NashEcology

22 Frome Road, Beckington

Bat Survey Report

Prepared for: Mr Damian Kelly

Date: November 2022

This report has been prepared and provided in accordance with the Code of Professional Conduct of the Chartered Institute of Ecology and Environmental Management.

Limitations

Nash Ecology Ltd has prepared this Report for the sole use of Damian Kelly ("Client") in accordance with the Agreement under which our services were performed.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate.

The methodology adopted and the sources of information used by Nash Ecology Ltd in providing its services are outlined in this Report. The work described in this Report was undertaken between May and September 2022 and is based on the conditions encountered and the information available during the said period of time.

Nash Ecology Ltd disclaim any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to Nash Ecology attention after the date of the Report.

This report is considered 'valid' for up to two years from the date the survey was conducted. If an application is made after this, then it is advisable to undertake an updated survey. In addition, any significant change to the project should result in consultation with an ecologist as reassessment of the ecological constraints may be required.

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1 INTRODUCTION

1.1 Background and Scope

Nash Ecology Ltd was instructed to carry out a bat assessment of '22 Frome Road, Beckington BA11 6TD' (Figure 1). The survey was commissioned to inform proposals to demolish the existing (unoccupied) property and replace it with three new residential dwellings (Figure 2). An earlier Preliminary Ecological Appraisal (Nash Ecology, 2022) assessed the property as having High Bat Roost Potential. The survey also identified that the Site was located within Band C of a Bat Consultation Zone, set up to control development that could affect the Mells Valley Special Area of Conservation (SAC).

The remainder of this report provides methods, results and a discussion of potential impacts on bats including, where necessary, a suitable mitigation strategy.

Figure 1: Site Location

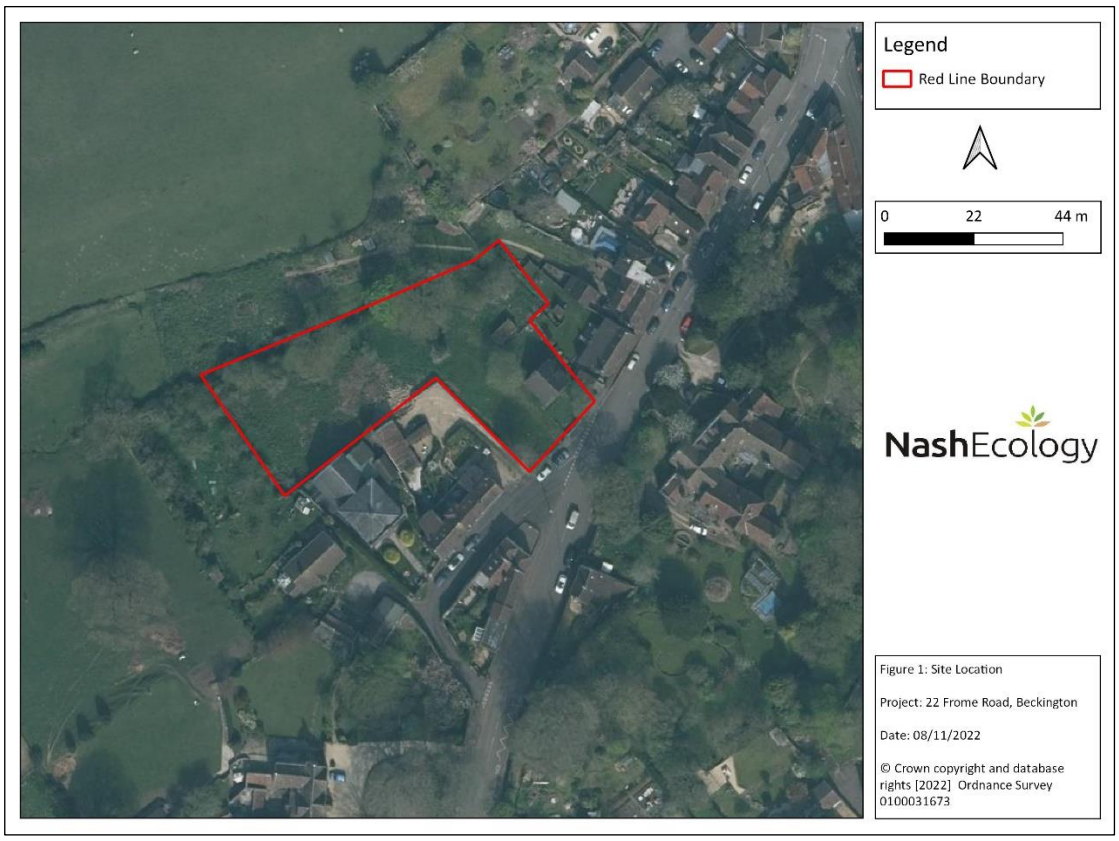
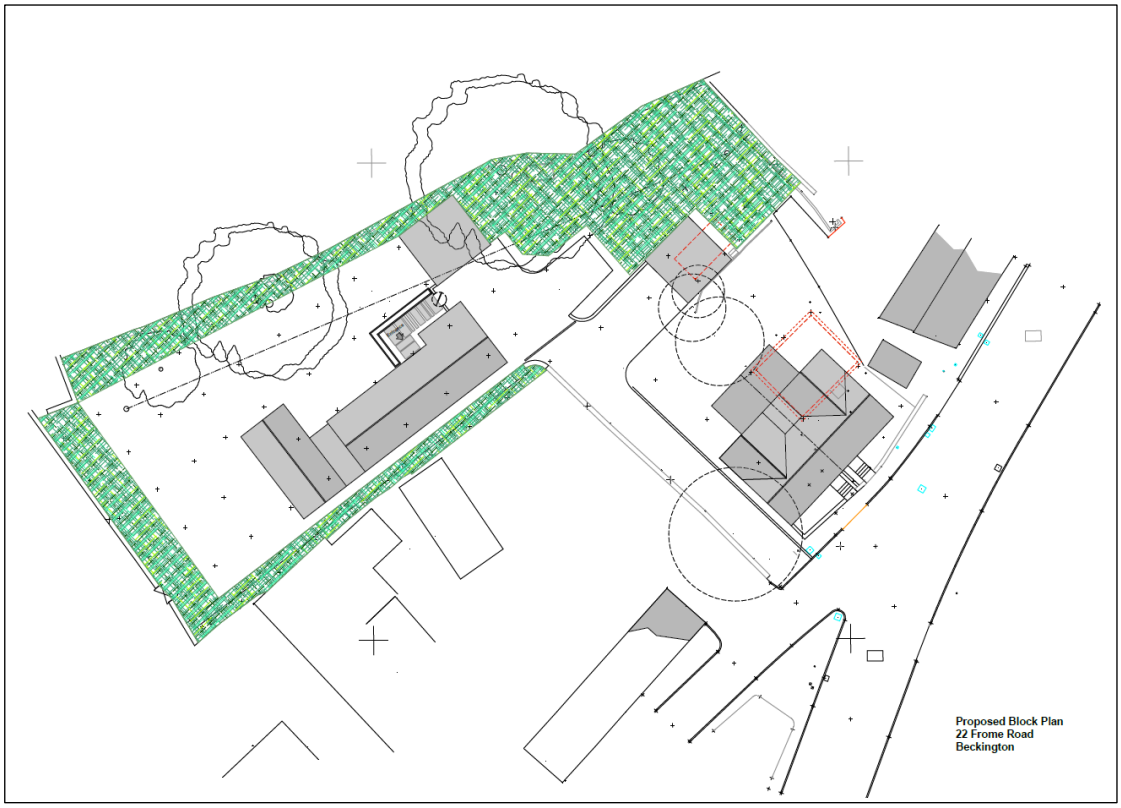


Figure 2: Proposed Site Layout



1.2 Legislation and Planning Policy Summary

1.2.1 Summary of Legislation

All bats are protected under Schedule 2 the Conservation of Habitats & Species (Amendment) (EU Exit) Regulations 2019 and Schedule 5 of the Wildlife and Countryside Act 1981 (as amended). When taken together it is illegal to:

- Deliberately disturb, capture, injure or kill a bat;
- Obstruct, damage or destroy a bat roosting place (even if bats are not occupying the roost at the time); and
- Possess or advertise/sell/exchange a bat (dead or alive) or any part thereof.

Seven species of bat are included on Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 as 'Species of Principal Importance for Conservation in England'. These include:

- Barbastelle (*Barbastella barbastellus*);
- Bechstein's bat (*Myotis bechsteinii*);
- Noctule (*Nyctalus noctula*);
- Soprano pipistrelle (*Pipistrellus pygmaeus*);
- Brown long-eared (*Plecotus auritus*);

- Greater horseshoe bat; and
- Lesser horseshoe bat.

Section 40 of the NERC Act 2006 places a duty of care on competent authorities to consider biodiversity as a material consideration when discharging their normal functions.

2 METHODS

2.1 Desk-based Study

A desk-based study was carried out as part of an earlier Preliminary Ecological Appraisal (Nash Ecology, 2022). Historical records of bats from within 1 km of the Site were purchased from Somerset Environmental Records Centre (SERC). For ease, a summary of the historical records of bats and bat roosts has been included within the current report.

2.2 Field Survey

2.2.1 Preliminary Bat Appraisal

A Natural England-licensed (Class 2) bat ecologist undertook a full inspection (both external and internal) of 22 Frome Road (House and Garage) on 20th July 2022. During the survey, the surveyor inspected the buildings for exterior roosting locations and possible access points to each buildings' interior. Such features were accessed and inspected for signs of use using an endoscope. An internal inspection for suitable roost locations and evidence of bat occupancy (such as droppings, urine spots, an absence of cobwebs and bats themselves) was then undertaken.

Trees were inspected from ground-level using a torch and binoculars. Of particular note were Potential Roost Features (PRF) that could support bats.

As bats are a cryptic group and often move between roosts, both within and between years, their presence is not always easy to detect. The buildings and trees were assessed for their Bat Roost Potential (BRP), following published guidance (BCT, 2016). The BRP categories are provided in Table 1 below.

Table 1: Bat Roost Potential Categories (BCT, 2016 and Mitchell-Jones, 2004)

Roost Potential	Description
Known or Confirmed	Confirmed signs of bat presence/ occupation (droppings, oily staining around entry points, insect remains, odour, scratching) and actual bat presence.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).
Low	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation). A tree of sufficient size and age to contain PRFs but with none seen form the ground or features seen with only very limited roosting potential.
Negligible	No features suitable for roosting bats. Includes structures constructed from unsuitable

Roost Potential	Description
	materials e.g. prefabricated with steel and sheet material. Structure is draughty, light and cool buildings with no roosting opportunities. High levels of regular disturbance including external lighting. Building is isolated for areas of foraging habitat. In the case of trees, no potential roosting features are present, or features have no potential to support roosting bats.

2.2.2 Bat Emergence Surveys

In line with published guidance for buildings assessed as having High BRP (Mitchell-Jones, 2004; BCT, 2016; BCT, 2022), three emergence surveys were completed. The survey utilised two surveyors (one of which was a Natural England-licensed bat ecologist). The surveyors were equipped with IR night vision aids (Canon XA40 / Sony AX33 and Nightfox Swift goggles) and a bat detector with recording capability (Batlogger M). The surveyors observed the potential access points (identified during the initial inspection) during a key period (15 minutes prior to sunset and ended at least 1.5 hours thereafter). Where encountered, areas of significant bat activity were also recorded. The surveys were undertaken during suitable environmental conditions between July and September 2022.

All recorded bat calls were analysed using BatExplorer (Batlogger) software following the survey. Calls were identified to species level where appropriate.

2.2.3 Activity Surveys

The Site lies within Band C of the Mells Valley BCZ (Burrows, 2017). An Appropriate Assessment, carried out as part of an earlier planning application (2019), determined that the development of the Site could affect the Mells Valley SAC.

To understand how greater horseshoe bats are using the Site and how this might be affected by the proposed development, a bat activity survey was undertaken. There is no prescribed survey effort for Sites within Band C. The small size of the Site (c. 0.283 ha) coupled with its suburban location means that it is unlikely to support large numbers of foraging bats. A tributary of the River Frome is located immediately to the west of the Site (and runs parallel with the boundary); as such, the western boundary could represent an important flight line. On balance, seasonal surveys were considered to be an appropriate survey effort.

The activity surveys comprised both walked transects and the use of static detectors. The walked activity transects involved surveyors following a pre-determined route around the Site (Figure 3). The route incorporated features of interest and linear features that could be utilised by bats, particularly those that would facilitate movement associated with Mells Valley SAC. The surveyors, which included a Natural England-licensed bat ecologist, was equipped with a handheld bat detector (Batlogger M). All bat activity encountered was recorded and mapped (see Figures at the end of this report). Three walked transects were completed between May and September 2022. The dusk surveys began at sunset and lasted for a minimum of two hours.

The walked transect data was augmented with Static Detector data. In excess of published guidance (BCT, 2016), two remote detectors (Anabat Swift) were left on Site for a period of five consecutive nights for each survey period. In total, 30 nights of static data were collected. The locations of the static detectors were kept consistent for each visit to enable meaningful spatial and temporal comparisons to be drawn. The small size of the Site meant the two detectors provided high levels of coverage. Importantly, one of the detector locations was near to the western boundary. Data were recorded in ZC format and analysed using AnalookW software. Static detectors provided information

on the species present as well as the number and timing of greater horseshoe bat registrations. A bat registrations is defined as a single automated detector file made up of bat pulses of a single species; this can be one bat in a file or many bats in a file. The number of registrations recorded on automated detectors gives an indication of the level of bat activity at a given location, but this cannot be reliably correlated to actual bat abundance because there is no observational context.

Static data were tabulated according to time (hour slots), which permitted a Bat Activity Index (BAI) to be calculated. The BAI was calculated using the following formula:

'BAI = number of registrations per hour'

The hourly totals were averaged across the duration of the night (in this case, ten hourly slots between 20:00 and 06:00 during which all bat activity was recorded). There is currently no published guidance on the categorisation of bat activity levels based on the number of bat registrations. The following scale has been used in this report:

- High BAI = an average of greater than five registrations per hour between sunset and sunrise;
- Moderate BAI = an average of between one and five registrations per hour between sunset and sunrise; and
- Low BAI = an average of less than one registration per hour between sunset and sunrise.

The survey and data analysis were carried out by a Natural England-licensed bat ecologist.

2.3 Survey Limitations

No constraints to the survey were noted.

Figure 3: Survey Methods

3 RESULTS

3.1 Desk-based Study

Historical records of bats were received from SERC. Species included within the data included brown long-eared bat (*Plecotus auritus*), common pipistrelle (*Pipistrellus pipistrellus*), Daubenton's bat (*Myotis daubentonii*), greater horseshoe bat (*Rhinolophus ferrumequinum*), lesser horseshoe bat (*Rhinolophus hipposideros*), noctule (*Nyctalus noctula*), serotine (*Eptesicus serotinus*), natterers bat (*Myotis nattereri*), and soprano pipistrelle (*P. pygmaeus*).

A historical survey of the House (First Ecology, 2019) identified a day / night / hibernation roost of soprano pipistrelle. The location of the roost was not confirmed but thought to be within a soffit box or beneath a roof tile. A small number of droppings were encountered in the loft space; these droppings were submitted for DNA analysis but could not be assigned to a species of bat.

The Site was located within Band C of the Mells Valley SAC. In addition to its habitats, the Mells Valley SAC was designated greater horseshoe bats. The SAC is made up of several discrete sites, the nearest of which is located c. 5.3 km to the southwest (beyond Frome).

3.2 Site Description

The Site was located on the western edge of the village of Beckington. Residential properties bordered the house to the north, east and south. A tributary of the River Frome formed the Site's western boundary, albeit separated by a stone wall. Beyond the watercourse, the land was dominated by sheep-grazed pasture. The River Frome, which forms a riparian corridor to the Mells Valley SAC, was located 0.4 km to the west (at its nearest point). The total area of land included within the Red Line Boundary (Figure 1) measured c. 0.283 ha

3.3 Field Survey

3.3.1 Preliminary Bat Appraisal

The Site included a residential house (B1, Figure 4) and a Garage (B2, Figure 4).

The house was detached, two-storey and unoccupied at the time of survey (Plates 1 & 2). The walls were constructed from stone and were partially rendered. Intact double-glazed doors and windows were present throughout. Plastic soffit boxes were located at the wall tops and were flush with the adjacent walls. The earlier report stated that a soprano pipistrelle potentially emerged from beneath the soffit box on the south-western aspect. This area was fully inspected and did not include any potential access points. Indeed, the area highlighted in the report was the space between the gutter and soffit box, an area in which no shelter was provided. Moreover, the roof tiles were flush and did not include any gaps. Based on this, it is unclear whether any bats did emerge from the building in 2019.

The roof was pitched and clad in double roman tiles. The roof was in a good condition and the ridge tile was cemented in place.

Figure 4: Site Layout

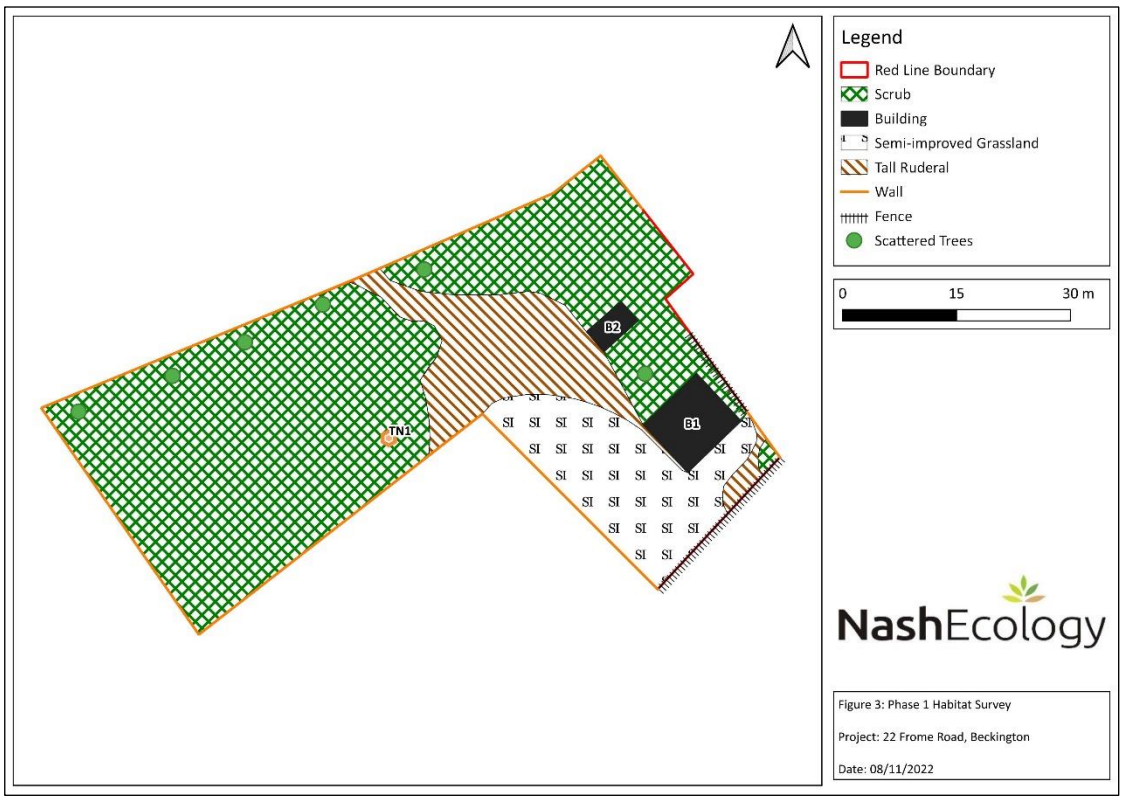


Plate 1: House (B1) Southern Aspect

Plate 2: House (B1) Northern Aspect

Internally, the property contained a single loft space that measured c. 10 m x 6 m x 2.5 m (Plates 3 & 4). The roof was lined with bitumen felt that was torn in places. Dense cobwebs covered the roof and extended down to the boarded / fibreglass floor. The gable walls were constructed from block. A water tank was present in the loft. No signs of bats were recorded. In 2019, a sample of droppings was collected from the loft and submitted to a laboratory for DNA analysis; these droppings were not ascribed to a species of bat.

Plate 3: B1 Loft Space

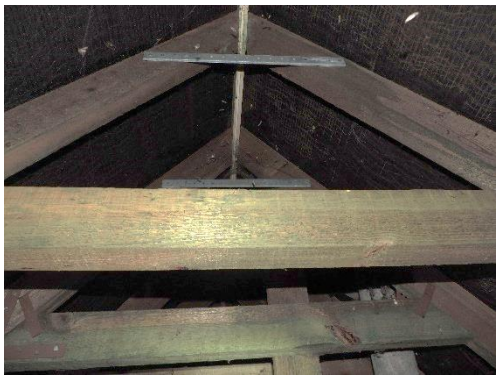


Plate 4: B1 Loft Space

The current survey did not find any evidence of bats within the property. Moreover, a detailed inspection has cast some doubt over whether the property was historically used as a bat roost. In light of the historical assessment, the House was assessed as having High BRP.

The garage (B2) was detached and constructed from block; the exterior walls were partially rendered (Plates 5 & 6). Ivy (*Hedera helix*) bindweed and sycamore saplings had encroached on the building. The roof was sloping and clad corrugated concrete / asbestos and plastic sheets. Internally, the roof was unlined.

Plate 5: Garage (B2)

Plate 6: Loft Space 3

The garage did not contain any external roost locations. The single-skinned block walls did not include any cavities. Overall, the garage was assessed as having Negligible BRP (which accords with the earlier survey).

All of the trees within the grassland were assessed as having Negligible BRP given the absence of potential roost features.

3.3.2 Emergence Surveys

The survey was undertaken at an appropriate time and during suitable environmental conditions (Table 2).

Table 2: Survey Timings and Environmental Conditions

Date	Sunset	Survey Times		Air Temperature (°C)		Wind Speed*		Cloud cover (%)	
		Start	End	Start	End	Start	End	Start	End
14/07/2022	21:22	21:07	22:52	20	16	1	1	0	0
29/07/2022	21:01	20:46	22:31	26	19	2	2	60	10
19/09/2022	19:15	19:00	20:45	21	17	1	1	70	100

Dusk Emergence 1

No bats were observed emerging from the House.

Non-emerging species recorded during the survey comprised common and soprano pipistrelles, lesser horseshoe bat and serotine.

Dusk Emergence 2

No bats were observed emerging from the House.

Non-emerging species recorded during the survey comprised common and soprano pipistrelles, lesser horseshoe bat, serotine and greater horseshoe bat. The latter comprised a single pass along the Site's eastern boundary.

Dusk Emergence 3

No bats were observed emerging from the House.

Non-emerging species recorded during the survey comprised common and soprano pipistrelles, lesser horseshoe bat, serotine and greater horseshoe bat. The latter comprised a single pass along the Site's eastern boundary.

Summary

Based on the collected data, the House was not assessed to contain a bat roost.

3.3.3 Activity Survey

3.3.3.1 Walked Transects

The dates, times and environmental conditions of the walked transects are presented below in Table 3. Figures are provided in Appendix A at the end of this report.

Table 3: Environmental Conditions of Walked Transects

Date	Sunset	Survey times	Air Temp (°C)		Wind speed *		Cloud Cover (%)	
			Start	End	Start	End	Start	End
19/05/2022	21:00	21:00 – 23:00	19	14	1	1	90	90
27/07/2022	21:09	21:09 – 23:09	20	16	1	1	95	95
15/09/2022	19:27	19:27 – 21:27	16	14	2	2	90	30

Walked Transect 1 (Spring)

Five species of bats were recorded during the walked transect. Common and soprano pipistrelles were the first species recorded and both were observed commuting and foraging within the garden (Figure 5). A greater horseshoe bat was observed commuting along the Site's eastern boundary c. 25 minutes after sunset. A serotine was observed flying over the Site at 21:27. Both greater and lesser horseshoe bats were observed foraging along the eastern boundary between 21:31 and 22:03. Common and soprano pipistrelles and serotine were observed foraging over the Site throughout the survey.

Walked Transect 2 (Summer)

Five species of bats were recorded during the walked transect. Soprano pipistrelle was the first species recorded and was observed commuting and foraging within the garden (Figure 6). A noctule flew over the Site at 21:27. Common and soprano pipistrelles and serotine were observed foraging within the garden throughout the survey. A lesser horseshoe bat was observed commuting along the Site's eastern boundary at 22:46, c. 97 minutes after sunset.

Walked Transect 3 (Autumn)

Seven species of bats were recorded during the walked transect. Soprano pipistrelles were the first bats recorded and were observed both commuting and foraging within the garden (Figure 7). Two lesser and two greater horseshoe bats were observed commuting along the Site's eastern boundary c. 20 minutes after sunset. A *Myotis* bat was observed near to the western boundary. A noctule flew over the Site on a single occasion. Serotines and common pipistrelles were foraging throughout the garden.

Summary

Based on the walked transect data, greater horseshoe bats were observed along the eastern boundary coinciding with the species' expected emergence time. The data suggests that there is a small roost (likely day roost) of greater horseshoe bats to the east of the Site (likely within several hundred metres). The greater horseshoe bats (along with lesser horseshoe bats) appear to be using the eastern and western boundaries to commute between roost sites and foraging habitat.

3.3.3.2 Static Surveys

Table 4 provides a summary of the greater horseshoe bat data gathered. The complete dataset is presented in Appendix B.

Table 4: Summary of Static Data – Greater Horseshoe Bat Only

Detector	Total No. Registrations Recorded	Average Registrations per Night	BAI*	Activity Level
19th – 23rd May 2022				
Anabat 1	91	9.1	0.91	Low
Anabat 2	1	0.1	0.01	Low
27th – 31st July 2022*				
Anabat 1	0	0	0	-
Anabat 2	0	0	0	-
2nd – 11th August 2022				
Anabat 1	1	0.1	0.01	Low
Anabat 2	0	0	0	-

* Other bats were recorded every day during this period and thus the absence is not due to inclement weather

3.3.4 Summary

The spring survey detected low levels of greater horseshoe bat, albeit primarily on Anabat 1 (western boundary). Although the species was recorded at low levels throughout the night, it was consistently recorded between 20:00 and 21:00. The number of registrations coupled with the timing indicates that a single greater horseshoe bat is roosting nearby (presumably to the east of Site), which accords with the walked transect data. Indeed, greater horseshoe bats were observed flying along the Site's eastern boundary during the emergence / activity surveys. No greater horseshoe bats were recorded during the summer and very few (single pass) during the autumn. As such, the importance of the Site appears to change according to the season. This largely accords with the results of an earlier survey (First Ecology, 2019).

4 DISCUSSION

4.1 General

The survey did not detect a bat roost within the House, in contrast to the earlier assessment (First Ecology, 2019). No signs of bats were recovered from within the loft space and no external potential roost locations were noted. During the three emergence surveys, no bats were observed emerging from the property nor showing it any special interest. The earlier survey reported droppings from the loft space; however, DNA analysis could not attribute these to any species of bat. This would indicate that: 1) the droppings have degraded beyond identification (unlikely); 2) the droppings were not from a bat; or 3) too little material was submitted (which is also unlikely). Subsequent to this, the 2019 emergence surveys identified a soprano pipistrelle emerging from the soffit / roof tile. This area was fully inspected and no suitable roost locations were noted. Indeed, the area shown in Plate 15 (First Ecology, 2019) showed the gap between the plastic soffit box and plastic guttering – an area which would afford no protection. Finally, the report concluded that the building would afford suitable hibernation potential solely on the basis of it being unoccupied. This is not accepted as the soffit box wouldn't be heated even if the property was occupied. On balance, the House is not considered to be a bat roost. The Garage and mature trees were assessed as having Negligible BRP.

The walked and static detector surveys confirmed that greater horseshoe bats were using the Site's eastern and western boundaries. Based on the walked transect data, greater horseshoe bats were observed moving along the eastern boundary at a time coinciding with their expected emergence. Static data then confirmed the species was foraging along the western boundary for a short period before moving off (presumably to the west). The data indicates that there is a small roost (likely a day roost) of greater horseshoe bats to the east of the Site. Upon emergence, these greater horseshoe bats commuted along the Site's eastern boundary to foraging grounds in the west. This pattern is supported by data gathered in 2019 by First Ecology.

The small number of greater horseshoe bats seen and the low levels of activity recorded are indicative of a small population - likely an individual or small number (< 3) of bats. The highest number of greater horseshoe bat registrations was achieved in May (spring); very few (if any) were recorded in July (summer) or September (autumn). This shows a temporal shift in the importance of the Site (i.e. being more important in the spring prior to the commencement of breeding).

When considering possible impacts, as stated above, the Site itself did not contain any opportunities for roosting bats. It is unclear whether the greater horseshoe bat population is linked to that at the Mells Valley SAC; however, the Site itself (0.283 ha or 0.00283 km^2) represents 0.003% of the available habitat within 5.3 km of the Mells Valley SAC (nearest site only). The loss of scrub, tall ruderal and un-grazed grassland are unlikely to adversely affect the Mells Valley population. However, the eastern and western boundaries do constitute 'important flightlines' for greater horseshoe bats (and indeed other species too). The loss of the eastern and western boundaries could isolate a greater horseshoe bat in the east from foraging grounds. This would be a moderate adverse impact at a local level.

To ensure that the important flight lines are retained, they will be protected throughout the development. Where possible, a 5 m buffer zone will be implemented along the eastern and western boundaries (greater in the northeast - an area that will be used to accommodate a resident slow-worm (*Anguis fragilis*) population). The buffer zone would be managed exclusively for wildlife. No access to the buffer zone will be permitted to the contractors or occupants of the new houses. A wooden fence would be erected along the inside of the buffer zone, which would block light spill. Locked gates to the buffer zone would be fitted at the Frome Road to enable habitat management works. Inside the buffer zone, the habitat would be managed in perpetuity as a rank grassland / scrub mosaic. No external lights will be fitted adjacent to the buffer zone, nor would any large (i.e. ≥ 1 m^2) windows be orientated towards it.

This would ensure minimal light spill. To further bolster this, a sensitive lighting strategy will be implemented. The sensitive lighting strategy will comprise the following broad elements (BCT, 2018):

- No excessive lighting - use only the minimum amount required for safety;
- No night-time working to be undertaken;
- Minimise light spill – use short columns and direct light downwards and in towards the Site;
- Use narrow spectrum bulbs that emit minimal ultra-violet light - avoid white and blue wavelengths of the spectrum, which can attract invertebrates;
- Lights should either peak higher than 550 nm or use glass lantern covers to filter UV light;
- Avoid using reflective surfaces under lights; and
- Minimise the amount of light spill from within the new buildings by good design.

Assuming that the above measures are implemented, the scheme will not result in a likely significant effect on the Mells Valley SAC or any features thereof.

4.2 Opportunities for Ecological Enhancement

The following provides suitable enhancements that could be incorporated within the current scheme:

- Addition of two Schwegler (or equivalent) bat boxes or bat bricks into each of the new buildings. If boxes are installed, it is recommended that a woodcrete box is utilised as these are long lasting and often come with a 25-year guarantee. The Schwegler 1FF standard box (or equivalent) and bat bricks would be suitable for this purpose and is utilised by a wide range of bat species. The boxes should be oriented to different directions to provide a range of environmental conditions (facing south and south-west is often effective). They must be placed in a dark location i.e. not subject to artificial lighting. Ideally, they should be placed over 4 metres high (where safe installation is possible) and in an uncluttered location so that bats can easily fly in and out (www.bats.org.uk);
- It is recommended that four bird boxes are included within the scheme comprising two with a 32 mm entrance hole and two open-fronted boxes to encourage a range of birds. It is recommended that woodcrete boxes (e.g. provided by Schwegler) are utilised as these provide longer lasting nesting opportunities than wooden boxes which tend to rot quickly. The 32 mm box should be placed between 2 m and 4 m above ground level and the open fronted box should be placed lower at about 2 m and placed within vegetation/cover. Boxes should not be positioned too close to each other to prevent aggressive behaviour between neighbours. Further information is provided at www.rspb.org.uk; and
- Integration of nest bricks into the building. Studies currently being undertaken at The Duchy of Cornwall sites are showing that such bricks are being used by a variety of small birds and could be described as a 'universal' brick for small building-dependent species such as swifts, house sparrows, starlings, house martins, blue tits, great tits and nuthatches.

5 REFERENCES

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APPENDIX A: WALKED SURVEY MAPS

Figure 5: Spring Transect Results

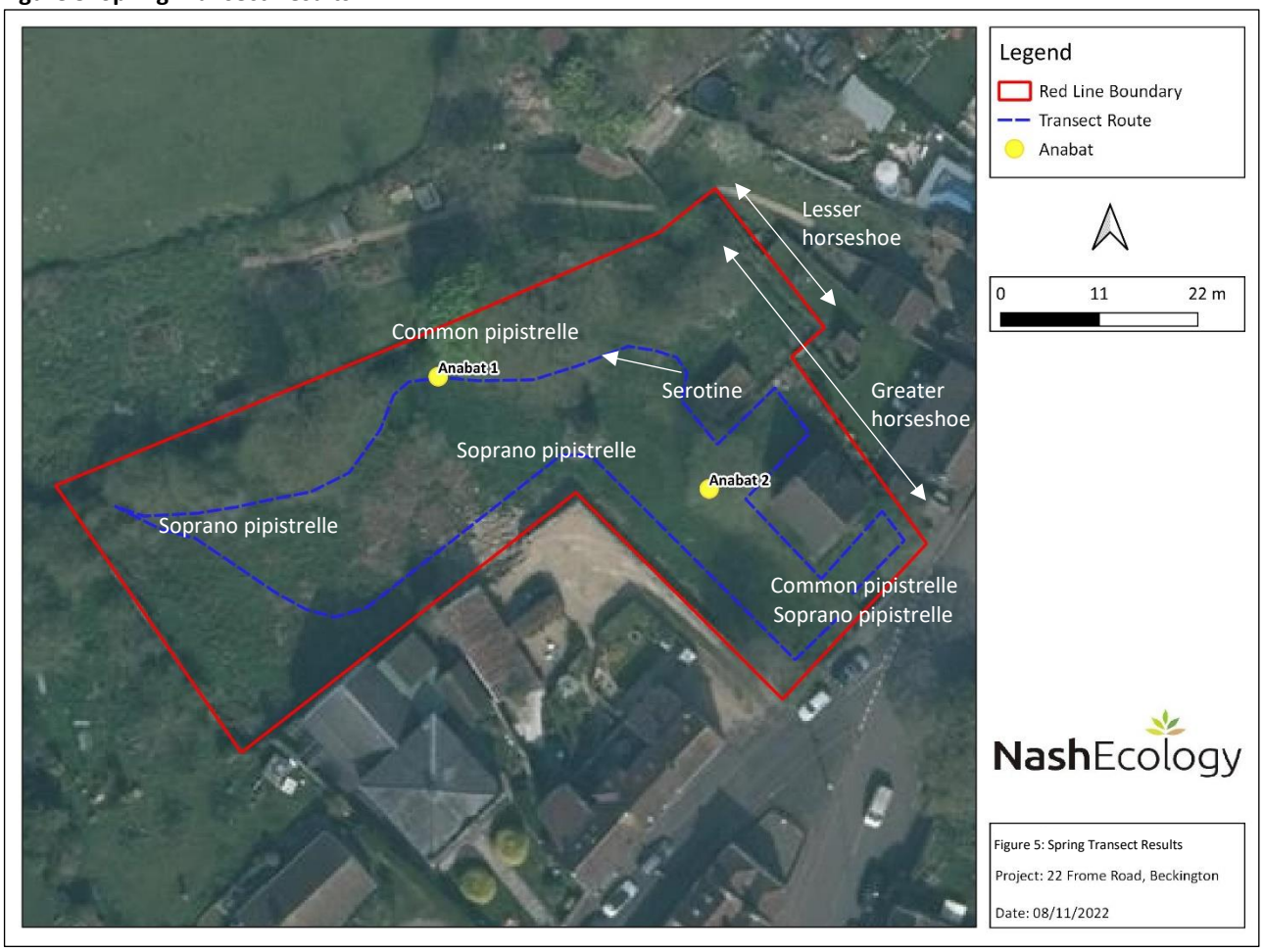


Figure 6: Summer Transect Results

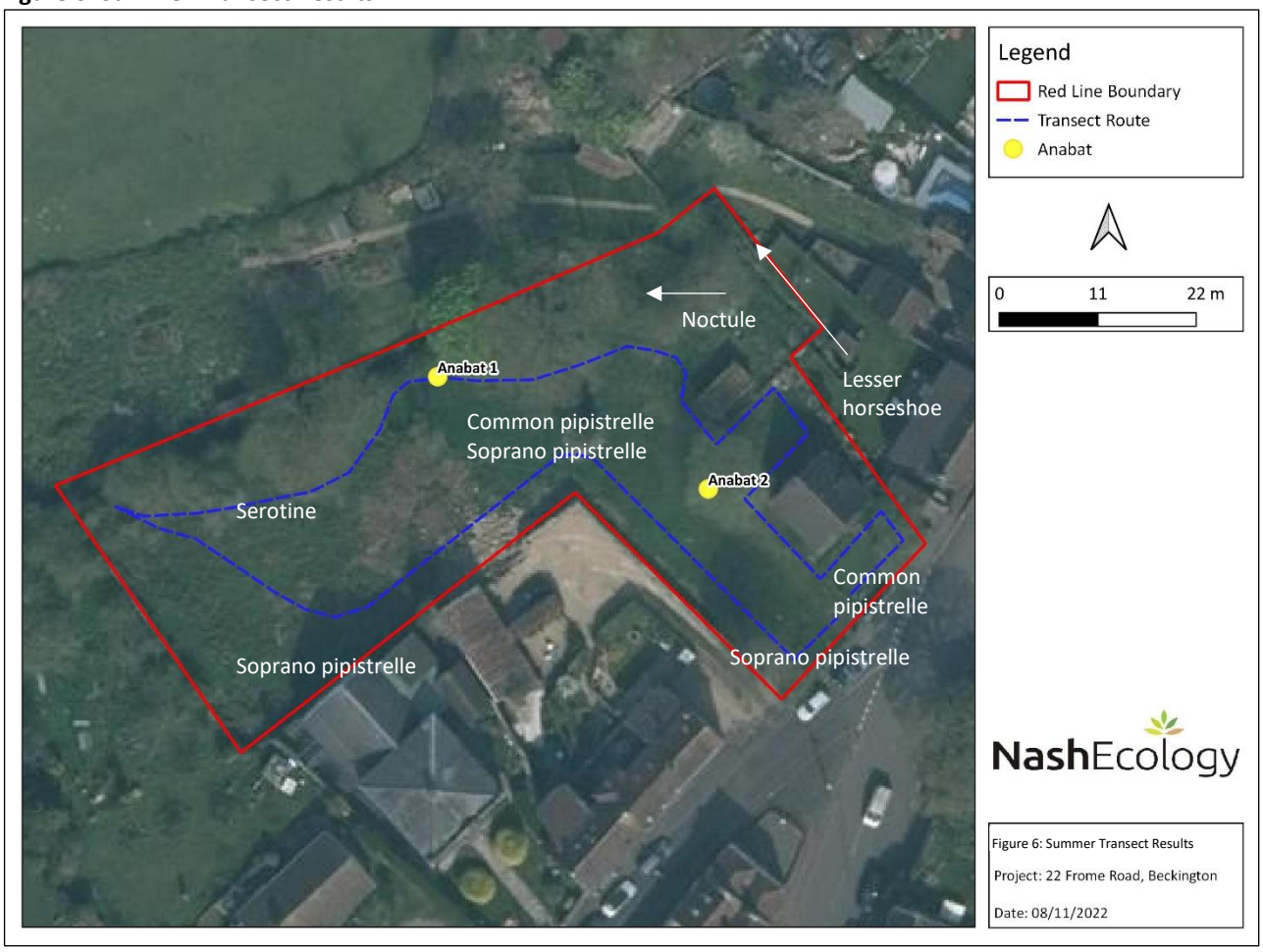
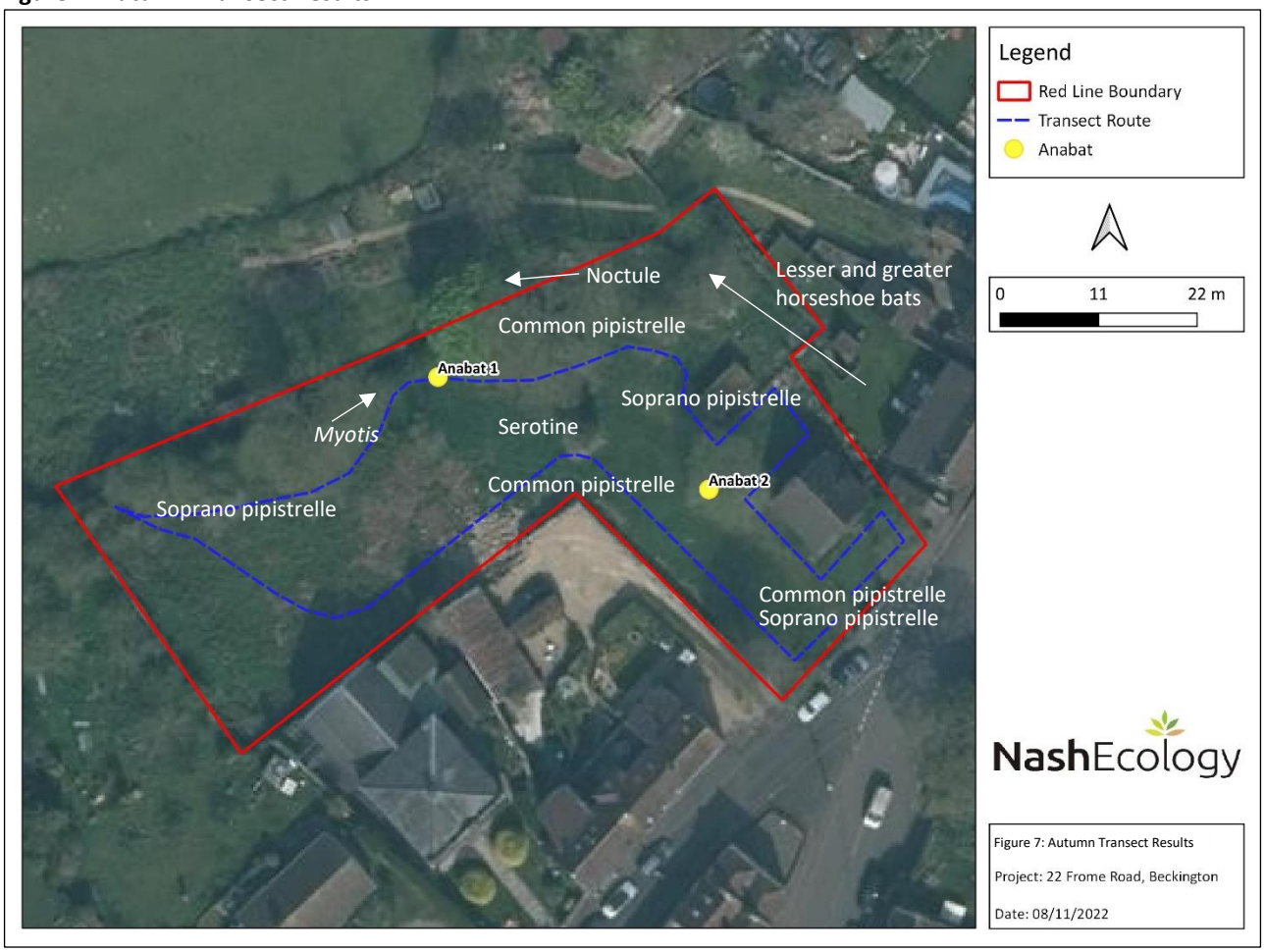


Figure 7: Autumn Transect Results



APPENDIX B: STATIC SURVEY DATA

ANABAT 1

19/05/2022	GHS	20/05/2022	GHS	21/05/2022	GHS	22/05/2022	GHS	23/05/2022	GHS
19:00 - 20:00	0	19:00 - 20:00	0	19:00 - 20:00	0	19:00 - 20:00	0	19:00 - 20:00	0
20:00 - 21:00	5	20:00 - 21:00	9	20:00 - 21:00	5	20:00 - 21:00	12	20:00 - 21:00	22
21:00 - 22:00	0	21:00 - 22:00	0	21:00 - 22:00	1	21:00 - 22:00	1	21:00 - 22:00	0
22:00 - 23:00	0	22:00 - 23:00	1	22:00 - 23:00	0	22:00 - 23:00	0	22:00 - 23:00	0
23:00 - 00:00	0	23:00 - 00:00	0	23:00 - 00:00	0	23:00 - 00:00	0	23:00 - 00:00	0
00:00 - 01:00	0	00:00 - 01:00	21	00:00 - 01:00	0	00:00 - 01:00	2	00:00 - 01:00	0
01:00 - 02:00	0	01:00 - 02:00	0	01:00 - 02:00	1	01:00 - 02:00	0	01:00 - 02:00	0
02:00 - 03:00	4	02:00 - 03:00	0	02:00 - 03:00	0	02:00 - 03:00	1	02:00 - 03:00	0
03:00 - 04:00	0	03:00 - 04:00	3	03:00 - 04:00	1	03:00 - 04:00	2	03:00 - 04:00	0
04:00 - 05:00	0	04:00 - 05:00	0	04:00 - 05:00	0	04:00 - 05:00	0	04:00 - 05:00	0
Total calls	**9**	**Total calls**	**34**	**Total calls**	**8**	**Total calls**	**18**	**Total calls**	**22**
Maximum	**5**	**Maximum**	**21**	**Maximum**	**5**	**Maximum**	**12**	**Maximum**	**22**
Minimum	**0**	**Minimum**	**0**	**Minimum**	**0**	**Minimum**	**0**	**Minimum**	**0**
Mean	**0.9**	**Mean**	**3.4**	**Mean**	**0.8**	**Mean**	**1.8**	**Mean**	**2.2**

ANABAT 2

19/05/2022	GHS	20/05/2022	GHS	21/05/2022	GHS	22/05/2022	GHS	23/05/2022	GHS
19:00 - 20:00	0	19:00 - 20:00	0	19:00 - 20:00	0	19:00 - 20:00	0	19:00 - 20:00	0
20:00 - 21:00	0	20:00 - 21:00	0	20:00 - 21:00	0	20:00 - 21:00	0	20:00 - 21:00	0
21:00 - 22:00	0	21:00 - 22:00	0	21:00 - 22:00	0	21:00 - 22:00	0	21:00 - 22:00	0
22:00 - 23:00	0	22:00 - 23:00	0	22:00 - 23:00	1	22:00 - 23:00	0	22:00 - 23:00	0
23:00 - 00:00	0	23:00 - 00:00	0	23:00 - 00:00	0	23:00 - 00:00	0	23:00 - 00:00	0
00:00 - 01:00	0	00:00 - 01:00	0	00:00 - 01:00	0	00:00 - 01:00	0	00:00 - 01:00	0
01:00 - 02:00	0	01:00 - 02:00	0	01:00 - 02:00	0	01:00 - 02:00	0	01:00 - 02:00	0
02:00 - 03:00	0	02:00 - 03:00	0	02:00 - 03:00	0	02:00 - 03:00	0	02:00 - 03:00	0
03:00 - 04:00	0	03:00 - 04:00	0	03:00 - 04:00	0	03:00 - 04:00	0	03:00 - 04:00	0
04:00 - 05:00	0	04:00 - 05:00	0	04:00 - 05:00	0	04:00 - 05:00	0	04:00 - 05:00	0
Total calls	**0**	**Total calls**	**0**	**Total calls**	**1**	**Total calls**	**0**	**Total calls**	**0**
Maximum	**0**	**Maximum**	**0**	**Maximum**	**1**	**Maximum**	**0**	**Maximum**	**0**
Minimum	**0**	**Minimum**	**0**	**Minimum**	**0**	**Minimum**	**0**	**Minimum**	**0**
Mean	**0**	**Mean**	**0**	**Mean**	**0.1**	**Mean**	**0**	**Mean**	**0**

July 2022

No horseshoe bats recorded

ANABAT 1

15/09/2022	GHS	16/09/2022	GHS	17/09/2022	GHS	18/09/2022	GHS	19/09/2022	GHS
19:00 - 20:00	0	19:00 - 20:00	0	19:00 - 20:00	0	19:00 - 20:00	0	19:00 - 20:00	0
20:00 - 21:00	0	20:00 - 21:00	0	20:00 - 21:00	0	20:00 - 21:00	0	20:00 - 21:00	0
21:00 - 22:00	0	21:00 - 22:00	0	21:00 - 22:00	0	21:00 - 22:00	0	21:00 - 22:00	0
22:00 - 23:00	0	22:00 - 23:00	0	22:00 - 23:00	0	22:00 - 23:00	0	22:00 - 23:00	0
23:00 - 00:00	0	23:00 - 00:00	0	23:00 - 00:00	0	23:00 - 00:00	0	23:00 - 00:00	0
00:00 - 01:00	0	00:00 - 01:00	0	00:00 - 01:00	0	00:00 - 01:00	0	00:00 - 01:00	0
01:00 - 02:00	0	01:00 - 02:00	0	01:00 - 02:00	0	01:00 - 02:00	0	01:00 - 02:00	0
02:00 - 03:00	0	02:00 - 03:00	0	02:00 - 03:00	0	02:00 - 03:00	0	02:00 - 03:00	0
03:00 - 04:00	0	03:00 - 04:00	0	03:00 - 04:00	0	03:00 - 04:00	0	03:00 - 04:00	0
04:00 - 05:00	1	04:00 - 05:00	0	04:00 - 05:00	0	04:00 - 05:00	0	04:00 - 05:00	0
Total calls	**1**	**Total calls**	**0**	**Total calls**	**0**	**Total calls**	**0**	**Total calls**	**0**
Maximum	**1**	**Maximum**	**0**	**Maximum**	**0**	**Maximum**	**0**	**Maximum**	**0**
Minimum	**0**	**Minimum**	**0**	**Minimum**	**0**	**Minimum**	**0**	**Minimum**	**0**
Mean	**0.1**	**Mean**	**0**	**Mean**	**0**	**Mean**	**0**	**Mean**	**0**

ANABAT 2

15/09/2022	GHS	16/09/2022	GHS	17/09/2022	GHS	18/09/2022	GHS	19/09/2022	GHS
19:00 - 20:00	0	19:00 - 20:00	0	19:00 - 20:00	0	19:00 - 20:00	0	19:00 - 20:00	0
20:00 - 21:00	0	20:00 - 21:00	0	20:00 - 21:00	0	20:00 - 21:00	0	20:00 - 21:00	0
21:00 - 22:00	0	21:00 - 22:00	0	21:00 - 22:00	0	21:00 - 22:00	0	21:00 - 22:00	0
22:00 - 23:00	0	22:00 - 23:00	0	22:00 - 23:00	0	22:00 - 23:00	0	22:00 - 23:00	0
23:00 - 00:00	0	23:00 - 00:00	0	23:00 - 00:00	0	23:00 - 00:00	0	23:00 - 00:00	0
00:00 - 01:00	0	00:00 - 01:00	0	00:00 - 01:00	0	00:00 - 01:00	0	00:00 - 01:00	0
01:00 - 02:00	0	01:00 - 02:00	0	01:00 - 02:00	0	01:00 - 02:00	0	01:00 - 02:00	0
02:00 - 03:00	0	02:00 - 03:00	0	02:00 - 03:00	0	02:00 - 03:00	0	02:00 - 03:00	0
03:00 - 04:00	0	03:00 - 04:00	0	03:00 - 04:00	0	03:00 - 04:00	0	03:00 - 04:00	0
04:00 - 05:00	0	04:00 - 05:00	0	04:00 - 05:00	0	04:00 - 05:00	0	04:00 - 05:00	0
Total calls	**0**	**Total calls**	**0**	**Total calls**	**0**	**Total calls**	**0**	**Total calls**	**0**
Maximum	**0**	**Maximum**	**0**	**Maximum**	**0**	**Maximum**	**0**	**Maximum**	**0**
Minimum	**0**	**Minimum**	**0**	**Minimum**	**0**	**Minimum**	**0**	**Minimum**	**0**
Mean	**0**	**Mean**	**0**	**Mean**	**0**	**Mean**	**0**	**Mean**	**0**