
Greengage

QA

Land accessed from private lane between 25a &25c Frognal –Bat Activity Survey Report

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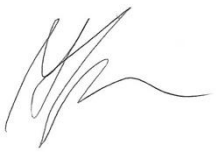
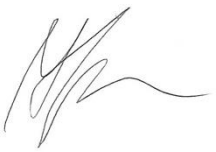
Signature:		
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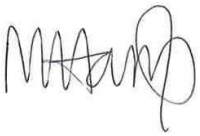
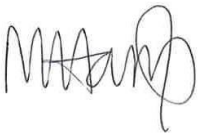
Signature:		
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1.0 EXECUTIVE SUMMARY

1.1 Greengage Environmental Ltd was commissioned by Square Feet Architects to undertake a Bat Activity Survey of land accessed from a private lane between 25a & 25c Frognal, London Borough of Camden.

1.2 Proposals seek to construct two 2-storey houses at the site.

1.3 A Preliminary Ecological Appraisal undertaken in 2017 identified low value for commuting and foraging bats. Subsequent pre-application advice from LB Camden accordingly requested 'a full bat survey to identify any potential flight paths'.

1.4 Accordingly, a period of monitoring using a static bat detector was undertaken, supplemented by a single activity survey.

1.5 This survey identified low to moderate levels of bat activity in the gardens at site, although early activity soon after sunset does suggest that there are roosts nearby.

1.6 Key mitigation actions are accordingly provided, including:

- Provision of a sensitive lighting scheme for bats; and
- Provision of compensatory green space at site in the form of living roofs and wildlife friendly landscaping.

1.7 Enhancement actions include provision of bat boxes in the built form of the new houses. The landscaping and living roofs may also stand to enhance habitat quality for foraging.

1.8 Assuming these measures are integrated within designs then proposals stand to result in gains for biodiversity. Detail on these measures could be secured through planning condition.

2.0 INTRODUCTION

2.1 Greengage Environmental Ltd was commissioned to undertake a Bat Activity Survey of land accessed from a private lane between 25a & 25c Frognal by Square Feet Architects.

2.2 This report has been produced to support planning proposals for the construction of two 2-storey houses at the site.

2.3 A Preliminary Ecological Appraisal was undertaken in January 2017 where value for foraging and commuting bats was noted. Subsequent pre-application advice from LB Camden in August 2018 accordingly included a request for further bat surveys to assess value and inform appropriate mitigation measures.

SITE DESCRIPTION

2.4 The site comprises two gardens separated by a wooden fence. The gardens comprise areas of amenity grassland, herbaceous beds, shrubs and scattered trees. One garden contains a shipping container used as a storage space.

2.5 The site is located near Finchley Road in Hampstead. Public green space in the immediate vicinity is limited, but the local area is characterised by an abundance of large residential properties with associated private gardens, creating green corridors through which wildlife can move. Hampstead Heath, a Metropolitan Site of Importance for Nature Conservation known to support bats, is located approximately 1.1km north west.

3.0 METHODOLOGY

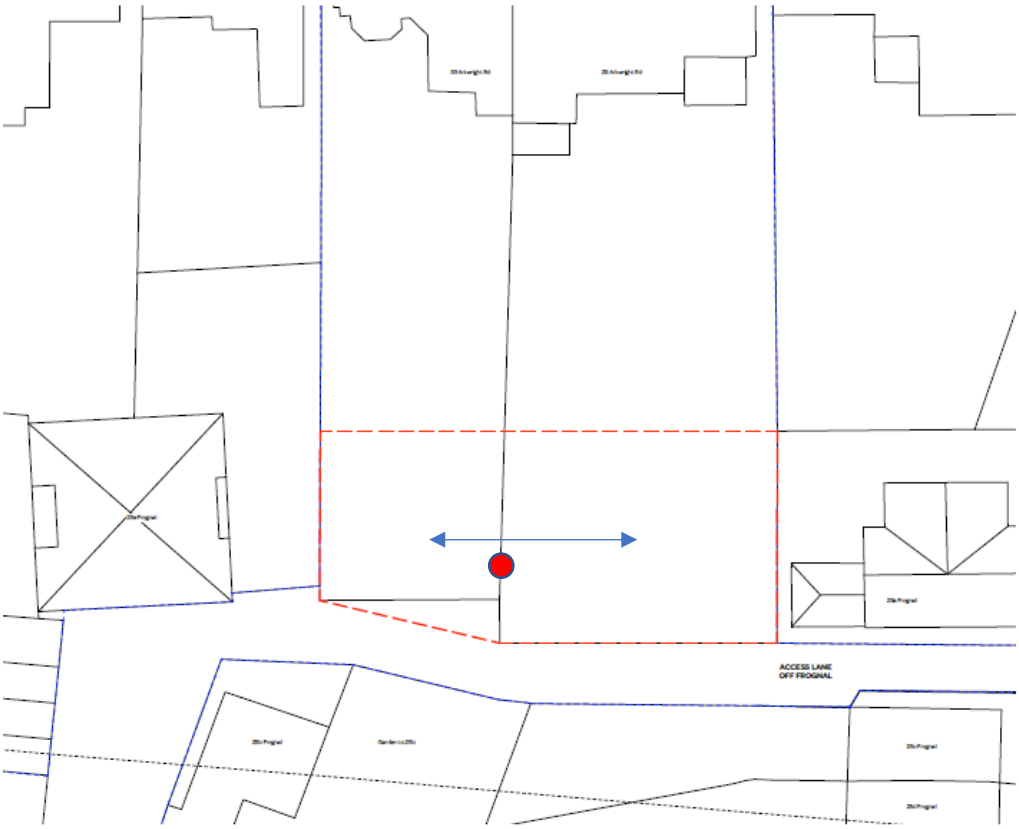
3.1 One static SM4 bat detector was installed in the centre of the site to collect data over a 7-night sampling period; (initially 5th -12th September 2018, but equipment failure required a second period of monitoring between 10th and 17th October). The detector was set to record each night from 30 minutes before sunset until 30 minutes after sunrise, ensuring the entire period that bats are active was recorded.

Figure 3.1 Static detector installed on fence line between gardens

3.2 Data collected by the detector was analysed using AnaLook software.

3.3 The static data collection was supplemented by a single activity survey undertaken by one surveyor on the 5th September. The surveyor collected data from sunset for a period of ~2 hours using a full spectrum Echometer Touch pro detector. They walked a very short transect between the two gardens in order to observe bat behaviour.

Figure 3.2 Red line boundary, location of surveyor (short transect route in blue arrow) and static detector (red circle)



Surveyors

3.4 Morgan Taylor, who was lead surveyor,oversaw data analysis and prepared this report, has an integrated Bachelors and Masters degree in Marine Biology (MSci Hons), a Natural England CL17 Bat Survey Level 2 Class Licence (2015-14178-CLS-CLS) and is a Chartered Environmentalist (CEnv) and Full member of CIEEM. Morgan has over 7 years' experience in ecological surveying and has undertaken assessments of numerous development sites of this type.

3.5 Mike Harris, who reviewed this report, has a Bachelor's degree in Environmental Biology (BSc Hons), a Natural England Great Crested Newt and Dormouse licence, is a Chartered Environmentalist (CEnv) and is a Full member of CIEEM. Mike has over 17 years' experience in ecological surveying and has undertaken and managed numerous ecological surveys and assessments.

3.6 This report was reviewed and verified by Mike Harris 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 and commentary on methodology

3.7 The survey was undertaken during suitable weather conditions to records bat activity.

3.8 The survey was undertaken late in the survey season however, with no data available for April to August.

3.9 The SM4 detector failed during the initial sampling period; files were recorded however were corrupted and the detector periodically turned off (the detector has been sent off for repair with suspected faulty battery connection). Given the continued warm weather in early October it was decided to redeploy the detector in order to take a snapshot measure of relative levels of bat activity at site.

3.10 Data are therefore missing from the early and mid-summer period. Bat activity data at this time of year however can be informative when assessing relative importance of a site as a late summer foraging resource or location for social behaviours associated with mating; two important behaviours that may be disturbed by lighting.

3.11 The sampling period in October is therefore considered to provide a useful appraisal of the site's relative importance for bats.

3.12 It is important to understand the limitations associated with the use of static bat detection. Intrinsically static detectors may fail to record bats passing at a certain distance, horizontally or vertically from the microphone. The SM4s do however allow a certain amount of omni-directionality, with a beam pattern of nearly 360°. Detectors were set to a high trigger sensitivity for recording.

3.13 The measure used to compare relative importance for bats has been *bat passes per hour*. It is important to consider that bat pass rates may naturally vary night by night, season by season, relative to a range of environmental conditions such as moon irradiance levels or weather patterns. Given the extended period of survey and the relatively constrained variance in data distribution however this factor is considered to be a robust proxy measure of relative importance for bats at the site in this instance.

3.14 'Bat passes' were defined as any call (i.e. a single pulse in a recording event) or series of calls separated by more than one second from another call or series of calls. The number of bat calls or bat passes does not directly relate to the number of bats in a location. It is important to be aware that results can be skewed by sustained foraging of a single bat in the location of the detector. Nevertheless, sustained foraging is indicative of the relative importance of a location as a resource.

3.15 These limitations are not considered to form a major constraint over the assessment or conclusions drawn in this report.

4.0 RESULTS

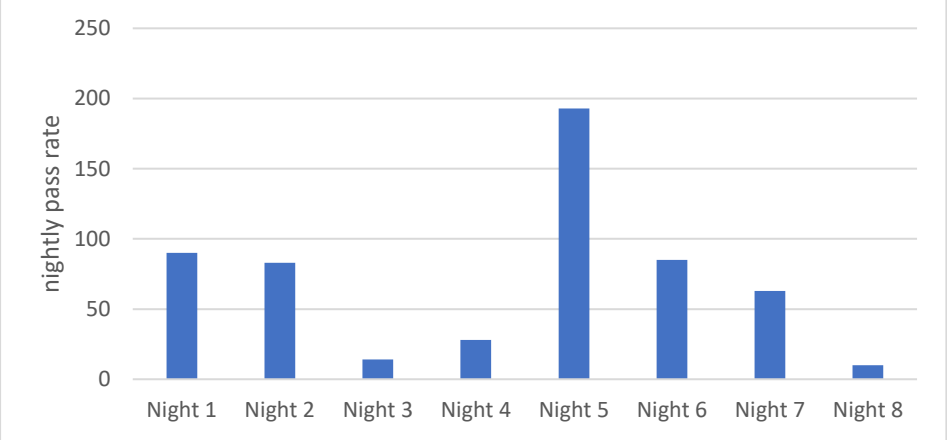
ACTIVITY SURVEYS

4.1 Low levels of activity were recorded during the activity survey with 5 common pipistrelle (*Pipistrellus pipistrellus*) passes detected at 19:50 (with feeding buzz), 20:08, 20:49, 20:50 and 20:52 (the latter two recorded also had associated feeding buzzes).

STATIC DETECTOR

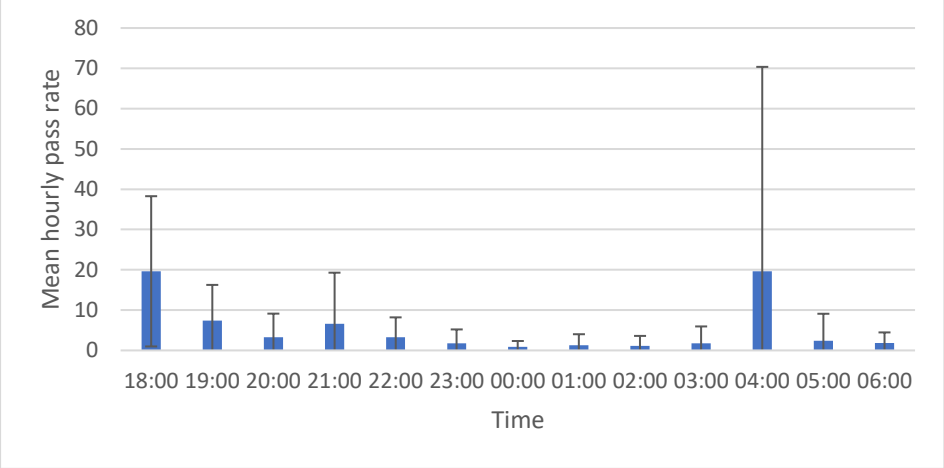
4.2 Levels of activity varied throughout the 8 night sampling period, ranging between a minimum of 14 passes per night to a maximum of 193. This variation is typical, with activity levels reliant on a wide range of environmental factors.

Figure 4.1 Total nightly passes



4.3 Trends in activity throughout each night were relatively consistent however. There was an initial peak in activity in the hours (1800 – 1900) after sunset, with a subsequent peak at around 0400. Sunset time ranged from 18:18 to 18:03 throughout the survey, with sunrise 07:16 to 07:26.

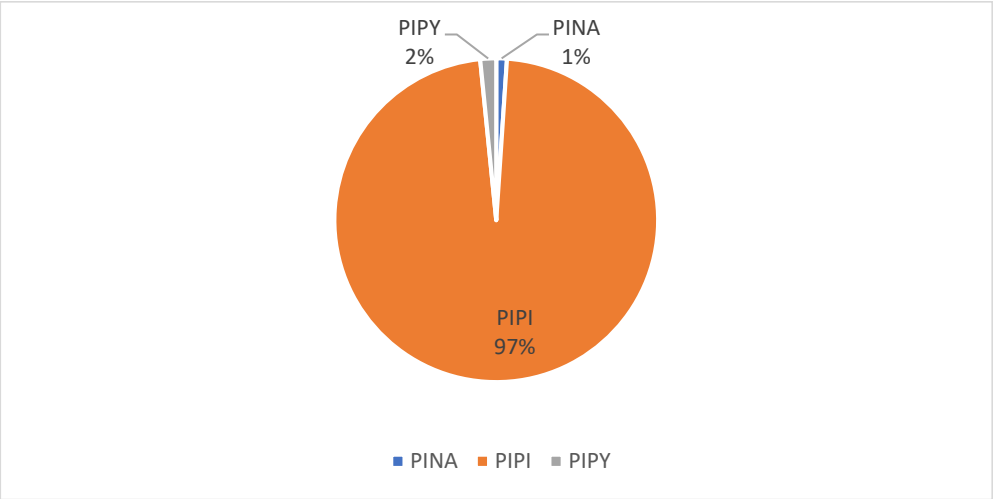
Figure 4.2 Mean hourly pass rate-errors bars denote standard deviation



4.4 Pass rates are fairly typical when compared with other similar sites (based on personal experience) and would be defined as being low to moderate within a suburban context.

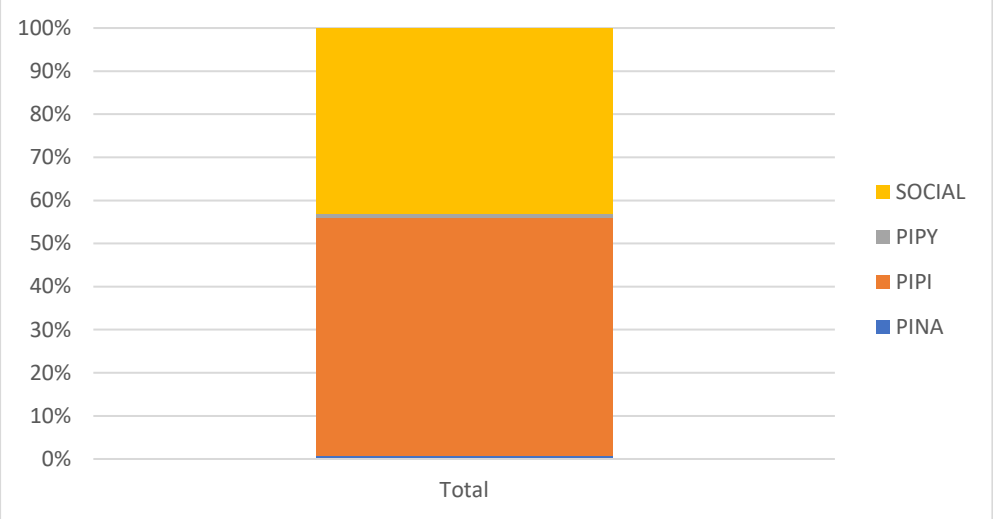
4.5 The initial post-sunset peak may suggest the presence of nearby roosts however, with passes recorded as soon as 10 minutes after sunset. This is unsurprising given the abundance of large period properties that support suitable roosting features such as tiled roof and internal roof voids.

Figure 4.3 Species diversity and composition (PIPI – common pipistrelle, PIPY – soprano pipistrelle and PINA Nathusius' pipistrelle)



4.6 Species diversity was low with almost all recordings belonging to common pipistrelles. Nine passes by soprano pipistrelles and six passes by Nathusius pipistrelles were recorded however.

Figure 4.4 Breakdown of species composition when including social calls



4.7 Nathusius pipistrelle are considered rare in the UK, although are known to be found in London, with numbers increasing. Information on population trends and behaviour of this species is still being collected and records of this species are therefore always of interest. Passes were recorded on the 10th and at 20:19 and 23:54 with two recordings triggered at each time, suggesting the bat circled the site for a short period, with a potential feeding buzz at 23:54. The remaining two passes were recorded on the 14th (19:46) and 16th (22:05) with short recordings suggesting passes during fast commuting flight.

4.8 Very few clear feeding buzzes were recorded at site, with occasional call sequences consistent with foraging behaviour throughout the sample period, however a large number of social calls were recorded, with nearly half of all recorded calls being *Pipistrellus* spp. type d social calls. This is consistent with bat behaviours in late summer and autumn as bats mate before hibernation. The site is accordingly seemingly of interest for socialising bats.

4.9 Auxiliary survey data can be found at Appendix 1.

DISCUSSION AND RECOMMENDATIONS

4.10 The site is clearly used by bats as part of a commuting corridor, possibly near to a roost, and for late summer socialisation. Habitats on site are relatively low in floral diversity and of low importance for potential invertebrate prey and its interest as a foraging resource is low to moderate, when compared with more favourable areas such as Hampstead Heath nearby.

4.11 Nonetheless, in the absence of mitigation proposals may stand to impact the value of the site for foraging, commuting and socialising bats.

4.12 The following actions should be integrated within design and approach at site to limit potential impacts upon bats and provide habitat enhancement:

- Light spill is currently low, as with surrounding gardens, which possibly encourages bats to pass through site. Proposals should therefore impose measures to limit additional light disturbance at site following development. Bat-sensitive lighting should be incorporated into the scheme to minimise any potential impacts of increased lighting levels on foraging, commuting and socialising bats. Lighting should follow guidance provided by the Institute of Lighting Professionals and Bat Conservation Trust[1]. This involves the use of low-UV warm-white LED bulbs with directional, downward facing and shielded lights which point away from green features such as tree lines or 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. Open green space (including any living roofs) should remain unlit, particularly between April and October, inclusive. Measures should be taken in internal light placement to reduce risk of light spill from windows, as per guidelines. Lighting at site should be modelled to confirm predicted intensity and spill;
- Provision of compensatory trees, vegetation and habitats of value to local bat populations should be provided for any areas lost to development. This should include the provision of a biodiverse roof to compensate for loss of ground floor habitat cover. The roof should use a substrate based system which is seeded and plug planted with wildflowers. Features for invertebrates should be provided including sandy piles, log piles, trays to encourage water pooling, pebble swirls and rope coils. Substrate depth should undulate between 100-200mm to ensure suitable water retention for periods of drought;
- The site currently lacks opportunities for roosting bats within the red line. Roosting opportunities should therefore be provided in the form of bat boxes within the structure of the new building. These could take the form of Habibat[2] boxes or similar which can be designed to match the chosen façade treatment. Boxes could also be hung from any retained trees;
- Enhanced wildlife-friendly landscaping to increase the overall ecological value of the site should be provided (the living roof may go beyond compensating loss of existing habitats and itself form part of the enhancement). This should include planting with night-blooming plants and/or species of known value for wildlife, potentially including species listed on the RHS's Plants for Pollinators list.

4.13 Measures relating to mitigation, compensation and enhancement could be described in an Ecological Management Plan to be secured through planning condition.

4.14 Assuming the measures listed above are followed then proposals would stand to fully mitigate impacts upon bats.

5.0 SUMMARY

5.1 Greengage undertook a bat activity survey of land accessed from a private lane between 25a & 25c Frognal in order to assess the potential impact of the proposed construction of two new houses at the site.

5.2 The survey recorded low to moderate levels of bat activity by common pipistrelles, although a small number of passes by Nathusius pipistrelle were recorded and high levels of socialisation were noted.

5.3 Mitigation measures have been recommended which include the provision of bat sensitive lighting, compensatory green space and enhanced landscaping and roosting opportunities.

5.4 Assuming these measures are implemented then no significant impacts upon bats are predicted.

5.5 Measures could be secured through planning condition.

APPENDIX 1: AUXILIARY SURVEY DATA

Survey type	Date	Sunset time	Finish time	Surveyors	Temp	Comments
Transect/ point survey	5/9/18	20:22	22:20	MT	18°C	Wind light, 6/8 cloud
Static survey	18th – 30th July	n/a	**n/a**	n/a	n/a	**Equipment failure**
Static survey	10/10/ 18 – 17/10/ 18	18:18-18:03	Until sunrise each night	n/a – SM4 detector with UM1 microphone	10 – 22°C	

APPENDIX 2: LEGISLATION AND POLICY

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.

The Wildlife & Countryside Act 1981 (WCA)[3] 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[4], 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[5], 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. Additionally, 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.

Planning Policy

National Planning Policy Framework (NPPF)

The National Planning Policy Framework (NPPF) 2018 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.

Particular focus is given to the protection and enhancement of designated sites and priority habitats and species. It acknowledges the importance of protecting and improving green corridors and ecological connectivity, providing strategic, multifunctional green infrastructure gains.

The London Plan: Spatial Development Strategy for Greater London

The London Plan is comprised of separate chapters relating to a number of areas, including London's Places, People, Economy and Transport. The following policies have been identified within the London Plan, which relate specifically to ecology and this development.

Policy 2.18 Green Infrastructure

'Policy 2.18 aims to protect, promote, expand and manage the extent and quality of, and access to, London's network of open and green spaces'.

Policy 5.10 Urban Greening

This policy encourages the 'greening of London's buildings and spaces and specifically those in central London by including a target for increasing the area of green space (including green roofs etc) within the Central Activities Zone'.

Policy 5.11 Green Roofs and Development Site Environs

Policy 5.11 specifically supports the inclusion of planting within developments and encourages boroughs to support the inclusion of green roofs.

Policy 5.13 Sustainable Drainage

'Policy 5.13 promotes the inclusion of sustainable urban drainage systems in developments and sets out a drainage hierarchy that developers should follow when designing their schemes'.

Policy 7.19 Biodiversity and Access to Nature

'The Mayor will work with all the relevant partners to ensure a proactive approach to the protection, enhancement, creation, promotion and management of biodiversity in support of the Mayors Biodiversity Strategy.'

Supplementary Planning Guidance (SPG): Sustainable Design and Construction 2014

As part of the London Plan 2011 implementation framework, the SPG, relating to sustainable design and construction, was released in April for consultation which includes the following sections detailing Mayoral priorities in relation to biodiversity of relevance to this development.

Nature conservation and biodiversity

The Mayor's priorities include ensuring 'developers make a contribution to biodiversity on their development site'.

Overheating

Where priorities include the inclusions of 'measures, in the design of schemes, in line with the cooling hierarchy set out in London Plan policy 5.9 to prevent overheating over the scheme's lifetime'

Urban greening

A Priority is for developers to 'integrate green infrastructure into development schemes, including by creating links with wider green infrastructure network'.

Use less energy

'The design of developments should prioritise passive measures' which can include 'green roofs, green walls and other green infrastructure which can keep buildings warm or cool and improve biodiversity and contribute to sustainable urban drainage'.

Camden Local Plan (2017)

The Local Plan was adopted by Council on 3 July 2017 and has replaced the Core Strategy and Camden Development Policies documents as the basis for planning decisions and future development in the borough.

Policy A3 Biodiversity

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

a. designate and protect nature conservation sites and safeguard protected and priority habitats and species;

b. grant permission for development unless it would directly or indirectly result in the loss or harm to a designated nature conservation site or adversely affect the status or population of priority habitats and species;

c. seek the protection of other features with nature conservation value, including gardens, wherever possible;

d. assess developments against their ability to realise benefits for biodiversity through the layout, design and materials used in the built structure and landscaping elements of a proposed development, proportionate to the scale of development proposed;

e. secure improvements to green corridors, particularly where a development scheme is adjacent to an existing corridor;

f. seek to improve opportunities to experience nature, in particular where such opportunities are lacking;

g. require the demolition and construction phase of development, including the movement of works vehicles, to be planned to avoid disturbance to habitats and species and ecologically sensitive areas, and the spread of invasive species;

h. secure management plans, where appropriate, to ensure that nature conservation objectives are met; and i. work with The Royal Parks, The City of London Corporation, the London Wildlife Trust, friends of park groups and local nature conservation groups to protect and improve open spaces and nature conservation in Camden.

Trees and vegetation

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

j. resist the loss of trees and vegetation of significant amenity, historic, cultural or ecological value including proposals which may threaten the continued wellbeing of such trees and vegetation;

k. require trees and vegetation which are to be retained to be satisfactorily protected during the demolition and construction phase of development in line with BS5837:2012 'Trees in relation to Design, Demolition and Construction' and positively integrated as part of the site layout;

l. expect replacement trees or vegetation to be provided where the loss of significant trees or vegetation or harm to the wellbeing of these trees and vegetation has been justified in the context of the proposed development;

m. expect developments to incorporate additional trees and vegetation wherever possible.

Policy CC2 Adapting to climate change

The Council will require development to be resilient to climate change. All development should adopt appropriate climate change adaptation measures such as:

a. the protection of existing green spaces and promoting new appropriate green infrastructure;

b. not increasing, and wherever possible reducing, surface water runoff through increasing permeable surfaces and use of Sustainable Drainage Systems;

c. incorporating bio-diverse roofs, combination green and blue roofs and green walls where appropriate; and

d. measures to reduce the impact of urban and dwelling overheating, including application of the cooling hierarchy.

Any development involving 5 or more residential units or 500 sqm or more of any additional floorspace is required to demonstrate the above in a Sustainability Statement.

REFERENCES

[1] Institution of Lighting Professionals and Bat Conservation Trust (2018), Bats and Artifical Lighting in the UK; Bats and the Built Environment Series.

[2] http://www.habibat.co.uk/ (Greengage do not endorse any specific products)

[3] HM Government, (1981); Part I and Part II of Wildlife and Countryside Act (as amended). HMSO

[4] 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

[5] HM Government, (2017); The Conservation of Habitats and Species Regulations 2017. Statutory Instrument 2010 no. 490 Wildlife Countryside. OPSI