Bat Activity Survey Report 2025

Land south of Smugglers Lane, Barns Green

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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 were commissioned by Miller Homes to undertake monthly bat activity surveys on land south of Smugglers' Lane, Slaughterford Farm, Itchingfield, Barns Green, Horsham, West Sussex, RH13 0PS. The red line boundary of the site is shown in Figure 1.

Figure 1: Approximate red line boundary of the site and immediate surroundings. Taken from Google Earth Pro, July 2025

1.2 An initial preliminary ecological appraisal was undertaken by The Ecology Partnership in April 2025. This report identified the hedgerows with trees onsite to provide linear habitats suitable for commuting and foraging bats. Furthermore, the site is connected to other highly suitable bat habitats such as woodland and large waterbodies.

1.3 This report presents the initial results of The Ecology Partnership's activity and static monitoring surveys in and around the site, which aims specifically to assess how bats are using the site over the course of the 2025 survey season.

Site Context and Status

1.4 The site lies to the southwest of the town of Barns Green in Horsham (TQ 12467 27020). The site covers approximately 3.2ha and consists of one field of modified grassland bordered by hedgerows on all four aspects.

Description of Proposed Development

1.5 The proposals are for a residential development with associated access road and garden space. Amenity areas include a play area and open space supporting a SuDS basin. Additional tree planting will be present across the site. A 20m vegetated buffer is to be maintained along the boundary of the adjacent ancient woodland to the west of the site.

Legislation

1.6 Under the 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*".

1.7 Bats are covered by the following relevant legislation: The Wildlife and Countryside Act (1981) (as amended); the Countryside and Rights of Way Act, 2000; the Natural Environment and Rural Communities Act (NERC, 2006); and by the Conservation of Habitats and Species Regulations (2010).

1.8 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).

1.9 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

Activity surveys and static monitoring

2.1 The surveys followed BCT guidelines (Collins, 2023) following the night-time bat walkover (NBW) methodology. This involved reviewing potential roost sources and flight lines followed by a transect survey. Surveyors were equipped with one of the following recording devices: Echo Meter Touch 2, Anabat Walkabout and/ or Bat logger.

2.2 The predetermined transect route was designed for a static watch of habitats that could contain potential roosting features followed by a circuit of the site following linear features such as hedgerows and woodland edges which bats are known to use as commuting corridors. These habitats also provide the most suitable habitat on site for foraging. Figure 2 displays the layout of the transect route.

Figure 2: Location of the transect route (blue line) including start point and Song Meter locations (blue and white dot)

2.3 The surveys started at sunset and observations were maintained for 1.5-2 hours. 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.

2.4 Two Song Meter SM4 acoustic detectors were deployed for at least five consecutive nights per month, through the months of April to October. These were placed within boundary features considered most suitable for foraging and commuting bats, to gauge activity levels and species diversity on site and within the immediate vicinity. Their locations are shown in Figure 2. The subsequent recordings were analysed using Kaleidoscope Pro Analysis Software.

Limitations

2.5 It should be noted that whilst every effort has been made to provide a comprehensive description of the site, no single investigation could ensure the complete characterisation and prediction of the natural environment.

2.6 After retrieving the static monitors and storing the data in the month of August, the hard back up failed and the data for this month was lost. However, walked transects were completed in April, July, and September 2025, and static monitoring data are available for the remainder of this season, April May, June, July, September and October covering all of the active seasons, in line with best practice guidelines. As such, this is considered a minor limitation.

3.0 Results

Activity surveys

3.1 Bat activity surveys have been carried out in May, July and September 2025. The following section summarises the results from these surveys.

3.2 Two bat surveyors followed the predetermined route illustrated in Figure 2. Activity levels, foraging and commuting behaviour were recorded, and species were identified using bat detectors. Surveyors began the survey at sunset and continued until 2 hours after sunset.

3.3 The date, time and weather conditions during these surveys are shown in Table 2.

Table 2. Summary of the date, time and weather conditions during April and June activity surveys.

Survey date	Time of sunset	Weather conditions
22nd May 2025	20:55	Conditions were dry with 95% cloud cover and temperature starting 12°C and dropping to 10°C at the end of the survey.
23rd July 2025	20:45	Conditions were dry with 30% cloud and temperature starting 20°C and dropping to 18°C at the end of the survey.
18th September 2025	19:07	Conditions were dry with 100% cloud cover and temperatures starting at 18°C and dropping to 16°C at the end of the survey.

22nd May 2025

3.4 The first activity survey commenced at sunset at 20:55 on the 23rd May 2025. The temperature was 12°C, dropping to 10°C by the end of the survey, conditions were dry with 95% cloud cover.

3.5 The first bat was recorded at 20:55, when soprano pipistrelles (P*ipistrellus pygmaeus*) were seen commuting north along the western boundary by both surveyors. Several individuals followed this route, including common pipistrelles (*Pipistrellus pipistrellus*). Soprano pipistrelles were observed foraging along the western boundary by both the surveyors in both the north-western and south-western start points. This continued until the end of the survey. Both soprano and common pipistrelle bats were observed foraging along the southern, eastern and northern hedgerows during this survey, but more intermittently than along the west. A noctule (*Nyctalus noctula*) was observed foraging over the site at 21:22 and flying south. A brown long-eared bat was heard in the north of the site at 22:28, but not seen. No other bat species were recorded during the survey.

23rd July 2025

3.6 The second activity survey commenced at sunset at 20:45 on the 23rd July 2025. The temperature was 20°C, dropping to 18°C by the end of the survey, conditions were clear and dry.

3.7 The first bat was recorded at 21:08, when a soprano pipistrelle was observed commuting north along the western boundary by both surveyors. Several more soprano pipistrelles followed this route, with a couple observed foraging along the western boundary by both surveyors in the north-western and south-western start positions. Soprano pipistrelles were then recorded foraging along the western and southern boundaries of the site during the remainder of the survey. Multiple common pipistrelles were also recorded foraging along the western boundary from 21:27. Common pipistrelle were then recorded consistently across the site during the remainder of the survey. A noctule was heard foraging in the northwest of the site at 21:23 and 21:25, and again in the southwest at 21:41. A myotis species bat was heard in the northwest corner of the site at 21:33. No other bat species were recorded during the survey.

18th September 2025

3.8 The third activity survey commenced at sunset at 19:07 on the 18th September 2025. The temperature was 18°C, dropping to 16°C by the end of the survey, conditions were 100% overcast and dry. The surveyors began the survey at each song meter position for this survey.

3.9 The first bat was recorded at 19:27, when a soprano pipistrelle was observed commuting west to east along the northern boundary of the site. Soprano pipistrelle were then observed foraging along the northern tree line continuously for the duration of the static portion of the survey. This activity continued across the survey on all boundary features, until the end of the survey. A noctule was first heard at 19:36, heard at the northern boundary of the site. This species was heard again at 20:27 in the north of the site. Common pipistrelle were first heard at 19:38 foraging along the northern boundary, and then continuously across the site until the end of the survey. A brown long-eared bat (*Plecotus auritus)* was heard at 19:44, 20:51, and 20:58, in the north of the site. Myotis species (*Myotis spp.)* were first heard at 20:06, with multiple foraging passes along the

southern boundary of the site, and then foraging along the western boundary of the site at 20:17. At 20:35, a myotis bat was heard foraging in the southeast of the site, along the west of the site at 20:45, and in the north of the site at 21:01. No other bat species were recorded during the survey.

Remote Recording – Song Meter Analysis

3.10 Song Meter acoustic detectors were deployed on site at locations shown previously in Figure 2. They were positioned in the northern and eastern boundaries of the site and were deployed for 5 nights each on the 16th April, 22nd May, 19th June, 24th July, 19th September, and 10th October.

April

3.11 April remote recording surveys identified a total of seven species present on the recording devices, with species including common and soprano pipistrelle, noctule, Leisler's bat, barbastelle, brown long-eared bat and myotis species.

3.12 The most dominant species present on the SM1 north position was the common pipistrelle, with a total of 1267 registrations over the five nights, with soprano pipistrelles at 33 calls, noctule bats at eight, and Leisler's bats and brown long-eared bats at two calls. A singular call was recorded for barbastelle bats.

3.13 On the SM2 east location, common pipistrelles were the most dominant recordings at 198 call registrations. The second most recorded species were soprano pipistrelles with 330 calls. There were also six myotis species calls and three noctule calls over the 5 nights. The summary of results is shown in Appendix 1.

May

3.14 In May, a total of seven species were recorded by the two Song Meters. The species recorded included common, nathusius and soprano pipistrelle, noctule, Leisler's bat, myotis species and serotine.

3.15 The SM1 north location was dominated by soprano pipistrelles, with 294 registrations over 5 nights, with common pipistrelles at 55 calls. Lower numbers were recorded with Leisler's bat at two calls, and a single noctule call.

3.16 The SM2 east location was dominated by common pipistrelles at 418 registrations. Other species included 56 soprano pipistrelle call registrations, 10 noctule calls, and eight Leisler's bat calls. Four nathusius pipistrelle calls were recorded and a single serotine and myotis species was recorded. No calls were recorded on the night of the 26th May.

June

3.17 In June, a total of eight species were recorded by the two Song Meters. The species recorded included common, nathusius and soprano pipistrelle, myotis species, noctule, serotine, brown long-eared bat and Leisler's bat.

3.18 The SM1 north location was dominated by soprano pipistrelles, with 1586 registrations over 5 nights, and common pipistrelles at 563 calls. Leisler's bats were recorded 14 times, and myotis species with 13 calls. Six calls were registered for noctules and serotines. Two calls were registered for both nathusius pipistrelles and brown long-eared bats.

3.19 The SM2 north location was dominated by both common and soprano pipistrelles at 837 and 854 call registrations, respectively. Other species included 21 myotis species call registrations, and six noctule and serotine calls. Three calls were registered for Leisler's bat, and two for both brown long-eared bats and nathusius pipistrelles.

July

3.20 In July, a total of eight species were recorded by the two Song Meters. The species recorded included common, nathusius and soprano pipistrelle, noctule, myotis species, brown long-eared bat, barbastelle, and Leisler's bat.

3.21 The SM1 north location was dominated by soprano pipistrelles, with 295 registrations over 5 nights, and common pipistrelles at 168 calls. Calls of myotis species were recorded 20 times, noctule bats were recorded 19 times, and brown long-eared bats 14 times. Serotines were recorded six times across the survey period, and Leisler's bat and barbastelle were recorded twice each.

3.22 The SM2 east location recorded common pipistrelle calls 195 times, and soprano pipistrelles 160 times. Noctules were recorded 28 times, and brown long-eared bats 14 times. Nine calls were recorded from myotis species, and six calls from both serotines

and Leisler's bats. One barbastelle call was recorded across the survey period.

September

3.23 In September, a total of nine species were recorded by the two Song Meters. The species recorded included common, nathusius and soprano pipistrelle, noctule, myotis species, brown long-eared bat, serotine, barbastelle, and Leisler's bat.

3.24 The SM1 north location recorded common pipistrelle calls 3656 times, soprano pipistrelles 2950 times, and myotis species 2518 times across the survey period. Brown long-eared bats were recorded 50 times, and barbastelle were recorded ten times. Five calls were recorded from nathusius pipistrelles, and four calls from noctule bats.

3.25 The SM2 east location was dominated by soprano and common pipistrelles, with 5955 and 4758 call registrations, respectively, over 5 nights. Calls of myotis species bats were recorded 741 times, brown long-eared bats were recorded 16 times, and nathusius pipistrelles 11 times. Serotines were recorded five times across the survey period, and noctules and Leisler's bat were both recorded once each.

October

3.26 In October, a total of eight species were recorded by the two Song Meters. The species recorded included common and soprano pipistrelle, noctule, myotis species, brown long-eared bat, serotine, barbastelle, and Leisler's bat.

3.27 The SM1 north location was dominated by both common and soprano pipistrelles, with 857 and 635 calls recorded over 5 nights. Calls of myotis species bats were recorded 80 times, barbastelle were recorded 31 times, and brown long-eared bats 12 times. Serotines were recorded eight times across the survey period, and noctule bats were only recorded once.

3.28 The SM2 east location recorded common pipistrelle calls 916 times, and soprano pipistrelles 398 times. Myotis species were recorded 19 times, and brown long-eared bats nine times. Three calls were recorded from barbastelles, and one call was recorded from Leisler's bat across the survey period.

Results Summary

3.29 The following tables summarise the data collected on site during these surveys.

Table 3: Total bat passes recorded by Song Meters by species

Bat species	Total number of recordings	Percentage of total
Common Pipistrelle	13,888	44.56
Soprano Pipistrelle	13,546	43.46
Myotis sp.	3,428	11.00
Brown long-eared bat	121	0.39
Barbastelle	48	0.15
Noctule	40	0.13
Leisler's bat	39	0.13
Serotine	38	0.12
Nathusius pipistrelle	20	0.06
Total	**31,168**	

3.30 It can be seen from Table 3 that activity was dominated by common and soprano pipistrelles. Other species recorded onsite are considered to have low-level use.

3.31 Table 4 shows the total number of passes recorded at each Song Meter location within each month.

Table 4: Total bat passes recorded each month by location.

Song Meter Location	Total number of passes per month						
	April	May	June	July	September	October	**Total**
SM1	537	352	2,192	526	9,193	1,624	**14,424**
SM2	1,313	498	1,731	419	11,488	1,346	**16,795**
Total	**1,850**	**850**	**3,923**	**945**	**20,681**	**2,970**	

3.32 It can be seen from Table 4 that activity levels fluctuated at each song meter location across the survey period. The SM2 east location recorded higher levels of activity than the SM1 north in April, May and September, but lower levels of activity in June, July and October. Overall, the total number of recordings were similar at both song meter locations. September recorded significantly more passes at both locations, with June having the next highest recordings, then October. May recorded the least amount of passes across the survey season.

3.33 Table 5 shows the total number of passes made per species at each Song Meter location. The table also shows the average number of passes per night per species at each Song Meter location. As no call registration were recorded on the night of 26th May at the east location, SM1 location recorded for 30 nights, and SM2 recorded for 29 nights over the survey period. This has been considered when calculating the average.

Table 5: Number of passes made by each species and average pass per species per night at each Song Meter location

	SM1 location		SM2 location	
	Number of passes	**Average passes per night**	**Number of passes**	**Average passes per night**
Common pipistrelle	7,230	241	6,658	229.6
Soprano pipistrelle	4,688	156.3	8,858	305.4
Myotis sp.	2,629	87.6	799	27.6
Brown long-eared bat	80	2.7	41	1.4
Noctule	57	1.9	30	1
Barbastelle	43	1.4	5	0.2
Serotine	21	0.7	17	0.6
Leisler's bat	19	0.6	20	0.7
Nathusius pipistrelle	11	0.4	13	0.5
Total	**14,778**		**16,441**	

3.34 It can be seen that common pipistrelles, barbastelle, brown long-eared bat and myotis species bats have a preference of the SM1 north location over the SM2 east position. Soprano pipistrelles were recorded in higher numbers at the SM2 east location, and noctule, serotine, Leisler's bat and nathusius pipistrelle were recorded in similar numbers at both locations.

4.0 Discussion

Bat Species and Activity

4.1 The walked transect activity surveys recorded consistent soprano and common pipistrelle calls across all three surveys. The activity levels were the highest along the western boundary. Soprano and common pipistrelles were recorded in high numbers

within the first 40 minutes after sunset, which suggests a nearby roost. Activity was also recorded along the other boundary features of the site, this consisted of mainly common and soprano pipistrelles foraging along these features. A noctule was observed once during the survey in May, three times during the survey in July, and twice during the September survey. A single brown long-eared bat was recorded during the survey in May, and three times in September. A single myotis species bat was recorded passing onsite during the survey in July but was recorded several times across the site during the September survey.

4.2 Remote recording devices were placed in two separate locations and were established in April through to October. Data was lost for the month of August. The surveys identified that the month of May had the lowest number of bat registrations, and September had the highest levels of activity.

4.3 Myotis calls were grouped together, and other species recorded included common, nathusius and soprano pipistrelles, noctule, Leisler's bat, barbastelle, serotine and brown long-eared bat, were all recorded across the site. With the grouping of the myotis bats, a total of nine species were recorded using the habitats on site.

4.4 Activity was dominated by common and widespread species, largely common pipistrelle bats.

Song Meter Data

4.5 Higher levels of bat activity were recorded across the site on the song meter detectors in comparison with the walked transect surveys, with the highest levels of activity overall being recorded in September. However, it must be noted that remote recording does not distinguish between a single individual making numerous passes whilst foraging around a particular feature, and between more numerous individual bats commuting across the landscape. As such, walked transects provide a good understanding of how a particular feature is being used.

4.6 The majority of bat passes recorded on site during both the walked transects and remote recording surveys, were from common and soprano pipistrelles. During the walked transect in all three surveys, common and soprano pipistrelles were recorded frequently

across the site and throughout the survey. These species are both common and widespread across the UK, with population estimates of 3,040,000 and 4,670,000 respectively (Mathews et al., 2018). Both species were recorded over 13,000 times across the survey period, suggesting this site is of local significance for these species of bats. Additionally, the walked transects recorded high levels of these species from early in the surveys, suggesting maternity roosts for these species within the immediate landscape.

4.7 Myotis species were recorded across the site. The majority of the calls were partials only and could not be confidently identified to species; these have been grouped in the general 'myotis species' category.

4.8 The numbers recorded on site increased dramatically in September, with a total of 3,259 calls recorded at both song meter locations. This was considered to be a significant number of calls for this species group, suggesting the site is of local significance for this group of bats. The site is within close proximity to four lakes and one large pond. Daubentons bats are known to forage above water bodies, catching insects from the surface of the water. It is likely that the myotis species identified onsite consist of mostly this species of bat. At least two calls picked up by SM2 in July were indicative of Bechstein calls, however, due to the overlap with other myotis species these cannot be definitively assigned to this species, and due to the location of the site on the edge of a settlement area with street lighting it is more likely these calls are attributed to other myotis species, and no records of this species were provided by the local records centre.

4.9 Brown long-eared (BLE) bats formed approximately 0.39% of the total passes on site. This species is relatively abundant and widespread, and in England, their population size is estimated to be 934,000 (Mathews *et al.*, 2018). Only low levels of BLE activity was recorded on site and the site was not considered to support any significant numbers.

4.10 A total of 48 barbastelle passes were recorded throughout the survey season, with the majority of calls being recorded during the October survey. No barbastelle calls were recorded in May and June, with one call in April, 3 in July and the remaining in September and October. The survey identifies that barbastelle use in the spring and summer months was limited and highly irregular.

4.11 The September and October surveys identify a higher number of barbastelle passes. These passes were recorded in the middle of the night and not linked to any emergence times, with a few calls recorded within a short time frame each night. This suggests a low number of bats opportunistically foraging onsite during this month while travelling from their summer roost to their hibernation roosting sites. These calls were largely recorded in the SM1 location, along the northern tree line. This feature is to be retained and buffered by the development and low level lighting employed within the scheme. As such, this feature will not be impacted by the development.

4.12 Noctules formed approximately 0.13% of the total passes onsite. During the walked transects, a low number of noctules were observed foraging within the habitats on-site. Therefore, the site was not considered to support any significant numbers.

4.13 Leisler's bats were recorded at 0.13% of calls recorded across the site, with the highest registration of 14 calls recorded in the north of the site in June. Call registrations were low across every month of the survey.

4.14 Serotine calls formed 0.12% of the total call registrations during the survey as only low levels were recorded during the survey period. As such the site was not considered to form a key component of the serotine's wider habitat requirement.

4.15 Nathusius' pipistrelle bats were recorded on site in low numbers, forming only a very small percentage of the total passes, with a maximum number of 16 calls recorded in September. It is therefore considered likely that the habitats on site are used on an occasional basis only by this species and that the site do not form part of their core habitat.

4.16 As barbastelle were identified using the site's boundary and boundary habitats, consideration of the site's development in relation to The Mens SACs and Ebernoe Common SAC must be made.

Sussex Bat SAC Considerations

4.17 Barbastelles and Bechstein's are Annex II (Habitats Directive) species and are considered to be Near Threatened according to the IUCN Red List. As these are one of

the rarest bat species in the UK, the Habitats Directive requires certain areas where they are found to be designated as a Special Area of Conservation (SAC) to ensure their populations are maintained at a favourable conservation status. Several SACs have been designated for barbastelle maternity or hibernation colonies, with a further two SACs where the barbastelle is a qualifying feature, but not a primary reason for site selection.

4.18 Bats are mobile and species that are qualifying features of the SAC, may forage or roost on land outside of the SAC boundaries. Occasionally impacts to such habitats can have a significant effect upon the special interest of a European site, through an impact on conservation objective 4 (effect on the population) and 5 (the distribution of the species). Habitats used by significant numbers of qualifying features of the SAC are defined as *functionally linked* to the site and so require assessment under the Habitats Directive and Regulations, as if they were within the SAC boundary (Chapman and Tyldesley, 2016).

4.19 Barbastelle bats have a large home range, with studies indicating commuting bats travelling as far as 20km, often rapidly and directly over open habitats to reach foraging grounds (Zeale *et al*., 2012). The Mens SAC, which supports a known maternity colony of barbastelles, is approximately 8.4km west of the site whilst the Ebernoe Common SAC, which supports a known maternity colony of barbastelles, is approximately 13.5km west of the site. The site therefore falls within the 20km barbastelle home range for both sites.

4.20 Bechstein's bats tend to forage within 1-2km of their woodland roosts. Ebernoe Common SAC, which supports a known bechstein population, is located 13.5km from the site. The Ebernoe Common SAC is located significantly outside of the typical home range, therefore, there it is considered that individuals could not be commuting from this SAC to the site.

4.21 The site is located within 15km of two Special Areas of Conservation (SAC): The Mens SAC and Ebernoe Common SAC; therefore, the development will need to comply with specialised policy SD10 from the South Downs Local Plan (SDLP). The proposals fall outside of the 6.5km key conservation area for The Mens SAC and Ebernoe Common SAC, but the site does lie within the 12km wider conservation area of the Mens SAC.

4.22 The Sussex Bat SAC Planning and Landscape Scale Enhancement Protocol provides impacts which require consideration in terms of development proposals. This includes impacts relating to physical habitat changes, lighting during construction and operation, and noise/ vibration impacts. Within the core area, avoidance of impacts should be key, with mitigation and finally compensation considered within any development.

4.23 Advice laid out within Sussex Bat Special Area of Conservation, Planning and Landscape Scale Enhancement Protocol states that all proposals within this zone should take:

'Reasonable steps to avoid impacts to the SACs and biodiversity in general and where this cannot be achieved, 'mitigation' measures should be implemented and if there are still residual impacts then compensatory measures will need to be provided'.

4.24 The definitions of avoidance, mitigation and compensation are shown below in Table 6.

Table 6: Definitions of avoidance, mitigation and compensation measures in relation to bats.

Measure	Definition
Avoidance	This normally means redesigning the scheme to avoid all direct and indirect impacts
Mitigation	This normally involves measures that reduce and/or minimise impacts such as altering the timing of works or using a different technique
Compensation	This generally involves the creation of new habitat, either on or off site and should only be considered as a last resort.

4.25 Using these definitions, it is considered that the proposals are already avoiding most impacts on commuting, foraging and roosting bats, by retaining the linear features of the northern, southern and western boundaries onsite (See Figure 3 overleaf). A new access track is proposed on the eastern boundary, however either side of this will be species-rich hedgerows and flower-rich grassland with SuDs features and a new watercourse, enhancing the area of foraging bats.

4.26 The scheme has been designed to retain the majority of existing linear features onsite,

therefore avoiding impacts through the loss or severance of flightlines. Furthermore, the retention of these linear features, buffering of the western ancient woodland, and management in the long term for biodiversity, will also ensure significant foraging and commuting habitats remain on site in the long term.

4.27 Where development occurs, low-quality grassland will be removed. New tree planting, wildflower meadow and the creation of a SuDS, have been designed to maximise biodiversity within the development area.

Figure 3. Colour Site Layout

4.28 The scheme has also been designed for houses to be primarily located away from these flightlines and the implementation of a sensitive lighting scheme across site will maintain these as dark commuting corridors, further minimising the potential for impacts relating to lighting. All construction works must be completed in the daytime when the bats are not active and potential sources of noise/vibration will be positioned away from these features, therefore impacts relating to noise/vibration are considered highly unlikely. These measures are considered to be sufficient to ensure negligible impacts to barbastelle, and other light-averse bats such as myotis species and brown

long-eared bats.

4.29 It is considered that barbastelles using the site could have originated from The Mens SAC, as the site lies within the outer zone of the 12km conservation area. However, this cannot be confidently determined. A precautionary approach to the design has been recommended to reflect this. Furthermore, following design advice and recommendations set within the Sussex bat SAC draft document published by the South Downs National Park and Natural England, commuting routes have been retained and buffered from development.

4.30 It is considered that the development retains the key landscape features within the site boundaries and provides enhancements (see below) for bats within the scheme, and sensitive lighting will be implemented. As such, impacts to bat species can be reduced to a level which would not be considered significant to the conservation status of their local populations.

Recommendations and Enhancements

4.31 The development will primarily occur on the central grassland, with the majority of the boundary vegetation retained and buffered as part of the development. The optimal boundary features will be retained and buffered as part of the development which will enhance the site for foraging and commuting bats. All native linear features will also be maintained as dark corridors to ensure they will still be used as commuting corridors. A SuDS basin and wildflower meadow is proposed within the development which will also enhance the site for foraging bat species.

Boundaries and treelines

4.32 The maintenance and enhancement of existing boundary features, specifically those along the western boundary will ensure that bats are not adversely affected by the proposals and can still commute across the site.

Barbastelles

4.33 The site boundaries have been identified as infrequent commuting routes for barbastelle bats. The northern boundary will be retained, as well as the southern and western boundaries which will keep connectivity across the site for commuting barbastelle bats.

Unlit linear treelines and hedgerows provide crucial flightlines for these species, with the most favoured routes typically having old tracks or rides running down the length of the interior (Greenaway, 2005). The retention of these features ensures the ecological functionality of the landscape has not been altered.

SUDS Basin

4.34 The development includes the creation of a SUDS basin on-site which would encourage new habitat for invertebrates and therefore potential for new foraging opportunities for bats.

4.35 The vegetation surrounding ponds should be managed with consideration for bats. Trees around the edges of waterbodies provide shelter from wind and rain as well as increasing invertebrate activity, trees in proximity to waterbodies are also particularly attractive to bats as roosts. It is also recommended some areas are left free from vegetation to provide an approach route for larger bats, excessively shaded banks can also reduce the abundance of invertebrates such as Diptera.

4.36 The SuDS will be planted with a grass and wildflower mixture which can survive becoming seasonally wet. This habitat will create new foraging opportunities for bats, in particular the Barbastelle, Daubentons and Brandt's bats which like to forage over wet meadows. A pond edge mix is proposed for use along the main water retention areas and should contain wildflowers and grasses suitable for sowing at the margins of pond, streams and ditches. The mixture proposed includes:

- Sneezewort (*Achillea ptarmica*)
- Wild Angelica (*Angelica sylvestris)*
- Marsh Marigold (*Caltha palustris*)
- Hemp Agrimony (*Eupatorium cannabinum*)
- Meadowsweet (*Filipendula ulmaria*)
- Square-stalked St John's Wort (*Hypericum tetrapterum*)
- Yellow Iris (*Iris pseudacorus*)
- Greater Birdsfoot Trefoil (*Lotus pedunculatus*)
- Gypsywort (*Lycopus europaeus*)
- Purple Loosestrife (*Lythrum salicaria*)

- Meadow Buttercup (*Ranunculus acris*)
- Water Figwort (*Scrophularia auriculata*)
- Ragged Robin *Silene flos-cuculi - (Lychnis flos-cuculi)*
- Devil's-bit Scabious (*Succisa pratensis*)
- Common Meadow-rue (*Thalictrum flavum*)
- Tufted Vetch (*Vicia cracca*)
- Meadow foxtail (*Alopecurus pratensis*)
- Sweet vernal-grass (*Anthoxanthum odoratum*)
- Crested dogstail (*Cynosurus cristatus*)
- Tufted hair grass (*Deschampsia cespitosa*)
- Common bent (*Agrostis capillaris).*

Lighting recommendations

4.37 A significant number of common and soprano pipistrelle passes were observed along the western boundary, with many recorded in the critical emergence window. Due to the high numbers of passes along the western boundary, as well as the timing of the passes, it could be an indicator that this is a key commuting / foraging feature for a roost within the immediate vicinity. It is advised that this boundary should be kept as a 'dark corridor' due to the frequency of usage. Many other bat species recorded are light-averse, such as brown long-eared bat, barbastelle, and myotis species.

4.38 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 brown long-ears and Myotis species, are known to avoid all streetlights (Stone et al., 2009, 2012, 2015). Therefore, the development could impact the abundance of these species on site post-development without careful design and mitigation.

4.39 Dark corridors could be implemented through the inclusion of dark buffer zones along the habitat edges of the site. These will help to ensure that light levels (measured in lux) within a certain distance of a feature do no exceed certain defined limits.

4.40 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.

Roost enhancements – boxes

4.41 Bat boxes should be erected on the retained mature trees or proposed buildings. This will enhance the local bat population and provide roosting opportunities. Recommended boxes include:

- Vivara Pro WoodStone Bat Box – A general purpose bat box that supports a range of species (Figure 3). 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 3).

Figure 3: Vivara Pro WoodStone Bat Box (left) and Large Multi Chamber WoodStone Bat Box (right)

4.42 Incorporating specially designed bat boxes into the design can enhance the habitat on site for bats. Suitable bat boxes include a variety of wooden bat boxes, such as an improved cavity box, a double chamber bat box and other wood-based varieties.

4.43 The development can incorporate bat tubes into the new buildings on site. It is recommended that either Schwegler 2FR Bat Tubes or Habibat Bat Box 001 are used. They are unobtrusive and can fit flush into masonry of a wall during the construction phase. It is recommended that these be placed on the walls of houses close to the western or southern boundary line, preferably on unlit south or west facing walls.

Additional planting schemes

4.44 Trees provide foraging opportunities for bats through provision of insect prey, as such it is recommended a number of the below native tree species are planted across the site post-development in treeline adjacent to new roads, or within garden habitats. This will help to improve wildlife corridors around the site for species such as badgers, amphibians, small mammals and birds. The following species are recommended to be used in enhancing existing hedgerows/ tree lines and in the creation of new hedgerows and individual standing trees across the site:

- Oak (*Quercus robur*)
- Rowan (*Sorbus aucuparia*)
- Elder (*Sambucus nigra*)
- Goat willow (*Salix caprea*)

- Hazel (*Corylus avellana*)
- Hornbeam (*Carpinus betulus*)
- Common alder (*Alnus glutinosa*)
- Hawthorn (*Crataegus monogyna*)
- Blackthorn (*Prunus spinosa*)
- Field maple (*Acer campestre*)
- Dog rose (*Rosa canina*);

4.45 Gardens and similar green spaces in developed areas can provide suitable foraging habitat for bats, in particular for pipistrelle species. It is recommended that post development gardens and amenity grasslands. Of particular benefit to bats are night-flowering species that attract night-flying invertebrate prey. The following native species are considered suitable:

- Nottingham catchfly (*Silene nutans*)
- Night-flowering catchfly (*Silene noctiflora*)
- Bladder campion (*Silene vulgaris*)
- Soapwort (*Saponaria officinalis*)
- Wild marjoram (*Orignaum vulgare*)
- Borage (*Borago officinalis*)
- Yarrow (*Achillea millefolium*)
- Primrose (*Primula vulgaris*)
- Corn marigold (*Glebionis segetum*)
- Perforate St John's-wort (*Hypercium perforatum*)
- Wood forget-me-not (*Myosotis sylvatica*)
- Ox-eye daisy (*Leucantheum vulgare*)
- Corncockle (*Agrostemma githago*)
- Cornflower (*Centaurea cyanus*)

4.46 It is also recommended that an information leaflet be produced for all future residents on how to live with neighbouring wildlife. This will help to inform the residents of the nature conservation value of the site and the measures taken to avoid impacts on the surrounding habitats and associated species. The leaflet should include measures such as keeping cats in at night to reduce predation on wildlife and what they can do should

they wish to create more wildlife-friendly gardens.

5.0 Conclusions

5.1 The site supports mature treelines, hedgerows and a woodland scrub which provide suitable foraging and commuting habitats for bats. The site also lies within the 12km wider conservation area for The Mens SAC, indirect and direct impact to bats and bat flight paths were required to be considered. An HRA is required to determine avoidance measures, mitigation or compensation.

5.2 Walked transects were undertaken in May, July and September. All three transects recorded consistent activity from common and soprano pipistrelles across the site for the entire duration of the survey. Occasional noctule, brown long-eared bat and myotis species activity was also recorded.

5.3 Two Song Meter detectors were placed on site each month between April and October 2025. The data from the month of August was lost and therefore not within this report. The Song Meter detectors recorded higher levels of bat activity on site than the activity surveys, and recorded a greater variety of bat species on site. In total, nine different species were identified using the site during the survey period. The dominant species recorded was common and soprano pipistrelles, with myotis species being the next most commonly recorded species. Low level use of the site by other species, including noctule, Leisler's bat, serotine, barbastelle, brown long-eared bats, and Nathusius pipistrelle were also recorded. The two remote devices recorded a fluctuating level of activity across the months, with a significant increase in calls registered in September.

5.4 The results of all surveys suggest the site is largely used by common bat species. The main areas for foraging were the boundary features across the site. These features will be retained and enhanced part of the development to ensure bats can move with ease across the landscape.

5.5 Current proposals indicate retention and enhancement all of the boundary features, and a 15m buffer zone will be implemented for the ancient woodland along the western aspect of the site. These features will be maintained as dark corridors with minimal

nearby lighting. A sensitive lighting scheme should also be developed to further minimise the potential for impacts to bats.

5.6 If these recommendations are adhered to, it is considered that the favourable conservation status of all bat species using the site will be maintained post-development.

5.0 References

Bat Conservation Trust (2018). *Bats and artificial lighting in the UK – Bats and the built environment series, (Guidance Note 08/18).* Bat Conservation Trust, London.

Bat Conservation Trust (2023). *Bat Surveys – Good Practice Guidelines Second Edition.* Bat Conservation Trust, London.

The Ecology Partnership (2025). *Preliminary Ecological Appraisal Land south of Smugglers Lane, Barns Green.* The Ecology Partnership, Leatherhead.

Appendix 1: Raw Bat Data

April

East

	PIPPIP	PIPPYG	NYCNOC	NYCLEI	PLEAUR	BARBAR	Total
16/04/2025	50	4		1	1	1	57
17/04/2025	27	3	2		1		33
18/04/2025	794	5	3	1			803
19/04/2025	18	4	2				24
20/04/2025	378	17	1	2			398
Total	1267	33	8	4	2	1	**1315**

North

	PIPPIP	PIPPYG	NYCNOC	MYOTIS	Total
16/04/2025	12	19	1		32
17/04/2025	33	9	1	2	45
18/04/2025	49	58		1	108
19/04/2025	49	27	1	1	78
20/04/2025	55	217		2	274
Total	198	330	3	6	**537**

May

East

	PIPPIP	PIPPYG	PIPNAT	NYCNOC	NYCLEI	EPTSER	MYOTIS	Total
22/05/2025	117	23		1	2			143
23/05/2025	238	19	1	5				263
24/05/2025	57	9	2	2	6	1	1	78
25/05/2025	6	5	1	2				14
26/05/2025								0
Total	418	56	4	10	8	1	1	**498**

North

	PIPPIP	PIPPYG	NYCNOC	NYCLEI	Total
22/05/2025	16	97			113
23/05/2025	13	92	1		106
24/05/2025	1	25		2	28
25/05/2025	24	79			103
26/05/2025	1	1			2
Total	55	294	1	2	**352**

June

East

	PIPPIP	PIPPYG	PIPNAT	NYCNOC	NYCLEI	EPTSER	PLEAUR	MYOTIS	TOTAL
19/06/2025	114	88		2		1	2		207
20/06/2025	137	144	2		2	2		3	290
21/06/2025	158	213		1	1	2		4	379
22/06/2025	219	218		1		1		4	443
23/06/2025	179	191		2				10	382
Total	807	854	2	6	3	6	2	21	**1701**

North

	PIPPIP	PIPPYG	PIPNAT	NYCNOC	NYCLEI	EPTSER	PLEAUR	MYOTIS	TOTAL
19/06/2025	62	288		2	3		1	2	358
20/06/2025	52	373			2	3		4	434
21/06/2025	79	349	1	4	6			2	441
22/06/2025	103	226	1		1	2	1	3	337
23/06/2025	267	350			2	1		2	622
Total	563	1586	2	6	14	6	2	13	**2192**

July

East

	PIPPIP	PIPPYG	NYCNOC	NYCLEI	EPTSER	PLEAUR	MYOTIS	BARBAR	Total
24/07/2025	39	8	5	1			1		54
25/07/2025	52	53	2	2	3	2			114
26/07/2025	26	17	12	1		3	3	1	63
27/07/2025	41	59	4	2		4	1		111
28/07/2025	37	23	5		3	5	4		77
Total	195	160	28	6	6	14	9	1	**419**

North

	PIPPIP	PIPPYG	NYCNOC	NYCLEI	EPTSER	PLEAUR	MYOTIS	BARBAR	Total
24/07/2025	43	47	5				4		99
25/07/2025	35	120	1	2	3	4	2		167
26/07/2025	71	69	7			2	5	1	155
27/07/2025	7	21	3		2	4	5	1	43
28/07/2025	12	38	3		1	4	4		62
Total	168	295	19	2	6	14	20	2	**526**

September

East

	PIPPIP	PIPPYG	PIPNAT	NYCNOC	NYCLEI	EPTSER	PLEAUR	MYOTIS	Total
19/09/2025	1366	1549	3	1		1	5	174	3099
20/09/2025	1749	2142	2					246	4139
21/09/2025	241	413	4		1	2	6	244	911
22/09/2025	102	245	2				1	7	357
23/09/2025	1300	1606				2	4	70	2982
Total	4758	5955	11	1	1	5	16	741	**11488**

North

	PIPPIP	PIPPYG	PIPNAT	NYCNOC	PLEAUR	MYOTIS	BARBAR	Total
19/09/2025	691	648	4	2	14	245	2	1606
20/09/2025	1624	1122		1	6	1070	1	3824
21/09/2025	225	215	1	1	7	516	2	967
22/09/2025	227	224			9	159	3	622
23/09/2025	889	741			14	528	2	2174
Total	3656	2950	5	4	50	2518	10	**9193**

October

East

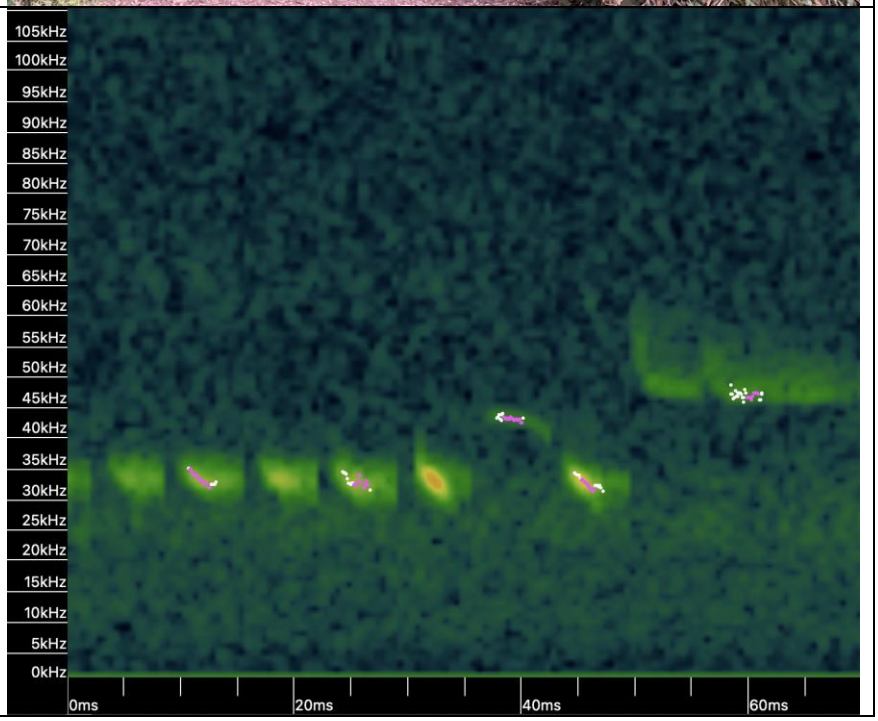
	PIPPIP	PIPPYG	NYCLEI	PLEAUR	MYOTIS	BARBAR	Total
19/09/2025	277	176		4	10	3	470
20/09/2025	49	7		1	1		58
21/09/2025	146	78	1	2	2		229
22/09/2025	386	90		1	4		481
23/09/2025	58	47		1	2		108
Total	916	398	1	9	19	3	**1346**

North

	PIPPIP	PIPPYG	NYCNOC	EPTSER	PLEAUR	MYOTIS	BARBAR	Total
19/09/2025	59	108			1	17	3	188
20/09/2025	20	18			3	2	2	45
21/09/2025	218	251	1	1	5	21	11	508
22/09/2025	478	205		7	3	34	1	728
23/09/2025	82	53				6	14	155
Total	857	635	1	8	12	80	31	**1624**

Appendix 2: Photos

Photograph 1: Photo of start location in northwest of the site for transect routes.	
Photograph 2: Photo of southwestern start position for transect routes.	

Photograph 3: Photo of western boundary in which most of the commuting and foraging occurred during the transect surveys.	
Photograph 4: Photo of Barbastelle call taken from Kaleidoscope software.	

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