



QA

Dunsbury Park Plots 500 - 502 – Bat Survey Report

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CONTENTS

1.0	EXECUTIVE SUMMARY	1
2.0	INTRODUCTION	2
	SITE DESCRIPTION	2
	ECOLOGICAL CONTEXT	3
3.0	METHODOLOGY	6
	TRANSECT SURVEY	6
	STATIC BAT DETECTOR DATA COLLECTION	6
	LIMITATIONS	7
	SURVEYORS	8
4.0	RESULTS	9
	SPECIES CODES	9
	TRANSECT SURVEY	9
	STATIC BAT DETECTORS	10
5.0	EVALUATION AND DISCUSSION	14
	KEY RECOMMENDATIONS	15
	ECOLOGICAL ENHANCEMENT	17
6.0	SUMMARY & CONCLUSION	19
	FIGURE 1 TRANSECT ROUTE	20
	FIGURE 2 BAT ACTIVITY MAP	21
	APPENDIX 1 RELEVANT LEGISLATION	22
	REFERENCES	23

1.0 EXECUTIVE SUMMARY

- 1.1 Greengage Environmental Ltd was commissioned to undertake a bat activity survey by Portsmouth City Council of the site of proposed Plots 500-502 of Dunsbury Park within the administrative boundary of Havant Borough Council.
- 1.2 This document is a report of this survey and has been produced to support a Reserved Matters Application (RMA) for the site which seeks the construction of three industrial units with associated landscaping and parking.
- 1.3 This survey aimed to establish the value of the site for foraging and commuting bats and identify any trends in the use of the site by bats, in order to inform mitigation or enhancement in light of the proposed development. This report presents findings for bat activity surveys across the wider masterplan site, however specific recommendations for mitigation actions are set out focusing on Plots 500 – 502 for the purposes of the RMA.
- 1.4 Results from recordings using static bat detectors and walked transect surveys identified a moderate level of foraging and commuting associated with the woodland edge and hedgerow habitats present on and adjacent to the site. The overwhelming majority of all activity was by common pipistrelles (*Pipistrellus pipistrellus*), a common urban species, but a total of nine species were recorded in total. This included western barbastelle (*Barbastella barbastellus*) which is notable for being a rare species in the UK, although activity of this species is only recorded in one area of the masterplan site.
- 1.5 Activity is not evenly distributed across the masterplan site, with certain areas recording much higher levels of activity than others. There is also a general trend of declining activity throughout the year.
- 1.6 It is recommended that the lighting strategy is designed in line with best practice guidance with any uncontrolled light spill upon the boundaries of Plot 500 – 502 avoided. Of particular importance is avoiding light spill onto the woodland edge habitat adjacent plot 500 - 502, therefore buffer planting zones are recommended to be maintained. Boundary vegetation is also recommended for retention, and there should be no loss of woodland or hedgerow habitats on site.
- 1.7 Enhancement recommendations are made, including provision of wildlife friendly landscaping, habitat enhancement and habitat creation. Bat boxes should also be fitted to retained mature trees to provide additional roosting opportunities.
- 1.8 Assuming the recommendations set out in this report are followed, there are no predicted impacts upon foraging or commuting bats associated with the proposed development of Plots 500 - 502.
- 1.9 Detail relating to these recommendations should be described in an Ecological Management Plan (EMP) and Construction Environmental Management Plan (CEMP) which could be secured through planning condition.

2.0 INTRODUCTION

- 2.1 Greengage was commissioned to undertake a bat activity survey by Portsmouth City Council of plots 500 – 502 of the Dunsbury Park development within the administrative boundary of Portsmouth City Council.
- 2.2 This document is a report of this survey and has been produced to support a Reserved Matters Application (RMA) for the site which seeks the construction of three industrial units with associated landscaping and parking.
- 2.3 This survey aimed to identify relative levels of bat activity across the site, identify spatial or temporal trends in bat activity, identify types of bat activity and monitor which species are using the site in order to identify an approach to mitigation for foraging and commuting bats in light of the development proposals.

SITE DESCRIPTION

- 2.4 The survey area and masterplan site extends to approximately 43.08 hectares (ha) and is centred on National Grid Reference SU 69860 09290. Plot 500-502 extends to approximately 3.58 hectares.
- 2.5 The site is located approximately 2.5km north-west of the centre of Havant, and approximately 150m east of the main carriageway A3(M). The immediate site surroundings comprise young, recently planted woodland to the west, bare ground and commercial / industrial units associated with the wider Dunsbury Park masterplan and pre-existing development to the east and south, and open green space to the north. The wider surroundings comprise pockets of woodland and areas of grassland, and the urban environments of Havant and Waterlooville.
- 2.6 Plot 500 - 502 largely comprises bare ground and young plantation woodland, with small areas of hardstanding and introduced shrub, and hedgerow forming the eastern boundary.

Wider Masterplan Site

- 2.7 Plot 500 – 502 is situated in the southwest of the wider masterplan site. The masterplan site is similar in character, with large open areas of cleared land bordered by native hedgerows and woodland.
- 2.8 This report, whilst prepared for the submission of an RMA for plots 500 – 502 will present bat activity data collected for the masterplan site to better understand bat activity in the wider landscape, however recommendations made based on these findings will focus specifically on plots 500 – 502.

Figure 2.1 Plot 500 – 502 (blue) in relation to the wider masterplan site (red)



ECOLOGICAL CONTEXT

Survey History

- 2.9 The masterplan site has been subject to a suite of ecological surveys prior to this assessment undertaken at the time of the original outline application. These assessments were used as part of the desk study component of this assessment. These previous surveys include:
- Preliminary Ecological Appraisal in 2010;
 - Bat emergence/re-entry and activity surveys in 2010/11;
 - Reptile surveys in 2011; and
 - Dormouse surveys in 2010/11.
- 2.10 These surveys confirmed the presence of common lizard (*Zootoca vivipara*), slow worm (*Anguis fragilis*) and hazel dormouse (*Muscardinus avellanarius*). Additionally, bat surveys identified varied levels of foraging and commuting across the site associated with common pipistrelle (*Pipistrellus pipistrellus*), soprano pipistrelle (*P. pygmaeus*), western barbastelle (*Barbastella barbastellus*), myotis (*Myotis spp.*), noctule (*Nyctalus noctula*) and serotine (*Eptesicus serotinus*).

Updated Preliminary Ecological Appraisal

- 2.11 An updated Preliminary Ecological Appraisal (PEA) was undertaken in 2021 by Greengage, to establish the ecological value of this site and the presence/likely absence of notable and/or legally protected species. This consisted of a site-specific data search and desk study accompanied by an ecological site walkover on 11th June 2021. The PEA confirmed that the nearest statutory designated sites are considered outside the zone of impact. However, a non-statutory designated site (Beechwood East Site of Nature Conservation Importance) is located immediately adjacent Plots 500 - 502. Additionally, there are Section 41 priority habitats on and adjacent to Plot 500 - 502, in the form of lowland mixed deciduous woodland and hedgerows.
- 2.12 The following JNCC Phase 1 habitats were identified as present on Plot 500 - 502:
- Broadleaved woodland - plantation (A1.1.2);
 - Tall ruderal (C3.1);
 - Amenity grassland (J1.2);
 - Intact hedge – native species-rich (J2.1.1);
 - Bare ground (J4); and
 - Hardstanding (J3.6).
- 2.13 The survey identified Plot 500 - 502 as having potential to support the following notable and/or protected species:
- Low potential to support badgers;
 - High potential to support foraging and commuting bats;
 - High potential to support dormouse;
 - Moderate potential to support reptiles;
 - Low potential to support invertebrates and
 - Low potential to support hedgehog.
- 2.14 Value for foraging and commuting bats on site was mostly associated with the woodland edge habitat along the western boundary and hedgerow along the eastern boundary.

Figure 2.2 Bare ground on site which is largely unsuitable for foraging and commuting bats, and hedgerow in the background



Figure 2.3 Woodland edge habitat



3.0 METHODOLOGY

TRANSECT SURVEY

- 3.1 Walked transects were undertaken monthly from July to October 2021. The transect route is shown in Figure 1.
- 3.2 The surveys commenced at sunset and continued for two hours after sunset. Surveyors were equipped with a handheld Batbox Duet Heterodyne bat detector and Echometer Touch bat detector to detect, visualise and record the calls of any bats present on, or immediately adjacent to the site.
- 3.3 Each activity survey was undertaken during suitable weather conditions, with temperatures ranging from 10°C - 22°C. Auxiliary survey data relating to conditions during the transect surveys are provided in the results section.

STATIC BAT DETECTOR DATA COLLECTION

- 3.4 Four SM4BAT ZC static bat detectors fitted with an ultrasonic SMM-U2 microphone were installed at locations across the masterplan site, with one of these detectors (DP2) installed within plots 500 - 502. They were strategically placed to assess the value of the various habitats present across the masterplan site including woodland edges, hedgerows and open bare ground.
- 3.5 Locations of the static bat detectors are shown below:

Figure 3.1 Static detector locations



- 3.6 The static detectors were set to record for one extended monitoring period per month between July and October 2021. Each monitoring period lasted for a minimum of five nights.
- 3.7 The recordings were viewed and analysed using Analook to determine species and forms of activity. Recordings were analysed manually.

LIMITATIONS

- 3.8 As Greengage were appointed during summer 2021, surveys only commenced in July. Therefore, it is recommended that additional bat activity survey visits are undertaken in April, May and June of 2022 to gain a full season of bat activity data.
- 3.9 There are inherent constraints associated with the use of static bat detectors. The microphones used are omni-directional, with a wide beam pattern and were set to a high sensitivity. However, obstacles can block microphones from recording. In this instance, both microphones were angled upwards, with a 360° beam pattern and there are no limitations associated with the quality/clarity of recordings in this respect.
- 3.10 The measure used to compare relative importance of location for bats is bat passes per night. It is important to consider that bat passes may naturally vary night to night, season to season, relative to weather conditions and conditions such as moon irradiance levels etc. However, given the extended monitoring period this factor is considered to be a robust proxy measure of relative importance for bats at the site.
- 3.11 The static bat detectors were subject to a number of failures during the monitoring periods due to unknown technical error. A calendar showing the successes/failures is presented in Table 3.1 below:

Table 3.1 Static detector failures

Detector	April 2021	May 2021	June 2021	July 2021
DP1	Pass	Fail	Pass	Pass
DP2	Pass	Pass	Pass	Pass
DP3	Pass	Pass	Pass	Fail
DP4	Pass	Fail	Pass	Fail

- 3.12 'Bat passes' were defined as any call 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 as individual bats cannot be differentiated.
- 3.13 The walked transect survey undertaken in July 2021 finished early owing to security concerns. However it did run for 85 minutes after sunset and the transect route was completed, therefore this is not considered a major constraint.

SURVEYORS

- 3.14 Daniel Perlaki, who undertook the surveys at site, undertook the static analysis and prepared this report, has an undergraduate degree in Ecology (BSc Hons), a master's degree in Conservation Science and Policy and is a Graduate member of CIEEM.
- 3.15 Morgan Taylor, who reviewed this report, has a bachelors and masters degree in Marine Biology (MSci Hons), a Natural England CL17 Bat Survey Level 2 Class Licence (2015-7369-CLS-CLS) and CL10 Dormouse Survey Licence (2017-30817-CLS-CLS). Morgan is a Chartered Environmentalist, Full member of CIEEM and has over 10 years' experience in ecological surveying, having undertaken assessments of numerous development sites of this type. He leads the Ecology team at Greengage.
- 3.16 This report was written by Daniel Perlaki and 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.

4.0 RESULTS

SPECIES CODES

- 4.1 The following results sections will refer to bat species using a prefix/code which was used in the Analook analysis. These are set out in Table 4.1 below:

Table 4.1 Species codes

Species code	Common name	Scientific name
EPSE	Serotine	<i>Eptesicus serotinus</i>
Myo	Myotis species	<i>Myotis spp.</i>
NYLE	Leisler's	<i>Nyctalus leisleri</i>
NYNO	Noctule	<i>Nyctalus noctula</i>
PIPI	Common pipistrelle	<i>Pipistrellus pipistrellus</i>
PIPY	Soprano pipistrelle	<i>Pipistrellus pygmaeus</i>
PINA	Nathusius' pipistrelle	<i>Pipistrellus nathusii</i>
BABA	Western barbastelle	<i>Barbastella barbastellus</i>
PLAU	Brown long-eared	<i>Plecotus auritus</i>

TRANSECT SURVEY

- 4.2 The table below provides auxiliary survey data:

Date	Start Time	End Time	Weather Conditions	Surveyor
22/07/2021	21:04	22:04*	23°C, 0/8 cloud, no wind	Daniel Perlaki
26/08/2021	20:02	22:02	17°C, 6/8 cloud, no wind	Daniel Perlaki
23/09/2021	19:00	21:00	16°C 4/8 cloud, 5mph wind	Daniel Perlaki
21/10/2021	17:59	19:59	10°C, clear sky, no wind	Daniel Perlaki

*See Limitations section

- 4.3 The transect surveys recorded two species (*Myotis sp.* and common pipistrelle). The highest level of activity was recorded during the August transect, followed by July, September and October, with no activity recorded on the October transect at all.
- 4.4 Common pipistrelle was the most commonly encountered species, and the species was recorded commuting and foraging along the hedgerow running through the centre of the site along Park Lane, along the hedgerows around the wildlife area and along the woodland at the north-eastern end of the masterplan site. On one occasion a common

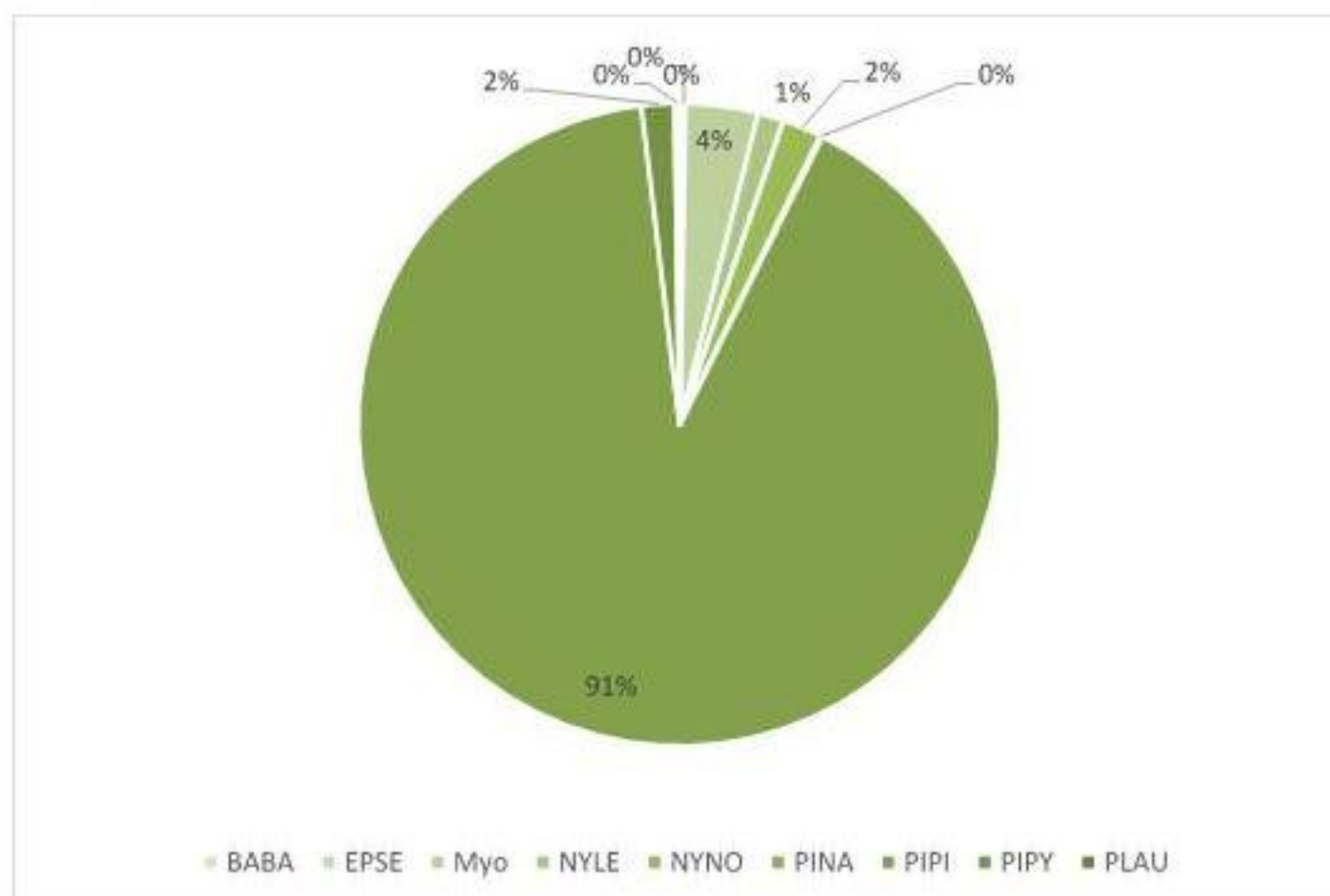
pipistrelle was recorded foraging around street lighting at the southern end of plots 500 – 502.

- 4.5 The only other species recorded was *Myotis* species although this wasn't identified to species level. It was recorded passing back and forth along the inside of the northern section of Park Lane.
- 4.6 On only one occasion was more than a single bat recorded at any one time, when two common pipistrelles were recorded along the western woodland edge of the northernmost plot. All other activity visually observed was single passes by single bats.
- 4.7 Areas of bat activity recorded during the transect surveys are shown in Figure 2.

STATIC BAT DETECTORS

- 4.8 Across all sample periods, the most frequently recorded species was common pipistrelle, representing 90.7% of all bat activity recorded, followed by *Myotis* sp. (3.6%) and common noctule (1.9%). This is consistent with the representation of bat activity observed in the walked transects, with common pipistrelle being the most commonly encountered species. This is also consistent with the previous bat surveys undertaken at the outline planning stage. The other bat species recorded by the static bat detectors included soprano pipistrelle (1.6% of activity), Leisler's (1.3%), brown long-eared (0.3%), Serotine (0.1%) and western barbastelle (0.1%).

Figure 4.1 Species representation across all static bat detector data at all locations

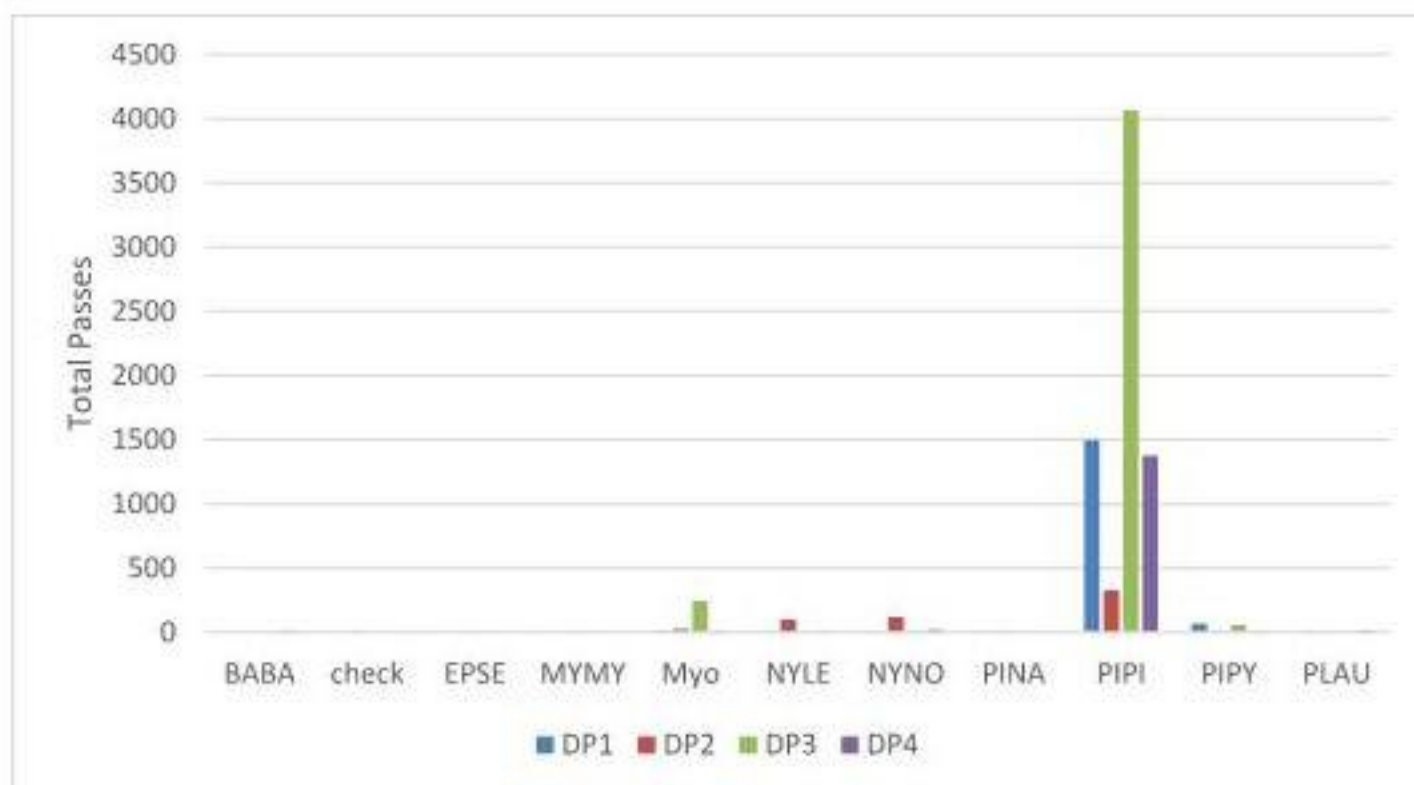


- 4.9 Species distribution across locations was uneven. Western barbastelle were only recorded at a single location (DP4) and a total of 11 passes were recorded. 84% of all

recordings of Leisler's and noctule were at DP2, and DP3 recorded far higher Myotis and soprano pipistrelle activity than any other location (86% and 85% of all recordings respectively).

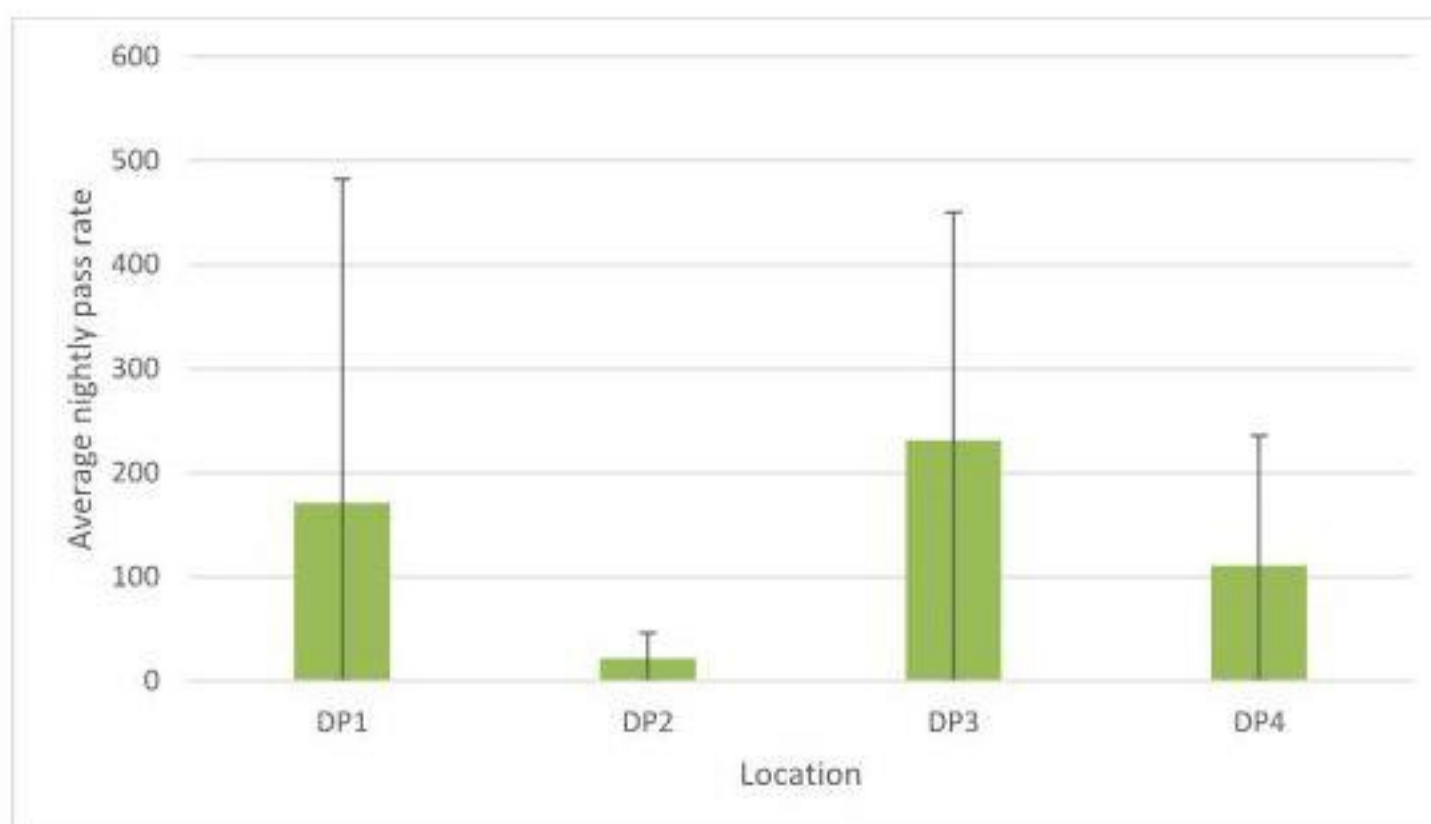
- 4.10 DP2 and DP3 had the highest species diversity. Eight species were recorded at DP2 and DP3, seven species at DP4 and six at DP1.

Figure 4.2 Total passes of each species recorded per location



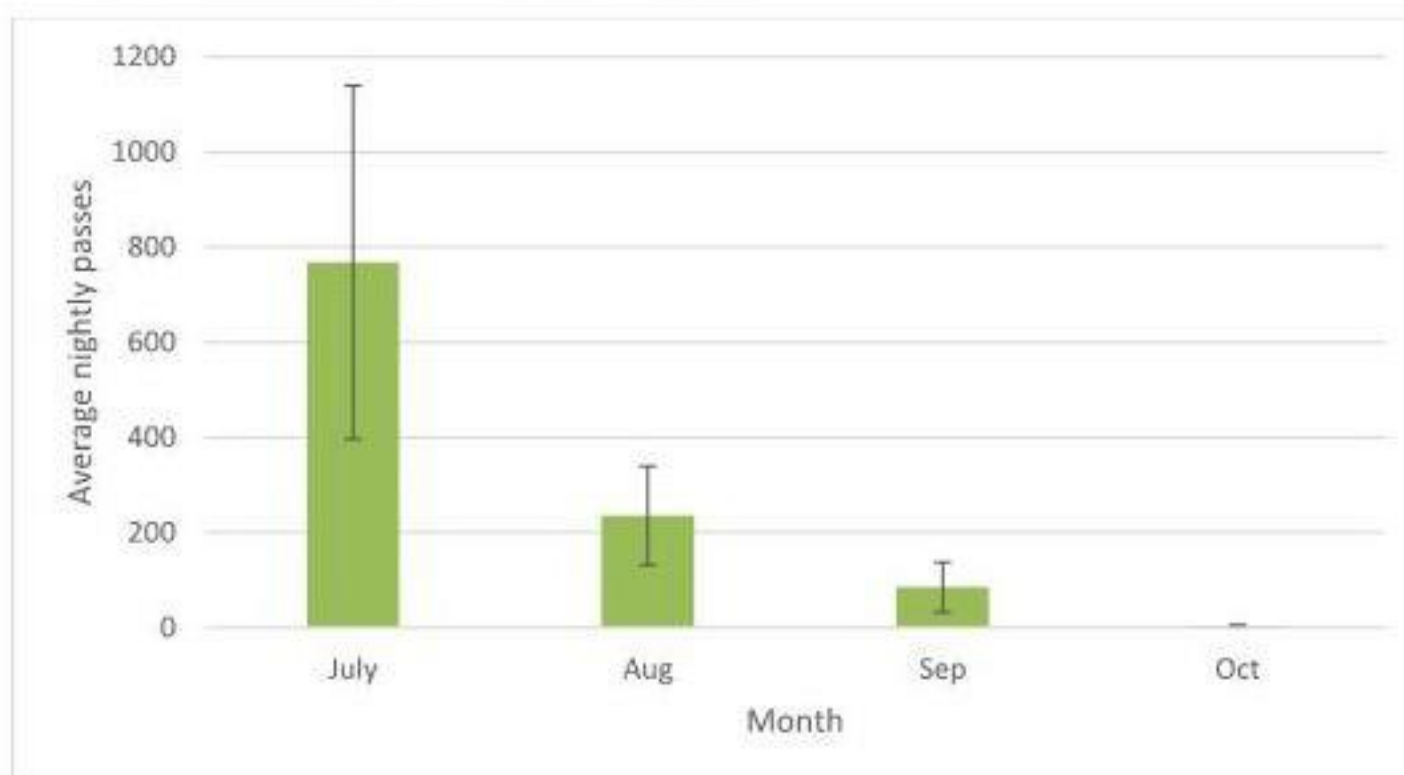
- 4.11 The highest levels of activity (calculated as average nightly pass rate) across the whole monitoring period was at DP3 with an average nightly pass rate of 231.4 (219.0 SD), followed by DP1 with an average of 171.0 passes per night (311.4 SD). DP4 had a pass rate of 110.8 (125.2 SD) and DP2 had the lowest level of activity with an average nightly pass rate of 22.0 (24.4 SD). The high standard deviations, reported in brackets, show the variability of activity however at these locations.

Figure 4.3 Average nightly pass rate per location across whole monitoring period



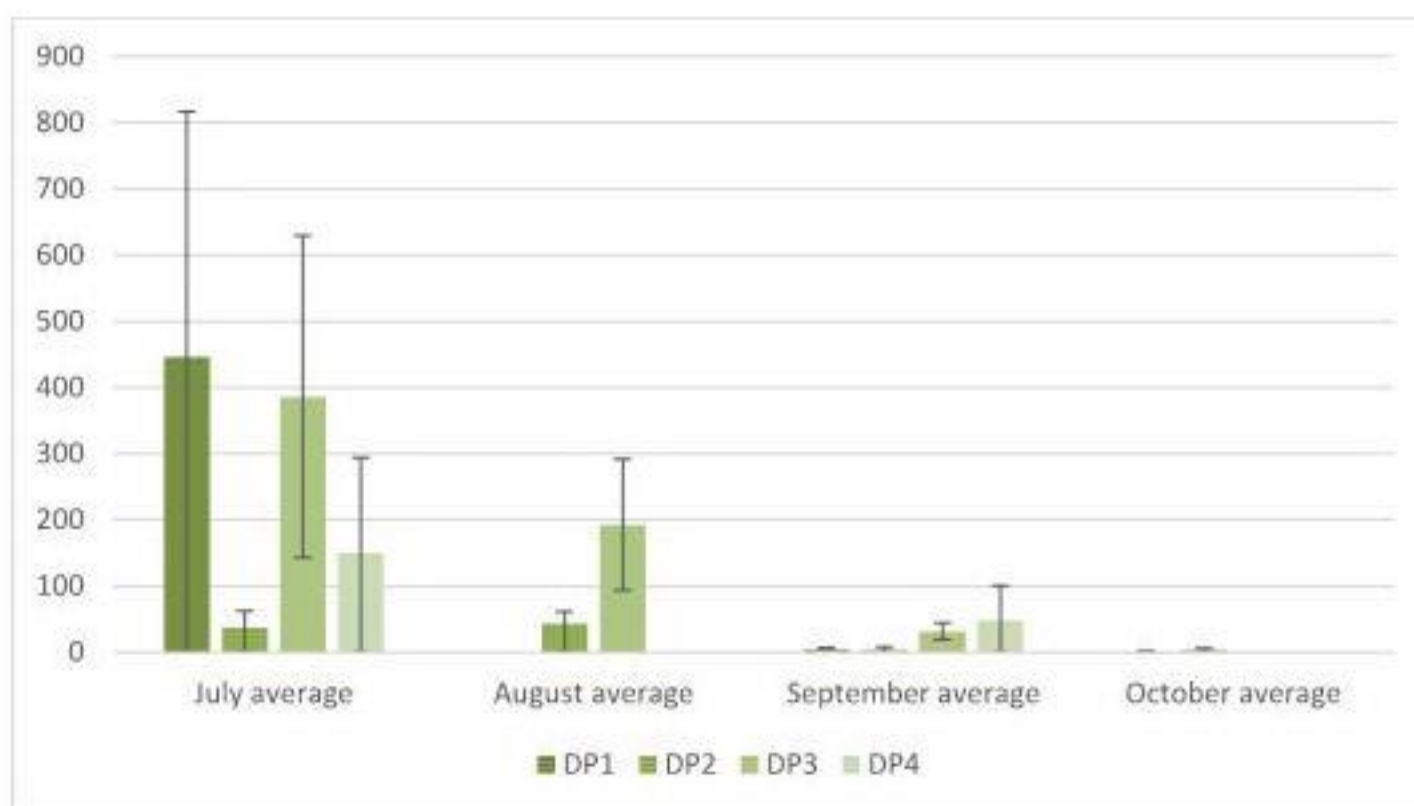
- 4.12 Activity levels were highest in July, followed by August, September and October, with average nightly pass rates across each month of 768.3 (371.3 SD), 235.5 (104.0 SD), 85.0 (52.5 SD) and 4 (2.2 SD) respectively.

Figure 4.4 Average pass night per month



- 4.13 DP3 had the highest level of activity for August and October. DP1 recorded higher levels of activity in July and DP4 recorded higher levels of activity in September.

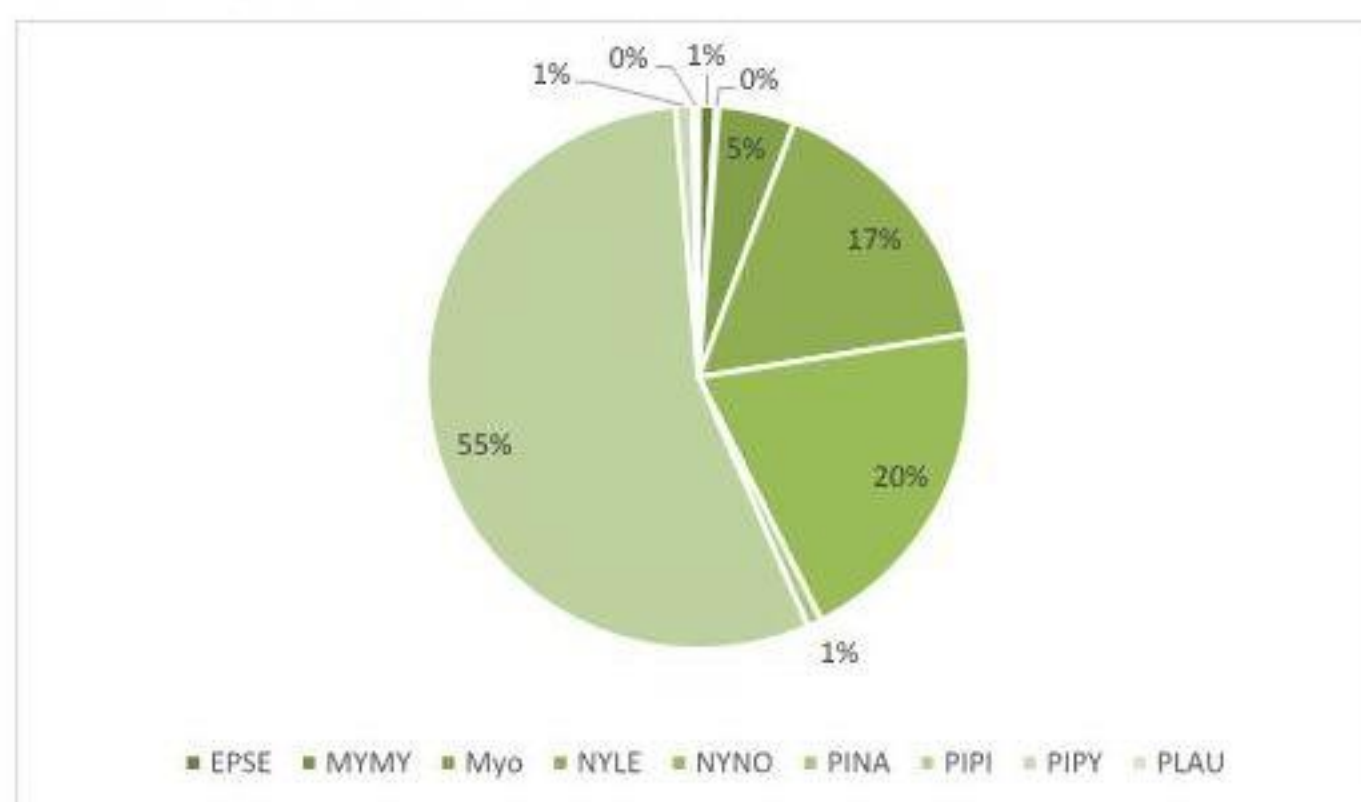
Figure 4.5 Mean passes per night per month at all locations



5.0 EVALUATION AND DISCUSSION

- 5.1 The surveys do not cover a full season as they were commissioned in July 2021. Therefore, it is recommended that activity surveys extend to April, May and June 2022 in order to have a full season of bat activity data. Nonetheless, it is possible to evaluate the available data to a certain degree.
- 5.2 The levels of activity across the masterplan site varied by a large extent, with DP2 recording notably lower activity than the other locations. This is broadly consistent with the walked transect results which did not record any foraging or commuting in Plot 500 – 502 (with the exception of a single instance of common pipistrelle foraging around a streetlight). It is somewhat surprising that bat activity at DP2 was lower, as it was installed adjacent to woodland edge habitat which forms a strong linear landscape feature that extends significantly beyond the boundaries of the site. It is possible that the presence of the A3(M) generates sufficient light spill and vibrational disturbance that the narrow strip of woodland/woodland edge habitat is less favourable. Additionally, external lighting spilling onto the hedgerow which forms the eastern boundary to this plot was identified, coming from the construction works being undertaken in the adjacent building plot which likely limits the value of this hedgerow.
- 5.3 The species mix at DP2 was almost exclusively common pipistrelle, noctule and Leisler's (92%), species which are generally more tolerant to increased levels of lighting.

Figure 5.1 Species mix at DP2



- 5.4 Elsewhere on the masterplan site, the results from the walked transect surveys suggest that the high levels of activity are from low numbers of bats using the areas repeatedly. It is likely that Park Lane (the hedgerow where DP3 was installed) and the woodland edge at the north-eastern corner of the site (where DP4 was installed) form part of the core sustenance zone for a small number of bats.

- 5.5 The presence of western barbastelle at DP4 is notable. Whilst BABA don't receive formal protection above other bat species, they are a rare species in the UK. They're known to have a large foraging area. The absence of recordings at other locations within the masterplan site indicates they're likely to predominantly use the woodland around DP4, which is far more extensive than woodland adjacent other areas of the site also covered by the survey.
- 5.6 Activity levels steadily declined from July to October across all locations. This coincides with a likely increase in torpor spells and associated reduced foraging activity. No social calls were recorded indicating the absence of mating roosts in the immediate vicinity of statics. Additionally, no swarming behaviour was observed, and activity levels indicate no swarming took place during the monitoring periods, suggesting the absence of maternity roosts in the immediate vicinity of the statics. This does not rule out the presence of these forms of roost in the nearby landscape however, given the scale of the site.

KEY RECOMMENDATIONS

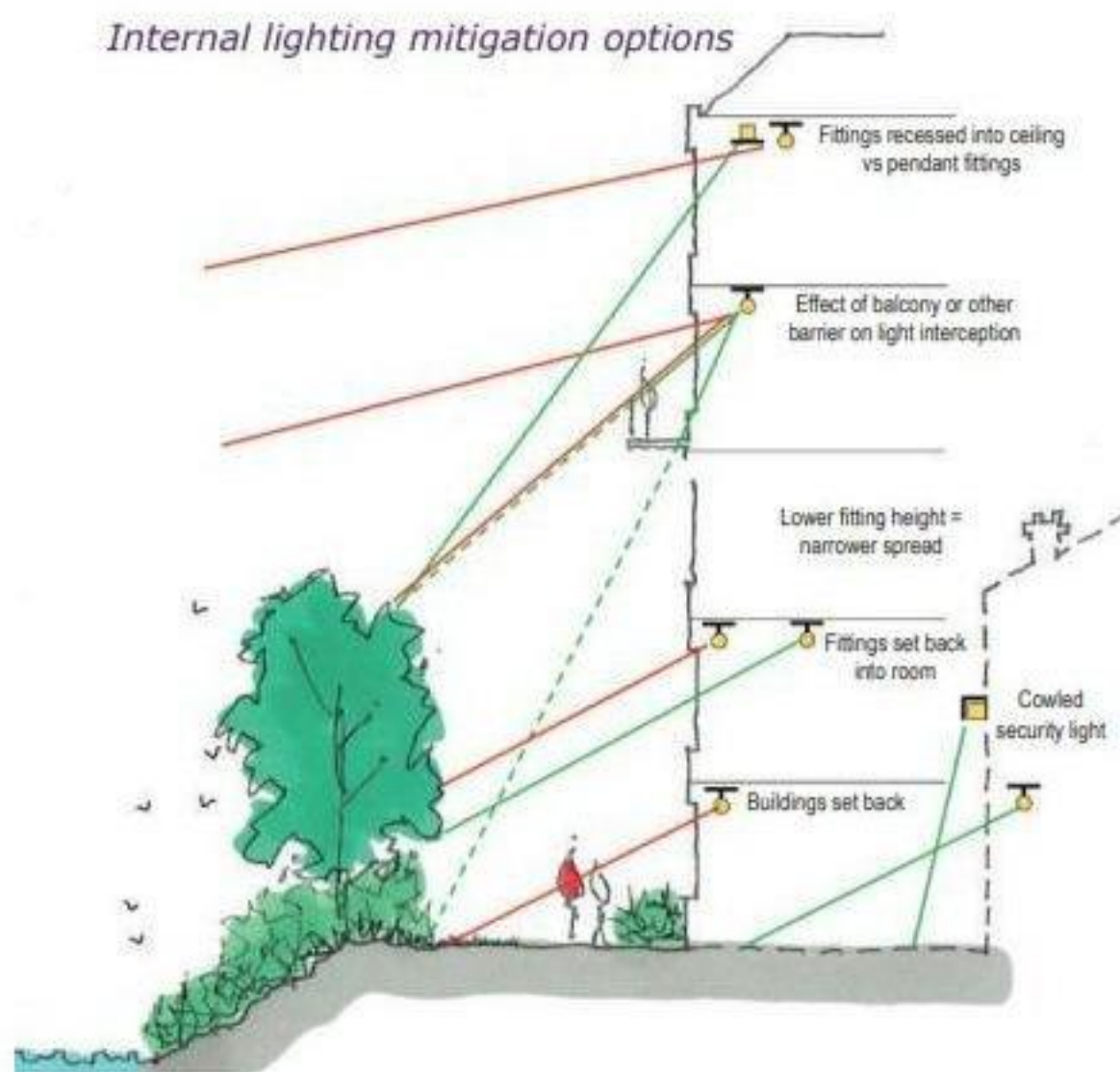
- 5.7 It is recommended that additional bat activity surveys are undertaken in April, May and June 2022 in order to analyse bat activity data for a full season. Greengage have already been appointed to undertake these surveys.
- 5.8 The recommendations below are specific to Plots 500 – 502 as design is not yet finalised for the remaining plots. However, many of the recommendations, particularly with regards to lighting and fencing will be applicable, albeit potentially more stringent. The lighting recommendations are likely to be stronger for any development near DP4 for example, owing to the presence of western barbastelle in this area.

Lighting

- 5.9 There are existing sources of external lighting on site, notably from the adjacent development plot to the east and A3(M) to the west. Development proposals should avoid contributing to this.
- 5.10 Lighting during the construction phase has potential to impact bats. All the points discussed below apply to operation phase lighting, however during construction all lighting should be turned off no later than 17:30 every day. Details on construction phase lighting should be set out in a Construction Environment Management Plan (CEMP) for the site.
- 5.11 All lighting associated with the scheme (during construction and operation) should follow best practice guidance set out by the Bat Conservation Trust and Institute of Lighting Professionals¹. Key principles include:

- Avoiding any light spill on valuable habitats on site. This includes the woodland edge and hedgerows. This should be achieved through directional lighting, implementation of controls, minimising height of lighting columns, use of cowls etc;
- Lighting controls on all external lighting should be controlled through use of PIR absence sensors to ensure luminaires are not on when not required;
- Luminaire choice should feature light fittings which are least harmful to bats. This includes LED lights in the warm-white colour spectrum, <3000K and peak wavelengths greater than 550nm;
- The minimum illuminance required should be used at all times; and
- Any internal lighting fixtures should be recessed into the ceiling in areas of the building with windows overlooking the woodland edge and hedgerow.

Figure 5.2 Internal lighting mitigation options



Woodland edge/hedgerow protection

- 5.12 The woodland edge and hedgerows around site should be suitably protected throughout the proposed development construction and operation. Light spill should be entirely avoided in this area through orientation of buildings and avoiding the use of external luminaires.

- 5.13 Buffer vegetation in the form of young, plantation woodland has been established on the bank along the western edge of the proposed building which should act as a light screen when the trees reach maturity. This should be retained and protected through installation of heras fencing to prevent accidental vehicle collisions/damage.
- 5.14 The hedgerow along the eastern boundary should also be suitably protected through heras fencing to establish a construction exclusion zone.
- 5.15 Lighting has been modelled and maximum lux levels on the hedgerow to the east will increase, however as no bats were recorded using this site boundary, this will not result in a significant detrimental impact. There will be no increase in lighting on the western woodland edge.

ECOLOGICAL ENHANCEMENT

- 5.16 Proposals should seek to enhance the ecological value of the site insofar as possible. The following enhancement recommendations should be included with the aim of achieving net gains for biodiversity, whilst specifically improving the value of the site for foraging, commuting and roosting bats.
- 5.17 Details of the below measures should be outlined in detail within an Ecological Management Plan (EMP) for the site, which may be secured through planning condition.

Woodland Management

- 5.18 There are opportunities to enhance the young plantation woodland along the western edge of the site.
- 5.19 Through suitable protection and allowing the planted trees to reach maturity, the ecological value of this area of the site will increase. Additionally, as this woodland matures it should be managed to establish good physical structure through planting a shrub layer, developing glades where possible and allowing deadwood to remain in situ.

Hedgerows

- 5.20 The landscaping proposals should seek to increase the coverage of hedgerows on site. Where possible, hedgerows should be planted to create boundary features rather than use of hard landscaping features such as walls and fences.
- 5.21 The species used to create these hedgerows should mimic those currently present on site, this would include the use of hawthorn, dog rose, hazel, elder, holly and blackthorn.

Meadow Planting

- 5.22 Areas of wildflower meadow should be created in landscaped areas in place of standard turf. Wildflower meadow has a very high biodiversity value, and is extremely valuable for invertebrate species, which in turn provides opportunities for foraging bats.

- 5.23 An appropriate wildflower species mix such as Emorsgate's EM3F-special general-purpose wildflower mix² or similar is recommended.

Bat boxes

- 5.24 Retained mature trees on and adjacent the site should have general purpose bat boxes attached to provide additional roosting opportunities for bats. Examples of suitable products are shown below.

Figure 5.3 CJ Wildlife WoodStone bat box (left) and Schwegler 2F general purpose bat box (right)



6.0 SUMMARY & CONCLUSION

- 6.1 Greengage was commissioned by Portsmouth City Council to undertake a bat activity survey of Dunsbury Park Plots 500 - 502 in Havant in order to establish the value of the site for foraging and commuting bats and identify a suitable approach to mitigation.
- 6.2 The masterplan site is considered to be of high value for bats, although this is not spatially consistent, with some areas clearly favoured over others. Of the locations across the masterplan site assessed, Plot 500 – 502 had the lowest recorded bat activity. Habitats along the site boundaries of the masterplan site are used by foraging and commuting bats of nine species, however with the exception of a central hedgerow which runs through the centre of the site, the interior areas of the site are not seemingly used by foraging or commuting bats.
- 6.3 Key mitigation, compensation and enhancement actions are described to enable legislative and policy compliance (see context at Appendix 2), aiming to achieve net gains in biodiversity for the site.
- 6.4 Key actions should be included within EMP and CEMP documents for the site which could be secured through planning condition.

FIGURE 1 TRANSECT ROUTE

FIGURE 2 BAT ACTIVITY MAP

DUNSBURY PARK

Bat Activity

- Common pipistrelle
- Myotis species

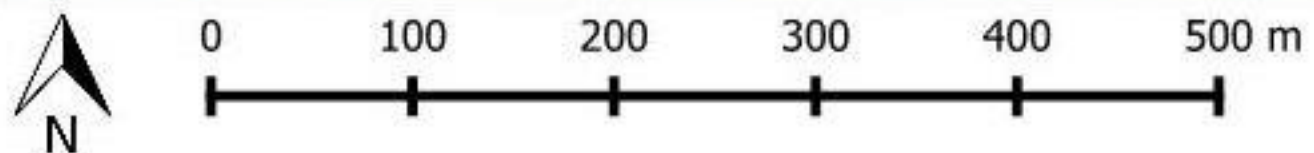


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Fig 2.0 Bat Survey Results

Project Number 551772
December 2021
1 to 5,000 at A3
Basemap Data: Google Earth



APPENDIX 1 RELEVANT LEGISLATION

Legislation Relating to Bats

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

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

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

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

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

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats;
- Damage or destroy a bat roosting place (even if bats are not occupying the roost at the time);
- Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; and
- Intentionally or recklessly obstruct access to a bat roost.

This legislation applies to all bat life stages.

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

REFERENCES

- ¹ Bat Conservation Trust and Institute of Lighting Professionals (2018); Bats and artificial lighting in the UK: Bats and the built environment series. BCT, London
- ² Emorsgate EM3F wildflower mix <https://wildseed.co.uk/mixtures/view/25>