



Land off Westwood Close, Emsworth

Bat Activity Report



Hampshire Homes Ltd

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Contents

Executive Summary.....	3
1.0 Introduction	5
1.1 Background	5
1.2 Site Location.....	5
1.3 Development Proposals	5
1.4 Purpose of the Report	6
2.0 Planning Policy & Legislation	7
2.1 National Planning Policy.....	7
2.2 Adopted Havant Borough Local Plan.....	8
2.3 Legislation	8
3.0 Methodology	10
3.1 Desk Study	10
3.2 Field Surveys	10
3.3 Limitations.....	11
3.4 Valuing the Bat Population of the Site	12
4.0 Survey Results	15
4.1 Timings and Weather Conditions for Nocturnal Bat Surveys	15
4.2 Activity Transects.....	16
4.3 Automated Activity Surveys	17
5.0 Discussion.....	19
5.1 Bat Activity Surveys.....	19
6.0 Potential Impact of the Development on Bats	20
6.1 Effects on Foraging/Commuting Habitat	20
7.0 Recommendations and Mitigation.....	21
7.1 Further Work	21
7.2 Avoidance.....	21
7.3 Mitigation	21
7.4 Enhancement.....	22
8.0 Summary	23
8.1 Recommendations and Mitigation.....	23
9.0 References.....	24

FIGURES

Figure 1 – Site Location Plan

Figure 2 – Site Layout

Figure 3 – Transect Route and Static Detector Locations

Figure 4 - Bat Activity Survey (24th July 2017)

Figure 5 – Bat Activity Survey (19st September 2017)

Figure 6 – Bat Activity Survey (16th October 2017)

Executive Summary

Contents	Summary
Site Location	The site is located to the east of Westwood Close and south of Westbourne Road in Emsworth, Hampshire and is centred at Ordnance Survey National Grid Reference SU 75295 06967. The site comprises a large area of common land with grazing cattle present. A tributary of the River Ems runs along the eastern site boundary, whilst residential properties back on to the site from the west. A subway passing beneath the A27 is located at the southernmost point of the site.
Previous Reports/Surveys	An Extended Phase I Habitat Survey was completed at the site in May 2017 (WYG 2017). The survey identified the site as providing suitable habitat for commuting and foraging bats. Suitable habitats on site comprised hedgerows and trees along the north-western boundary. Tree lines along the eastern boundary and the tributary of the River Ems bordering the site were identified as more suitable habitat. The development site was classified as having low suitability (BCT, 2016).
This Survey(s)	Three activity surveys were carried out during the optimal surveying season. Surveyors walked on a transect route that incorporated all areas of the site including all habitats likely to be used by foraging and commuting bats. An automated bat detectors were left at the site for at least five consecutive night each season between July - October. Data from this detector helped to gain further information on the species present and relative amount of activity through the night.
Results	A moderate level of activity was recorded on July and September activity surveys and in October a low level of activity was recorded. Up to four species of bat were recorded; common pipistrelle, soprano pipistrelle, noctule and a <i>Myotis</i> species.
Recommendations	The results of the activity survey will remain valid for two years (i.e. October 2019). If works have not commenced within this time, it is recommended that a review of the findings and site conditions is completed to determine whether updated surveys are required. To enhance the site for foraging and commuting bat the following measures are proposed to be incorporated within the master plan and proposals: • Lighting across the development designed to reduce impacts on bat foraging and commuting habitats; • Avoidance of breathable roof membranes; • Enhancement of connectivity of the western boundary by hedgerow infill planting; and • Incorporation of planting of native species of value to foraging and commuting bats into landscape plan.



	It is recommended that construction activity should cease at sunset to avoid impacts to bats during the construction phase. Additional enhancement measures for the proposed developments include the provision of one bat tile on a residential property and four bat boxes on suitable retained trees within the site. Additional planting across the site will incorporate species of value to foraging and commuting bats.
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1.0 Introduction

1.1 Background

WYG was commissioned by Hampshire Homes Ltd in June 2017 to carry out bat activity surveys to inform proposed development at Land off Westwood Close, Emsworth (hereafter referred to as 'the site'). These surveys were recommended based on the Extended Phase 1 survey, conducted in May 2017 (WYG, 2017), which identified the site as having low suitability for bats to use the habitats on site for foraging and commuting. Suitable habitats for bat foraging and commuting comprised hedgerows and trees along the north-western boundary. Higher quality linear features were identified adjacent to the site, which are tree lines along the eastern boundary and the tributary of the River Ems (hereafter referred to as 'ditch'). The tributary offers suitable commuting route as well as foraging resources.

Bat activity surveys were recommended based on:

- The occurrence of bat records in the local area;
- The presence of suitable foraging and commuting habitat on site and in the surrounding landscape; and
- Potential direct/indirect impacts to some of these habitats as a result of the development proposals.

The current report details the findings of the bat activity surveys and recommends, where necessary, measures to avoid, minimise and offset the potential impacts to commuting and foraging bats as a result of the proposed development. This report will provide information to inform a planning application for the site.

This report was prepared by WYG Assistant Ecologist Dominika Muriénova.

1.2 Site Location

The site is located to the east of Westwood Close and south of Westbourne Road in Emsworth, Hampshire and is centred at Ordnance Survey National Grid Reference SU 75295 06967. The survey area, hereafter referred to as the 'site', is shown on Figure 1 and comprises a large area of common land with grazing cattle present. Ditch that is a tributary of the River Ems runs along the eastern site boundary, whilst residential properties back on to the site from the west. A subway passing beneath the A27 is located at the southernmost point of the site. The wider area is made up by residential properties and arable fields.

1.3 Development Proposals

Proposals are for the construction of 36 residential units, including a provision for affordable housing. A proposed access road into the site will adjoin Westwood Close, whilst it is proposed that the existing footpath running through the site is realigned around the development. In addition to the above, hard and soft landscaping is also proposed. The illustrative masterplan for the site is shown in Figure 2.



1.4 Purpose of the Report

The bat activity surveys aimed to determine if bats were using landscape features within and adjacent to the site as resources for roosting, commuting or foraging and determine the likely impacts of the proposed development on this behaviour. This report highlights these potential constraints and includes recommendations for avoidance, mitigation and enhancements, as appropriate.

Note that, where possible, common names for flora and fauna have been used throughout this report for ease of reading.

2.0 Planning Policy & Legislation

2.1 National Planning Policy

2.1.1 National Planning Policy Framework

The NPPF requires local planning authorities to take account of the conservation of protected species when determining planning applications and makes the presence of a protected species a material consideration when assessing a development proposal that, if carried out, would be likely to result in harm to the species or its habitat.

In the case of European Protected Species such as bats, planning policy emphasises that strict statutory provisions apply (including the *Conservation of Habitats and Species Regulations 2010* (as amended), to which a planning authority must have due regard.

Where developments requiring planning permission are likely to impact upon protected species, it is necessary that protected species surveys are undertaken and submitted.

It also includes a requirement for the planning system to contribute to and enhance the natural and local environment through protecting and enhancing valued landscapes, ecosystem services and provide net gains in biodiversity.

2.1.2 Biodiversity 2020

Biodiversity 2020 replaces the previous UK Biodiversity Action Plan and sets national targets to be achieved. The intent of Biodiversity 2020, however, is much broader than the protection and enhancement of less common species, and is meant to embrace the wider countryside as a whole.

The Natural Environment and Rural Communities (NERC) Act 2006 lists seven bat species considered as Species of Principal Importance (SPI), including soprano pipistrelle, noctule and brown long-eared bat.

Local Biodiversity Action Plans (LBAP) identify habitat and species conservation priorities at a local level (typically at the County level), and are usually drawn up by a consortium of local Government organisations and conservation charities. Although no-longer accountable at a national level many are still managed and implemented at a local level. Havant LBAP states:

Havant LBAP identifies and audits green space both natural and urban, and seeks to balance the use of such space by identifying projects with multifunctional benefits to both people and wildlife. Havant has a number of motivated and organised local groups already doing great work for biodiversity; ideas for local actions and projects for community groups are central to the Plan.

Havant borough holds a biodiversity asset of international importance having a large variety of notable and protected species and habitats within its boundary. Havant Borough Council have recognised and actively conserved important sites through the adoption of five Local Nature Reserves (LNRs) and 135 Sites of Importance for Nature Conservation (SINCs). There are many areas of opportunity to further enhance and protect biodiversity and in doing so ensure that economic development is sustainable and quality of life improved.



This LBAP also recognises importance of urban green spaces such as allotments in providing roosts for bats, and encourages residents to make their allotments more wildlife-friendly.

2.2 Adopted Havant Borough Local Plan

The site is within Havant Borough and is governed by the Core Strategy for Havant Borough Council. Development Management Policy DM8 Conservation, Protection and Enhancement of Existing Natural Features states:

Development will only be permitted where it protects and enhances local habitats and landscape distinctiveness and which addresses all of the relevant criteria as set out below:

- *Protects natural features of nature conservation and/or amenity importance on the site, for example trees, woodlands, hedgerows, soils, streams, stream corridors, springs, ditches or ponds from damage, destruction and a deterioration in quality.*
- *Sympathetically incorporates existing features into the overall design of the scheme including measures taken to ensure their continued survival.*
- *Provides new landscape works that integrate successfully with the local environment and existing natural features, using local materials and plant species and making provision for future maintenance of new landscape works associated with new developments.*
- *Ensures sequences of greenspaces are maintained and protects the attractiveness and visual amenity of all green open spaces that contribute to the identity of the borough.*

2.3 Legislation

All 18 British bat species are listed in Schedule 5 of the *Wildlife and Countryside Act 1981* (as amended) and under Schedule 2 of the *Conservation of Habitats and Species Regulations 2010* (as amended) as European Protected Species. Furthermore, the *Countryside and Rights of Way Act 2000* (Schedule 12, Paragraph 5) has amended Section 9 of the 1981 Act. They are, therefore, fully protected under Section 9 of the 1981 Act and under Regulation 41 of the *Conservation of Habitats and Species Regulations 2010* (as amended) which transposes the Habitats Directive into UK law.

This makes it an offence to:

- Deliberately capture, injure or kill any bat;
- Deliberately disturb bats, in particular where it is likely to:
 - Impair their ability to breed or reproduce, or to rear or nurture their young;
 - Impair their ability to hibernate or migrate; or
 - Affect significantly the local distribution or abundance of bats.
- Intentionally or recklessly damage, destroy or obstruct the access to the place of shelter or protection; and
- Damage or destroy a bat's breeding site or resting place.

Unmitigated removal of linear corridors such as sections of hedgerows and increases in habitat disturbance (through lighting, noise and vibration impacts) during construction and operational phases of a proposed development could indirectly impact bats that use the site to forage and commute. For example, lighting impacts could potentially sever a commuting route between a nursery roost and foraging ground such that it impairs bat's ability to rear young.



Furthermore, direct impacts to bats may occur through road traffic mortalities in the operational phase of a proposed development.

Such indirect and direct impacts could result in an offence being committed.

3.0 Methodology

3.1 Desk Study

3.1.1 Local Ecological Records Centre

Information was requested from the Hampshire Biodiversity Information Centre (HBIC) for information on any nature conservation designations and protected or notable species records within 2 km of the site. This provided the overall ecological context for the site and surrounding areas and HBIC and SxBRC returned 338 records of bats within 2km of the site, comprising an unidentified bat, serotine, Bechstein's bat, Brandt's bat, Daubenton's bat, whiskered bat, Natterer's bat, noctule, pipistrelle species bat, common pipistrelle, soprano pipistrelle, long-eared bat species and brown long-eared bat. Large numbers of Bechstein's bat (51 and 26 individuals) were recorded in Longcopse Hill located approximately 1.1km from the site to the north in 2009. Bechstein's bat is listed as '*rarest*' bats (Collins, 2016) and are typically associated with broadleaved woodland. The site is open with few mature trees and species-poor hedgerows. The River Ems to the north does provide a potential commuting corridor, however it is interrupted by several roads and areas of existing development. This reduces the likelihood of Bechstein's bat occurring on site.

3.2 Field Surveys

3.2.1 Bat Activity Surveys

Site was assessed as having *low suitability* for commuting and foraging bats; based on this BCT (2016) guidelines recommend three activity surveys, one per season. The activity surveys were carried out on 24th July, 19th September and 16th October 2017. Two surveyors were present on site for each survey, with the surveyors walking together on a single transect route. The transect route incorporated all areas of the site including all habitats likely to be used by foraging and commuting bats including hedgerows and streams. The surveys commenced 15 minutes prior to sunset and concluded approximately two hours after. Weather conditions (temperature, precipitation and wind speed) were recorded for each survey.

All surveys were completed when weather conditions were suitable (i.e. not during heavy rain, low temperatures or strong winds) as recommended within the BCT guidance (Collins, 2016). The surveyors made a note of bat activity, using both visual observation and audio bat detectors to identify foraging and/or commuting behaviour. The nature of any bat activity was recorded along with the direction in which the bat was travelling when it was observed. The following details were noted:

- Frequency at which bats were detected;
- Location within the survey area;
- Species and number of bats present;
- Whether bats appeared to be foraging or commuting; and
- Weather conditions and temperature.

Surveys were led by Consultant Ecologists Max Ward GradCIEEM and Ben Cooke GradCIEEM, who were qualified ecologists and were experienced at undertaking bat surveys. All surveyors used an Elekon Batlogger (full spectrum) bat detector. Surveyors walked along the transect route at a steady pace and stopped at predetermined locations along the transect route to conduct point counts. The

data recorded during the surveys were analysed using the Bat Explorer software. The transect route is shown on Figure 3.

3.2.2 Automated Bat Activity Surveys

One automated bat detector, Anabat Express, was left at the site for at least five consecutive days in August, September and October 2017. The detector was placed in the same location each time it was deployed (Figure 3). Recorded bat calls were analysed by an experienced bat ecologist using Analook software to allow identification to species or genus level where possible. Bat passes were defined as five or more individual echolocation sounds separated from other calls by a minimum of two seconds.

3.3 Limitations

Surveys were completed at an appropriate time of year so timing or weather should not limit the robustness of the survey.

The survey effort of three visits conforms with the recommendations for a site of low suitability (Collins, 2016), however, a 'spring' visit was not completed. The bat activity survey did not commence until the end of July 2017, due to the timing of the initial extended Phase 1 Habitat Survey in late June. It was therefore not possible to carry out a spring survey of the site. Instead, an additional summer survey was included, to provide a spread of survey dates between July and October. The lack of a spring survey is not considered to be a major limitation to the survey, as the site is relatively small (narrow and long field), and three visits were undertaken in suitable weather conditions, enabling a robust assessment of bat activity within the site.

One automated bat detector was left at the site from August to October for at least five consecutive nights. The static detector recorded low number of bat passes overall. The placement of static detector was limited to this location as site is intensively used by public and livestock also grazes this area. During activity surveys carried out using a hand-held bat detector, the recorded activity in the area of static detector was low and therefore the relatively low number of recordings collected from the static detector is not considered a significant limitation. In addition, static detector data from September could not be retrieved. As data from the other two months is available this is not considered a significant limitation.

Inspection of weather data revealed that on nights when no bats were recorded in August and in October, the weather conditions were unsuitable for bat activity (rain and relatively low temperatures). In August, over 5 consecutive nights in suitable conditions was achieved. In October although a maximum of 4 consecutive nights were in suitable conditions, a total of 7 nights in suitable conditions was achieved. Therefore this is not considered to be a significant limitation.

Some bat species, such as some bats of the *Myotis* genus, are more difficult to detect as their calls are quieter than other bats such as those of the *Pipistrellus* genus. As such, the louder bats are likely to have been identified more often than quieter species, which may have been under recorded. Calls of the quieter species such as *Myotis*, are also more difficult to analyse. Therefore these species are identified to genus level, with species name suggested.

If the proposed development does not proceed within the next **two years** (i.e. October 2019) it is recommended that a review of the site conditions is undertaken to determine whether updated

surveys are necessary. This will help to establish if bat activity has changed in the interim period and to inform future mitigation measures, if necessary.

3.4 Valuing the Bat Population of the Site

The assessment of the value of the bat population on site is based on an article in the Chartered Institute of Ecology and Environmental Management (CIEEM) In Practice magazine – *Valuing Bats in Ecological Impact Assessment*, No. 70, December 2010 (Wray *et al.* 2010). Where bats (species and number) are found using certain habitats (to roost, commute or forage) their population is assigned a relative ecological value. The value to the species is partly based upon how well used a habitat is and upon how rare the bat species is. In the case of commuting routes or foraging areas the number of roosts nearby is also a factor. Once the value of the bat population has been calculated, robust mitigation for any impact on the bats can be determined.

British bat species have been subdivided into groups, dependant on how common they are: common, rarer and rarest. These have been further subdivided based upon the location surveyed. Table 1 presents the rarity categorisation of bats in England. Tables 1 to 4 have been adapted from Wray *et al.* (2010).

Table 1 **Categorising bats by distribution and rarity in England**

Rarity	Country
	England
Rarest	Greater horseshoe Bechstein's Alcathoe Greater mouse-eared Barbastelle Grey long-eared
Rarer	Lesser horseshoe Whiskered Brandt's Daubenton's Natterer's Leisler's Noctule Nathusius' pipistrelle Serotine
Common	Common pipistrelle Soprano pipistrelle Brown long-eared

To calculate the score for either commuting routes or foraging areas the numerical values from each column below are added together; these are detailed in Tables 2 and 3.

Table 2 Valuing Commuting Routes

Species	Number of Bats	Roosts/Potential Roosts Nearby	Type and Complexity of Linear Features
Common (2)	Individual bats (5)	None (1)	Absence of (other) linear features (1)
		Small number (3)	Unvegetated fences and large field sizes (2)
Rarer (5)	Small number of bats (10)	Moderate number/not known (4)	Walls, gappy or flailed hedgerows, isolated well grown hedgerows, and moderate field sizes (3)
		Large number of roosts or close to a SSSI (5)	Well grown and well-connected hedgerows, small field sizes (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Complex network of mature well-established hedgerows, small fields and rivers/streams (5)

Table 3 Valuing Foraging Areas

Species	Number of Bats	Roosts/Potential Roosts Nearby	Foraging Habitat Characteristics
Common (2)	Individual bats (5)	None (1)	Industrial or other site without established vegetation (1)
		Small number (3)	Suburban areas or intensive arable land (2)
Rarer (5)	Small number of bats (10)	Moderate number/not known (4)	Isolated woodland patches less intensive arable and/or small towns and villages (3)
		Large number of roosts or close to a SSSI (5)	Larger or connected woodland blocks, mixed agriculture and small villages/hamlets (4)
Rarest (20)	Large number of bats (20)	Close to or within a SAC for the species (20)	Mosaic of pasture, woodlands and wetland areas (5)

Finally, for commuting routes and foraging areas the overall ecological value is based upon the scoring system detailed in Table 4.



Table 4 Scoring System for Valuing Commuting and Foraging Bats

Geographic Frame of Reference	Score
International	>50
National	41-50
Regional	31-40
County	21-30
District, local or parish	11-20
Not important	1-10

4.0 Survey Results

4.1 Timings and Weather Conditions for Nocturnal Bat Surveys

Tables 5 - 8 show the survey dates, times and weather conditions recorded during each of the surveys. Weather conditions during automated bat surveys were taken from www.wunderground.com and represent temperatures from Southampton, the closest location for which historical data are available. Historical data represent average weather conditions recorded on a day.

Table 5 Weather Conditions During Nocturnal Activity Bat Surveys

Date	Sunset Times	Survey Time(s)	Weather at the Start/End of Survey
24.07.2017	21:01	20:46 – 23:01	St: 18°C; 20% cloud cover; light breeze; no precipitation E: 16.5°C; 10% cloud cover; light breeze; no precipitation
19.09.2017	19:10	18:55 – 22:10	St: 14°C; 10% cloud cover; light breeze; nil precipitation E: 10°C; 0% cloud cover; light breeze; nil precipitation
16.10.2017	18:05	17:55 – 20:10	St: 15°C; 10% cloud cover; strong breeze; nil precipitation E: 14.1°C; <10% cloud cover; strong breeze; nil precipitation

Table 6 Weather Conditions During Automated Bat Survey in August

Date	Weather	Weather Suitability
01.08.2017	14°C; wind speed 11km/h; scattered clouds; no precipitation	Suitable
02.08.2017	16°C; wind speed 17km/h; rain	Unsuitable
03.08.2017	17°C; wind speed 24km/h; light rain	Unsuitable
04.08.2017	16°C; wind speed 12km/h; partly cloudy; no precipitation	Suitable
05.08.2017	16°C; wind speed 8km/h; partly cloudy; no precipitation	Suitable
06.08.2017	14°C; wind speed 9km/h; partly cloudy; no precipitation	Suitable
07.08.2017	16°C; wind speed 9km/h; mostly cloudy; no precipitation	Suitable
08.08.2017	13°C; wind speed 6km/h; light rain showers	Suitable
09.08.2017	13°C; wind speed 11km/h; light rain	Suitable
10.08.2017	14°C; wind speed 14km/h; partly cloudy; no precipitation	Suitable
11.08.2017	13°C; wind speed 8km/h; fog; no precipitation	Suitable
12.08.2017	16°C; wind speed 11km/h; mostly cloudy; no precipitation	Suitable

Table 7 Weather Conditions During Automated Bat Surveys in September

Date	Weather	Weather Suitability
19.09.2017	11°C; wind speed 4km/h; fog; no precipitation	Suitable
20.09.2017	12°C; wind speed 8km/h; mostly cloudy; no precipitation	Suitable
21.09.2017	12°C; wind speed 10km/h; mostly cloudy; no precipitation	Suitable
22.09.2017	10°C; wind speed 6km/h; fog; no precipitation	Suitable
23.09.2017	14°C; wind speed 6km/h; partly cloudy; no precipitation	Suitable
24.09.2017	14°C; wind speed 7km/h; partly cloudy; no precipitation	Suitable
25.09.2017	15°C; wind speed 2km/h; light rain	Suitable

Table 8 Weather Conditions During Automated Bat Survey in October

Date	Weather	Weather Suitability
24.10.2017	15°C; wind speed 15km/h; light drizzle	Suitable
25.10.2017	14°C; wind speed 8km/h; light drizzle	Suitable
26.10.2017	13°C; wind speed 4km/h; fog; no precipitation	Suitable
27.10.2017	9°C; wind speed 6km/h; clear sky; no precipitation	Suitable
28.10.2017	7°C; wind speed 7km/h; fog; no precipitation	Unsuitable
29.10.2017	9°C; wind speed 11km/h; mostly cloudy; no precipitation	Suitable
30.10.2017	6°C; wind speed 2km/h; clear; no precipitation	Unsuitable
31.10.2017	8°C; wind speed 4km/h; partly cloudy; no precipitation	Suitable
01.11.2017	9°C; wind speed 3km/h; fog; no precipitation	Suitable

4.2 Activity Transects

4.2.1 24th July 2017

A r moderate level of bat activity was recorded during this activity transect. The majority of the activity recorded was focused towards southern and northern boundary and included commuting and foraging by mainly soprano pipistrelles (multiple passes by individual bats on several locations), common pipistrelles (multiple passes by individual bats on several locations), with occasional passes by noctule (multiple passes by individual bats on three location) and a *Myotis* species (two passes by one individual at one location). Refer to Figure 4 for the details of activity recorded.

Soprano pipistrelle was recorded foraging at the north-western boundary of the site, while noctule foraged along the north-eastern boundary. Both these areas are adjacent to mature trees. In the southern section of the site, soprano pipistrelle foraged in area adjacent to the stream tributary lined with a hedgerow. Three species (common and soprano pipistrelles and a *Myotis* species) foraged



together at the southern boundary that is lined with woodland habitat, separating the site from the road. A low level of activity by common pipistrelles was also recorded along the western boundary, adjacent to residential gardens.

4.2.2 19th September 2017

A moderate level of bat activity was recorded during this activity transect. Four species of bats were recorded: common pipistrelle (multiple passes by individual bats on five locations), soprano pipistrelle (multiple passes by individual bats on five locations), noctule (three passes by individual bats on two locations) and a *Myotis* species (two passes by individual bat on one location). The activity was focused mainly around the southern end of the site. Refer to Figure 5 for the details of activity recorded.

Common pipistrelles, together with few *Myotis* species passes, were particularly active along the south-western boundary of the site, where a mature oak is located adjacent to residential gardens. Two other areas of relatively high activity were located at south-eastern corner of the site and along the south-eastern boundary of the site, which is lined with a stream. The activity in both of these locations was dominated by soprano and common pipistrelles, with noctules also recorded. The northern boundary of the site was also utilised for foraging by predominantly soprano pipistrelles.

4.2.3 16th October 2017

A low level of bat activity was recorded during this survey. Two species of bats were recorded; common pipistrelle (multiple passes by individual bats at two locations) and soprano pipistrelle (two passes by an individual bat at one location). The activity was focused around the mature oak tree bordering residential gardens at the south-western boundary of the site. See Figure 6 for details of the recorded activity.

Almost all the activity was recorded at the mature oak bordering the residential gardens in the southern section of the site. This is where the two soprano pipistrelle passes were recorded too, alongside a single foraging common pipistrelle. Four more common pipistrelle passes were recorded further up the western boundary, while only one pass was recorded at the eastern boundary along the stream.

4.3 Automated Activity Surveys

The automated bat detectors deployed on site recorded up to two bat species in August - October 2017. The majority of passes recorded were by common pipistrelle, with occasional passes by soprano pipistrelle. In general, low numbers of bat passes (five in total during one night) were recorded. The activity surveys, carried out with hand held bat detectors, showed that the area where static detector was placed was rarely used by bats, however more suitable location for detector was not available (see section 3.3 Limitations).

Tables 9-10 provide details of bat calls recorded during the automated surveys.

Table 9 Automated Bat Detector Survey Results from August 2017

Date	Species	Number of Passes
01.08.2017	Common pipistrelle	4

Date	Species	Number of Passes
	Soprano pipistrelle	1
02.08.2017	No bats recorded	0
03.08.2017	No bats recorded	0
04.08.2017	Common pipistrelle	1
05.08.2017	No bats recorded	0
06.08.2017	No bats recorded	0
07.08.2017	No bats recorded	0
08.08.2017	No bats recorded	0
09.08.2017	No bats recorded	0
10.08.2017	No bats recorded	0
11.08.2017	Common pipistrelle	5
12.08.2017	Common pipistrelle	1

Table 10 Automated Bat Detector Survey Results from October 2017

Date	Species	Number of Passes
24.10.2017	No bats recorded	0
25.10.2017	No bats recorded	0
26.10.2017	No bats recorded	0
27.10.2017	No bats recorded	0
28.10.2017	No bats recorded	0
29.10.2017	No bats recorded	0
30.10.2017	No bats recorded	0
31.10.2017	No bats recorded	0
01.11.2017	No bats recorded	0

5.0 Discussion

5.1 Bat Activity Surveys

During bat activity transects and automated static surveys, up to four bat species were recorded within or adjacent to the Site. These were common pipistrelle, soprano pipistrelle, noctule and a *Myotis* species. Common and soprano pipistrelles were the most frequently recorded, while noctule and a *Myotis* species were recorded rarely.

Areas of the site where the most bat activity was recorded were at the mature oak adjacent to residential gardens at the south-western boundary of the site, the eastern boundary of the site along the ditch and the north-eastern boundary where there is a small woodland coppice (Figures 4-6). Activity included mixture of commuting and foraging.

According to Table 1 recorded bats, particularly noctule and a *Myotis* species, are considered 'rarer'. Based on the assessment in Table 2, the commuting bat score on site is 17 (rarer species, individual bats, unknown number of roosts, gappy hedgerow). Therefore, the commuting bat value on site is considered to be of up to **district, local or parish level**. Based on the assessment in Table 3, the foraging bat score on site is 17 (rarer species, individual bats, unknown number of roosts, isolated woodland patches in small towns). Therefore, the foraging bat value at this site is considered to be of up to **district, local or parish level**.

6.0 Potential Impact of the Development on Bats

6.1 Effects on Foraging/Commuting Habitat

Based on the analysis above, the site is considered to have value at a Local level for foraging and commuting bats. The development proposal includes the construction of residential properties with associated access, landscaping, and car parking. The proposed development will retain most of the valuable features for foraging and commuting bats, in particular the mature oak tree at the south-western border (outside of development boundary), hedgerow along the river tributary, large area of improved grassland in the eastern section of the site, and woodland coppice at the northern boundary (outside of development boundary). Proposal will result in the loss of improved grassland in the western section and parts of hedgerow at the north-western boundary to provide access to the development site. Loss of the grassland and hedgerow is not expected to have an impact on commuting or foraging bats.

There is potential for bats that continue to forage and commute within areas of retained habitat to be impacted by lighting during the construction and operational phases of the development. Some common bats, such as those of the *Pipistrellus* genus, are attracted to certain types of lighting as it attracts their invertebrate prey (Rydell and Racey, 1995). However lighting can also illuminate the bats themselves and make them more vulnerable to being predated upon. Where inappropriate lighting occurs close to roost sites, bats may abandon their roost or delay their emergence, which limits their foraging opportunities. Lighting a commuting or foraging route may also impact upon the integrity of a roost, even if the roost itself is not directly affected. Bats from the *Myotis* genus are more sensitive to ambient lighting and may be deterred from using areas of the site, if the lighting is not sensitively designed.

Mitigation recommendations to offset the potential development and operational impacts are provided in the following section.

7.0 Recommendations and Mitigation

7.1 Further Work

If the proposed development does not proceed within the next two years (i.e. by October 2019) it is recommended that a review of the site conditions is undertaken to determine whether updated surveys are necessary. This will help to establish if bat activity has changed in the interim period and to inform future mitigation measures, if necessary.

7.2 Avoidance

7.2.1 Lighting

Stone (2013) summarises the findings of the Bats and Lighting Research Project to date. This has found that artificial lighting tends to have an adverse effect on bats and recommends a series of measures to avoid or reduce this impact. It is recommended that lighting on the development site comprise LED lamps, with a low colour correlated temperature – preferably below 3500K (warm white). Lighting should be directed groundward to avoid light spillage, with hoods/shields as necessary. Light spill on boundary features to be used by commuting bats should be a maximum of 1lux.

During the construction phase (between April and October), it is recommended that construction activity ceases 30 minutes before sunset, to avoid delaying the emergence of locally roosting bats because of artificial lighting. It is also recommended that construction activity only commences again after sunrise to ensure that impacts to bats returning to local roosts does not occur.

7.2.2 Breathable Roof Membranes

In new buildings, good practice should be considered and the use of Breathable Roof Membranes (BRM) avoided. Instead, Type 1F bitumen and hessian under-felt should be considered as an alternative. Ongoing research has confirmed that no BRM are bat-friendly and all pose a risk to bats. As the membranes wear over time the fibres in the membrane become loose. Bats can become entangled in the fibres and, unable to escape, dehydrate, and starve to death. As well as posing a risk to bats, BRMs are also degraded by bats and the efficiency of the membrane is impaired (i.e. the use of BRMs in situations where bats are present is detrimental to the efficient functioning of the BRM as well as to bats. The research is summarized at <http://www.batsandbrms.co.uk/images.php>), further detail is provided in Waring *et al.* (2013).

7.3 Mitigation

7.3.1 Habitat Retention and Replacement

The proposed development will retain the mature oak tree at the south-western border, hedgerow along the river tributary, large area of improved grassland in the eastern section of the site, most of scrub habitat located in the centre of the site, and trees coppice at the northern boundary. Proposals will result in the loss of improved grassland in the western section (to allow placement of housing) and parts of defunct hedgerow at the north-western boundary (to allow access and parking).

It is recommended that a diverse collection of native planting is incorporated into the landscaping design within the proposed development site (refer to Appendix A for recommended 'bat-friendly



planting). The planting should be also incorporated to change the western gappy hedgerow boundary to an intact one. Structurally diverse vegetation and inclusion of native evening-blooming plants will attract insects which in turn will help to enhance the site for foraging bats. Proposed planting which will benefit bats includes woodland edge/understorey planting along the western boundary of the site, species-rich meadow grassland planting, wet grassland planting for attenuation features and additional species-rich hedgerow planting.

7.4 Enhancement

Whilst enhancement is not a legal requirement, it is encouraged on site as it helps to meet the government objectives for planning to protect and enhance biodiversity, in accordance with the *National Planning Policy Framework (NPPF)*.

A number of the measures outlined in the mitigation section, such as the planting of 'bat-friendly' plants have the potential to enhance the site for bats.

Additional measures to enhance the site for bats include the provision of one bat tile on the most north-western placed residential property, as it will be located close to suitable foraging and commuting habitat. Additionally four Schwegler 2FN or similar tree-mounted bat boxes to be attached to suitable retained trees within the retained site boundaries. This model of bat box will be suitable for both crevice-dwelling and larger bat species. Lighting should be directed away from these new roost sites. Ideally, two boxes will be placed in the southern section of the site and two in the northern section.

Bat boxes will be located away from footpaths and areas subject to disturbance, which will reduce recreational pressure on these new roosting locations.

Bat boxes installed on trees will be sited as high as possible (no lower than 3m) and clear of any overhanging branches so that the bats have direct and easy access to them. Ideally the boxes should be erected facing in differing directions to provide variety in conditions. Boxes should be attached to the tree using an aluminium nail or tied in position using wire/leather.

8.0 Summary

8.1 Recommendations and Mitigation

8.1.1 Further Work

- The results of the bat activity surveys will remain valid for two years i.e. until October 2019.
- If works have not commenced by that time, it is recommended that the results of the surveys are reviewed to determine any need for updates.

8.1.2 Avoidance

- It is recommended that lighting comprises warm white LED lamps to reduce potential disturbance to bats to a minimum.
- Lighting should be directed groundward to avoid light spillage, using light hoods/shields as necessary to keep light spill on boundaries to 1lux.
- During the construction phase it is recommended that, between April and October, construction activity ceases 30 minutes before sunset, if not before, and commences again after sunrise.
- The use of Breathable Roof Membranes (BRM) should be avoided. Instead, Type 1F bitumen and hessian under-felt should be considered as an alternative.

8.1.3 Mitigation

- It is recommended that additional trees are planted within residential gardens and areas of public open space.
- It is recommended that a diverse collection of native planting will be incorporated into the landscaping design within the proposed development site (refer to Appendix A for recommended 'bat' plants).
- It is recommended that gaps within the western boundary hedgerow are infilled with native shrub planting.

8.1.4 Enhancement

- A number of the measures outlined in the mitigation section, such as the planting of 'bat-friendly' plants have the potential to enhance the site for bats.
- Four artificial bat roosts will be attached to trees that are being retained on the proposed development site. Bat boxes will be located away from footpaths and areas subject to disturbance, which will reduce recreational pressure on these new roosting locations.

9.0 References

- Collins, J. (ed) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.
- Rydell, J., Racey, P.A. (1995). Street lamps and the feeding ecology of insectivorous bats. *Symposium of the Zoological Society of London*, 67, pp 291-307.
- Stone E. (2013) Bats and Lighting: Overview of current evidence and mitigation guidance.
- Waring, S. D., Essah, E. A., Gunnell, K., Bonser, R. H. C. (2013). Double jeopardy: The potential for problems when bats interact with breathable roofing membranes in the United Kingdom. *Architecture and environment*, 1(1):1-13.
- Wray, S., Welss, D., Long, E. & Mitchell-Jones, T. (2010). Valuing bats in ecological impact assessment. *In Practice*, No 70, pp 22-25.
- WYG (2017) Ecological Appraisal Summary.



FIGURES

Figure 1 – Site Location Plan

Figure 2 – Site Layout

**Figure 3 – Transect Route and Static
Detector Locations**

**Figure 4 - Bat Activity Survey (24th
July 2017)**

**Figure 5 – Bat Activity Survey (19st
September 2017)**

**Figure 6 – Bat Activity Survey (16th
October 2017)**



Rev A	Date 26/10/17	Notes Initial map production
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Legend



Site Location Plan

**Westwood Close, Emsworth
Hampshire Homes Ltd**

Scale at A3: 1:10,000	Project No: A104417	Drawing No: Figure 1	Revision: A
Drawn by: Ben Blowers	Drawn date: 26/10/2017	Approved by: Max Ward	

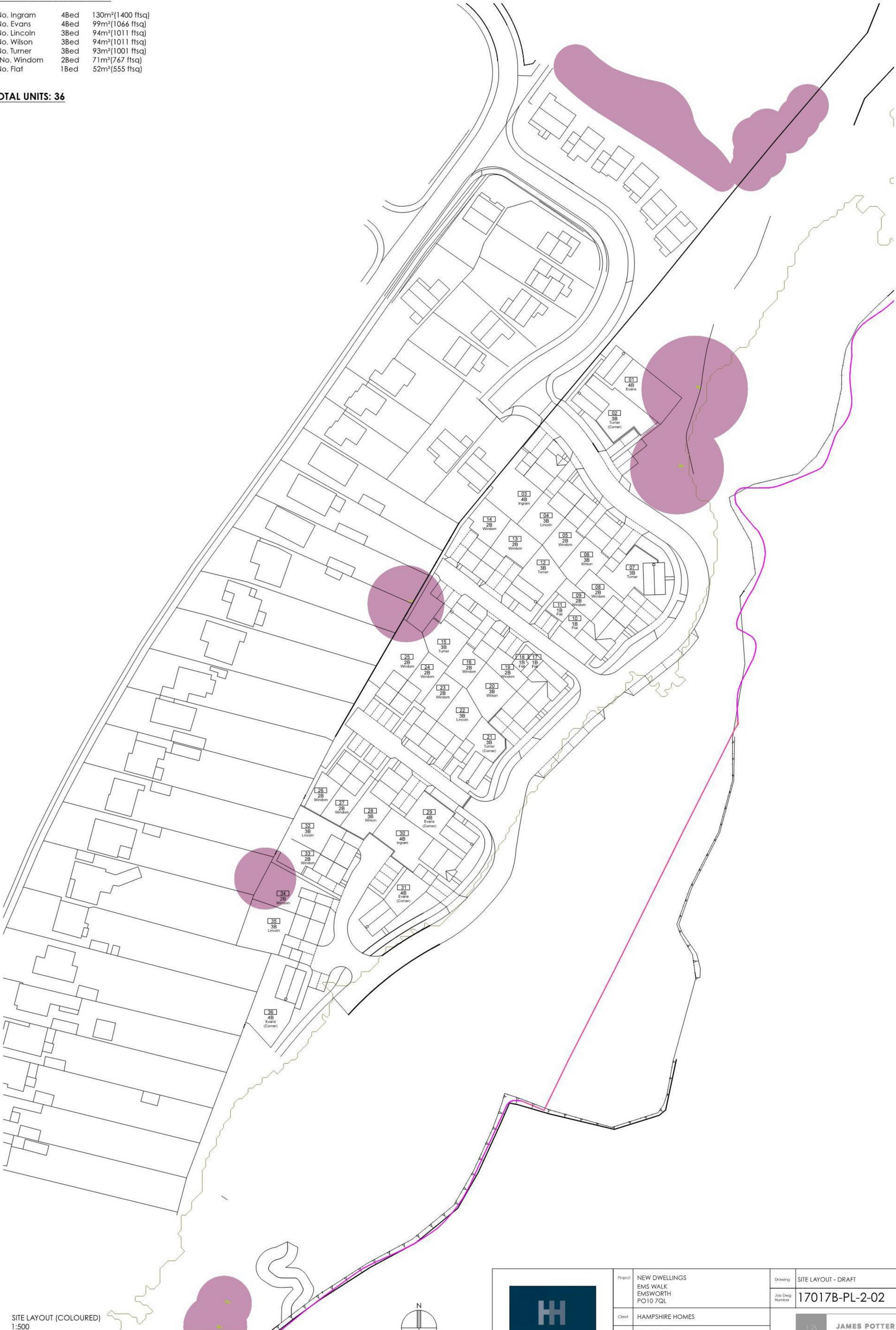
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Rev.	Date	Note	Author	Checked

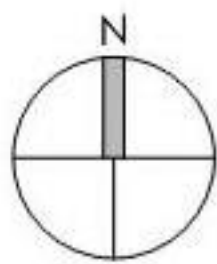
SCHEDULE OF ACCOMMODATION

2No. Ingram	4Bed	130m ² (1400 ftsq)
4No. Evans	4Bed	99m ² (1066 ftsq)
4No. Lincoln	3Bed	94m ² (1011 ftsq)
3No. Wilson	3Bed	94m ² (1011 ftsq)
5No. Turner	3Bed	93m ² (1001 ftsq)
16No. Windom	2Bed	71m ² (767 ftsq)
4No. Flat	1Bed	52m ² (555 ftsq)

TOTAL UNITS: 36



SITE LAYOUT (COLOURED)
1:500



Project	NEW DWELLINGS EMS WALK EMSWORTH PO10 7QL		Drawing	SITE LAYOUT - DRAFT	
	Client		Job-Dwg Number	17017B-PL-2-02	Rev. A
Status		PLANNING		 www.jpaa.design JPA - PORTSMOUTH Suite 1, Winter Works, Road of 119 Winter Road Southsea, Portsmouth, PO4 8DS T: +44(0)2393 871 000	
Scale		1:500	Sheet Size	A1	
Author		JP	Checked	RR	Date 24/10/18



Rev	Date	Notes
A	08/01/18	Initial map production

Legend

- Site boundary
- Common Pipistrelle heard not seen
- Soprano Pipistrelle heard not seen
- Myotis species heard not seen
- Noctule heard not seen
- S Stopping point
- Soprano Pipistrelle
- Transect route
- (C) Commuting
- (F) Foraging

0 25 50 100 Metres



Bat Activity Survey (24th July 2017)

**Westwood Close, Emsworth
Hampshire Homes Ltd**

Scale at A3: 1:2,800	Project No: A104417	Drawing No: Figure 4	Revision: A
Drawn by: Ben Blowers	Drawn date: 08/01/2018	Approved by: Dominika Muriénova	

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