18 Jess Cole, who undertook the site survey and reviewed this report has a BSc degree in Ecology (Hons) and is a graduate member of CIEEM. Jess holds a Natural England Great

Crested Newt Licence (2016-24975-CLS-CLS) and has over five years' experience in ecological survey and assessment.

- 3.19 James Bumphrey, who reviewed this report, has an undergraduate degree in Environmental Sciences (BSc Hons), a Master's degree in Environmental Consultancy, a Natural England Great Crested Newt Licence (2018-35160-CLS-CLS). James has 8 years' experience in ecological consultancy.
- 3.20 This report was written by Sam Barker, who has an undergraduate degree in Environmental Science (BSc Hons), is an Associate member of CIEEM with four years' experience of writing PEA's.
- 3.21 This report was written by Sam and reviewed and verified by Jess and James 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.

CONSTRAINTS

- 3.22 The PEA was undertaken during an optimal time of year during ideal conditions by a suitably qualified ecologist. It was possible to access all areas of the site.
- 3.23 No significant constraints that stand to impact conclusions drawn in this report therefore presented themselves.

4.0 RESULTS

DESK TOP REVIEW

Designations

- 4.1 Consultations with the GIGL and the Multi-Agency Geographic Information for the Countryside (MAGIC) datasets have confirmed that there are no statutory designations of national or international importance within the boundary of the site.
- 4.2 There are no statutory sites of international importance within 5km of the site.
- 4.3 There was however, one Local Nature Reserve (LNR) within a 2km radius, Yeading Meadows, located 1.5km north of site.
- 4.4 Records from GIGL also identified eight SINC's within 2km of the site boundary. SINC's are recognised by the Greater London Authority and London borough councils as important wildlife sites.
- 4.5 Table 4.1 below gives the locations and descriptions of a selection of the nearest/most relevant local designations.

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

Site Name	Approximate Location	Description
Statutory Designations		
Yeading Meadows LNR	1.59km north	Yeading Meadows are an extensive mosaic of unimproved meadows and pastures divided by hedgerows, on the old floodplain of Yeading Brook. The grassland varies according to management history and tendency to flooding, although the total flora is extremely diverse The Yeading Brook flows through the site, with a diverse marginal flora. Riverside scrub in the north of the site supports a small population of broad-leaved helleborine
Non-Statutory		
London's Canals – Site of Metropolitan Importance	877m south	The canals support a wide range of aquatic flora, amongst which are found a number of locally uncommon species. These include narrow-leaved water plantain, rigid hornwort and shining pondweed, all species of clean, clear waters. The canals also support important invertebrate fauna, a diverse fish community and breeding waterfowl.
Yeading Brook, Minet Country Park and Hitherbroom Park - Site of	10m north	Minet Country Park comprises reclaimed derelict land; Much of the country park is recently created rough grassland, with areas of older, more natural meadow.

Site Name	Approximate Location	Description
Borough Grade I importance		To the east of the country park is Minet Tip. The scrubby pits and hillocks support a rich flora and diverse birdlife. To the north-east of the country park the banks of the Yeading Brook are clothed in scrub and small trees. A small stream with largely natural banks runs eastwards through Hitherbroom Park to meet the Yeading Brook in the Country Park.
Lake Farm Country Park – Site of Borough Grade I importance	1.11km west	It is an extensive formerly agricultural area managed principally for nature conservation, integrated with its amenity roles. Rotational grass-cutting is utilised to encourage and maintain grassland diversity and habitat continuity.
St Mary's, Wood End – Site of Borough Grade II Importance	1.07km north west	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. A variety of habitats includes fields, amenity grassland, hedgerows, scrub, a botanic garden and an artificial pond.

Biodiversity Action Plans

- 4.6 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.
- 4.7 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*.
- 4.8 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).
- 4.9 There were no UK priority habitats identified on site.
- 4.10 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.

London BAP

- 4.11 There is no Local BAP therefore the London BAP is of most relevance to this site.

4.12 The London BAP lists 214 priority species and eight Species Action Plans (SAPs), in addition to four priority habitats and 11 Habitat Action Plans (HPAs). There are also many species listed on the BAP which are priority species and are of conservation concern. Of these, the features relevant to this report include:

- Bats (SAP);
- Stag beetle (*Lucanus cervus*) (SAP);
- House sparrow (*Passer domesticus*) (SAP); and
- Built structures listed as a priority habitat.

Species Record

4.13 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:

- Bird species including starling (*Sturnus vulgaris*), peregrine falcon (*Falco peregrinus*), black redstart (*Phoenicurus ochruros*), herring gul (*Larus argentatus*), lesser spotted woodpecker (*Dryobates minor*) house sparrow, and swift.
- Stag beetle;
- Hedgehog (*Erinaceus europaeus*); and
- Bat species including daubenton's bat (*Myotis daubentonii*), common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*Pipistrellus pygmaeus*) and brown Long-eared (*Plecotus auratus*).

4.14 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

4.15 The habitats presented across the assessment site consist of the following Joint Nature Conservation Committee (JNCC) Phase 1 Habitat categories, as mapped at Figure 1:

- **Scattered broadleaved trees (A3.1);**
 - Amenity grassland (J1.2);
 - Introduced shrub (J1.4);
 - Buildings (J3.6); and

- Other (Hardstanding) (J5)

Scattered Broad Leaved Trees

- 4.16 Over 25 semi-mature broadleaved trees were scattered across the site. Three larger sycamore (*Acer pseudoplatanus*) were identified within the area of amenity grassland in the south east of the site, these were the most mature specimens on site.
- 4.17 The other trees recorded on site were predominantly associated with the areas of ornamental planting and included wild cherry (*Prunus avium*), copper beach (*Fagus sylvatica f. purpurea*), sycamore and silver birch (*Betula pendula*).

Figure 4.1 Scattered to the eastern section of site



Amenity Grassland

- 4.18 Amenity grassland was present across the site but was in greatest abundance to the south east. The grassland was maintained at a short sward height (<5cm) and predominantly comprised perennial rye grass (*Lolium perenne*), red fescue (*Festuca rubra*), annual meadow grass (*Poa annua*) cocks foot (*Dactylis glomerata*), daisy (*Bellis perennis*) and dandelion (*Taraxacum sp.*).

Figure 4.2 Area of amenity grassland in the south east corner of the site



Introduced Shrub

- 4.19 Introduced shrub was present across the site, mainly in raised planters to the south of the buildings.
- 4.20 The species mix was highly ornamental and included viburnum (*Viburnum tinus*), cherry laurel (*Prunus laurocerasus*), cotoneaster (*Cotoneaster sp.*), ivy (*Hedera helix*), and box (*Buxus sp.*).

Figure 4.3 Raised planted with introduced shrub to the south of Building 3



Buildings

- 4.21 There were seven buildings across the site and described further below.

Building 1 & 2 (rows of garages)

- 4.22 At the eastern end of the site were two rows of concrete-built flat roofed garages, these had pebble dashed rendering with wooden fascia boards.

Figure 4.4 View of garage buildings from the south



Building 3, 5 & 7 (apartment blocks)

- 4.23 Three 12 storey 1960s brick built high rise buildings, with flat roofs, constructed of red brick with UPVC windows.

Figure 4.5 View of building 5 and 3 from the east of site



Building 4 & 6 (car parks)

- 4.24 Two single storey, covered car parks, built from brick and concrete with a pebble dash render and a flat concrete roof. Steel mesh secured the open gaps between the roof and low brick wall.

Figure 4.6 View of building 4 from the north



Hardstanding

- 4.25 Hardstanding was present across the site. The private road comprising the access to the secured garages was constructed from concrete. The walkways and pavements were constructed from a combination of tarmac and brick paving.
- 4.26 The children's play area also had areas of softer wet pour rubber surface around the play equipment.

Figure 4.7 Children's playground to the north east of site



Detailed description of Site: Species

Bats

Foraging

- 4.27 Records from GiGL identified a total of four bat species within 2km of the site.
- 4.28 The greenspace on site and within the zone of influence of the development is well connected to the highway's woodland to the east of the site and other features of value within the landscape, such as Minet Country Park, Yeading Brook and other parks, street trees and private gardens throughout the immediate surrounding landscape.
- 4.29 The greenspace on site is therefore likely to provide a stepping-stone in the urban landscape of Hayes, used by bats to commute and forage.
- 4.30 That being said, the site, is likely regularly subject to disturbance and high levels of lighting in the evening, which diminishes the site's value for bats somewhat.
- 4.31 Therefore, with all of the above taken into consideration, in particular the high levels of lighting, the site and the green spaces within its zone of influence, has been determined to provide **low** potential to support the commuting and foraging behaviour of bats.

Roosting

- 4.32 All buildings (1-7) and trees within the site boundary were assessed for their potential to support roosting bats.

- 4.33 Buildings 1, 2 3, 4, 5 and 7 were all found to provide features which have suitability to support small numbers of crevice dwelling species such as common pipistrelle, which are known to be in the area. These features include gaps underneath fascia boards and missing mortar between brick work. See table 4.2 below for full results.

Table 4.2 Results of bat scoping assessment

Potential Roosting Feature	Photo	Potential	Comments
Building 1			
Gap under fascia board		Low	This feature provides a small, crevice space suitable for small numbers of common crevice dwelling species, such as pipistrelles, which are known to be in the area.
Building 2			
Gap between masonry		Low	This feature provides a small, crevice space suitable for small numbers of common crevice dwelling species, such as pipistrelles, which are known to be in the area.

Potential Roosting Feature	Photo	Potential	Comments
Building 3, 7 & 7			
Missing mortar		Low	These features were uniform across buildings 3,5 and 7 and each provides a small, crevice space suitable for small numbers of common crevice dwelling species, such as pipistrelles, which are known to be in the area.
Building 4			
Gap in masonry		Low	This feature provides a small, crevice space suitable for small numbers of common crevice dwelling species, such as pipistrelles, which are known to be in the area.

4.34 Given the low conservation status of the bats these features have suitability to support, these buildings have been given **low** potential to support roosting bats.

4.35 Building 4 and building 6 and all trees on site were identified as having **negligible** potential to support roosting bats owing to a lack of potential roost features.

Birds

4.36 Records provided from GIGL identified a variety of common and widespread bird species within 2km of the site.

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- 4.37 The scattered trees and buildings on site provide occasional suitable nesting habitat for a range of common and widespread bird species, however, high levels of disturbance from lighting and the nearby roads reduces the suitability of site somewhat.
- 4.38 Therefore, the site provides **moderate** potential to support nesting birds.
- 4.39 Given the height of the apartment blocks on site the site was also assessed for its suitability to support peregrine falcon, a bird species listed by Schedule 1 of the Wildlife and Countryside Act (1981) (as amended).
- 4.40 However, despite the height of the towers no suitable ledges to support the nesting behaviour of the species was noted. The site therefore has **negligible** potential to support any Schedule 1 bird species.

Invasive/Non-native species

- 4.41 During the PEA, two invasive non-native plant species were identified on site, confirming **presence**.
- 4.42 Cotoneaster (see Target Note 1 for location) is listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and its intentional spread in the wild is therefore considered illegal.
- 4.43 Cherry laurel was also identified amongst the introduced shrub on site. whilst this species is not Schedule 9 it is listed by the London Invasive Species Initiative (LISI) as a category 3 species meaning it is a "*Species of high impact or concern which are widespread in London and require concerted, coordinated and extensive action to control/eradicate*".

Other BAP Species

- 4.44 There are 11 records of hedgehog within 2km of the site, with the closest record approximately 700m from site.
- 4.45 The introduced shrub and grassland around the site provides some isolated areas of suitable habitat for nesting and foraging hedgehogs.
- 4.46 Therefore, the site provides **low** potential to support hedgehog.

5.0 EVALUATION AND DISCUSSION

BASELINE SUMMARY

- 5.1 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	Confirmed	Yeading Meadows LNR was located over 1.5km from the site boundary. As this site lies over 1km from the site, there are considered to be no potential impacts Given that there is to be only a relatively small increase in population, during the operational phase, from the current baseline population levels, there would be no significant increase on recreational pressures on Yeading Meadows. Furthermore, the development will provide sufficient on-site recreation space for residents which will reduce the pressure on the LNR. No operational impact is therefore anticipated.
Designated Sites: Non-Statutory	Confirmed	Yeading Brook SINC, was located approximately 10m north of the site boundary. Minet Country Park and Hitherbroom Park, that are included in the Yeading Brook SINC, were within 500m of the site and therefore these are considered to be at risk from the development if due care and consideration aren't taken during the construction phase. Impacts such as dust and water pollution that could enter the brook during construction will need to be appropriately mitigated. These measures should be detailed within a Construction Environmental Management Plan (CEMP), and set out as guiding principles in the Illustrative Demolition and Phasing Strategy (including Demolition and Construction Method Statement), prepared by Martin Arnold and

Receptor	Presence/Potential Presence	Comments
		the Outline Construction Logistics Plan, prepared by Markides. Given that there is to be only a relatively small increase in population, during the operational phase, from the current baseline population levels, there would be no significant increase on recreational pressures on Yeading Brook SINC. Furthermore, the development will provide sufficient on-site recreation space for residents which will reduce the pressure on the SINC.
Foraging bats	Low	The greenspace on site and within the developments zone of influence provides habitat could be used by bats to commute along, and provide a corridor to foraging habitat away from site. Given this area is relatively small no further activity surveys are recommended. However, in order to protect any bats that may be using the site, mitigation measures are recommended. High level recommendations around lighting to protect this foraging resource is included within paragraphs 5.6 to 5.8 below.
Roosting bats	Low	Buildings 1, 2, 3, 4, 5 and 7 were all identified as having low potential to support roosting bats. In order to establish the presence/likely absence of roosting bats within the buildings further surveys are recommended. These further surveys should be in the form of emergence or re-entry surveys. Detail of this survey methodology can be found within paragraphs 5.9 – 5.11 below.
Birds	Moderate	The site has some potential to support a range of common and widespread species, as such further surveys for nesting birds are not necessary. However, mitigation to ensure that no individuals or active nests are harmed through the site clearance is included below.
Invasive/Non-native species	Confirmed	Further survey in relation to the invasive non-native plant species found on site is not necessary. However, mitigation measures to ensure there is no further spread of these species in the wild is included below.

Receptor	Presence/Potential Presence	Comments
Hedgehog	Low	Further survey in relation to hedgehogs is not necessary. However, mitigation and compensation measures to ensure no individuals are harmed and that there is suitable habitat post construction is included below.

DISCUSSION AND RECOMMENDATIONS

- 5.2 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.
- 5.3 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

Non-Statutory

- 5.4 To ensure the development would not result in any damage to Yeading Brook SINC, good practice guidelines will be included within a CEMP and must be put in place and followed during construction.
- 5.5 Construction phase measures should include:
- The sensitive siting of construction compounds, laydown areas and associated lighting away from the SINC;
 - Screening barriers around the northern site boundary to protect the SINC from dust pollution during the site clearance works; and
 - A plan produced to ensure that dust or water-borne pollution generated during the construction phase does not impact on the SINC.

Bats

Foraging and Commuting

- 5.6 The vegetation on site and within the developments zone of influence are considered to provide low potential for commuting and foraging bats. To protect these features measures to minimise the impact of lighting on these areas are provided.

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- 5.7 Artificial lighting can cause disturbance to bat roosting, foraging and commuting activity. Bat sensitive lighting should be incorporated into the scheme to minimise any potential impacts of increased lighting levels on foraging, commuting and socialising bats.
- 5.8 Lighting design will follow the guidance provided by the Institute of Lighting Professionals (ILP) and Bat Conservation Trust (BCT)⁶. This involves:
- The use of low-UV warm-white LED bulbs with directional, downward facing lights which point away from green features such as trees, hedgerows and areas of planting;
 - External lights should be subject to curfew controls where possible with lights on movement sensors to reduce light pollution when not needed; and
 - The use of cowls, louvres and hoods should be incorporated onto any external lighting to reduce upward light spill and direct light to where it is needed.
- 5.9 Lighting at the site will be modelled by a lighting specialist to confirm predicted intensity and spill.
- 5.10 As areas of greenspace will be lost as part of the development proposals, compensation for this loss of suitable bat foraging habitat has been included in the design. This compensation includes tree planting and wildlife friendly landscaping, utilising species of known value to bats' invertebrate prey such as night scented species like honeysuckle (*Lonicera periclymenum*), jasmine (*Jasminum officinale*) and evening primrose (*Oenothera biennis*).

Roosting

- 5.11 As proposals seek to demolish the buildings on site, further surveys to establish the presence/likely absence of roosting bats in these buildings is required.
- 5.12 As the buildings on site have been found to provide low bat roosting potential only these further surveys should take the form of a single emergence/re-entry survey, undertaken in accordance with BCT Good Practice Guidelines⁶ and carried out between May – August.
- 5.13 Mitigation and compensation requirements in relation to any roosting bat(s) in the buildings is to be fully determined following the completion of the recommended emergence/re-entry surveys.
- 5.14 Please note the report with the results of these further surveys is attached in Appendix 1.
-

Birds

- 5.15 Birds and their nests are protected from being killed/injured/damaged/destroyed (Appendix 2) and it is therefore recommended that any clearance of any trees, buildings and shrub on site is undertaken outside of the bird nesting season (March to August [inclusive]). If clearance cannot be avoided within this period, it must only take place after a suitably qualified ecologist has confirmed the absence of nesting birds.
- 5.16 To compensate for the loss in nesting bird habitat, landscaping proposals include native tree and shrub planting, as well as include bird boxes hung from any retained trees.
- 5.17 Compensatory planting focuses on the provision of berry producing species such as holly (*Ilex aquifolium*), rowan (*Sorbus subg. Sorbus*) and blackthorn (*Prunus spinosa*) as well as species with dense shrubby growth like elder (*Sambucus nigra*), hazel (*Corylus avellana*) and dog rose (*Rosa canina*) within which birds may construct nests. This will not only provide nesting opportunities, but also deliver vital food resource for birds over the winter months.

Invasive/Non-native species

- 5.18 It is important that these species are removed sensitively from the site during the clearance works and destroyed in such a way that prevents their spread. Clearance should follow guidance from LISI⁷ and Defra⁸.
- 5.19 LISI also details actions to help prevent, control and, where feasible, eradicate invasive non-native species in London. The following steps should be taken before, during and after site clearance to help control the species:
- Identify areas where these species are present and assess the risk of and how they would be spread;
 - Set up monitoring schemes on site; and
 - Raise awareness of these species through notices on site to help prevent the spread.

Hedgehog

- 5.20 In order to minimise the potential for killing or injuring of hedgehogs (and other small to medium sized mammals) during site clearance, removal of dense vegetation should be undertaken in two phases, by cutting to 30cm in the first instance, then to ground level after that. The vegetation should be checked for mammals between these two cuts. Should any hedgehogs be found, they should be moved to a suitable area of habitat that is not subject to clearance.

- 5.21 Inclusion of dense shrub and scrub species within the soft landscaping design proposals will help to compensate for the loss of suitable hedgehog habitat. This will provide hedgehogs with a foraging resource, as well as shelter from predators.

Enhancement

- 5.22 In accordance with the National Planning Policy Framework and local policy drivers (Appendix 2) proposals should provide net gains in biodiversity under the Defra Metric 3.0 methodology.
- 5.23 Habitats will be created to provide value for the protected species discussed above and other priority species to align with national and local conservation objectives. The following features are included, as show by the Illustrative Landscaping Strategy:
- Substrate-based biodiverse green roofs, with rooftop enhancements including sandy piles, log piles, rope piles and ephemeral wetlands;
 - Green walls, taking the form of trellis systems with climbing plants such as ivy, honeysuckle, star jasmine and hops (*Humulus lupulus*);
 - Wildlife friendly landscaping at ground level, incorporating native tree, shrub and hedgerow planting as well as planting of herbaceous species of known biodiversity value;
 - Bird boxes targeting sparrow and swift, incorporated within the built form of buildings, ideally to fit within the brickwork;
 - Bat boxes, targeting crevice dwelling species, incorporated within the built form of the buildings. Where this is not possible boxes should be attached to the building in appropriate locations;
 - Inclusion of hedgehog friendly fencing panels and provision of hedgehog nesting boxes; and
 - Invertebrate habitat features in the form of bee bricks, bee posts, invertebrate hotels and buried log piles. These should be incorporated into the design of the development located close to shrub and herbaceous planting.

6.0 SUMMARY & CONCLUSION

- 6.1 Greengage was commissioned to undertake a PEA by The London Borough of Hillingdon of a site known as Avondale Drive in Hayes, London Borough of Hillingdon 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.
- 6.2 The PEA identified value for a number of notable and protected species and habitats, including bats (foraging, commuting and roosting), nesting birds, and hedgehog.
- 6.3 Further surveys to establish the presence/likely absence of bats in the buildings is required. The results of these surveys should be used to inform the need for any additional mitigation and compensation actions required.
- 6.4 Protection measures for the Yeading Brook SINC during the construction period are to be included within a site specific CEMP. Further mitigation measures in relation to nesting birds, hedgehog and non-native invasive plant species are also provided and will be included in the aforementioned CEMP and the Illustrative Demolition and Phasing Strategy (including Demolition and Construction Method Statement), prepared by Martin Arnold and the Outline Construction Logistics Plan, prepared by Markides.
- 6.5 Measures to remove any non-native or invasive species is done sensitively and are destroyed in a way that prevents the further spread of these species in the wild.
- 6.6 Key enhancement measures have been described in this report and target UK and local priority species, to help increase the qualitative biodiversity value of the site. These enhancement measures should be described in detail within an EMP, along with their management requirements.

FIGURE 1 SITE PLAN AND HABITAT MAP



Avondale Drive

- Red Line Boundary
- Target Note
- Fence
- Scattered Tree
- Feature with Low Bat Roosting Potential
- Buildings
- Ephemeral Short Perennial Vegetation
- Introduced Shrub
- Amenity grassland
- Hardstanding



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**Fig 1.0 Site Plan and
Habitat Map**

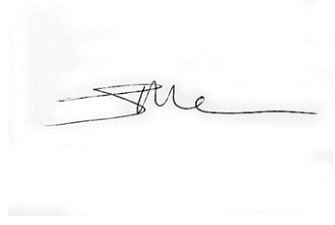
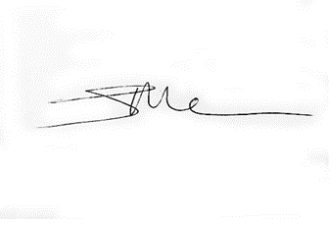
Project Number 551711
November 2021
1 to 1195 at A3

APPENDIX 1 BAT SURVEY REPORT



QA

Avondale Drive –Bat Survey Report

Issue/Revision:	Draft	Final
	October 2021	November 2021
Comments:		
Prepared by:	Sara Morris	Sara Morris
Signature:		
Authorised by:	Jess Cole	Jess Cole
Signature:		
File Reference:	551711smOct21DV01_Avondale_Drive_Bats	551711smOct21FV02_Avondale_Drive_Bats

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FIGURE 1: EMERGENCE SURVEY RESULTS

APPENDIX 1: LEGISLATION AND PLANNING POLICY

REFERENCES

1.0 EXECUTIVE SUMMARY

- 1.1 Greengage Environmental Ltd was commissioned to undertake bat emergence surveys by The London Borough of Hillingdon of the site known as Avondale Drive in Hayes, located within the London Borough of Hillingdon.
- 1.2 This document is a report of these surveys and has been produced to support a planning submission for the site which seeks:
- Development in outline (with all matters reserved) for residential floorspace (Class C3) to comprise: demolition of all existing buildings and structures; erection of new buildings; new pedestrian and vehicular accesses; associated amenity space, open space, landscaping; car and cycle parking spaces; plant, refuse storage, servicing area and other works incidental to the proposed development; and
 - Detailed planning consent for Block A comprising 30 residential units (Class C3); new pedestrian access; associated amenity space and landscaping; cycle parking, refuse storage, and other associated infrastructure.
- 1.3 During the initial survey undertaken by Greengage on 7th May 2021 as part of the Preliminary Ecological Appraisal (PEA) and Bat Scoping Assessment (Doc Ref: 551711sb22jul21FV01_Avondale Drive_PEA) buildings 1,2,3,5 and 7 were identified as having low potential to support roosting bats.
- 1.4 Additionally, all trees on site were assessed to identify any features which would provide suitability for roosting bats. All trees were identified as having negligible potential to support bats.
- 1.5 Given the results of the initial scoping survey, in accordance with Bat Conservation Trust (BCT) guidelines¹, one emergence survey per building was recommended to ascertain the presence/likely absence of roosting bats in the buildings on site.
- 1.6 During the surveys three common pipistrelles (*pipistrellus pipistrellus*) were seen emerging/re-entering from three features on B7. The survey work has therefore confirmed the presence of three bat roosts within B7.
- 1.7 No roosting bats were identified in B1, B2, B3 and B5. Bats are therefore considered likely absent from these structures.
- 1.8 Given the time of year the roosts were identified, and the low number of bats seen emerging, the roosts have been classified as transitional/occasional roosts.
- 1.9 During the emergence surveys moderate levels of commuting and foraging activity was noted on site and within the immediate surroundings. This activity was noted from a total of five bat species, with activity distributed across the site. Species included:
-

-
- Common pipistrelle;
 - Soprano pipistrelle (*Pipistrellus pygmaeus*);
 - Noctule (*Nyctalus noctule*); and
 - Brown long-eared (*Plecotus auratus*).
- 1.10 As proposals would result in the demolition of B7, and therefore destruction of the roosts identified, a European Protected Species Mitigation (EPSM) licence or Bat Low Impact Class License (BLICL) from Natural England will be required before the demolition of this building can take place.
- 1.11 The licence can only be granted upon confirmation of full planning permission.
- 1.12 Given the nature of the roosts found the mitigation actions to be implemented under the licence will include:
- The provision of suitable bat boxes on retained trees to act as a temporary roost in the unlikely circumstances that a bat is disturbed during the works and needs to be caught and moved;
 - An inspection of the confirmed roost locations using an endoscope, immediately prior to demolition works, undertaken by a licensed bat ecologist;
 - The careful, supervised destruction of the roosts, by hand overseen by the named ecologist on any future licence;
 - Provision of compensatory roosting space in newly constructed buildings.
- 1.13 Mitigation specifications also include implementation of a 'bat sensitive' lighting strategy designed to minimise disturbance to the bats using the site, as well as provision of wildlife-friendly landscaping to enhance the foraging resource that currently exists in the green space at site. Detail on these mitigation measures is included in Section 5 of this report.
- 1.14 In addition, ecological enhancements have been specified to include additional bat boxes, green walls and wildlife-friendly landscaping.
-

2.0 INTRODUCTION

- 2.1 Greengage was commissioned to undertake a bat emergence survey by The London Borough of Hillingdon of the site known as Avondale Drive in Hayes, located within the London Borough of Hillingdon.
- 2.2 This document is a report of these surveys and has been produced to support a planning submission for the site which seeks to implement the regeneration of the existing residential estate with associated green infrastructure delivery.

AIMS OF THE SURVEY

- 2.3 The surveys undertaken in 2021 aimed to:
- Determine the intensity of bat activity both spatially and temporally to help estimate bat diversity and relative abundance, and measure relative importance of the site for local populations;
 - Determine the nature of bat activity on site: roosting, foraging, commuting or socialising; and
 - Find and characterise any roosts by observing emergence behaviour.
- 2.4 By using a collation of existing data for the area to support the survey, it is possible to determine the presence/likely-absence of bats across the site and in the wider area. This information can then be used to determine preliminary mitigation, compensation and enhancement that are appropriate.

SITE DESCRIPTION

- 2.5 The survey area extends to approximately 0.9 ha and is centred on National Grid Reference TQ 10706 80281.
- 2.6 The site predominantly comprised hardstanding, buildings, amenity grassland, introduced shrub and scattered trees.
- 2.7 The site is located to the east of Hayes, with Hayes & Harlington train station 1.2km to the south west and Southall train station 1.8km to the east.
- 2.8 Avondale Drive immediately borders to the south and the Paddington to Reading trainline borders to the east. To the north of site lies the school playing fields and Yeading Brook Site of Importance for Nature Conservation (SINC).
- 2.9 The wider site surrounding area predominantly residential, with an abundance of playing fields, pocket parks, private gardens and tree lined streets forming a suburban green

mosaic which connects the site to more substantial areas of greenspace, such as Minet Country Park, located 100m to the east.

PRELIMINARY ECOLOGICAL APPRAISAL

Desk based assessment

- 2.10 Site-specific information was also sourced through Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) website² and a biological records search from Greenspace Information for Greater London (GIGL) in relation to the presence of protected species, designated sites or areas of regional, national or international importance.
- 2.11 The desk study identified records of bats within the surrounding area. These records identified a total of four species including:
- Common pipistrelle (*Pipistrellus pipistrellus*);
 - Brown long-eared (*Plecotus auratus*);
 - Soprano pipistrelle (*Pipistrellus pygmaeus*); and
 - Daubenton's bat (*Myotis daubentonii*).
- 2.12 An assessment of the local area using aerial photography and available maps and biological data was also undertaken.

Site visit

Bat Scoping

- 2.13 The PEA site visit (which included an Extended Ecological Phase 1 Survey) was undertaken on 7th May 2021. The overall assessment consisted of a site walkover to identify any potential to support protected species and/or habitats.
- 2.14 During the PEA survey roosting potential was noted in Buildings 1, 2, 3, 5 and 7. Features included gaps underneath fascia boards and missing mortar between brick work. These features have particular suitability to support small numbers of crevice dwelling species of low conservation concern such as pipistrelle species.
- 2.15 Given the low conservation status of the bats these features have suitability to support, the buildings onsite were given low potential to support roosting bats.
- 2.16 Owing to these findings, a single further survey in the form of emergence survey to ascertain the presence / Likely absence of roosting bats on site was recommended in accordance with BCT guidance¹.

3.0 METHODOLOGY

EMERGENCE SURVEY

- 3.1 Due to the number of buildings on site, the further survey work was split between four evenings in August and September 2021.
- 3.2 Each survey was undertaken in appropriate weather conditions with survey temperatures at sunset between 25°C and 16°C, in accordance with Bat Conservation Trust (BCT) guidelines¹.
- 3.3 18 surveyor locations were identified across the site which allowed suitable coverage of B1, B2, B3, B5 and B7. These locations enabled any emergence behavior to be observed clearly. These locations can be seen in Figure 1.
- 3.4 The emergence surveys commenced 15 minutes prior to sunset and continued for 1.5 hours after sunset.
- 3.5 Table 3.1 provides detail on locations of each surveyor and conditions during each of the emergence surveys.

Table 3.1 Surveyor locations and conditions during the emergence surveys

Date	Locations Surveyed	Sunset Time	Survey Duration	Weather Conditions
18/08/21	B1, B2	20:16	20:01 – 21:46	Warm and cloudy, (20°C – 18°C)
25/08/21	B7	20:02	19:47 – 21:32	Mild, still and overcast (18°C -17°C)
06/09/21	B3, B4, B5 north and west	19:36	19:15 – 21:06	Warm, clear and still (25°C - 22°C)
14/09/21	B5 south and east	19:17	19:02 – 20:47	Light breeze, clear and warm (18°C - 16°C)

- 3.6 Surveyors were equipped with an Echometer Touch bat detector to hear, visualize and record bat calls and identify bats to species level.

SURVEYORS

- 3.7 The core team consisted of the following Suitably Qualified Ecologists (SQEs):
- 3.8 Jess Cole, who reviewed this report, has a BSc degree in Ecology (Hons) and is a Graduate member of CIEEM. Jess holds a Natural England Great Crested Newt Licence

(2016-24975-CLS-CLS) and has over five years' experience in ecological survey and assessment.

- 3.9 Sara Morris, who wrote this report, has an undergraduate degree in Environmental Biology (BSc Hons) and over four years of experience in ecological surveying and consultancy.
- 3.10 Molly Crookshank, who undertook the survey work, has a Bachelor's degree in Animal Biology (BSc Hons) a Master's degree in Wildlife Biology and Conservation (MSc) and is a qualifying member of CIEEM.
- 3.11 This core team were assisted by a team of experienced surveyors including, Jesse Aberbach, Hazel Cuenca, Jason Short, Natasha Fen Connor, Alex Theodouro, Emma Carter, Jordan McNulty, Iona Cunningham-Eurich, Victoria Mercier and Joanne Reynolds.
- 3.12 This report was written by Sara Morris and reviewed and verified by Jess Cole 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.

LIMITATIONS

- 3.13 Two of the emergence surveys were undertaken in September, outside of the optimal bat survey season (May-August), as stated in the BCT guidelines¹. However, as bat activity was recorded during these surveys, and the weather conditions were suitable, the results gathered are considered sufficient to make early conclusions regarding the presence of bat roosts.
- 3.14 There were no other significant limitations to the bat surveys, with weather conditions considered suitable throughout.

4.0 RESULTS

EMERGENCE SURVEYS

- 4.1 Two common pipistrelles were seen emerging from B7. These emergences were recorded on the 25th August at 20:16, 14 minutes after sunset and at 20:21, 19 minutes after sunset, typical emergence times for this species.
- 4.2 Both bats emerged from weep holes in the brickwork on the south façade of the building. The roost locations can be seen on Figure 2. The first bat to emerge immediately re-entered the building, into a third weep hole, hence three roosts.
- 4.3 An additional roost characterisation survey was undertaken on this façade on the 14th September where one common pipistrelle was recorded emerging at 19:24, 22 minutes after sunset, from one of the same weep holes in the brickwork.
- 4.4 The location of these roost can be found in Figure 1.

Figure 4.1 Example of roost features



- 4.5 No other roosts were identified during the surveys.
- 4.6 Given the time of year the roosts were identified, and the number of bats seen to emerge from each feature, these roosts are considered to be transitional/occasional roosts.

-
- 4.7 In addition to the roosting activity, the surveys confirmed low levels of foraging and commuting activity from a total of four bat species comprising common and soprano pipistrelle, noctule and brown long-eared.
- 4.8 The flight paths of bats observed during these surveys is indicated on Figure 1

5.0 PRELIMINARY IMPACT ASSESSMENT AND MITIGATION STRATEGY

SUMMARY

- 5.1 The development proposals include the demolition of the buildings on site which will result in the destruction of the roosts.
- 5.2 It is understood that proposals will result in a loss of some onsite shrubbery and greenspace. New lighting will also be provided as part of the development.
- 5.3 All UK bat species are protected by UK and European legislation (see full context at Appendix 1), under which 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); and
 - Intentionally or recklessly obstruct access to a bat roost.
- 5.4 A European Protected Species Mitigation (EPSM) licence or Bat Low Impact Class Licence (BLICL) from Natural England is required to undertake works that would otherwise result in an offence.
- 5.5 The most appropriate license for the works will be determined in due course.
- 5.6 The licence will therefore be required in this instance given the proposed destruction of the roosts. Mitigation actions will be required, secured through this licence, to minimise the direct impact upon individual bats with compensatory roost space, compensatory foraging resources and a sensitive lighting scheme provided, ensuring a favourable conservation status of bats at the site is maintained.
- 5.7 The licence must be applied for after the confirmation of planning permission, however, recommended mitigation has already been designed into the proposals where possible.

STATUS OF SPECIES FOUND AT SITE

- 5.8 Three common pipistrelle transitional/occasional roosts for low numbers of bats were found at the site within B7. These forms of roost are of low conservation status in the context of this site and all potential impacts stand to result in a low scale of impact upon local conservation status as per table 6.1 of the *Bat Mitigation Guidelines*³.

EPSM LICENCE AND BLIC LICENCE

- 5.9 One licencing option is the EPSM, another is the BLICL. The BLICL option is available given the roosts present on site are for a small number of low conservation status bats only.
- 5.10 Further details relating to the proposed mitigation approach should be detailed in the relevant licence and agreed with Natural England where appropriate.
- 5.11 With respect to planning it is recommended that further details relating to the mitigation approach are secured through condition, however, mitigation and compensation actions have been considered and are provided below, roughly following the format of Natural England's Method Statement Template.

PREDICTED IMPACTS IN ABSENCE OF MITIGATION AND COMPENSATION

Initial impacts

- 5.12 Ultimately, the proposals will involve the permanent loss of the roosts, however, these roosts are likely to be one of many similar roosts in the area, which individual bats are likely to move between, therefore, its loss would cause a insignificant negative impact within the development zone of influence only.

Long term impacts

- 5.13 Proposals are not predicted to result in significant fragmentation or isolation impacts. However, increased lighting and reduction of surrounding foraging/commuting resource within the wider site may stand to result in disturbance, resulting in low to moderate negative impacts at a local scale.

MITIGATION STRATEGY

- 5.14 Actions taken at the site will follow the mitigation hierarchy:
- Proposals will first avoid impacts through design and approach;
 - If not possible then proposals will seek to minimise impacts;
 - Next, proposals will incorporate on-site compensatory actions; and
 - Failing this, proposals should provide off site compensation for unavoidable residual impacts (offsetting).
- 5.15 In this case it is not possible to retain B7 and deliver the proposed development. As such it will not be possible to retain the existing roosts (avoiding impacts), which is the

preferred option detailed in the Bat Mitigation Guidelines. Mitigation actions will therefore be required during construction works, within Phase 1b, and compensatory roost spaces must be provided in the fabric of the newly constructed building.

- 5.16 The overall objectives of the actions outlined below are to minimise disruption to bats during works and to provide new roosting sites through incorporation of bat boxes and bat access tiles, thus avoiding impacts on existing bat individuals and increasing the value of the site for local bat populations.

Timing

- 5.17 As set out in the Bat Mitigation Guidelines¹, the most common and effective way of avoiding disturbance of a roost is to complete works outside of the time or season when bats are likely to be using the roosts. This varies between species and roost types.
- 5.18 With regard to the roosts found on site, observations suggest these are transitional/occasional roosts used by low numbers of bats during the summer and early autumn months. Accordingly, works that will affect the roosts should ideally be undertaken outside of this season (1st November – 1st May), although given the small number of individuals and the fact these roosts are likely to be transient, then cautionary clearance during summer may be acceptable.
- 5.19 If summertime working is unavoidable, care should be taken to reduce general disturbance during the summer months, including timing works in daylight hours when bats are inactive, and keeping noise disturbance to a minimum. No additional artificial lighting should be left on overnight. As such, light, noise and general disturbance through construction activity will be limited to within hours that bats are not active.

Roost Destruction

- 5.20 The removal of the roosting features should be undertaken by hand, under the supervision of a licenced ecologist.
- 5.21 At least three bat boxes should be installed in an appropriate place in the surrounding trees being retained within proposals or on poles so that they can be used for shelter in the event that a bat is found while features are being removed.

Replacement roosts

- 5.22 Three bat bricks should be incorporated into the fabric of the new building on site as a direct compensatory roosting space. These should mirror the specifications of the existing roosts as far as possible, being of a similar height, on the same elevation.

- 5.23 The figure below gives an example of a bat brick that can be seamlessly incorporated into the design of the new building.

Figure 5.1 Habitat bat box⁴



Ecological Clerk of Works

- 5.24 As mentioned in paragraph 5.19 above, at least three bat boxes, preferably crevice boxes such as the "Improved Crevice Bat Box⁵", or similar, should be erected in any retained trees or on poles prior to any works. These boxes should be placed approximately 2m-5m from the ground facing south east or south west.
- 5.25 Prior to any work commencing, on-site workers should be briefed by an experienced ecologist in an Ecological Clerk of Works (ECoW) role during a 'tool box talk' on the mitigation strategy and legislation relating to bats.
- 5.26 After the tool box talk a licenced ecologist should check the confirmed roosting features for the presence of bats. If absent the careful destruction of the roosts can take place. This will take place under the supervision of the licenced ecologist.
- 5.27 If a bat is found to be present the licenced ecologist should capture the bat with gloved hands or a hand net, place the bat in a drawn-string cloth bag and then place into one of the bat boxes hung on adjacent trees.
- 5.28 Injured bats should be immediately taken into care. Details of a local well experienced 'bat hospital' should be known by the bat handler and provided to site managers.
- 5.29 A copy of the EPSM or BLIC licence should remain available on site at all times, a summary sheet of guidance should be given to each of the builders and contractors working on the structures.

Additional Actions

- 5.30 Bats were recorded foraging and commuting across the site at moderate levels during the surveys. As such, the following best practice measures have been integrated into the design to minimise impacts upon local bat populations, in line with local policy drivers:
- Bat-sensitive lighting incorporated into the scheme to minimise any potential impacts of increased lighting levels on foraging and commuting bats observed as present;
 - Additional roosting opportunities provided in the form of 'extra' bat boxes within the structure of the new building;
 - Retention of trees, vegetation and habitats of value to local bat populations, where possible; and
 - Wildlife-friendly landscaping to enhance the site as a foraging and commuting resource.

Lighting

- 5.31 Artificial lighting can cause disturbance to bat species' roosting, foraging and commuting activity⁶. The proposed development will have lighting elements associated with the new building.
- 5.32 Any lighting associated with the proposals will be designed following appropriate guidance described in the Institute of Lighting Engineers and Bat Conservation Trust joint guidance document for the reduction of obtrusive light⁷. This will include directional lighting, appropriate luminescence and protection from light spill and will ensure that all lighting is designed, operated and maintained under best practice conditions. No uncontrolled lighting will occur and light spill will be minimised; this would enable the continued use of the site as a roosting and foraging resource.
- 5.33 No light sources such as security lights will be positioned near artificial roost entrances and neither will any light sources be directed towards any roost entrances i.e. no up-lighting of the building. Additionally, no light will fall on any areas of extensive vegetation, as this would impair the value of the vegetation as foraging resources.

Ecological Enhancements

- 5.34 Ecological enhancements have been included within the proposed landscape design to improve the value of the habitats on site for roosting, foraging and commuting bats. These enhancements include:

- Substrate-based biodiverse green roofs, with rooftop enhancements including sandy piles, log piles, rope piles and ephemeral wetlands;
- Green walls, taking the form of trellis systems with climbing plants such as ivy (*Hedera helix*), honeysuckle (*Lonicera periclymenum*), star jasmine (*Trachelospermum jasminoides*) and hops (*Humulus lupulus*);
- Wildlife friendly landscaping at ground level, incorporating native tree, shrub and hedgerow planting as well as planting of herbaceous species of known biodiversity value;
- Bat boxes, targeting crevice dwelling species, incorporated within the built form of the buildings; and
- Invertebrate habitat features in the form of bee bricks, bee posts, invertebrate hotels and buried log piles. These will be incorporated into the design of the development located close to shrub and herbaceous planting.

5.35 These enhancements are in line with best practice set out by the National Planning Policy Framework (NPPF).

Monitoring

5.36 Given the size of the proposed scheme and the nature of the roosts identified no monitoring is considered necessary, based on the current results.

RESIDUAL IMPACT

5.37 The existing roosts will be destroyed; however, replacement roosting space will be provided in the form of bat boxes and bat tiles in the vicinity of the existing roosts in new buildings.

5.38 This compensatory roosting space would be considered sufficient to compensate for the destruction of the existing roosts.

5.39 The new lighting design will follow best practice guidance to ensure the local bat population are not deterred from using the site.

5.40 These design elements should be secured through planning condition and licencing requirements.

5.41 Upon successful implementation of these mitigation, compensation and enhancement actions, the proposals will have a negligible residual impact.

6.0 SUMMARY AND CONCLUSIONS

- 6.1 Greengage was commissioned to undertake a bat emergence survey by The London Borough of Hillingdon of the site known as Avondale Drive, located within the London Borough of Hillingdon.
- 6.2 This document is a report of these surveys and has been produced to support a planning submission for the site which seeks to implement the regeneration of the existing residential estate with associated green infrastructure delivery.
- 6.3 During the 25th August emergence survey, three common pipistrelle roosts were identified within B7. One of these three roosts was reconfirmed on the 14th September during the roost characterisation survey.
- 6.4 Owing to the type of roosting feature, the number of bats using the features and the time of year the roosts were identified, these three roosts have been classified as transitional/occasional roosts.
- 6.5 Proposals would result in the demolition of B7 and therefore the destruction of the roosts. All bats are protected by UK and European legislation, and therefore a EPSM or BLIC licence from Natural England will be required for these works.
- 6.6 Preliminary mitigation actions are described in this report. A licenced ecologist will be required to supervise demolition of the roosts, which should be dismantled by hand. Bat boxes should be hung from trees at the site in the interim, as potential replacement roosting spaces should any bats be disturbed during the precautionary clearance works.
- 6.7 Replacement roosts will be implemented into the fabric of the new building in the form of integrated bat bricks.
- 6.8 Preliminary mitigation specifications also include implementation of a 'bat sensitive' lighting strategy designed to minimise disturbance to the bats using the site, as well as provision of wildlife-friendly landscaping to replace and enhance the foraging resource that currently exists in the green space on site. Detail on these mitigation measures are included in Section 5 of this report.
- 6.9 Ecological enhancement specifications are also outlined in this report. Further detail on these can be secured through planning condition.

FIGURE 1: EMERGENCE SURVEY RESULTS