Bat Survey – 2024 Activity Surveys

Land South of Hammerwood Road

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LIABILITIES:

Whilst every effort has been made to guarantee the accuracy of this report, it should be noted that living creatures are capable of migration and whilst protected species may not have been located during the survey duration, their presence may be found on a site at a later date.

The views and opinions contained within this document are based on a reasonable timeframe between the completion of the survey and the commencement of any works. If there is any delay between the commencement of works that may conflict with timeframes laid out within this document, or have the potential to allow the ingress of protected species, a suitably qualified ecologist should be consulted.

It is the duty of care of the landowner/developer to act responsibly and comply with current environmental legislation if protected species are suspected or found prior to or during works.

1.0 INTRODUCTION

Background

1.1 The Ecology Partnership was commissioned by Virtue Land to undertake a bat activity survey for the land south of Hammerwood Road, Ashurstwood, East Grinstead, hereafter referred to as the 'site' (Figure 1).

1.2 The site (TQ42363661) is located east of Ashurstwood and is approximately 0.49ha. The site consists of woodland with relatively dense residential development to the northwest and east of the site. To the northeast of the site is agricultural land, whilst woodland is predominant to the south.

Figure 1: Site red line boundary.

Proposed Development

1.3 The proposed development is for 12 residential units with associated hardstanding and garden habitats

Legislation

1.4 Under the Natural Environment and Rural Communities (NERC) Act 2006, it is now the duty of every Government department in carrying out its functions "*to have regard, so far as it is consistent with the proper exercise of those functions, to the purpose of conserving biological diversity in accordance with the Convention*". Seven species of bat (Barbastelle, Bechstein's, Noctule, Soprano pipistrelle, Brown long-eared, Greater horseshoe and Lesser horseshoe) are listed as Species of Principal Importance in England under Section 41 of the NERC Act.

1.5 All bats are covered by the following relevant legislation: the Wildlife and Countryside Act (WCA) 1981 (as amended); the Countryside and Rights of Way Act 2000; the Natural Environment and Rural Communities Act 2006; and by the Conservation of Habitats and Species Regulations (CHSR) 2010.

1.6 Under the WCA 1981 it is an offence to:

- Intentionally, recklessly or deliberately disturb a roosting or hibernating bat (i.e. disturbing it whilst it is occupying a structure or place used for shelter or protection).
- Intentionally or recklessly obstruct access to a roost (i.e. a structure or place used for shelter or protection).

1.7 Under the CHSR 2010 it is an offence to:

- Deliberately capture (or take), injure or kill a bat
- Intentionally, recklessly or deliberately disturb a bat, in particular (i) any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young; (ii) any disturbance which is likely to impair their ability in the case of hibernating or migratory species, to hibernate or migrate; or (iii) any disturbance which is likely to affect significantly the local distribution or abundance of the species to which they belong
- Damage or destroy a breeding site or resting place (roost) of a bat.

2.0 METHODOLOGY

2.1 A bat activity survey was undertaken between May and October 2024.

Night-time Bat Walkover (NBW) Survey

2.2 A NBW survey was carried out on 29th May. The surveyor remained in position for 30 minutes before walking the predetermined transect route, during which bat flyovers and activity were recorded. The route was designed to follow features which bats are known to use as commuting corridors.

2.3 Only one NBW was conducted due to health and safety concerns regarding the hazards of navigating the woodland at night, particularly the multiple trip hazards present. In addition, due to the habitats present and the size of the site, it is considered that the automated/static surveys would be sufficient to determine overall levels of bat activity.

Figure 2: Transect routes.

2.4 The surveys started at sunset and finished 2 hours after sunset. Bats usually emerge about twenty minutes after sunset depending on the species, light level, weather conditions and time of year. Peak activity will normally last for about two hours after sunset, during times of peak insect activity. Surveyors were equipped with Echo Meter Touch 2 Pro bat detectors.

Automated/Static Survey

2.5 Anabat Express and Song Meter Mini 2 detectors were deployed monthly between May and October. The detectors were positioned to determine levels of activity across the site, in relation to the proposed development. The recordings were analysed using Anabat Insight and Kaleidoscope software.

Figure 3: Location of Static Detectors.

Limitation

2.6 The northern static detector in July 2024 did not record any bats, and the northern static detector in September 2024 failed to record. Based on the results, it is likely that the northern static detector in July 2024 also failed to record. Although these detectors failed to record, based on the size of the site, it is only considered that a single static detector would be required to determine the level of bat activity. In addition, with the additional detectors utilised throughout the survey, it is considered that the level of bat activity for the northern boundary has been determined and that an accurate presentation of the sites bat activity levels has also been determined.

3.0 RESULTS

Night-time Bat Walkover (NBW) Survey

29th May 2024

3.1 Sunset was at 21:03, the start temperature was 15°C , with 40% cloud cover and a 1 on the Beaufort Wind Scale. The first bat recorded on the survey was a common pipistrelle (21:21) heard along the eastern edge of the site. Foraging common pipistrelles were also recorded along the northern edge (22:18,) and along the western edge (22:25). Foraging soprano pipistrelles were recorded along the western edge (21:56) and eastern edge (21:10). A total of 3 common pipistrelles and 2 soprano pipistrelles were recorded during the survey.

3.2 Activity levels overall were very low.

Figure 4: 29th May 2024 survey results.

Static Recorders

3.10 Two Anabat Express/Song Meter Mini 2 static recording devices were deployed across the site in May, June, July, August, September and October (See Figure 3 for locations). In July 2024 the static detector along the northern boundary did not record any bats. In September 2024, the static detectors along the northern boundary failed.

Table 1. Number and percentage of registrations made by each species per static location (Average per night – total number of registrations divided by total number of recording nights)

	Eastern boundary		Northern boundary		Southern boundary	
Bat species	**Total**	**Average per night**	**Total**	**Average per night**	**Total**	**Average per night**
Common pipistrelle	224	7.47	3004	200.27	18	1.80
Soprano pipistrelle	41	1.37	17	1.13	11	1.10
Brown long-eared	170	5.67	1	0.07	-	-
Myotis sp.	10	0.33	11	0.73	-	-
Noctule	186	6.20	14	0.93	-	-
Leisler's	23	0.77	20	1.33	3	0.30
Serotine	3	0.10	1	0.07	-	-
Nathusius' pipistrelle	1	0.03	-	-	-	-

3.3 The automated survey results are detailed in Tables 3-14 in Appendix 1.

3.4 In total, 3,758 bat passes were recorded during the automated surveys, comprising a total of 9 species: common pipistrelle, soprano pipistrelle, Nathusius's pipistrelle, Myotis sp., noctule, Leisler's bat *Nyctalus leisleri*, brown long-eared *Plecotus auritus*, and serotine *Eptesicus serotinus*.

3.5 The activity was dominated by common pipistrelle, making up approximately 86.38% of the registrations. The second and third most frequent species were noctule at 5.32% and brown long-eared at 4.55%. The other 5 species account for the remaining 3.76%.

3.6 The greatest number of common pipistrelle registrations was recorded at the northern boundary in October (an average of 306.4 registrations a night). The second greatest number of common pipistrelle registrations was recorded in August at the northern location (an average of 294.4 registrations a night).

Table 2. Total number of bat recordings by species across the site between April and October 2024

Bat species	Total number of recordings	Approximate % of total
Common pipistrelle	3246	86.38
Noctule	200	5.32
Brown long-eared	171	4.55
Soprano pipistrelle	69	1.84
Leisler's	46	1.22
Myotis sp.	21	0.56
Serotine	4	0.11
Nathusius' pipistrelle	1	0.03

4.0 DISCUSSION

4.1 The transect surveys recorded very low levels of bat activity within the site with the majority of the registrations from common pipistrelle and soprano pipistrelle. Common and soprano pipistrelles are both common and widespread across the UK.

4.2 The static detectors recorded the highest activity along the northern boundary and a peak count of 742 common pipistrelle registrations was recorded on 8th October 2024.

4.3 Although the surveys recorded occasional increases in activity from common species, the levels of activity throughout the survey period were much lower. The majority of the activity was recorded from common pipistrelle and other common species with limited recordings from rarer species including Leisler's. As such, the majority of the site is considered to support '**low**' levels of bat activity, with limited increases of '**moderate**' activity, although these peaks are likely to be from a few bats foraging nearby to the detectors.

Recommendations and Enhancements

Commuting and foraging habitat

4.4 As several bat species make use of the boundary features onsite, it is recommended that light should be directed away from these features, maintaining these as 'dark corridors'. This would minimise any potential impacts on light-sensitive species such as brown long-eared bats and some Myotis species (Stone *et al*., 2012).

4.5 Dark corridors must be maintained along the boundary features. Lighting can alter bat behaviour significantly in terms of light avoidance with some species unable to cross lit areas even at low light levels. In addition, lighting can affect the availability of insect prey with some groups attracted to lights, creating a 'vacuum effect' in adjacent habitats. Some of the species on site, such as *Myotis* species, are known to avoid all streetlights (Stone *et al.*, 2009, 2012, 2015).

4.6 The proposals indicate there will be breaks created in the woodland habitat and these breaks will be mitigated using hop overs (Figure 5). Existing features on either side of the created

gap are managed to a greater height to create a bridge effect over the proposed roads, and/or trees are planted/retained as a central reservation in any created gaps to form a stepping-stone effect.

Figure 5: 'Hop-overs' created using trees to guide bats over roads (Limpens et al 2005).

4.7 Dark corridors could be implemented through the inclusion of dark buffer zones along important features. These will help to ensure that light levels (measured in lux) within a certain distance of a feature do no exceed certain defined limits. The feature itself, such as the ditch and hedgerows, for example, would not have any artificial lighting (Zone A in Figure 6). The habitats between these important features and the development area would then act as a transition with lighting limits (Zones B and C in Figure 4). Within the transition zone, it is important to use screening methods and to carefully consider whether lighting is appropriate and at what levels. The size of these buffers will be dependent on the importance of the feature. A lighting specialist in collaboration with an ecologist would help determine these levels and zone sizes. The development area itself (Zone D in Figure 6) should then be subject to a sensitive lighting scheme.

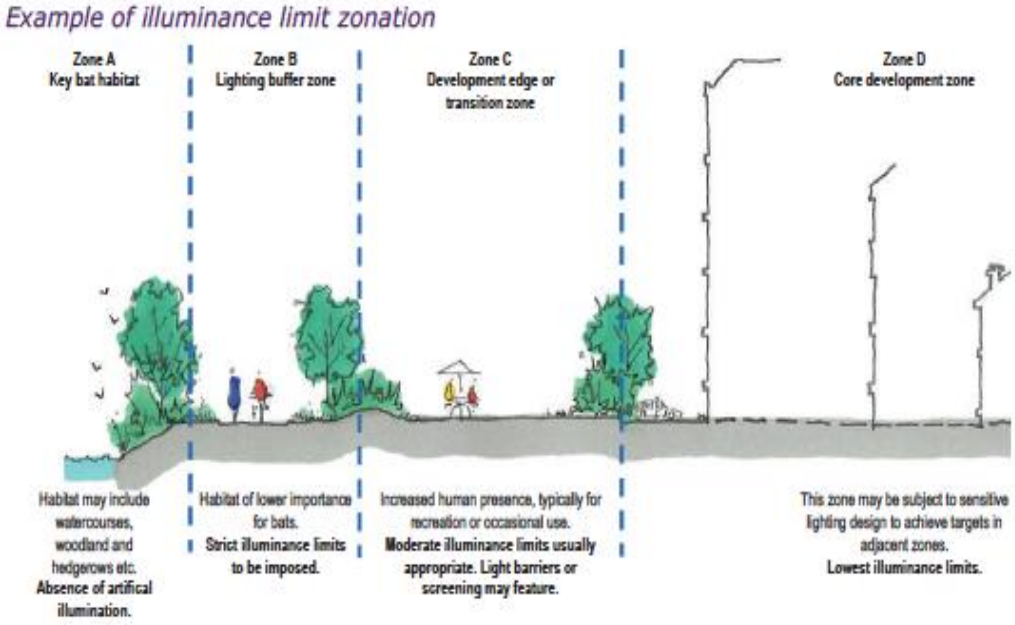

Figure 6: Examples of lighting buffers which can be included within the design of the scheme

4.8 Where lighting is required on site, a sensitive lighting scheme must be implemented. Again, collaboration between a lighting professional and ecologist may be required in order to help design this scheme but measures should include:

- The impact on bats can be minimised by the use of Light emitting diodes (LEDs) instead of mercury, fluorescent or metal halide lamps where glass glazing is preferred due to their sharp cut-off, lower intensity and their dimming capability. Lighting should be directed to where it is needed and light spillage avoided.
- This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only.
- Soft landscape planting should also be used as a barrier or manmade features such as walls or fencing with planted climbers where required within the build can be positioned so as to form a barrier between any development and the linear features used by bats.

4.9 Bollard lighting is recommended to be used across the site, along internal streets where possible, in place of full street lighting (Figure 7). The retained ditch and hedgerow habitats are recommended to be maintained as dark corridors with no lighting installed in these areas.

This will maintain the integrity of these corridors for foraging bats. Warm-white or red lights are recommended to be used if health and safety concerns are great as these are said to limit the impact on insects and therefore bat activity.

Figure 7: Use of red bollard lights are considered to be 'bat friendly'

Roost enhancements - Bat boxes.

4.10 New roosting opportunities will be created on site by installing bat boxes on retained mature trees along the site boundaries. This will enhance the site for local bat populations and would provide further roosting opportunities. Recommended boxes include:

- Vivara Pro WoodStone Bat Box – A general purpose bat box that supports a range of species (Figure 8). These can be hung on trees in a variety of heights and aspects in order to provide a variety of micro-climates.
- Large Multi Chamber WoodStone Bat Box – This is a multipurpose box designed for larger colonies and a range of bat species including pipistrelles, noctules and brown long-eared bats. These should be hung on mature trees around the site (Figure 8).

Figure 8: Vivara Pro WoodStone Bat Box (left) and Large Multi Chamber WoodStone Bat Box (right).

5.0 CONCLUSIONS

5.1 Overall, bat activity on site was generally considered to be 'low' levels, with occasional 'moderate' levels of activity recorded for common pipistrelle. It is recommended that the proposed development maintains the boundary features and includes hop-overs to minimise the impact of any necessary breaks in linear habitat features. A sensitive lighting scheme is recommended to ensure that the majority of the existing commuting/foraging flight paths are negatively impacted. The installation of bat boxes and the creation of linear planting features would provide enhanced opportunities for bats.

6.0 REFERENCES

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7.0 APPENDIX 1 – STATIC RESULTS

Table 3. 29th May – 2nd June 2024 (Southern Boundary)

Southern Boundary	Bats - Number of Registrations		
May	**Common pipistrelle**	**Soprano pipistrelle**	**Leisler's**
29/05/2024	9	0	0
30/05/2024	0	0	0
31/05/2024	0	0	0
01/06/2024	0	3	3
02/06/2024	6	1	0
Total Registrations	**15**	**4**	**3**

Table 4. 29th May – 2nd June 2024 (Eastern Boundary)

Eastern Boundary	Bats - Number of Registrations						
May	**Common pipistrelle**	**Soprano pipistrelle**	**Serotine**	**Brown long-eared**	**Myotis sp.**	**Noctule**	**Leisler's**
29/05/2024	29	2	0	0	1	0	0
30/05/2024	0	0	0	0	0	0	13
31/05/2024	0	2	0	1	0	0	2
01/06/2024	4	0	1	0	0	1	3
02/06/2024	41	2	0	1	0	0	0
Total Registrations	**74**	**6**	**1**	**2**	**1**	**1**	**18**

Table 5. 25th – 30th June 2024 (Southern Boundary)

Southern Boundary	Species Registrations	
June	**Common pipistrelle**	**Soprano pipistrelle**
25/06/2024	0	4
26/06/2024	1	1
27/06/2024	0	1
29/06/2024	2	0
30/06/2024	0	1
Total Resignations	**3**	**7**

Table 6. 25th – 30th June 2024 (Southern Boundary)

Eastern Boundary	Species Registrations
June	**Noctule**
25/06/2024	0
26/06/2024	0
27/06/2024	1
29/06/2024	0
30/06/2024	0
Total Resignations	**1**

Table 7. 26th – 30th July 2024 (Eastern Boundary)

Eastern Boundary	Species Registrations		
July	**Common pipistrelle**	**Soprano pipistrelle**	**Myotis sp.**
26/07/2024	2	2	0
27/07/2024	2	0	0
28/07/2024	13	1	0
29/07/2024	0	1	0
30/07/2024	2	0	1
Total Resignations	**19**	**4**	**1**

Table 8. 26th – 30th July 2024 (Northern Boundary)

Northern Boundary	Species Registrations		
July	**Common pipistrelle**	**Soprano pipistrelle**	**Myotis sp.**
26/07/2024	0	0	0
27/07/2024	0	0	0
28/07/2024	0	0	0
29/07/2024	0	0	0
30/07/2024	0	0	0
Total Resignations	**0**	**0**	**0**

Table 9. 22nd – 26th August 2024 (Northern Boundary)

Northern Boundary	Species Registrations						
August	**Common pipistrelle**	**Soprano pipistrelle**	**Serotine**	**Myotis sp.**	**Noctule**	**Leisler's**	**Brown long-eared**
22/08/2024	22	0	0	0	0	0	0
23/08/2024	468	4	0	0	3	0	0
24/08/2024	1	0	0	1	0	2	0
25/08/2024	625	5	0	2	0	4	1
26/08/2024	356	5	1	7	1	9	0
Total Resignations	**1472**	**14**	**1**	**10**	**4**	**15**	**1**

Table 10. 22nd – 26th August 2024 (Eastern Boundary)

Eastern Boundary	Species Registrations					
August	**Common pipistrelle**	**Soprano pipistrelle**	**Myotis sp.**	**Noctule**	**Brown long-eared**	**Serotine**
22/08/2024	12	0	0	0	1	0
23/08/2024	7	7	2	12	34	0
24/08/2024	0	7	0	19	23	1
25/08/2024	1	1	3	2	3	1
26/08/2024	6	6	1	83	43	0
Total Resignations	**26**	**21**	**6**	**116**	**104**	**2**

Table 11. 18th – 22nd September 2024 (Eastern Boundary)

Eastern Boundary	Species Registrations						
September	**Common pipistrelle**	**Soprano pipistrelle**	**Nathusius's pipistrelle**	**Noctule**	**Leisler's**	**Brown long-eared**	**Myotis sp.**
18/09/2024	7	0	0	7	0	5	0
19/09/2024	26	0	0	16	0	11	1
20/09/2024	17	0	0	34	0	32	1
21/09/2024	20	3	1	9	5	16	0
22/09/2024	0	0	0	0	0	0	0
Total Resignations	**70**	**3**	**1**	**66**	**5**	**64**	**2**

Table 12. 18th – 22nd September 2024 (Northern Boundary)

Northern Boundary	Species Registrations
Detector Failed	

Table 13. 8th – 12th October 2024 (Northern Boundary)

Northern Boundary	Bats - Number of Registrations				
October	**Common pipistrelle**	**Soprano pipistrelle**	**Noctule**	**Leisler's**	**Myotis sp.**
08/10/2024	742	0	2	0	1
09/10/2024	533	2	2	1	0
10/10/2024	1	1	3	2	0
11/10/2024	8	0	2	0	0
12/10/2024	248	0	1	2	0
Total Registrations	**1532**	**3**	**10**	**5**	**1**

Table 14. 8th – 12th October 2024 (Eastern Boundary)

Eastern Boundary	Bats - Number of Registrations		
August	**Common pipistrelle**	**Soprano pipistrelle**	**Noctule**
08/10/2024	5	3	0
09/10/2024	9	0	2
10/10/2024	0	1	0
11/10/2024	18	3	0
12/10/2024	3	0	0
Total Registrations	**35**	**7**	**2**

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