26 Netherhall Gardens, Hampstead, Dome Assets Ltd
Bat Survey Report, August 2017

QA

26 Netherhall Gardens – Bat Survey Report

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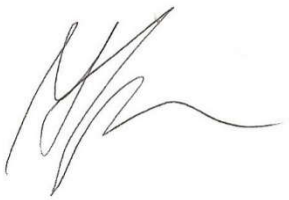
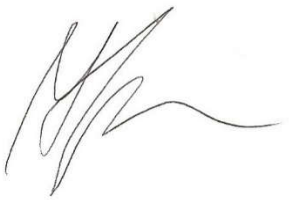
Signature:		
File Reference:	550906epJul17DV01_Bat_Survey	550906epAug17FV01_Bat_Survey

CONTENTS

1.0 EXECUTIVE SUMMARY

1.1 Greengage Environmental Ltd was commissioned by Dome Assets Ltd to undertake bat emergence and re-entry surveys of the building at 26 Netherhall Gardens, London.

1.2 A planning application was submitted for the redevelopment of 26 Netherhall Gardens, however objections were raised by local residents regarding the potential presence of bats. Three bat emergence and re-entry surveys were therefore undertaken between May and July 2017 to identify and characterise any bat roosts and to assess activity levels of bats within the application site.

1.3 An internal inspection of the loft space was undertaken in April 2017 which found no evidence of a bat roost within the building. Several potential roost features were identified on the exterior of the building, including gaps between tiles, missing tiles, and gaps under lead flashing around the chimney and dormer windows.

1.4 The emergence and re-entry surveys confirmed the presence of a common pipistrelle (*Pipistrellus pipistrellus*) roost under lead flashing around the chimney breast of the south-east corner of the building. A further roost is suspected by the south-east dormer window. There is a roof void inside the building which could not be accessed, however, it is possible that bats are able to enter this void.

1.5 Moderate levels of foraging were observed around the garden and bats were observed commuting along the line of houses on the eastern side of the buildings. Low levels of commuting and foraging activity were recorded on the street side (west) of the building. Several species including common pipistrelles and noctules (*Nyctalus noctula*) were identified as being present.

1.6 Proposals seek to demolish the existing building, which would result in the destruction of the roost. All bats are protected by UK legislation, and therefore a licence from Natural England will be required to enable the proposals. Formal mitigation and provision of compensatory roosting space will be required to ensure the ongoing favourable conservation status of common pipistrelle in the area. Mitigation will include seasonal works overseen by a licenced ecologist, alongside provision of replacement roosting space in the new building in the form of bat tiles and integrated boxes. Compensatory roosting space will need to possess similar characteristics (dimensions, aspect etc) as the existing roost. Bat boxes will need to be erected in the garden in the interim, as replacement roosting spaces and as a shelter should any bats be encountered during works. A licenced ecologist will be required to supervise demolition of the roost; this section of roof should be dismantled by hand.

1.7 In addition, bat sensitive features and enhancements should be incorporated into the design of the development. Recommendations include a lighting strategy that has been considered to minimise disturbance to the commuting routes and wildlife-friendly planting to replace the foraging resource that currently exists in the garden.

1.8 Detail of these mitigation measures are included in Section 5 of this report.

1.9 Assuming that all recommendations are followed, the impact of the proposed development should be fully mitigated or compensated for.

2.0 INTRODUCTION

2.1 Greengage Environmental Ltd was commissioned by Dome Assets Ltd to undertake a Bat Emergence and Re-Entry Survey of the building at 26 Netherhall Gardens, London.

2.2 This survey report has been produced to address the objections made to the planning application which was submitted in March 2017 (Application Number: 2017/0579/P). The objections included a statement from occupiers of 26 Netherhall Gardens that mentioned the potential presence of a bat roost within the building.

2.3 Potential bat foraging habitat and potential for roosting bats were identified during a Bat Scoping Survey undertaken on 20th April 2017, although no evidence of bat roosting was found within the loft space of the building.

2.4 Bat Emergence and Re-Entry Surveys were therefore recommended for the site to enable an assessment of the potential impacts associated with the proposed development.

2.5 Surveys were undertaken following guidance in the *Bat Conservation Trust: Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd Ed*[1].

2.6 The recommendations and opinions expressed in this report are based on the combination of information stated and site observations.

AIMS OF SURVEY

2.7 The surveys aimed to determine the following:

- Presence/absence of bat species;
- Intensity of bat activity both spatially and temporally to help estimate bat populations;
- Type of activity, most usually
  - Foraging (by feeding buzzes); or
  - Commuting (by high directional pass rates);
- Presence and nature of any roosts.

2.8 By using a collation of existing data for the area to support the survey, it is possible to determine the presence/absence of bats across the site and in the wider area. This information can then be used to determine the form and extent of any mitigation that would be required if bats were found to be present.

SITE DESCRIPTION

2.9 The assessment site covers an area of 0.1 hectares (ha) and is approximately centred on National Grid Reference TQ 26361 85080, OS Co-ordinates 526361, 185080.

2.10 The assessment site sits half-way along Netherhall Gardens, a residential street close to Finchley Road Station, which slopes gently downwards from north to south and is lined with an avenue of semi-mature trees. Buildings on this road are of similar age and

structure, being three – four storeys high and constructed in the late 19th Century. There are many opportunities for roosting bats in properties along this road and in the local vicinity.

2.11 The assessment site consists of a four-storey building with a basement, which has been converted into a number of flats, and a single-storey extension to the south which forms another enclosed flat. The building is of red brick construction with a clay tile roof and dormer windows. There is a small area of lawn and introduced shrubs in the front of the building with car parking spaces, and a garden to the rear with many introduced shrubs and mature trees. The site backs onto a line of garages belonging to the properties behind.

2.12 The site is connected to the wider landscape by a network of semi-mature street trees, and is 1km from Hampstead Heath and Primrose Hill; parks which both present excellent foraging opportunities for bats.

PROPOSED DEVELOPMENT

2.13 The planning proposals comprise the demolition of 26 Netherhall Gardens and the construction of a four-storey apartment building to include 5 flats, associated car parking and landscaping. The planning application was submitted in March 2017 (2017/0579/P).

3.0 METHODOLOGY

BAT SCOPING SURVEY

Roost Assessments

3.1 Following BCT guidelines, a Preliminary Roost Inspection was undertaken on 20th April 2017. The detailed inspection comprised assessing the exterior and interior of the relevant buildings to look for features that bats could use for entry/exit and roosting and to search for signs of bats. The survey aimed to determine the actual or potential presence of bats and the need for further survey and/or mitigation.

3.2 The exteriors were searched systematically for potential bat access points and roosting places, and to locate any evidence of bats such as live or dead specimens, bat droppings, urine splashes, fur-oil staining and/or squeaking noises.

3.3 The interiors were also searched systematically to identify potential bat access points and roosting places, and to locate evidence of bats. Bat specimens (live or dead) and droppings are the most reliable type of evidence. Other evidence found can include urine splashes, fur-oil staining, feeding remains (moth wings), squeaking noises (which can sometimes alert an ecologist to an otherwise hidden roost), bat-fly (Nycteribiid) pupal cases or odour.

3.4 It should be noted that bats can leave no visible sign of their presence even on the inside of a building, particularly where there are hidden cracks, crevices and voids.

BAT EMERGENCE AND ACTIVITY SURVEY

3.5 Three bat emergence and re-entry surveys were undertaken between May and July 2017. The dates and climatic conditions of these surveys can be found in the auxiliary survey data table at Appendix 3. The bat activity surveys were undertaken during clear and warm conditions, with temperatures ranging from 16 - 21°C. Surveys commenced approximately 15 minutes before sunset and were completed 1.5 - 2 hours after sunset. Re-entry surveys commenced 1.5 hours before sunrise and ran up to sunrise.

3.6 One lone re-entry survey, one lone emergence survey and one emergence and re-entry survey within one night were undertaken.

3.7 During the surveys, surveyors stood at fixed positions around the building. One surveyor was positioned at the front of the house at street level (Location 1) to observe any evidence of bats emerging from the roof or any activity along the road. The second surveyor was positioned to the rear of the house in the garden (Location 2) to observe any bats emerging from the rear of the building and observe activity in the garden. From this vantage point it was also possible to observe the southern face of the building. On the final survey, only Location 2 was surveyed. This was due to the low levels of bat activity observed at Location 1 and the lack of high value features on this side of the

building, and allowed surveyors to focus on the confirmed roost locations from survey Location 2.

3.8 The surveyors were each equipped with a BatBox Duet Heterodyne detector. One surveyor also used an Echo Meter Touch to detect and visualise the echolocation calls of any bats present in the area, which could be recorded and subsequently analysed with Analook software to help with verification of species.

SURVEYORS

3.9 There were two surveyors present at each survey.

3.10 Emily Power, who surveyed the site and prepared this report, has a Bachelor's degree in Biology (BSc Hons) and a Master's degree in Applied Ecology (MSc), a Natural England Bat Survey Level 1 Class Licence (2016-22854-CLS-CLS) and is a Graduate member of CIEEM with three years' experience of ecological surveys.

3.11 Dan Perlaki, who surveyed the site, has an undergraduate degree in Ecology (BSc Hons) and a Master's degree in Conservation Science and Policy.

3.12 Naomi Foot, who surveyed the site, has an undergraduate degree in Ecology and Conservation (BSc Hons), a Master's degree in Applied Ecology and is a Graduate member of CIEEM.

3.13 Laura Thomas, who surveyed the site, has an undergraduate Biology (BSc Hons) and a Master's degree in Evolutionary & Behavioural Ecology.

3.14 Morgan Taylor, who reviewed this report, has an integrated Bachelors and Master's degree in Marine Biology (MSci Hons), a Natural England CL17 Bat Survey Level 2 Class Licence (2015-14178-CLS-CLS) and is a Full member of CIEEM. Morgan has over 6 years' experience in ecological surveying and has undertaken assessments of numerous development sites of this type.

3.15 This report was reviewed and verified by Morgan Taylor 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 TO SURVEY

3.16 It was not possible to observe the northern face of the building due to the amount of vegetation and the proximity of the building to the neighbouring property. However, no bats were recorded coming from or returning to this area, and so this is not considered to be a significant limitation.

3.17 It is not possible to access the internal void around the dormer window and chimney breast on the top floor in order to undertake an internal inspection in this area.

3.18 This does present a notable limitation to the survey methodology as the suspected roost was noted in this location. Given the absence of any access hatch however an internal inspection was not a viable option, without physically cutting a hole in the wall. On the basis that pipistrelles are roosting in this location this is not considered to significantly impact any conclusions drawn in this report however; pipistrelles roost in cracks and crevices and do not require open roof voids. No obvious access into the roof void in this location was noted, and it is assumed that the condition of the roof space in this location is similar to that elsewhere in the roof, with roofing felt in good order hindering access from external roosting features.

3.19 It is nonetheless possible that pipistrelles are accessing this internal roof void using the gaps beneath the lead flashing and tiles where re-entry/emergence was observed, and this has been factored in to mitigation and compensation approach, reflecting the most conservative scenario.

4.0 BAT SURVEY RESULTS

BAT SCOPING SURVEY

Site Assessment

4.1 Potential roosting opportunities were identified on the external features of the building, including missing tiles and lifted tiles on the roof, and gaps under lead flashing around the chimney and dormer windows.

4.2 No evidence of bats or potential entry points were found during the internal inspection of the loft space. There is an internal void on the south-east corner of the top floor that bats might be able to access, however it was not possible to gain access into this void in order to complete an inspection (see discussion in Limitations at 3.16).

4.3 There are no other trees, buildings or structures within the boundary that could provide roost locations.

Figure 1. Inside the loft space during the internal inspection

Figure 2. The internal void at the south-east corner of the building on the top floor

Figure 3. View of the south-eastern side of the building, with confirmed roost under tiles next to the chimney

Figure 4. View of the building from the garden

Figure 5. Close up view of lifted flashing under the south-east dormer window

Figure 6. Close up of the gap under lifted flashing around the south-east chimney breast

4.4 Within the site boundary, natural vegetation and habitats consist of amenity grassland, introduced shrubs and semi-mature and mature trees. The site is linked to other areas of green space by a network of street trees and gardens. Therefore, the area provides moderate foraging and commuting habitat for bats.

4.5 In accordance with the BCT guidelines, for the reasons listed above, and given the legal protection afforded to bats, the requirement for an emergence and re-entry survey was

confirmed in order to confirm presence/likely-absence of roosting bats and to establish the relative importance of the site for local bat populations.

BAT EMERGENCE AND RE-ENTRY SURVEY

4.6 The emergence and re-entry surveys undertaken at the application site confirmed the presence of a common pipistrelle roost under the lead flashing beside the chimney stack on the east side of the south face of the building. Three pipistrelles were observed emerging at this location during the first survey at 21:17, 21:23, 21:36 and on the 15/05/2017.

4.7 Two bats were observed re-entering the building at this location during the second survey at 03:49 and 04:29 on the 01/06/2017.

4.8 The third survey comprised both a dusk emergence and dawn re-entry survey. Two common pipistrelles were observed emerging from the chimney at 21:29 on the 13/07/2017 and three common pipistrelles were observed returning to this location at 04:32, 04:36 and again at 04:36 on the 14/07/2017.

4.9 A further bat roost is suspected under the lead flashing around the south-east dormer window, although this was only observed at one of the three surveys and was subject to some uncertainty. Five common pipistrelles were observed emerging from this area of the building, one at 21:12, and the other four in quick succession at 21:17 on the 15/05/2017.

4.10 This survey confirmed there to be moderate levels of foraging and commuting bats on the garden side of the building and low levels of foraging and commuting along the street side of the building. Species encountered included common pipistrelle and noctule.

4.11 Detailed results can be found at Appendix 3.

ROOST CHARACTERISATION

4.12 The roost on site was characterised as a seasonal summer day roost in use by a small number of common pipistrelle bats. There is an entrance point beneath the lead flashing by the chimney stack and a further entrance point close to the dormer window, although the exact location (focusing down to the exact tile/stretch of flashing) could not be determined; such details were unlikely to have been possible to determine given the height of the roost, and further characterisation surveys were therefore not considered necessary to draw suitable conclusions and inform associated mitigation.

4.13 The entrance to the roost by the chimney sits at a height of approximately 11m, on a south-facing elevation and is approximately 4cm long and 1cm tall, as estimated by eye. The entrance to the roost by the dormer window is on an east-facing elevation at approximately 10m in height. It is not known whether the roost is under the lead flashing around the window or under roof tiles nearby, although both provide potential roost features.

4.14 Behind this roost is a void between the outer wall and inner wall, although there are no access points and therefore it was not possible to undertake an internal inspection. It is therefore not known whether bats are able to access this void or whether they are roosting between the lead flashing / roof tiles and the roof membrane without entering the building. Without undertaking fairly destructive works to open up a roof void it will not be possible to inspect this section of roof space and mitigation must therefore reflect the most conservative scenario.

TIMING & CONDITIONS

4.15 The three survey visits were undertaken in May, June and July 2017. This is an optimal period for the surveys according to BCT Guidelines. Visits to the site were made during suitable times before and after sunset to assess bat activity.

4.16 Weather during the survey visits was generally conducive for surveying for bats, being mild with temperatures ranging between 16 - 21°C.

5.0 IMPACT ASSESSMENT AND MITIGATION STRATEGY

DISCUSSION

5.1 The survey results confirmed the presence of a bat roost beneath the lead flashing around the chimney and near the dormer window on the south-east of 26 Netherhall Gardens. This roost is thought to be a summer day roost in use by a small number of common pipistrelle bats. Commuting and foraging habitat was observed, some along the road, but the majority occurring in the garden.

5.2 The development proposals include the demolition of the existing building and construction of a new building, the majority of which will fall within the footprint of the existing property. Proposals also include the clearance of a small amount of suitable bat foraging habitat within the garden. It is understood the mature oak in the garden will be retained and protected. As such, the potential impacts of the development predominantly relate to the presence of the bat roost in the building, and increased lighting levels disturbing suitable foraging and commuting habitat in the garden.

5.3 All UK bat species are protected by UK legislation, 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 licence from Natural England is required to undertake works that would otherwise result in an offence. Mitigation will be required to minimise the damage and compensatory roost space will be required within the new building, with sensitive landscaping and lighting schemes provided.

EPSM LICENCE

5.5 A European Protected Species Mitigation licence (EPSM) will be required from Natural England before works can take place. Further details relating to the proposed mitigation approach should be detailed in the EPSM licence with Natural England where appropriate.

5.6 This application should include a Method Statement, Reasoned Statement and Licence Application Form. The Reasoned Statement must address the three derogation tests set out in the Conservation of Habitat and Species Regulations 2010 required to secure a successful EPSM Licence:

In determining whether or not to grant a licence, Natural England must apply the requirements of Regulation 535 of the Regulations and, in particular, the three tests set out in sub-paragraphs (2)(e), (9)(a) and (9)(b)6

(1) Regulation 53(2)(e) states: a licence can be granted for the purposes of "preserving public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment".

(2) Regulation 53(9)(a) states: the appropriate authority shall not grant a licence unless they are satisfied "that there is no satisfactory alternative".

(3) Regulation 53(9)(b) states: the appropriate authority shall not grant a licence unless they are satisfied "that the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.''

5.7 With respect to planning it is recommended that further details relating to the mitigation approach are secured through condition.

5.8 A detailed application has not been produced at this time, however mitigation and compensation actions have been considered and integrated within the approach. Detail is provided below roughly following the format of Natural England's Method Statement Template.

STATUS OF SPECIES FOUND AT SITE

5.9 A common pipistrelle day roost was found at the site. This form of roost is of low conservation interest in the context of this site and all potential impacts stand to result in a low-moderate scale of impact upon local conservation status as per table 6.1 of the *Bat Mitigation Guidelines*[2].

PREDICTED IMPACTS IN ABSENCE OF MITIGATION AND COMPENSATION

Initial impacts

5.10 Ultimately, the proposals will involve the permanent loss of the roost, causing a major negative impact at site level. This is likely to be one of many similar roosts in the area, which individual bats are likely to move between, and therefore would cause a low - moderate negative impact on a local level.

5.11 Without consideration, works may stand to directly disturb the roost through human presence, noise from internal and external construction works, vibration from internal works and external works such as piling, dust creation, lighting or obstruction through scaffolding, all resulting in medium negative impacts at a site level.

5.12 Albeit unlikely, proposals may directly stand to impact bats through crushing during removal or roofing elements, cladding or tiling, or repairs to cracks in timber beams. This would result in the death of bats, considered a major negative impact at a site level.

5.13 Bats may also be prevented from using the day roost through lighting, changes to site conditions or obstruction, causing disturbance to the roost and bats themselves, resulting in low negative impacts at a local scale.

Long term impacts

5.14 Without consideration proposals may prevent continued use of the site by common pipistrelles. The proposals may therefore stand to result in the long-term destruction and loss of low conservation value roosts of common bat species resulting in permanent low to moderate negative impacts at a local scale.

5.15 Proposals are not predicted to result in significant fragmentation or isolation impacts, although increased lighting and reduction of surrounding foraging/commuting resource within the garden may stand to result in minor disturbance, resulting in low negative impacts at a local scale.

PROPOSED MITIGATION STRATEGY

5.16 Actions taken at the site should follow the mitigation hierarchy:

- Proposals should first avoid impacts through design and approach;
- If not possible then proposals should seek to minimise impacts;
- Next, proposals should incorporate on-site compensatory actions; and
- Failing this, proposals should provide off site compensation for unavoidable residual impacts (offsetting).

5.17 Actions for this scheme will therefore first seek to mitigate impacts directly through avoidance (e.g. through changing designs or specifying timing) then compensate for unavoidable impacts (e.g. through provision of alternative roosting space where it is not possible to directly mitigate through avoidance) before seeking to provide enhancements which result in residual net gains.

5.18 The development includes the demolition of the building, and as such it will not be possible to retain the existing roost (avoiding impacts), which is the preferred option detailed in the Bat Mitigation Guidelines. Therefore, works will be carried out under an EPSM Licence which is to be obtained from Natural England. Mitigation will be required during construction works and compensatory roost spaces must be provided in the fabric of the new building.

5.19 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, thus avoiding impacts on existing bat individuals and increasing the value of the site for local bat populations.

Timing

5.20 As set out in the Bat Mitigation Guidelines, 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 roost. This varies between species and roost types.

5.21 With regard to the roost at Netherhall Gardens, observations suggest this is likely to be used as a seasonal day roost by small group of bats during the summer months. Accordingly, works that will affect the roost should be undertaken outside of this season (1st September – 1st May).

5.22 Care should be taken to reduce 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.

Roofing

5.23 The removal of roof tiles and lead flashing should be undertaken by hand, under the supervision of a licenced ecologist. Bat boxes should be installed in an appropriate place in the garden so that it can be used for shelter in the event that a bat is found while tiles are being removed.

5.24 Bat boxes and bat tiles will be incorporated into the fabric of the new building as compensatory roosting space. These should mirror the specifications of the existing roost as far as possible, being of a similar height, on the same elevation. Additional bat boxes should be placed around the roof to maximise the likelihood of the bat boxes being used.

5.25 The figure below gives examples of bat boxes and bat tiles that can be seamlessly incorporated into the design of the new building.

Figure 7. Habibat bat boxes and bat access tiles

5.26 No breathable roofing membranes (BRMs) will be used in the roof. BRMs are harmful to bats (bats can get stuck in the microfibres where they may die from starvation or dehydration), and the presence of bats stands to damage the membrane itself through 'fluffing' and degradation as a result of urine and faecal staining.

Internal Void

5.27 Access should be obtained into the internal void, which sits on the south-eastern corner of the building on the top floor, to allow an internal inspection to take place. This should also be undertaken in the winter months to minimise disturbance to any bats. Should any evidence of bats be found, or any egress/ingress points be found, this structure will need to be compensated for in the design of the new building to allow bats continued access to this space.

5.28 If no entrance points or evidence of bats is found, then likely-absence can be confirmed and roost compensation will be limited to bat tiles and bat boxes.

5.29 If a compensatory internal void is required in the new building, access for bats will be provided via a bat access tile similar in size and aspect to any existing entrance points. The space will resemble the plan in Appendix 3.0 taken from the *BCT and RIBA Designing for Biodiversity 2nd Edition*[3] guidance document.

5.30 This approach will enable the internal void to be suitably insulated whilst still allowing access inside. Any potential roosting features such as cracks and exposed wooden beams will be mirrored in the design of the new building.

5.31 These works will retain the ecological functionality of the structure as a roost, albeit in slightly different condition; humidity and temperature conditions are likely to differ,

however the general niches available will be the same with the provision of access into the internal void, feeding roost locations and crevices internally behind beams etc.

Ecological Clerk of Works

5.32 Four 2F Schwegler Bat Box[4] (General Purpose) or similar will be erected in mature trees surrounding the building prior to any works. These boxes will be placed approximately 5m from the ground facing between south and west.

5.33 Prior to any work commencing, on-site workers will 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.

5.34 The ECoW will be present during sensitive activities (i.e. works around the identified roost) and if bats are encountered during any works, Greengage will be contacted and a licenced bat handler will capture the bat with thin 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.

5.35 Injured bats will be immediately taken into care. Details of a local well experienced 'bat hospital' will be known by the bat handler and provided to site managers.

5.36 A copy of this document will remain available on site at all times, a summary sheet of guidance will be given to each of the builders and contractors working on the structures.

Additional Actions

5.37 Bats were recorded foraging and commuting across the site at moderate levels over the survey period. As such, the following best practice recommendations are made 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 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

5.38 Artificial lighting can cause disturbance to bat species' roosting, foraging and commuting activity[5]. The proposed development will have lighting elements associated with the new building, however, given the continued use as a residential property there should be no

additional lighting caused as a result of the development, where a lighting scheme is designed.

5.39 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 light*[6]. 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 will enable the continued use of the site as a roosting and foraging resource.

5.40 No light sources such as security lights should be positioned near artificial roost entrances and neither should any light sources be directed towards any roost entrances. Additionally, no light should fall on any areas of vegetation in the garden, as this would impair the value of the trees as foraging resources.

Bat boxes

5.41 Most species of bats will use bat boxes at various times of year but in particular they are favoured by pipistrelles, Leisler's, noctule and Myotis species. These species are known to be in the wider area, therefore, we would propose that bat boxes are incorporated into the fabric of the new building and installed on any suitable trees; the use of these bat boxes will increase roosting opportunities for bats in the area.

5.42 Bat boxes should be positioned in sunny locations mainly to the south or west. However, a variety of different locations would provide a range of climatic conditions and attract several different species. The optimal height for a bat box is 3 to 6 metres with an entrance free from obstruction and obstacles. The behaviour of bats varies from species to species but generally they will use a number of different roosts so it is best to erect several boxes in different locations across the site and include a range of aspects.

Landscape Management

5.43 It is important that any suitable foraging habitat on site is retained or replaced, and, where possible, enhanced, to prevent any net loss in bat foraging habitat. Vegetation clearance, particularly of trees, shrubs and scrub, should also be kept to a minimum to protect the commuting routes provided by these green corridors.

5.44 It is understood that some of the existing vegetation will be removed as part of the development proposals. This is restricted to the trees on the southern boundary of the garden. It is understood that the mature oak is to be retained. With other gardens in the area, it is not considered that the loss of these trees will significantly impact foraging habitat, however, replacement habitat should be provided on a like-for-like basis.

5.45 Floral diversity should be encouraged in the new garden landscaping, to encourage a richer assemblage of invertebrate prey. This can be achieved through the sowing of native wildflower seeds, as well as the augmentation of the southern boundary with

native shrub species such as blackthorn, hawthorn, hazel, oak, hornbeam, buckthorn or wild cherry.

Monitoring

5.46 A programme of post-development monitoring will be undertaken to assess the success of the scheme and to inform any necessary management or remedial operations.

5.47 In accordance with guidance on proportionate mitigation (Figure 4, Bat Mitigation Guidelines), as the surveys confirmed the presence of individuals of relatively common species, the confirmed roost is considered to be of low conservation significance at this stage and there are subsequently only minimal monitoring requirements.

5.48 Currently, it is recommended that a single dusk emergence/dawn re-entry survey is completed annually for two years following completion of the development, alongside checks of any bat boxes installed at site.

RESIDUAL IMPACTS

5.49 The existing roost will be destroyed, however a replacement roost will be provided in the form of bat bricks and bat tiles in the vicinity of the existing roost, of a similar nature to those shown to be in use in the building in its current state. The internal roof void will be inspected and if evidence of bats is found, this will be recreated in the fabric of the new building.

5.50 This compensatory roosting space is considered likely to compensate for the destruction to the existing roost.

5.51 Sensitive timing of works will mitigate any direct impacts upon bats in the short term.

5.52 Proposals may result in short term impacts through the loss of roosting space whilst development works are ongoing; if works stand to run into the summer the building will be secured to prevent access by bats resulting in potential direct disturbance impacts.

5.53 Compensatory commuting and foraging habitat will be provided around the site, although there will be a net loss in green space and a likely increase in lighting.

5.54 Lighting will therefore follow best practice guidance and the smaller areas of landscaping provided will be of greater quality.

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

6.0 CONCLUSIONS

6.1 Greengage were commissioned by Dome Assets Ltd to undertake bat emergence and re-entry surveys of the building at 26 Netherhall Gardens, London.

6.2 A common pipistrelle roost was identified under the lead flashing around the chimney on the south-east corner of the building. An additional roost of common pipistrelle bats was identified around the south-east dormer window, although the exact entrance point could not be determined. Due to observations during the surveys, the roost has been classified as a summer day roost in use by a small number of bats.

6.3 Foraging habitat on-site is present within the garden. It is understood that proposals include the removal of vegetation along the southern boundary of the garden but that the large mature oak will be retained. The site itself is set in a heavily-residential setting, with many gardens and mature street trees, and is intermediate between Hampstead Heath and Primrose Hill which pose excellent foraging habitat for bats.

6.4 A number of bat species were recorded foraging and commuting over the site, including common pipistrelle and noctule.

6.5 With a roost confirmed within the building on site, a mitigation licence from Natural England will be required to proceed with works. The details are fully discussed in Section 5, but will involve:

- Timing works in the winter period when bats are absent;
- Undertaking works around the roost, including removing tiles by hand, under the supervision of a licenced ecologist;
- Provision of alternative roosting spaces in the garden in the event that bats are found during works, and
- The provision of permanent compensatory roosts, namely bat boxes and bat tiles, to be inbuilt into the fabric of the new building. This may include an internal roof void, depending on the results of an internal inspection.

6.6 Additional considerations include the design of a sensitive lighting scheme, whereby there is no additional lighting as a result of the development, where lights are not sited near, or spill onto, the entrances to the artificial roosts, and where foraging resourcing in the garden, including shrubs and trees, are unlit. Wildlife-friendly planting to replace the trees and shrubs that are to be lost will ensure there is no impact upon bat foraging habitat. Additional roosting spaces, above those installed to replace the roost that will be lost, will be required in order to maximise the number of potential roosting spaces, replace the numerous potential roosting spaces that currently exist across the roof of the building, and ensure a variety of micro-climates to ensure that appropriate conditions are provided.

6.7 Monitoring should be undertaken annually, in the two years following completion of the development, to comprise a single dusk emergence or dawn re-entry survey and bat box check, to determine the success of the scheme.

6.8 Assuming that all recommendations are followed, the impact of the proposed development should be fully mitigated or compensated for.

7.0 APPENDIX 1: 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)[7] 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[8], 1992 as a European protected species. They are therefore fully protected under Section 9 of the 1981 Act and under Regulation 39 of the Conservation of Habitats and Species Regulations 2010[9], 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.

Guidance on nature conservation within planning is issued by the Government within the National Planning Policy Framework. This Framework document acts as guidance for local planning authorities on the content of their Local Plans, but is also a material consideration in determining planning applications.

As a result of the NPPF any species or habitats of principal importance found on the application site, in addition to statutorily protected species, are of material consideration in the planning process.

The London Plan

Policy 7.19, Biodiversity and Access to Nature, in the London Plan[10] highlights the importance of biodiversity and seeks to ensure "*a proactive approach to the protection, enhancement, creation, promotion and management of biodiversity*". This includes guidance for development proposals, which should "*a) wherever possible, make a positive contribution to the protection, enhancement, creation and management of biodiversity; b) prioritise assisting in achieving targets in biodiversity action plans (BAPs) …; c) not adversely affect the integrity of European sites and be resisted where they have significant adverse impact on … the population or conservation status of a protected species or a priority species or habitat identified in a UK, London or appropriate regional BAP or borough BAP."*

Camden Local Plan

The Camden Local Plan[11], which was adopted in June 2017, includes measures for safeguarding protected species. Policy A3 states that "*Camden's green spaces and built environment support species protected under UK and international legislation. The presence of protected habitats or species is a material planning consideration. Protected species in Camden include significant populations of bats and rare species of birds and amphibians. Species and habitats of principal importance to the conservation of biodiversity or 'priority species', are identified in the BAP. The Council will give specific consideration to habitats and species on this list when assessing planning applications. The current BAP (2013-2018) contains targets and actions to protect and enhance habitats and species and increase opportunities to engage with nature.*"

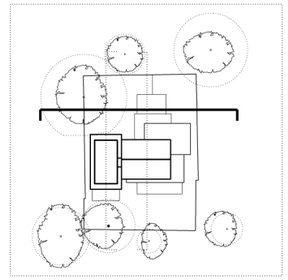
Enhancements for biodiversity at new developments are suggested within the Local Plan, including "*biodiverse-rich landscaping, sustainable urban drainage systems, 'species features' such as bird and bat boxes, artificial roosts for bats, tree planting and green roofs and walls…Front gardens also provide an opportunity to provide soft landscaping (planting) which can improve biodiversity as well as enhancing the character and attractiveness of the area."*

8.0 APPENDIX 2: ROOST LOCATIONS

Roost locations and locations of surveyors during surveys

NOTES:

DO NOT SCALE FROM THIS DRAWING.
ALL DIMENSIONS TO BE CHECKED ON SITE.
ALL OMISSIONS AND DISCREPANCIES TO BE REPORTED TO THE ARCHITECT IMMEDIATELY.



Revision description	Date	Check	Rev

Squire and Partners

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info@squireandpartners.com
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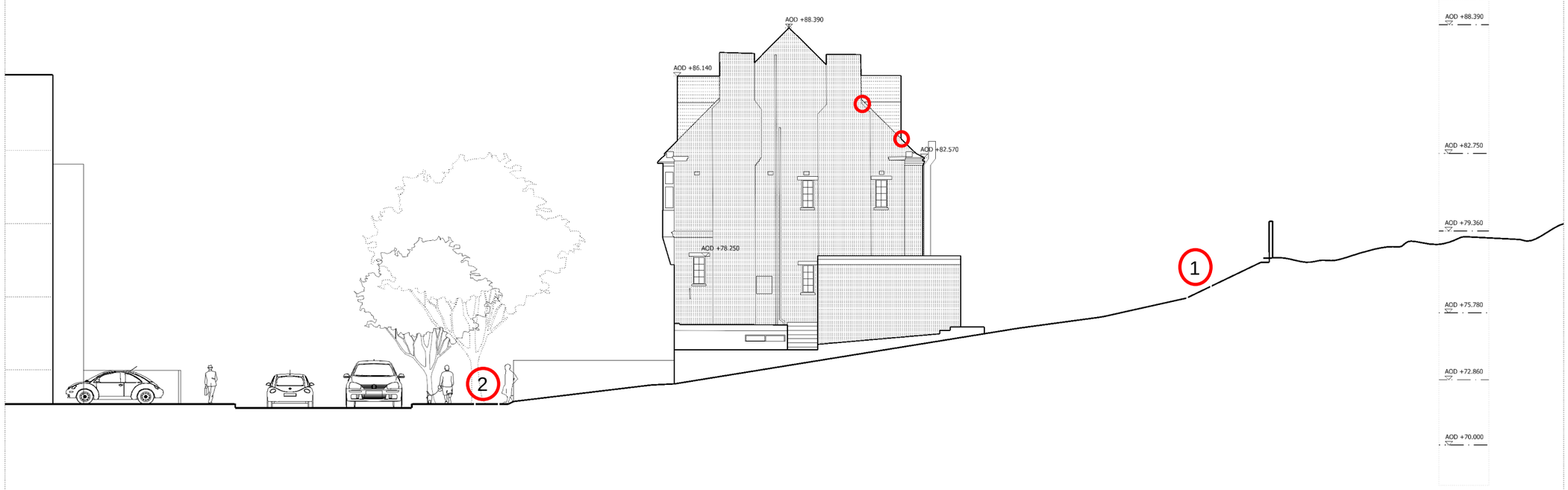
Project
26 Netherhall Gardens,
Hampstead,
London. NW3.

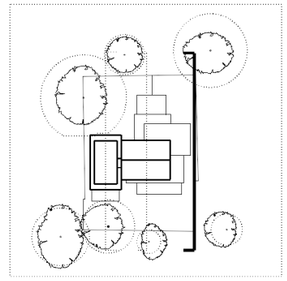
Drawing
Existing East Elevation

Drawn	Date	Scale
GH	13/11/2013	1: 100@A1 1: 200@A3
Job number	**Drawing number**	**Revision**
04009	JA12_E_E_001_OP04	



NOTES:

DO NOT SCALE FROM THIS DRAWING.
ALL DIMENSIONS TO BE CHECKED ON SITE.
ALL OMISSIONS AND DISCREPANCIES TO BE REPORTED TO THE ARCHITECT IMMEDIATELY.



Revision description	Date	Check	Rev

Squire and Partners

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Project
26 Netherhall Gardens,
Hampstead,
London. NW3.

Drawing
Existing South Elevation

Drawn	Date	Scale
EC	27/02/2013	1: 100@A1 1: 200@A3
Job number	Drawing number	Revision
04009	JA12_E_S_001	

9.0 APPENDIX 3: AUXILIARY SURVEY DATA

Table 1. Survey Conditions

Survey	Surveyor	Date	Sunset / Sunrise Time	Weather Conditions	Temperature °C
Preliminary Roost Assessment	Emily Power	20th April 2017	NA	NA	NA
Bat Emergence Survey 1	Emily Power and Laura Thomas	15th May 2017	20:46	Overcast, rained in the day, slight breeze	16
Bat Re-Entry Survey 2	Emily Power and Daniel Perlaki	1st June 2017	04:48	Clear	16
Bat Emergence Survey 3 (dusk)	Emily Power and Naomi Foot	13th July 2017	21:13	Cloudy	21
Bat Re-Entry Survey 3 (dawn)	Emily Power and Daniel Perlaki	14th July 2017	04:59	Clear	17

Table 2. Survey Results from Survey 1 – Dusk Emergence

Time	Species	Comments
Location 1 – Front of the Building		
21:04	Common pipistrelle	Commuting – not seen
21:08	Common pipistrelle	Seen foraging, travelling south
21:21	Common pipistrelle	Commuting – not seen
21:23	Common pipistrelle	Seen foraging, travelling south
21:26	Common pipistrelle	Commuting, heard very faintly – not seen
Location 2 – Rear of the Building		
20:55	Common pipistrelle	Not seen
20:59	Common pipistrelle	Seen commuting from the south west
21:05	Common pipistrelle	Foraging at the back of the garden
21:08	Common pipistrelle	Commuting from north to south
21:09	Common pipistrelle	Commuting from south to north
21:10	Common pipistrelle	Commuting from south to north
21:11	Common pipistrelle	Foraging at the back of the garden
21:11	Common pipistrelle	Not seen
21:12	**Common pipistrelle**	**Emerged from dormer window and flew south**
21:14	Common pipistrelle	Not seen
21:17	**Common pipistrelle**	**Emerged from dormer window and flew south**
21:17	**Common pipistrelle**	**Emerged from dormer window and flew south**
21:17	**Common pipistrelle**	**Emerged from chimney and flew south**
21:17	**Common pipistrelle**	**Emerged from dormer window and flew south**
21:17	Common pipistrelle	Not seen
21:17	**Common pipistrelle**	**Emerged from dormer window and flew south**
21:34	**Common pipistrelle**	**Emerged from chimney and flew south**
21:35	Common pipistrelle	Commuting from south to north
21:36	**Common pipistrelle**	**Emerged from chimney and flew south**
21:49	Common pipistrelle	Not seen but heard foraging
21:57	Common pipistrelle	Not seen
22:02	Common pipistrelle	Not seen

22:13	Common pipistrelle	Not seen

Table 3. Survey Results from Survey 2 – Dawn Re-Entry

Time	Species	Comments
Location 1		
04:02	Common pipistrelle	Commuting
04:08	Common pipistrelle	Commuting
04:30	Noctule	Commuting
Location 2		
02:58	Common pipistrelle	Foraging
03:05	Common pipistrelle	Foraging
03:14	Common pipistrelle	Commuting
03:46	Common pipistrelle	Commuting north
03:49	**Common pipistrelle**	**Returned to roost by the chimney**
03:59	Common pipistrelle	Commuting
04:02	Common pipistrelle	Foraging in garden
04:14	Common pipistrelle	Commuting south
04:25	Common pipistrelle	Commuting
04:28	Common pipistrelle	Commuting south
04:29	**Common pipistrelle**	**Returned to roost by the chimney**

Table 4. Results from Survey 3 – Dusk Emergence

Time	Species	Comments
Location 1		
Not observed		
Location 2		
21:27	Common pipistrelle	Commuting south
21:29	**Common pipistrelle**	**Emerged from chimney and flew north**
21:29	**Common pipistrelle**	**Emerged from chimney and flew west**
21:34	Common pipistrelle	Commuting north
21:36	Common pipistrelle	Foraging in garden
21:41	Common pipistrelle	Commuting south
21:42	Common pipistrelle	Foraging in garden
21:47	Common pipistrelle	Commuting west
21:48	Unknown	In neighbouring garden – not echolocating
21:48	Common pipistrelle	Commuting
21:50	Common pipistrelle	Commuting
21:55	Common pipistrelle	Commuting
21:58	Common pipistrelle	Foraging in garden
22:12	Common pipistrelle	Commuting

Table 5. Results from Survey 3 – Dawn Re-Entry

Time	Species	Comments
Location 1		
Not observed		
Location 2		
04:16	Common pipistrelle	Commuting – not seen
04:29	Common pipistrelle	Commuting – flew west across the garden
04:32	**Common pipistrelle**	**Returned to chimney**
04:36	**Common pipistrelle**	**Returned to chimney**
04:36	**Common pipistrelle**	**Returned to chimney**

10.0 REFERENCES

[1] Bat Conservation Trust (2016). Bat Surveys for Professional Ecologists: Good Practice Guidelines 3rd Edition

[2] English Nature (2004). Bat Mitigation Guidelines

[3] Bat Conservation Trust; RIBA (2013) Designing for Biodiversity: A technical guide for new and existing buildings

[4] 2F Schwegler Bat Box http://www.nhbs.com/title/158629/2f-schwegler-bat-box-general-purpose (Greengage does not specifically endorse this product)

[5] E.L. Stone, S. Harris, G. Jones (2015) Impacts of artificial lighting on bats: a review of challenges and solutions, *Mamm. Biol.*, **80** 213–219

6 Bat Conservation Trust (BCT) & Institute of Lighting Engineers (ICL) (2009) BATS AND LIGHTING IN THE UK Bats and the Built Environment Series Version 3

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

[8] 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

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

[10] The London Plan (2016). The spatial development strategy for London consolidated with alterations since 2011.

[11] Camden Council (2017). The Camden Local Plan Adopted Version June 2017