Botley West Solar Farm

Environmental Statement

Volume 3

Appendix 9.4: Bat Surveys

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Term	Meaning
The Applicant	SolarFive Ltd
The Project	Botley West Solar Farm

Abbreviations

Abbreviation	Meaning
DCO	Development Consent Order
EIA	Environmental Impact Assessment
ES	Environmental Statement
NSIP	Nationally Significant Infrastructure Project
PEIR	Preliminary Environmental Information Report
PV	Photovoltaic
PVDP	Photovolt Development Partners GmbH

Units

Unit	Description
%	Percentage
km^2	Square kilometres
kWh	Kilowatt hour
MW	Megawatt
Mwe	Megawatt electrical
MWh	Megawatt hour

1 Introduction

1.1 Overview

1.1.1 This Appendix of the Environmental Statement (ES) has been prepared by RPS on behalf of Photovolt Development Partners GmbH. (PVDP) for the Applicant, SolarFive Ltd. (SolarFive). This Appendix supports Chapter 9: Ecology and Nature Conservation in Volume 1 of the ES **[EN010147/APP/6.3]**.

1.1.2 The Project site is located in rural Oxfordshire near to Blenheim Palace and the villages of Bladon, Woodstock, Cassington and Cumnor. It comprises approximately 1,300 ha of mainly arable land with over 90 km of hedgerow dividing fields. The majority of the land proposed for the Project is currently used for arable crops or is otherwise down to pasture. The River Evenlode runs through the centre of the Project site in a north-south orientation.

1.1.3 The wider landscape is rural in nature with blocks of woodland, including ancient woodland, other riparian systems (both the River Glyme and Cherwell are nearby) and large water bodies including the lakes within Blenheim Palace and Farmoor Reservoir.

1.1.4 The Project would be constructed within arable fields with all features that might be used by bats for foraging/roosting/commuting retained. As such, the aim of the study was to determine the general level of bat activity across the Project site through the use of static monitoring of key landscape features and the likely assemblage of bat species present.

1.1.5 This report has been updated at Deadline 5 of the Examination to address some minor corrections requested by Natural England in their Relevant Representation [RR-0761]. It has also been updated to include data from 2024/25 static detector monitoring to explore opportunities to further refine the bat mitigation package. An additional Annex B of this report provides full details of all radio tracking and associated roost data considered as part of the Project.

1.2 Legislation

1.2.1 Relevant legislation, policy guidance and both Local and National Biodiversity Action Plans (BAPs) are referred to throughout this report where appropriate. Their context and application are explained in the relevant sections of this report.

1.2.2 The relevant articles of legislation are:

- The Environment Act, 2021;
- The National Planning Policy Framework (NPPF, 2021, 2023);
- ODPM Circular 06/2005 (retained as Technical Guidance on NPPF 2021);
- Adopted Cherwell Local Plan 2011-2031 (Part 1);
- The Conservation of Habitats and Species Regulations (Amendment) (EU Exit) 2019;

- The Natural Environment and Rural Communities Act 2006; and
- National/Local Biodiversity Action Plan for Oxfordshire.

2 Methods

2.1 Bat Activity Surveys – Statics Monitoring

2.1.1 Bat activity surveys were undertaken within the site boundary to gain information about bat use in both 2022 and 2023. Statics surveys were undertaken within the site between April and October 2022, and again between April and October 2023. In 2022, static bat detectors were deployed at eight locations across the site, shown on Figure 2.1, and five locations in 2023, shown in Figure 2.2. The habitats present at each static location are described in Table 2.1 (2022 locations) and Table 2.2 (2023 locations).

2.1.2 The static detector surveys focused on areas of higher-value habitats which were identified as being most suitable for foraging and commuting bats, and those which are likely to be significantly impacted by the Project.

2.1.3 The woodland edges, hedgerows and land close to the River Evenlode were considered to provide good value foraging and commuting habitat for bats and would likely support a variety of night-flying invertebrates for bats to forage upon. These features were linked via hedgerows (on and off site) and other linear features to areas of suitable foraging and roosting habitat within the wider project area and wider landscape.

Table 2.1: Habitats present at each static detector deployment location (2022 locations).

Location	Habitat
S1	Species-rich hedgerow
S2	Species-rich line hedgerow connected to a patch of woodland to the west
S3	Woodland edge
S4	Open habitat in between two sections of woodland
S5	A line of mature trees south of the River Evenlode
S6	A line of mature trees surrounded by improved grassland, connecting a patch of woodland to the River Evenlode
D1	Intact hedge – species-poor bordered by standing water, surrounded by improved grassland and arable farmland
D2	Defunct hedge – native species-rich bordered by a dry ditch, surrounded by arable farmland

Table 2.2: Habitats present at each static detector deployment location (2023 locations).

Location	Habitat
S5	Under an oak tree within species rich hedgerow.
S6	Species-rich hedgerow and fence.
S7	Woodland area between farmlands.
S8	Treeline / scrub area next to trainline.
S9	Interconnecting hedgerow within farmland.

2.1.4 The static bat detectors were left once or twice a month at each location, to record overnight over at least five consecutive nights. The detectors were programmed to commence recording approximately 15 minutes before sunset and terminated 15 minutes after sunrise. This period covered the peak time bats would be commuting to and from their roosts. A summary of all the deployment nights (including month and session number) at each location is shown in Table 2.3 (2022 locations) and Table 2.4 (2023 locations) overleaf.

Table 2.3: Static detector deployment information per location (2022)

Static Location	Deployment session dates													
	April		May		June		July		August		September		October	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
S1	20 - 25	-	6 - 10	17 - 23	16 - 20	-	7 - 11	-	19 - 28	-	9 - 13	23 - 27	12 - 16	19 - 22
S2	20 - 25	-	6 - 10	17 - 23	16 - 20	-	7 - 11	-	19 - 28	-	23	-	12 - 16	19 - 22
S3	13 - 20	-	11 - 16	-	1 - 6	16 - 20	22	-	19 - 28	-	9 - 13	23 - 27	12 - 16	19 - 22
S4	13 - 19	-	12 - 16	-	1 - 6	16 - 20	22 - 31	-	19 - 21	-	9 - 13	23 - 27	12 - 16	19 - 22
S5	-	-	-	-	7 - 11	22 - 29	7 - 17	-	3 - 6	-	1 - 3	16 - 21	3 - 9	26 - 30
S6	-	-	-	-	7 - 9	22 - 29	-	-	3 - 7	-	1 - 3	16 - 21	26 - 30	-
D1	7 - 12	26 - 30	1 - 5	24 - 30	21 - 30	-	12 - 17	19 - 21	4 - 9	-	1 - 3	16 - 21	3 - 9	26 - 30
D2	7 - 13	26 - 30	1 - 5	24 - 29	21 - 30	-	12 - 18	-	4 - 12	-	1 - 5	16 - 21	3 - 9	26 - 30

S = Static location; D = Denmans Farm static location

Table 2.4: Static detector deployment information per location (2023)

Static Location	Deployment session dates													
	April		May		June		July		August		September		October	
	1	2	1	2	1	2	1	2	1	2	1	2	1	2
S5	20 - 24	25-29	03 - 11	19 - 24	01 - 06	13 - 18	07 - 12	12 - 18	09 - 13	14 - 19	07 - 11	12 - 17	05 - 10	10 - 18
S6	06 - 10	20 - 24	05 - 08	19 - 20	01 - 06	13 - 13	07 - 15	-	09 - 20	-	07 - 17	-	04 - 10	11 - 17
S7	06 - 11	19 - 21	05 - 11	19 - 25	13 - 18	-	07 - 18	-	09 - 20	-	07 - 11	12 - 17	05 - 10	11 – 16
S8	06 - 10	20 - 24	04 - 10	19 - 24	01 - 03	13 - 20	07 - 09	13 - 14	-	-	07- 09	12 - 15	04 - 07	11 - 13
S9	06 - 10	20 - 24	05 - 10	19 - 24	13 - 17	-	07 - 13	15 - 18	09 - 13	14 - 19	07 - 09	12 - 16	08 - 11	04 - 17

2.2 Static Bat Data analysis

2.2.1 The bat passes were recorded and all bats were identified to species level, where possible using either BatExplorer or Kaleidoscope. As not all bat calls recorded can be identified to species, especially with *Myotis* bats, therefore descriptions of bat species assemblage represent the minimum number present rather than a definite list of all species present.

2.2.2 Where several bat species were present within a call segment, then all the species were tagged in the results spreadsheet. For example, a common pipistrelle *Pipistrellus pipistrellus*, soprano pipistrelle *Pipistrellus pygmaeus* and *Myotis* bat all calling simultaneously would result in three individual bat registrations for calculating bat pass counts.

2.2.3 The number of bat passes recorded is not representative of the number of bats present within any given area, as a single bat may have made many passes. Therefore, results are provided as an amount of activity for each species over the course of a recording session and survey period, provided as passes per night.

2.3 Static Bat Data Limitations

Surveys

2.3.1 In 2022 each location comprised at least five nights of recordings for each month, apart from Static Location 5 (S5) and Static Location 6 (S6) in April and May, Static Location 3 (S3) and S6 for July and S3 for September, due to access constraints and/or equipment failure. Two deployments (per month) were undertaken for some locations. Some deployments lost data due to equipment failure meaning they had less than five nights of data. This has been taken into account when evaluating the results.

2.3.2 The bat data presented in the tables, detailing the results of the surveys, shows the number of passes for each species. It is important to note that the number of contacts does not equate to the number of individual bats, as several contacts can be generated by one bat flying past several times. Instead, the number of contacts provides an index of bat activity, which can be used to identify areas of habitat of higher or lower value for bats. Where appropriate, data has been presented at an average of bat passes per night, in order for data to be comparable between surveying periods and static locations.

2.3.3 Species identification by sonogram is limited to a certain extent by similarities in call structure parameters for certain species. All bats modulate their calls according to the habitats they are navigating and their behaviour. This imposes limitations on reliable identification of bats to species level for species of the same genus, and specifically for *Plecotus*, *Myotis* and *Nyctalus* bats.

2.3.4 Due to the location of the site and known range of *Plecotus* bats, every *Plecotus* bat recorded was assumed to be a brown long-eared bat *Plecotus auritus*. *Nyctalus* species (noctule *Nyctalus noctula* and Leisler's bat *Nyctalus leislerii*) were separated where possible but grouped where call parameters overlapped and prevented reliable identification to species.

2.3.5 Bats of the species group *Myotis* are notoriously difficult to differentiate based on echolocation call structure alone and therefore these bats were only analysed to species level if calls were characteristic of a certain species, present within suitable habitat.

2.3.6 A proportion of species are likely to be underrepresented in the analysis, such as long-eared bats *Plecotus* sp., barbastelle bats *Barbastellus barbastellus* and serotine bats *Eptesicus serotinus*. For long-eared and barbastelle bats, this is most likely due to their call characteristics, which are comparatively quiet compared to that of other species. In order for the detectors to record brown long-eared bat calls, bats must fly within 3 m of the microphone. For serotine bats, it's call parameters overlap with *Nyctalus* species making it difficult to distinguish.

2.4 Walked Transects and Woodland Bat Trapping Surveys May 2024

2.4.1 In order to ascertain the likelihood of the woodlands supporting bat roosts, and in particular the presence of bat roost for Annex II species, specifically barbastelle bats at the centre of the Project site (where the panels are located in fields immediately adjacent to the woodlands), a bat transect was undertaken of each of the three woods, Pinsley Wood (central grid reference: SP 42881 13541), Burleigh Wood (central grid reference: SP 44430 13571), Bladon Heath Wood (central grid reference: SP 45571 13837 by a pair of surveyors on 14 May 2024. The transects were led by experienced bat surveyors with assistants. It was not possible to survey Begrooke Wood due to access limitations.

2.4.2 Surveyors were equipped with Anabat Scout or Anabat Walkabout full spectrum handheld bat detectors. Weather for the surveys was around 17°C, dry and with light winds. The surveys commenced at 20:50 (sunset) and continued for two to three hours after sunset, ensuring a full rotation of highest suitability woodland in each wood was walked once. In each wood, three static bat detectors were placed at strategic locations to maximise the likelihood of detecting barbastelle bats. Static detectors were either Anabat Swifts, or Wildlife Acoustics Song Meter 4 (SM4). Detectors were in place and recording prior to the transects commencing and were recollected at the end of the transect.

2.4.3 The transect routes, stropping points and static locations are set out on Figure 2.3 (Pinsley Wood), Figure 2.4 (Burleigh Wood), and Figure 2.5 (Bladon Heath Wood). The transect routes selected, including stopping points and locations of static detectors, was based on a daytime familiarisation survey of each wood carried out earlier the same day prior to the transect survey commencing.

2.4.4 A repeat of the transects, supported by static detectors, was scheduled to take place on the 21 May 2024. The first trapping night in Pinsley Wood was also scheduled for the same evening. However, a change in the weather system that day brought heavy rain at the start time of the surveys that remained forecast to continue for the entire night. The transects were therefore aborted. It was decided to still set out static detectors in Burleigh (three Anabat Swifts) and Bladon Heath Wood (four SM4's) - see Figure 2.6). These remained in

place until the 28 May 2024. The highest level of barbastelle activity was detected in Pinsley Wood on the first transect (14 May 2024) and therefore further static surveys were not carried out for this wood.

2.4.5 Bat audio data collected during the surveys was initially analysed using Kaleidoscope Pro auto-analysis software (version 5) using the UK and Europe classifier. Bat calls were then further analysed using Analook software (Version 4.5z; Titley Scientific). It should be recognised that a series of separate sound files could represent multiple bats calling infrequently (e.g. as they each pass overhead moving in one direction) or a small number of bats (or even one individual) calling frequently (e.g. bats making repeated foraging passes). The species analysis follows the call parameters as describe in Russ1. Due to the unreliability of auto-analysis software, all barbastelle calls (and verification of 'Noise' and 'NoID' files) generated by Kaleidoscope Pro are manually verified by an ecologist experienced in sound analysis.

2.4.6 Bat trapping surveys were carried out at Pinsley Wood (22 May 2024), and Bladon Heath Wood (28 May 2024). The surveys were carried out using two Austbat triple bank harp traps, and two single 9m Ecotone mist nets. The Sussex Autobat acoustic lure were used at three of the four traps at any one time (always both harp traps, and one mist net). The Sussex Autobats were set to play synthesised calls of woodland bat species on a sequence. The bat trapping was carried out by experienced and appropriately licenced Level 3 & 4 bat ecologists. The trapping locations are shown in Figure

2.4.7 Bat trapping surveys were undertaken during suitable weather conditions, and commenced at sunset, continuing for at least 2 hours to capture the peak bat emergence period:

- Pinsley Wood (22 May 2024): 16°C, dry, still. Heavy rain preceded the 24 hours before the survey. Survey commenced 21:01 (sunset) and ceased at 00:00.
- Bladon Heath Wood (28 May 2024): 14°C, dry, light breeze. Rain earlier in the day. Survey commenced 21:10 (Sunset) and ceased 00:30.

2.4.8 All ecologist handling bats wore FFP2 non-valved fast masks and clean nitrile gloves (or thicker gloves for larger species) for each bat handled. Captured bats were placed temporarily in clean cotton drawstring bags, prior to being processed. The following data was collected for each captured bat:

- The trap in which it was caught
- Time
- Species
- Sex
- Forearm measurement (mm)
- Weight (g)
- Any distinguishing marks or rings
- Any other relevant notes

2.4.9 In addition, Eppendorf sample jars were available to collect dropping samples, should these be needed for species verification post survey. All bats were released immediately following processing

3 Results

3.1 Location S1 (2022)

3.1.1 A summary of the survey dates, number of nights deployed, and bat passes for location S1 is provided in **Table 3.1**. A summary of the average bat passes per night by species recorded at location S1 is provided in Error! Reference s ource not found.. Totals of bat passes per recording period, per species are provided in Appendix B.

3.1.2 In **Table 3.1** and Error! Reference source not found., the data are presented a s the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 3.1: Bat static survey summary for location S1 (2022)

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
20/04/22 - 25/04/22	6	578	96.3
06/05/22 - 10/05/22	5	2091	418.2
17/05/22 - 23/05/22	7	1568	224.0
16/06/22 - 20/06/22	5	598	119.6
07/07/22 - 11/07/22	5	1903	380.6
19/08/22 - 28/08/22	10	733	73.3
09/09/22 - 13/09/22	5	225	45.0
23/09/22 - 27/09/22	5	80	16.0
12/10/22 - 16/10/22	5	181	36.2
19/10/22 - 22/10/22	4	193	48.3

3.1.1 At least nine species of bats were recording at location S1 in 2022, including common, soprano and Nathusius' pipistrelle *Pipistrellus nathusii*, barbastelle, *Myotis sp.,* noctule, Leisler's bat, serotine, and brown long-eared bats. Common and soprano pipistrelle, barbastelle, *Myotis sp.,* and noctule bats were recorded during each of the recording sessions.

3.1.2 Common pipistrelle were the most frequently recorded species at this location, with an average of 114.52 passes per night over the survey period.

3.1.3 The next highest activity was soprano pipistrelle and *Myotis* sp. although this was far lower than that of common pipistrelles with an average of 12.46 passes and 9.64 passes per night respectively over the survey period. Both soprano pipistrelle and *Myotis* bats had a peak in activity in July 2022 at 40 passes and 27 passes per night respectively.

3.1.4 Barbastelle bats had an average of 4.02 passes per night, with a peak of 18.83 passes per night in April 2022.

3.1.5 All other species had far less activity each with an average of less than one pass per night over the survey period. Activity was mainly recorded between May and August.

3.1.6 The highest level of activity was recorded in May, followed by July then June. Looking at this trend by species, common pipistrelle activity follows this trend with much higher activity in May and July, but lower activity in June. This could indicate a maternity colony(s) using the site for foraging and/or commuting. Pregnant bats tend to stay closer to maternity roosts when heavily pregnant, which tends to be in June; this could account for the lower activity observed in June 2022. None of the other bat species recorded on site follow this pattern as closely, however both barbastelle and soprano pipistrelle had a similar pattern (but at much lower passes per night) with higher activity either side of late May and June 2022. This is particularly apparent with barbastelle that had 18.83, 8.6 and 6.9 passes per night in April, early May and August respectively, but less than two passes per night all other recording sessions, suggesting commuting between summer and autumn/winter sites.

Table 3.1: Average bat passes per night at location S1 in 2022

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
20/04/22 - 25/04/22	6	18.83	63.83	2.50	0.00	0.00	10.17	0.17	0.67	0.00	0.00	0.17	0.00	96.33
06/05/22 - 10/05/22	5	8.60	387.20	14.00	0.00	0.00	6.60	0.00	1.40	0.00	0.40	0.00	0.00	418.20
17/05/22 - 23/05/22	7	0.43	198.57	4.43	0.86	0.29	18.43	0.00	0.43	0.00	0.43	0.00	0.14	224.00
16/06/22 - 20/06/22	5	0.20	94.80	7.40	0.20	0.00	12.20	0.20	3.60	0.00	0.00	0.00	0.00	119.60
07/07/22 - 11/07/22	5	1.40	299.00	40.40	0.00	0.80	27.20	1.20	8.80	0.20	0.00	1.60	0.00	380.60
19/08/22 - 28/08/22	10	6.90	24.80	15.60	0.00	0.40	13.10	4.60	5.30	1.50	0.20	0.90	0.00	73.30
09/09/22 - 13/09/22	5	0.20	18.20	14.20	0.00	0.00	1.80	0.00	10.20	0.20	0.00	0.20	0.00	45.00
23/09/22 - 27/09/22	5	1.00	6.40	5.40	0.00	0.00	2.40	0.00	0.80	0.00	0.00	0.00	0.00	16.00
12/10/22 - 16/10/22	5	1.40	19.60	9.20	0.00	0.00	3.20	0.00	1.60	0.60	0.60	0.00	0.00	36.20
19/10/22 - 22/10/22	4	1.25	32.75	11.50	0.00	0.00	1.25	0.00	0.50	0.75	0.00	0.25	0.00	48.25
Average		**4.02**	**114.52**	**12.46**	**0.11**	**0.15**	**9.64**	**0.62**	**3.33**	**0.33**	**0.16**	**0.31**	**0.01**	**145.75**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.2 Location S2 2022

3.2.1 A summary of the survey dates, number of nights deployed, and bat passes for location S2 is provided in **Table 3.2**. A summary of the average bat passes per night by species recorded at location S2 is provided in **Table 3.3**. Totals of bat passes per recording period, per species are provided in Appendix B.

3.2.2 In **Table 3.2** and **Table 3.3**, data is presented as the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 3.2: Bat static survey summary for location S2 in 2022

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
20/04/22 - 25/04/22	6	23	3.8
06/05/22 - 10/05/22	5	1078	215.6
17/05/22 - 23/05/22	7	463	66.1
16/06/22 - 20/06/22	5	937	187.4
07/07/22 - 11/07/22	5	3197	639.4
19/08/22 - 28/08/22	10	5768	576.8
23/09/22	1	10	10.0
12/10/22 - 16/10/22	5	698	139.6
19/10/22 - 23/10/22	5	2039	407.8

3.2.3 At least nine species of bats were recording at location S2 in 2022, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp.,* noctule, Leisler's bat, serotine and brown long-eared bats. Soprano pipistrelle were recorded during each of the recording sessions. Common pipistrelle and *Myotis sp.* were recorded during all but one of the recording sessions (September 2022).

3.2.4 Common pipistrelle were the most frequently recorded species at this location, with an average of 181.78 passes per night over the survey period. Over twice as much activity was recorded during July and August 2022 (531.8 passes/night) than on any other session.

3.2.5 The species with the next highest level of activity was soprano pipistrelle with an average of 53.80 passes per night over the survey period. The highest soprano pipistrelle activity was recorded in late October 2022 (176.6 passes/night).

3.2.6 Noctule bats had an average of 7.32 passes per night over the survey period, with over twice the amount of activity recorded in both the October 2022 sessions than any other recording session, although this was still a relatively low amounts of activity, with a peak of 21.60 passes per night.

3.2.7 All other species had less activity, each with an average of less than three pass per night over the survey period. Nathusius' pipistrelle were only recorded during the August 2022 session.

3.2.8 Barbastelle were recorded during five of the recording sessions (early May, July, August, and both October sessions), with an average of 0.74 passes per night across the survey season.

3.2.9 Overall, activity at location S2 fluctuated over the course of the 2022 season, with the highest amount of bat activity recorded in July 2022 (639.40 passes/night), second highest in August 2022 (576.80 passes/night), and third highest in late October 2022 (407.80 passes/night). Lower levels of activity were recorded in April 2022 (3.83 passes/night) and in September 2022 (10.00 passes/night). However, the static detector only recorded for one night in September 2022, with only soprano pipistrelle recorded on that evening.

Table 3.3: Average bat passes per night at location S2 in 2022

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
20/04/22 - 25/04/22	6	0.00	0.83	1.17	0.00	0.00	1.67	0.00	0.00	0.00	0.17	0.00	0.00	3.83
06/05/22 - 10/05/22	5	1.60	144.80	53.60	0.00	0.00	3.20	0.00	2.40	2.80	5.80	1.40	0.00	215.60
17/05/22 - 23/05/22	7	0.00	43.00	18.71	0.00	0.00	0.43	0.00	1.57	0.71	1.71	0.00	0.00	66.14
16/06/22 - 20/06/22	5	0.00	142.40	40.40	0.00	0.20	0.60	0.20	3.20	0.00	0.20	0.20	0.00	187.40
07/07/22 - 11/07/22	5	0.20	535.00	87.80	0.00	0.00	3.40	0.60	8.80	2.20	0.00	1.40	0.00	639.40
19/08/22 - 28/08/22	10	0.30	531.80	16.30	0.10	0.00	5.30	0.20	8.90	3.60	8.00	1.30	1.00	576.80
23/09/22	1	0.00	0.00	10.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.00
12/10/22 - 16/10/22	5	1.40	37.00	79.60	0.00	0.00	1.80	0.00	19.40	0.20	0.00	0.20	0.00	139.60
19/10/22 - 23/10/22	5	3.20	201.20	176.60	0.00	0.00	1.80	0.00	21.60	0.80	0.20	2.40	0.00	407.80
Average		**0.74**	**181.78**	**53.80**	**0.01**	**0.02**	**2.02**	**0.11**	**7.32**	**1.15**	**1.79**	**0.77**	**0.11**	**249.62**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.3 Location S3 (2022)

3.3.1 A summary of the survey dates, number of nights deployed, and bat passes for location S3 is provided in **Table 0.1**. A summary of the average bat passes per night by species recorded at location S3 is provided in **Table 0.2**. Totals of bat passes per recording period, per species are provided in Appendix B.

3.3.2 In **Table 0.1** and **Table 0.2**, the data are presented as the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 0.1: Bat static survey summary for location S3

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
13/04/22 - 20/04/22	8	2766	345.8
11/05/22 - 16/05/22	6	836	139.3
01/06/22 - 06/06/22	6	345	57.5
16/06/22 - 20/06/22	5	251	50.2
22/07/22	1	0	0
19/08/22 - 28/08/22	10	1527	152.7
09/09/22 - 13/09/22	5	289	57.8
23/09/22 - 27/09/22	5	741	148.2
12/10/22 - 16/10/22	5	1004	200.8
19/10/22 - 23/10/22	5	193	38.6

3.3.3 At least nine species of bats were recording at location S3 in 2022, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp.,* noctule, Leisler's bat, serotine and brown long-eared bats. Common and soprano pipistrelle and noctule bats were recorded during all but one of the recording sessions (July 2022).

3.3.4 Common pipistrelle were the most frequently recorded species at this location, with an average of 76.61 passes per night over the survey period. The highest common pipistrelle activity was recorded in April 2022 (318.00 passes/night).

3.3.5 The next highest activity was soprano pipistrelle with an average of 14.01 passes per night over the survey period. Soprano pipistrelle activity was higher between August and late-October 2022 (14.3-34.00 passes/night), potentially indicating swarming or mating activity that occurs in autumn, although these activity levels are fairly low. It is unlikely that this indicates commuting between summer and winter sites as there is not a similar peak in April 2022.

3.3.6 Noctule bat activity was very close to soprano pipistrelle with an average of 10.15 passes per night over the survey period. Leisler's bat activity was very low with 0.16 passes per night over the survey period, and with activity only recorded in April and May 2022. However, *Nyctalus* sp. calls were recorded at higher level (18.21 passes/night) over the survey period, and on all but one of the recording sessions (July 2022). Thus, noctule and/or Leisler's bat activity will have been higher than that identified to individual species.

3.3.7 All other species had less activity, each with an average of less than two pass per night over the survey period.

3.3.8 Overall, activity at location S3 fluctuated over the course of the survey period, with the highest amount of bat activity recorded in April 2022 (345.75 passes/night) second highest in mid-October 2022 (200.80 passes/night), and roughly between 140 and 150 passes per night in May, August and late September 2022. The static detector only recorded for one night in July 2022, and no bat passes were recorded on that evening.

Table 0.2: Average bat passes per night at location S3 in 2022

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
13/04/22 - 20/04/22	8	0.25	318.00	7.63	0.00	0.75	1.00	0.38	5.38	1.25	11.00	0.13	0.00	345.75
11/05/22 - 16/05/22	6	0.00	91.83	1.67	0.17	1.00	1.17	0.17	13.17	0.33	29.50	0.17	0.17	139.33
01/06/22 - 06/06/22	6	0.00	38.17	9.50	0.00	0.00	0.83	0.00	6.67	0.00	2.33	0.00	0.00	57.50
16/06/22 - 20/06/22	5	0.40	22.80	1.20	0.20	0.00	2.40	0.00	4.20	0.00	19.00	0.00	0.00	50.20
22/07/22	1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
19/08/22 - 28/08/22	10	0.90	58.30	14.30	0.00	2.20	4.50	0.80	31.50	0.00	38.50	0.20	1.50	152.70
09/09/22 - 13/09/22	5	0.00	10.60	24.20	0.00	0.40	0.60	0.00	17.20	0.00	4.80	0.00	0.00	57.80
23/09/22 - 27/09/22	5	0.40	119.40	29.20	0.00	2.40	0.60	0.20	10.00	0.00	15.20	0.00	0.00	148.20
12/10/22 - 16/10/22	5	0.20	100.80	34.00	0.00	1.00	1.40	0.20	9.60	0.00	53.20	0.20	0.20	200.80
19/10/22 - 23/10/22	5	0.00	6.20	18.40	0.00	1.40	0.00	0.00	3.80	0.00	8.60	0.20	0.00	38.60
Average		**0.22**	**76.61**	**14.01**	**0.04**	**0.92**	**1.25**	**0.18**	**10.15**	**0.16**	**18.21**	**0.09**	**0.19**	**119.09**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.4 Location S4 (2022)

3.4.1 A summary of the survey dates, number of nights deployed, and bat passes for location S4 is provided in **Table 0.3**. A summary of the average bat passes per night by species recorded at location S4 is provided in Error! Reference source not f ound.. Totals of bat passes per recording period, per species are provided in Appendix B.

3.4.2 In **Table 0.3** and Error! Reference source not found. data is presented as the total n umbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 0.3: Bat static survey summary for location S4

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
13/04/22 - 19/04/22	7	187	26.7
12/05/22 - 16/05/22	5	197	39.4
01/06/22 - 06/06/22	6	254	42.3
16/06/22 - 20/06/22	5	162	32.4
22/07/22 - 31/07/22	10	5580	558.0
19/08/22 - 21/08/22	3	328	109.3
09/09/22 - 13/09/22	5	188	37.6
23/09/22 - 27/09/22	5	91	18.2
12/10/22 - 16/10/22	5	231	46.2
19/10/22 - 23/10/22	5	130	26.0

3.4.3 At least nine species of bats were recording at location S4, common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp.,* noctule, Leisler's bat, serotine and brown long-eared bats. Common and soprano pipistrelle and noctule bats were recorded during each of the recording sessions. *Myotis sp.* were recorded during all but one of the recording sessions (late October 2022).

3.4.4 Common pipistrelle were the most frequently recorded species at this location, with an average of 55.77 passes per night over the survey period. Far higher common pipistrelle activity was recorded in July (454.8 passes/night) than in any other recording session.

3.4.5 The next highest activity was soprano pipistrelle with an average of 11.93 passes per night over the survey period. The highest soprano pipistrelle activity was also recorded in July 2022 (55.4 passes/night).

3.4.6 Noctule bats had an average of 7.60 passes per night over the survey period. Leisler's bat activity was very low with 0.46 pass per night over the survey period, and with activity only recorded in April and July 2022. However, *Nyctalus* sp. calls were recorded an average of 6.46 passes per night over the survey period, and on every recording session. Thus, noctule and/or Leisler's bat activity will have been higher than that identified to individual species.

3.4.7 *Myotis* bats had an average of 5.94 passes per night, with a peak of 24.67 passes per night in August 2022.

3.4.8 Barbastelle bats had an average of 3.97 passes per night, with a peak of 25.67 passes per night in August.

3.4.9 All other species had less activity, each with an average of less than 1 pass per night over the survey period. Brown long-eared bats were only recorded during the early September 2022 session.

3.4.10 Overall, activity at location S4 was much higher in July 2022 (558.00 passes/night) than in any other recording session. This appears to be attributed to the far higher activity of common pipistrelles (454.80 passes/night) than any other species or genus that and all other recording sessions.

Table 0.4: Average bat passes per night at location S4 in 2022

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
13/04/22 - 19/04/22	7	1.57	6.71	6.71	0.00	0.14	3.43	0.00	4.71	0.29	3.14	0.00	0.00	26.71
12/05/22 - 16/05/22	5	0.80	17.20	5.00	0.00	1.80	7.40	0.00	2.80	0.00	4.20	0.20	0.00	39.40
01/06/22 - 06/06/22	6	0.00	32.67	4.83	0.17	0.17	2.33	0.00	0.50	0.00	1.67	0.00	0.00	42.33
16/06/22 - 20/06/22	5	0.20	15.20	5.60	0.00	0.60	3.80	0.00	4.40	0.00	2.40	0.00	0.20	32.40
22/07/22 - 31/07/22	10	9.10	454.80	55.40	0.10	1.70	5.60	0.00	12.30	4.30	14.10	0.10	0.50	558.00
19/08/22 - 21/08/22	3	25.67	19.67	19.33	0.00	3.00	24.67	0.00	6.33	0.00	10.67	0.00	0.00	109.33
09/09/22 - 13/09/22	5	1.60	5.00	6.00	0.60	0.00	9.60	0.60	10.80	0.00	2.80	0.00	0.60	37.60
23/09/22 - 27/09/22	5	0.80	0.40	5.20	0.00	0.60	2.20	0.00	4.20	0.00	4.60	0.00	0.20	18.20
12/10/22 - 16/10/22	5	0.00	2.60	5.80	0.00	2.80	0.40	0.00	20.60	0.00	13.80	0.00	0.20	46.20
19/10/22 - 23/10/22	5	0.00	3.40	5.40	0.20	0.40	0.00	0.00	9.40	0.00	7.20	0.00	0.00	26.00
Average		**3.97**	**55.77**	**11.93**	**0.11**	**1.12**	**5.94**	**0.06**	**7.60**	**0.46**	**6.46**	**0.03**	**0.17**	**93.62**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.5 Location S5 (2022)

3.5.1 A summary of the survey dates, number of nights deployed, and bat passes for location S5 is provided in **Table 0.5**. A summary of the average bat passes per night by species recorded at location S5 is provided in **Error! Reference source not found.**. Totals of bat passes per recording period, per species are provided in Appendix B.

3.5.2 In **Table 0.5** and Error! Reference source not found., the data are presented as the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 0.5: Bat static survey summary for location S5

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
07/06/22 - 11/06/22	5	12623	2524.6
22/06/22 - 29/06/22	6	7109	1184.8
07/07/22 - 17/07/22	11	8716	792.4
03/08/22 - 06/08/22	4	999	249.8
01/09/22 - 03/09/22	3	325	108.3
16/09/22 - 21/09/22	6	559	93.2
03/10/22 - 09/10/22	7	252	36.0
26/10/22 – 30/10/22	5	201	40.2

*** no data available for nights of 25th & 26th June 2022**

3.5.3 At least nine species of bats were recording at location S5 in 2022, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp.,* noctule, Leisler's bat, serotine and brown long-eared bats. Common pipistrelle, soprano pipistrelle, *Myotis sp.* and noctule were recorded during each of the recording sessions. No static recording sessions were undertaken at this location in April or May 2022.

3.5.4 Soprano pipistrelle were the most frequently recorded species at this location, with an average of 324.62 passes per night over the survey period. The next highest activity was common pipistrelle with an average of 252.61 passes per night over the survey period. The highest activity for both these species was recorded in early June 2022 (1,419.60 and 1,079.40 passes/night respectively), with the second highest activity in late June and third highest in July 2022. This could indicate maternity roost of both species are near this location; as previously mentioned pregnant bats will stay closer to the roost when heavily pregnant which is typically in June. Ideally, data in April and May 2022 would support this theory, however no data were available for these months. The weather was warm in early 2022; anecdotal evidence provided by field surveyors noted that maternity roosts had broken up earlier that year than typically expected (early August rather than mid to late August). Thus it is possible that female pipistrelle bats would stay closer to the maternity roost in early June, rather than the expected mid/late June.

3.5.5 *Myotis sp*. bats had an average of 22.71 passes calls per night over the survey period, with the highest activity recorded in July (73.45 passes/night).

3.5.6 Nathusius' pipistrelle had an average of 8.87 passes per night over the survey period, with a peak of 46.17 passes per night in late June 2022. Very little activity was recorded in August and both September sessions (less than one pass/night) and no activity was recorded in both October 2022 sessions.

3.5.7 Noctule bats had an average of 6.58 passes per night over the survey period, with the highest activity recorded in July 2022 (19.82 passes/night).

3.5.8 Barbastelle bats had an average of 10.51 passes per night over the survey period, with far higher activity recorded in August 2022 (64.00 passes/night) than on any other recording session.

3.5.9 All other species had less activity, each with an average of less than two pass per night over the survey period. Leisler's bat calls were only identified during the late September session, but *Nyctalus sp*. calls were recorded on other sessions. Thus, it is possible that Leisler's bats were present at location S5 on other recording sessions.

3.5.10 Overall, activity at location S5 was much higher in early June 2022 (2,524.60 passes/night) than in any other recording session. This appears to be attributed to the far higher activity of common and soprano pipistrelles (1,079.40 and 1,419.60 passes/night respectively) than any other species or genus that and all other recording sessions.

Table 0.6: Average bat passes per night at Location S5 in 2022

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
07/06/22 - 11/06/22	5	0.00	1079.40	1419.60	15.40	1.00	5.00	0.60	3.00	0.00	0.60	0.00	0.00	2524.60
22/06/22 - 29/06/22	6	2.33	438.33	633.00	46.17	0.83	50.00	1.33	11.17	0.00	1.00	0.17	0.17	1184.83
07/07/22 - 17/07/22	11	0.36	296.36	385.36	8.00	1.27	73.45	0.00	19.82	0.00	6.73	0.18	0.64	792.36
03/08/22 - 06/08/22	4	64.00	56.00	94.25	0.75	0.75	20.00	1.50	12.50	0.00	0.75	0.00	0.00	249.75
01/09/22 - 03/09/22	3	1.67	73.33	14.67	0.33	0.00	14.67	1.00	2.33	0.00	0.33	0.00	0.00	108.33
16/09/22 - 21/09/22	6	14.83	34.00	26.83	0.33	0.17	13.17	1.67	1.50	0.17	0.33	0.17	0.00	93.17
03/10/22 - 09/10/22	7	0.86	17.43	12.86	0.00	0.29	2.00	0.43	2.14	0.00	0.00	0.00	0.00	36.00
26/10/22 – 30/10/22	5	0.00	26.00	10.40	0.00	0.00	3.40	0.00	0.20	0.00	0.00	0.00	0.20	40.20
Average		**10.51**	**252.61**	**324.62**	**8.87**	**0.54**	**22.71**	**0.82**	**6.58**	**0.02**	**1.22**	**0.07**	**0.13**	**628.66**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat

* no data available for nights of 25th & 26th June 2022

3.6 Location S6 in 2022

3.6.1 A summary of the survey dates, number of nights deployed, and bat passes for location S6 is provided in **Table 0.7**. A summary of the average bat passes per night by species recorded at location S6 is provided in **Table 0.1**. Totals of bat passes per recording period, per species are provided in Appendix B.

3.6.2 In **Table 0.7** and **Table 0.1**, the data are presented as the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 0.7: Bat static survey summary for location S6

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
07/06/22 - 09/06/22	3	8834	2944.7
22/06/22 - 29/06/22*	6	9046	1507.7
03/08/22 - 07/08/22	5	8146	1629.2
01/09/22 - 03/09/22	3	5392	1797.3
16/09/22 - 21/09/22	6	3128	521.3
26/10/22 – 30/10/22	5	1104	220.8

*** no data available for nights of 25th & 26th June 2022**

3.6.3 At least nine species of bats were recording at location S6 in 2022, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp.,* noctule, Leisler's bat, serotine and brown long-eared bats. Common and soprano pipistrelle, barbastelle, *Myotis sp*. and brown long-eared bats were recorded during each of the recording sessions. Noctule and Leisler's bats were recorded during all but one of the recording sessions (October 2022). No static recording sessions were undertaken at this location in April, May or July 2022.

3.6.4 Common pipistrelle were the most frequently recorded species at this location, with an average of 744.46 passes per night over the survey period. The highest amount activity was recorded in early September 2022 (1,337.67 passes/night), and the second highest in early June 2022 (1,183.33 passes/night).

3.6.5 The next highest activity was soprano pipistrelle with an average of 527.57 passes per night over the survey period. The highest soprano pipistrelle activity was recorded in late early June 2022 (1,601.67 passes per night).

3.6.6 Both common and soprano pipistrelle had activity patterns similar to that at location S5 with high activity in early June 2022 and decreasing activity in from late June and August 2022. This potentially indicates maternity roosts nearby. Soprano pipistrelle activity continued to decrease through the survey period, while common pipistrelle activity mainly decreased, however had high amounts of activity again in early September 2022. Although these patterns are not supported by the lack of data in April, May and July 2022.

3.6.7 *Myotis* bats had an average of 128.91 passes calls per night over the survey period, with the highest activity recorded in August 2022 (519.20 passes/night), nearly as

high as common pipistrelle activity that month. The next highest *Myotis* bat activity was in early June 2022 (119.00 passes/night).

3.6.8 Noctule bats had an average of 11.76 passes calls per night over the survey period, with over twice the amount of activity recorded in early June 2022 than in any other recording session, although this was still relatively low amounts of activity with a peak of 31.33 passes per night.

3.6.9 *Myotis* bats and noctule activity both had higher amounts of activity in early June than in later June 2022, similar to that exhibited by pipistrelles at this location. These types of bats typically have smaller maternity roosts than those of pipistrelle bats, thus the more modest activity levels could still be indicative nearby maternity roosts. However, the lack of April, May and July data makes this pattern less robust.

3.6.10 Barbastelle bats had an average of 4.83 passes per night over the survey period, with the highest activity recorded in August 2022 (12.00 passes/night).

3.6.11 Brown long-eared bats had an average of 3.90 passes per night over the survey period, with the highest activity recorded in early September 2022 (11.7 passes/night).

3.6.12 All other species had less activity, each with an average of less than one pass per night over the survey period.

3.6.13 Overall, activity at location S6 fluctuated over the course of the survey, with the highest amounts of bat activity recorded in early June 2022 (2,9444.67 passes/night), the second highest in early September 2022 (1,797.33 passes/night), and third highest in August 2022 (1,629.20 passes/night). Much lower amounts of activity were recorded in late September 2022 (521.33 passes/night) and in October 2022 (220.8 passes/night).

Table 0.1: Average bat passes per night at location S6 in 2022

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
07/06/22 - 09/06/22	3	3.00	1182.33	1601.67	0.00	0.00	119.00	4.00	31.33	2.00	0.67	0.67	0.00	2944.67
22/06/22 - 29/06/22*	6	0.17	739.17	715.67	0.17	0.00	41.33	1.17	9.33	0.67	0.00	0.00	0.00	1507.67
03/08/22 - 07/08/22	5	12.00	587.40	494.60	0.00	0.20	519.20	4.00	11.40	0.20	0.20	0.00	0.00	1629.20
01/09/22 - 03/09/22	3	8.00	1337.67	253.33	2.67	78.67	83.67	11.67	16.00	3.33	0.33	2.00	0.00	1797.33
16/09/22 - 21/09/22	6	3.83	457.17	49.17	0.33	0.00	7.83	0.17	2.50	0.33	0.00	0.00	0.00	521.33
26/10/22 – 30/10/22	5	2.00	163.00	51.00	0.00	0.00	2.40	2.40	0.00	0.00	0.00	0.00	0.00	220.80
Average		**4.83**	**744.46**	**527.57**	**0.53**	**13.15**	**128.91**	**3.90**	**11.76**	**1.09**	**0.20**	**0.45**	**0.00**	**1436.83**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.7 Location D1 in 2022

3.7.1 A summary of the survey dates, number of nights deployed, and bat passes for location D1 is provided in **Table 3.1**. A summary of the average bat passes per night by species recorded at location D1 is provided in **Table 1.2**: Average bat passes per night at location D1 in 2022

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
07/04/22 - 12/04/22	6	1	555	308	0	0	8	0	9	5	0	1	**0**	**887**
26/04/22 - 30/04/22	5	2	380	259	0	0	15	0	1	0	0	1	**0**	**658**
01/05/22 - 05/05/22	5	6	583	256	0	0	4	0	9	0	0	0	**0**	**858**
24/05/22 - 30/05/22	7	8	379	147	0	0	0	0	4	2	0	0	**0**	**540**
21/06/22 - 30/06/22	10	0	903	194	0	0	13	0	10	0	0	2	**0**	**1122**
12/07/22 - 17/07/22	6	1	909	323	0	0	14	3	13	3	0	4	**0**	**1270**
19/07/22 - 21/07/22	3	0	309	496	4	0	32	23	8	1	0	4	**0**	**877**
04/08/22 – 09/08/22	6	1	454	372	2	0	13	18	4	9	0	0	**0**	**909**
01/09/22 – 03/09/22	3	0	636	188	0	0	0	56	5	0	0	0	**0**	**885**
16/09/22 – 21/09/22	6	0	362	184	0	0	0	11	9	0	0	0	**0**	**566**
03/10/22 – 09/10/22	7	0	807	212	0	0	0	5	1	0	0	0	0	**1025**

26/10/22 – 30/10/22	5	0	52	229	0	0	0	4	1	0	0	2	0	**288**
Average		**1.58**	**527.42**	**264.00**	**0.50**	**0.00**	**8.25**	**10.00**	**6.17**	**1.67**	**0.00**	**1.17**	**0.00**	**823.75**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.8 Location D2 in 2022

3.8.1 A summary of the survey dates, number of nights deployed, and bat passes for location D2 is provided in Error! Reference source not found.. A summary of the average bat passes per night by species recorded at location D2 is provided in **Table 1.4.** Totals of bat passes per recording period, per species are provided in Appendix B.

3.8.2 In Error! Reference source not found. and **Table 1.4,** the data are presented as the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 1.3: Bat static survey summary for Location D2 in 2022

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
07/04/22 - 12/04/22	6	1163	290.75
26/04/22 - 30/04/22	5	378	75.60
01/05/22 - 05/05/22	5	451	90.20
24/05/22 - 30/05/22	7	1760	251.43
21/06/22 - 30/06/22	10	2149	214.90
12/07/22 - 18/07/22	7	2347	391.17
04/08/22 – 12/08/22	9	4207	840.80
01/09/22 – 05/09/22	5	909	181.80
16/09/22 – 20/09/22	5	825	137.50
03/10/22 – 09/10/22	7	966	138.00
26/10/22 – 30/10/22	5	625	156.25

3.8.3 At least nine species of bats were recording at location D2 in 2022, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp.,* noctule, Leisler's bat, serotine and brown long-eared bat. Common pipistrelle, soprano pipistrelle and *Myotis sp.* were recorded during each of the recording sessions.

3.8.4 Soprano pipistrelle were the most frequently recorded species at this location, with an average of 114.97 passes per night over the survey period. The highest amount activity was recorded in August 2022 (328.00 passes per night), and the second highest in July 2022 (213.17 passes per night).

3.8.5 The species with the next highest level activity was common pipistrelle with an average of 108.66 passes per night over the survey period. The highest common pipistrelle activity was recorded in August (within an average of 413.8 passes per night).

3.8.6 *Myotis* bats had an average of 11.00 passes calls per night over the survey period, with the highest activity recorded in June 2022 (29.60 passes/night).

3.8.7 Noctule bats had an average of 5.93 calls per night over the survey period, with August being the highest activity recorded (32.8 passes/night).

3.8.8 All other species had less activity, each with an average of less than four pass per night over the survey period.

3.8.9 . Totals of bat passes per recording period, per species are provided in Appendix B.

3.8.10 In **Table 3.1** and **Table 1.2**: Average bat passes per night at location D1 in 2022

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
07/04/22 - 12/04/22	6	1	555	308	0	0	8	0	9	5	0	1	**0**	**887**
26/04/22 - 30/04/22	5	2	380	259	0	0	15	0	1	0	0	1	**0**	**658**
01/05/22 - 05/05/22	5	6	583	256	0	0	4	0	9	0	0	0	**0**	**858**
24/05/22 - 30/05/22	7	8	379	147	0	0	0	0	4	2	0	0	**0**	**540**
21/06/22 - 30/06/22	10	0	903	194	0	0	13	0	10	0	0	2	**0**	**1122**
12/07/22 - 17/07/22	6	1	909	323	0	0	14	3	13	3	0	4	**0**	**1270**
19/07/22 - 21/07/22	3	0	309	496	4	0	32	23	8	1	0	4	**0**	**877**
04/08/22 – 09/08/22	6	1	454	372	2	0	13	18	4	9	0	0	**0**	**909**
01/09/22 – 03/09/22	3	0	636	188	0	0	0	56	5	0	0	0	**0**	**885**
16/09/22 – 21/09/22	6	0	362	184	0	0	0	11	9	0	0	0	**0**	**566**
03/10/22 – 09/10/22	7	0	807	212	0	0	0	5	1	0	0	0	0	**1025**
26/10/22 – 30/10/22	5	0	52	229	0	0	0	4	1	0	0	2	0	**288**
Average		**1.58**	**527.42**	**264.00**	**0.50**	**0.00**	**8.25**	**10.00**	**6.17**	**1.67**	**0.00**	**1.17**	**0.00**	**823.75**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.9 Location D2 in 2022

3.9.1 A summary of the survey dates, number of nights deployed, and bat passes for location D2 is provided in Error! Reference source not found.. A summary of the average bat passes per night by species recorded at location D2 is provided in **Table 1.4.** Totals of bat passes per recording period, per species are provided in Appendix B.

3.9.2 In Error! Reference source not found. and **Table 1.4,** the data are presented as the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 1.3: Bat static survey summary for Location D2 in 2022

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
07/04/22 - 12/04/22	6	1163	290.75
26/04/22 - 30/04/22	5	378	75.60
01/05/22 - 05/05/22	5	451	90.20
24/05/22 - 30/05/22	7	1760	251.43
21/06/22 - 30/06/22	10	2149	214.90
12/07/22 - 18/07/22	7	2347	391.17
04/08/22 – 12/08/22	9	4207	840.80
01/09/22 – 05/09/22	5	909	181.80
16/09/22 – 20/09/22	5	825	137.50
03/10/22 – 09/10/22	7	966	138.00
26/10/22 – 30/10/22	5	625	156.25

3.9.3 At least nine species of bats were recording at location D2 in 2022, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp.,* noctule, Leisler's bat, serotine and brown long-eared bat. Common pipistrelle, soprano pipistrelle and *Myotis sp.* were recorded during each of the recording sessions.

3.9.4 Soprano pipistrelle were the most frequently recorded species at this location, with an average of 114.97 passes per night over the survey period. The highest amount activity was recorded in August 2022 (328.00 passes per night), and the second highest in July 2022 (213.17 passes per night).

3.9.5 The species with the next highest level activity was common pipistrelle with an average of 108.66 passes per night over the survey period. The highest common pipistrelle activity was recorded in August (within an average of 413.8 passes per night).

3.9.6 *Myotis* bats had an average of 11.00 passes calls per night over the survey period, with the highest activity recorded in June 2022 (29.60 passes/night).

3.9.7 Noctule bats had an average of 5.93 calls per night over the survey period, with August being the highest activity recorded (32.8 passes/night).

3.9.8 All other species had less activity, each with an average of less than four pass per night over the survey period.

3.9.9 , the data are presented as the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 3.1: Bat static survey summary for Location D1

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
07/04/22 - 12/04/22	6	887	221.75
26/04/22 - 30/04/22	5	658	131.60
01/05/22 - 05/05/22	5	858	171.60
24/05/22 - 30/05/22	7	540	77.14
21/06/22 - 30/06/22	10	1122	112.20
12/07/22 - 17/07/22	6	1270	254.00
19/07/22 - 21/07/22	3	877	292.33
04/08/22 – 09/08/22	6	909	181.80
01/09/22 – 03/09/22	3	885	295.00
16/09/22 – 21/09/22	6	566	94.33
03/10/22 – 09/10/22	7	1025	146.43
26/10/22 – 30/10/22	5	288	72.00

3.9.10 At least nine species of bats were recording at location D1 in 2022, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp.,* noctule, Leisler's bat, serotine and brown long-eared bat. Common pipistrelle, soprano pipistrelle and noctule were recorded during each of the recording sessions.

3.9.11 Common pipistrelle were the most frequently recorded species at this location, with an average of 527.42 passes per night over the survey period. The highest amount activity was recorded in July 2022 (909 passes/night), and the second highest in early June 2022 (903 passes/night).

3.9.12 The next highest activity was soprano pipistrelle with an average of 264.00 passes per night over the survey period. The highest soprano pipistrelle activity was recorded in July (496 passes per night).

3.9.13 *Myotis* bats had an average of 8.25 passes calls per night over the survey period, with the highest activity recorded in July 2022 (32 passes/night).

3.9.14 Noctule bats had an average of 6.17 calls per night over the survey period, with July being the highest activity recorded (13 passes/night).

3.9.15 Barbastelle bats had an average of 1.58 passes per night over the survey period, with the highest activity recorded in May 2022 (8 passes/night).

3.9.16 Brown long-eared bats had an average of 10.00 passes per night over the survey period, with the highest activity recorded in early September 2022 (56 passes/night).

3.9.17 All other species had less activity, each with an average of less than one pass per night over the survey period.

Table 1.2: Average bat passes per night at location D1 in 2022

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
07/04/22 - 12/04/22	6	1	555	308	0	0	8	0	9	5	0	1	**0**	**887**
26/04/22 - 30/04/22	5	2	380	259	0	0	15	0	1	0	0	1	**0**	**658**
01/05/22 - 05/05/22	5	6	583	256	0	0	4	0	9	0	0	0	**0**	**858**
24/05/22 - 30/05/22	7	8	379	147	0	0	0	0	4	2	0	0	**0**	**540**
21/06/22 - 30/06/22	10	0	903	194	0	0	13	0	10	0	0	2	**0**	**1122**
12/07/22 - 17/07/22	6	1	909	323	0	0	14	3	13	3	0	4	**0**	**1270**
19/07/22 - 21/07/22	3	0	309	496	4	0	32	23	8	1	0	4	**0**	**877**
04/08/22 – 09/08/22	6	1	454	372	2	0	13	18	4	9	0	0	**0**	**909**
01/09/22 – 03/09/22	3	0	636	188	0	0	0	56	5	0	0	0	**0**	**885**
16/09/22 – 21/09/22	6	0	362	184	0	0	0	11	9	0	0	0	**0**	**566**
03/10/22 – 09/10/22	7	0	807	212	0	0	0	5	1	0	0	0	0	**1025**
26/10/22 – 30/10/22	5	0	52	229	0	0	0	4	1	0	0	2	0	**288**
Average		**1.58**	**527.42**	**264.00**	**0.50**	**0.00**	**8.25**	**10.00**	**6.17**	**1.67**	**0.00**	**1.17**	**0.00**	**823.75**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.10 Location D2 in 2022

3.10.1 A summary of the survey dates, number of nights deployed, and bat passes for location D2 is provided in Error! Reference source not found.. A summary of the a verage bat passes per night by species recorded at location D2 is provided in **Table 1.4**. Totals of bat passes per recording period, per species are provided in Appendix B.

3.10.2 In Error! Reference source not found. and **Table 1.4**, the data are presented as the t otal numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 1.3: Bat static survey summary for Location D2 in 2022

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
07/04/22 - 12/04/22	6	1163	290.75
26/04/22 - 30/04/22	5	378	75.60
01/05/22 - 05/05/22	5	451	90.20
24/05/22 - 30/05/22	7	1760	251.43
21/06/22 - 30/06/22	10	2149	214.90
12/07/22 - 18/07/22	7	2347	391.17
04/08/22 – 12/08/22	9	4207	840.80
01/09/22 – 05/09/22	5	909	181.80
16/09/22 – 20/09/22	5	825	137.50
03/10/22 – 09/10/22	7	966	138.00
26/10/22 – 30/10/22	5	625	156.25

3.10.3 At least nine species of bats were recording at location D2 in 2022, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp.,* noctule, Leisler's bat, serotine and brown long-eared bat. Common pipistrelle, soprano pipistrelle and *Myotis sp.* were recorded during each of the recording sessions.

3.10.4 Soprano pipistrelle were the most frequently recorded species at this location, with an average of 114.97 passes per night over the survey period. The highest amount activity was recorded in August 2022 (328.00 passes per night), and the second highest in July 2022 (213.17 passes per night).

3.10.5 The species with the next highest level activity was common pipistrelle with an average of 108.66 passes per night over the survey period. The highest common pipistrelle activity was recorded in August (within an average of 413.8 passes per night).

3.10.6 *Myotis* bats had an average of 11.00 passes calls per night over the survey period, with the highest activity recorded in June 2022 (29.60 passes/night).

3.10.7 Noctule bats had an average of 5.93 calls per night over the survey period, with August being the highest activity recorded (32.8 passes/night).

3.10.8 All other species had less activity, each with an average of less than four pass per night over the survey period.

Table 1.4: Average bat passes per night at Location D2 in 2022

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Total
07/04/22 - 12/04/22	6	1.00	141.00	144.00	0.00	0.00	1.75	0.00	2.50	0.00	0.00	0.50	**290.75**
26/04/22 - 30/04/22	5	0.00	3.00	27.00	0.00	41.80	2.40	0.00	1.40	0.00	0.00	0.00	**75.60**
01/05/22 - 05/05/22	5	0.40	50.60	30.80	0.20	0.00	6.60	0.00	1.60	0.00	0.00	0..00	**90.20**
24/05/22 - 30/05/22	7	10.14	116.71	109.86	0.86	0.00	7.86	0.00	5.29	0.00	0.00	0.71	**251.43**
21/06/22 - 30/06/22	10	0.20	109.60	72.80	0.20	0.00	29.60	0.00	2.40	0.00	0.00	0.10	**214.90**
12/07/22 - 18/07/22	7	0.00	133.00	213.17	1.33	0.00	24.50	10.00	8.17	0.67	0.00	0.33	**391.17**
04/08/22 – 12/08/22	9	0.80	413.8	328.00	24.40	0.00	24.00	0.60	32.80	16.40	0.00	0.00	**840.80**
01/09/22 – 05/09/22	5	0.80	68.40	84.60	1.80	0.00	21.40	0.20	3.40	0.00	0.00	0.00	**181.80**
16/09/22 – 20/09/22	5	0.00	40.83	87.33	1.17	0.00	1.50	0.33	6.33	0.00	0.00	0.00	**137.50**
03/10/22 – 09/10/22	7	0.00	36.29	97.14	2.00	0.00	0.86	0.14	1.29	0.14	0.00	0.14	**138.00**
26/10/22 – 30/10/22	5	0.00	82.00	70.00	0.00	0.00	0.50	3.75	0.00	0.00	0.00	0.00	**156.25**
Average		**1.21**	**108.66**	**114.97**	**2.91**	**3.80**	**11.00**	**1.37**	**5.93**	**1.56**	**0.00**	**0.18**	**251.67**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.11 Location S5 (2023)

3.11.1 A summary of the survey dates, number of nights deployed, and bat passes for location S5 is provided in **Table 0.77**. A summary of the average bat passes per night by species recorded at location S5 is provided in **Table 0.1**. Totals of bat passes per recording period, per species are provided in Appendix B.

3.11.2 In **Table 0.7** and **Table 0.18**, the data are presented as the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 1.5: Bat static survey summary for location S5.

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
20/04/23 – 24/04/23	4	294	6.13
25/04/23 – 29/04/23	4	1979	41.23
03/05/23 – 11/05/23	8	4791	49.91
19/05/23 – 24/05/23	5	687	11.45
01/06/23 – 06/06/23	5	609	10.15
13/06/23 – 18/06/23	5	2300	38.33
07/07/23 – 12/07/23	5	2261	37.68
12/07/23 – 18/07/23	6	3599	49.99
09/08/23 – 13/08/23	5	1993	33.22
14/08/23 – 19/08/23	5	1650	27.50
07/09/23 – 11/09/23	4	1012	21.08
12/09/23 – 17/09/23	5	1027	17.12
05/09/23 – 10/09/23	5	1377	22.95
10/10/23 – 18/20/23	8	259	2.70

3.11.3 At least nine species of bats were recording at location S5 in 2023, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp.*, noctule, Leisler's bat, serotine and brown long-eared bat. Common and soprano pipistrelle, *Myotis sp.* and noctule bats were recorded during each of the recording sessions.

3.11.4 Common pipistrelle were the most frequently recorded species at this location, with an average of 147.04 passes per night over the survey period. The highest amount activity was recorded in May 2023 (average of 459.38 passes/night), and the second highest in April 2023 (average of 266.00 passes/night).

3.11.5 The next highest activity was soprano pipistrelle with an average of 130.41 passes per night over the survey period. The highest soprano pipistrelle activity was recorded in July 2023 (average of 374.00 passes per night).

3.11.6 Noctule bats had an average of 18.61 passes calls per night over the survey period, with almost three times the amount of activity recorded in late June 2023 than in any other recording session.

3.11.7 *Myotis sp*. had an average of 7.67 passes per night over the survey period, with the highest activity recorded in early September 2023 (55.25 passes/night).

3.11.8 All other species had less activity, each with an average of less than three passes per night over the survey period.

3.11.9 Overall, activity at location S5 was relatively similar over the survey period. The highest period of bat activity happened in early May and late July 2023 (both averaging approximately 50 passes per night), and the third highest in late April 2023 (average of 41.23 passes per night). The lowest amount of activity happened in late October (average of 2.70 passes per night).

Table 1.6: Average bat passes per night at location S5 in 2023.

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
20/04/23 – 24/04/23	4	0.00	67.25	3.25	0.00	0.50	0.75	0.00	0.25	0.00	1.50	0.00	0.00	**6.13**
25/04/23 – 29/04/23	4	0.00	266.00	171.5	0.00	54.75	1.00	0.00	1.00	0.00	0.50	0.00	0.00	**41.23**
03/05/23 – 11/05/23	8	0.00	459.38	111.00	3.50	17.25	4.63	0.00	1.50	0.00	1.25	0.38	0.00	**49.91**
19/05/23 – 24/05/23	5	0.00	89.00	41.20	0.00	2.00	1.80	0.20	2.60	0.00	0.60	0.00	0.00	**11.45**
01/06/23 – 06/06/23	5	0.00	48.60	43.80	0.20	26.80	2.20	0.00	0.20	0.00	0.00	0.00	0.00	**10.15**
13/06/23 – 18/06/23	5	0.00	116.60	216.80	0.80	9.20	0.80	0.00	114.40	0.00	1.200	0.20	0.00	**38.88**
07/07/23 – 12/07/23	5	0.00	114.20	313.40	0.00	2.20	3.20	0.00	18.60	0.20	0.20	0.00	0.20	**37.68**
12/07/23 – 18/07/23	6	0.00	203.67	374.00	0.00	1.17	2.17	0.00	12.00	0.17	6.67	0.00	0.00	**49.99**
09/08/23 – 13/08/23	5	0.00	135.20	205.60	0.40	1.60	3.80	0.00	40.60	0.00	11.40	0.00	0.00	**33.22**
14/08/23 – 19/08/23	5	1.00	141.80	145.00	0.00	0.60	7.80	0.60	26.80	0.00	6.40	0.00	0.00	**27.50**
07/09/23 – 11/09/23	4	0.25	150.75	5.50	0.25	1.50	55.25	0.50	35.00	1.50	2.50	0.00	0.00	**21.08**
12/09/23 – 17/09/23	5	0.40	159.20	28.80	0.20	0.60	9.60	0.00	6.00	0.00	0.60	0.00	0.00	**17.12**
05/09/23 – 10/09/23	5	13.60	91.00	152.20	0.00	2.80	12.80	0.40	1.40	0.00	1.20	0.00	0.00	**22.95**

10/10/23 – 18/20/23	8	0.88	15.88	13.75	0.00	0.13	1.63	0.00	0.13	0.00	0.00	0.00	0.00	**2.70**
Average		**1.15**	**147.04**	**130.41**	**0.38**	**8.65**	**7.67**	**0.12**	**18.61**	**0.13**	**2.43**	**0.04**	**0.01**	**26.43**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.12 Location S6 (2023)

3.12.1 A summary of the survey dates, number of nights deployed, and bat passes for location S6 is provided in **Table 0.7**. A summary of the average bat passes per night by species recorded at location S5 is provided in **Table 1.8**. Totals of bat passes per recording period, per species are provided in Appendix B.

3.12.2 In **Table 0.7** and **Table 0.1**, the data are presented as the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 1.7: Bat static survey summary for location S6.

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
06/04/23 – 10/04/23	5	127	2.12
20/04/23 – 25/04/23	5	999	16.65
05/05/23 – 08/05/23	4	2918	60.79
19/05/23 – 20/05/23	2	3984	166.0
01/06/23 – 06/06/23	6	3275	45.49
13/06/23	1	347	28.92
07/07/23 – 15/07/23	9	4244	39.30
09/08/23 – 20/08/23	12	5012	34.81
07/09/23 – 17/09/23	11	3860	29.24
04/10/23 – 10/10/23	7	2433	28.96
11/10/23 – 17/10/23	6	291	4.04

3.12.3 At least nine species of bats were recording at location S6 in 2023, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp.*, noctule, Leisler's bat, serotine and brown long-eared bat. Common and soprano pipistrelle, and *Myotis sp.* bats were recorded during each of the recording sessions. Noctule bats were recorded during all but two of the recording sessions (the first and last recording periods).

3.12.4 Both pipistrelle species were by far the most abundant species recorded. Common pipistrelle were the most frequently recorded species at this location, with an average of 251.56 passes per night over the survey period. The highest amount activity was recorded in May 2023 (average of 940.00 passes/night), and the second highest in October 2023 (average of 252.00 passes/night).

3.12.5 The next highest activity was soprano pipistrelle with an average of 207.95 passes per night over the survey period. The highest soprano pipistrelle activity was recorded in May 2023 (average of 1,029.50 passes per night).

3.12.6 Noctule bats had an average of 21.61 passes calls per night over the survey period, with the highest period recorded in June 2023.

3.12.7 All other species had less activity, each with an average of 10 or fewer passes per night over the survey period.

Table 1.8: Average bat passes per night at location S6 in 2023.

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
06/04/23 – 10/04/23	5	0.40	14.80	9.60	0.00	0.00	0.60	0.00	0.00	0.00	0.00	0.00	0.00	**2.12**
20/04/23 – 25/04/23	5	0.00	120.60	73.40	0.00	0.80	3.80	0.80	0.40	0.00	0.00	0.00	0.00	**16.65**
05/05/23 – 08/05/23	4	0.00	548.75	174.25	0.25	0.00	2.75	0.00	3.50	0.00	0.00	0.00	0.00	**60.79**
19/05/23 – 20/05/23	2	0.50	940.00	1029.50	1.00	0.50	19.50	0.50	0.50	0.00	0.00	0.00	0.00	**166.00**
01/06/23 – 06/06/23	6	0.50	436.33	105.83	0.33	0.00	1.50	0.00	1.33	0.00	0.00	0.00	0.00	**45.49**
13/06/23	1	0.00	171.00	9.00	0.00	0.00	3.00	5.00	159.00	0.00	0.00	0.00	0.00	**28.92**
07/07/23 – 15/07/23	9	0.00	223.33	227.44	0.11	0.22	6.78	1.00	12.56	0.00	0.00	0.11	0.00	**39.30**
09/08/23 – 20/08/23	12	0.92	88.50	250.08	0.08	3.33	35.42	2.25	36.83	0.08	0.00	0.17	0.00	**43.81**
07/09/23 – 17/09/23	11	0.73	131.27	132.36	0.91	29.00	32.73	3.00	20.00	0.00	0.36	0.55	0.00	**29.24**
04/10/23 – 10/10/23	7	4.86	79.29	252.00	0.00	1.00	3.86	3.00	3.57	0.00	0.00	0.00	0.00	**28.96**
11/10/23 – 17/10/23	6	0.67	13.33	24.00	0.33	9.17	0.33	0.67	0.00	0.00	0.00	0.00	0.00	**4.04**
Average		**0.78**	**251.56**	**207.95**	**0.27**	**4.00**	**10.02**	**1.47**	**21.61**	**0.01**	**0.03**	**0.08**	**0.00**	**42.30**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.13 Location S7 (2023)

3.13.1 A summary of the survey dates, number of nights deployed, and bat passes for location S7 is provided in **Table 0.7**. A summary of the average bat passes per night by species recorded at location S5 is provided in **Table 0.1**. Totals of bat passes per recording period, per species are provided in Appendix B.

3.13.2 In **Table 0.7** and **Table 0.1**, the data are presented as the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 1.9: Bat static survey summary for location S7.

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
06/04/23 – 11/04/23	5	582	9.70
19/04/23 – 21/04/23	2	223	9.29
05/05/23 – 11/05/23	6	492	6.83
19/05/23 – 25/05/23	6	4216	58.56
13/06/23 – 18/06/23	5	4963	82.72
07/07/23 – 18/07/23	11	7809	59.16
09/08/23 – 20/08/23	11	2103	15.93
07/09/23 – 11/09/23	4	713	14.85
12/09/23 – 17/09/23	5	1946	32.43
05/10/23 – 10/10/23	5	3913	65.22
11/10/23 – 16/10/23	5	294	4.90

3.13.3 At least nine species of bats were recording at location S7 in 2023, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp*., noctule, Leisler's bat, serotine and brown long-eared bat. Common and soprano pipistrelle, barbastelle, *Myotis sp.* and noctule were recorded during each of the recording sessions.

3.13.4 Common pipistrelle were the most frequently recorded species at this location, with an average of 240.32 passes per night over the survey period. The highest amount activity was recorded in October 2023 (average of 677.20 passes/night), and the second highest in July 2023 (average of 617.18 passes/night).

3.13.5 The species with the next highest level of activity was soprano pipistrelle with an average of 101.42 passes per night over the survey period. The highest soprano pipistrelle activity was recorded in June 2023 (average of 385.20 passes per night).

3.13.6 Noctule bats had an average of 22.84 passes calls per night over the survey period, with almost twice times the amount of activity recorded in late September 2023 than in any other recording session.

3.13.7 *Myotis sp.* bats had an average of 17.01 passes per night over the survey period, with the highest activity recorded in early June 2023 (87.60 passes/night).

3.13.8 Barbastelle bats recorded an average of 6.89 passes per night over the survey period, with the highest activity recorded in June 2013 (average of 23.20 passes/night) and October 2023 (20.20 passes/night). All other months recorded fewer than an average of 10 passes per night.

3.13.9 All other species had much less activity, each with an average of less than one pass per night over the survey period.

Table 1.10: Average bat passes per night at location S7 in 2023.

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
06/04/23 – 11/04/23	5	0.60	58.00	50.80	0.00	0.00	5.40	0.00	1.20	0.40	0.00	0.00	0.00	**9.70**
19/04/23 – 21/04/23	2	2.50	24.50	66.50	0.00	0.00	1.50	0.00	16.00	0.50	0.00	0.00	0.00	**9.29**
05/05/23 – 11/05/23	6	3.17	28.83	27.33	0.67	3.50	1.33	0.33	14.83	1.67	0.00	0.33	0.00	**6.83**
19/05/23 – 25/05/23	6	2.33	406.67	247.50	0.50	0.17	18.33	1.00	23.00	1.17	0.00	2.00	0.00	**58.56**
13/06/23 – 18/06/23	5	23.20	449.80	385.20	1.40	1.60	87.60	2.40	39.60	0.00	0.80	1.00	0.00	**82.72**
07/07/23 – 18/07/23	11	0.55	617.18	57.82	0.00	0.45	4.64	0.09	26.00	1.00	0.82	0.36	0.00	**59.16**
09/08/23 – 20/08/23	11	4.36	68.64	77.82	0.00	0.09	14.45	0.18	21.55	3.18	0.36	0.55	0.00	**15.93**
07/09/23 – 11/09/23	4	4.50	87.50	38.00	0.25	0.00	15.50	0.00	30.50	0.00	1.25	0.75	0.00	**14.85**
12/09/23 – 17/09/23	5	4.80	195.20	92.60	0.20	1.00	19.80	0.60	69.80	0.00	3.80	1.40	0.00	**32.43**
05/10/23 – 10/10/23	5	20.20	677.20	61.80	1.00	0.00	11.60	2.40	8.00	0.00	0.00	0.00	0.40	**65.22**
11/10/23 – 16/10/23	5	9.60	30.00	10.20	0.40	0.00	7.00	0.40	0.80	0.00	0.40	0.00	0.00	**4.90**
Average		**6.89**	**240.32**	**101.42**	**0.40**	**0.62**	**17.01**	**0.67**	**22.84**	**0.72**	**0.68**	**0.58**	**0.04**	**32.69**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.14 Location S8 (2023)

3.14.1 A summary of the survey dates, number of nights deployed, and bat passes for location S8 is provided in **Table 0.7**. A summary of the average bat passes per night by species recorded at location S5 is provided in **Table 0.1**. Totals of bat passes per recording period, per species are provided in Appendix B.

3.14.2 In **Table 0.7** and **Table 0.1**, the data are presented as the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 1.11: Bat static survey summary for location S8.

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
06/04/23 – 10/04/23	4	1118	23.29
20/04/24 – 21/04/23	4	122	2.54
04/05/23 – 10/05/23	6	808	11.22
19/05/23 – 24/05/23	5	2022	33.70
01/06/23 – 03/06/23	2	560	23.33
13/06/23 – 20/06/23	7	1574	18.74
07/07/23 – 09/07/23	2	693	28.88
13/07/23 – 14/07/23	1	601	50.08
07/09/23 – 09/09/23	2	687	28.63
12/09/23 – 15/09/23	3	677	18.81
04/010/23 – 07/10/23	3	434	12.06
11/10/23 – 13/10/23	2	153	6.38

3.14.3 At least nine species of bats were recording at location S8 in 2023, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp*., noctule, Leisler's bat, serotine and brown long-eared bat. Common and soprano pipistrelle, noctule and brown long-eared bats were recorded during each of the recording sessions.

3.14.4 Common pipistrelle were the most frequently recorded species at this location, with an average of 70.40 passes per night over the survey period. The highest amount activity was recorded in May 2023 (average of 225.80 passes/night), and the second highest in July 2023 (average of 168.00 passes/night).

3.14.5 The next highest activity was Nathusius' pipistrelle with an average of 60.86 passes per night over the survey period. The highest Nathusius' pipistrelle activity was recorded in July 2023 (average of 474.00 passes per night).

3.14.6 The next highest activity was soprano pipistrelle with an average of 60.86 passes per night over the survey period. The highest soprano pipistrelle activity was recorded in May 2023 (average of 106.20 passes per night).

3.14.7 *Myotis* bats had an average of 24.35 passes per night over the survey period, with the highest activity recorded in early July 2023 (72.00 passes/night).

3.14.8 Noctule bats had an average of 20.09 passes calls per night over the survey period, with almost twice times the amount of activity recorded in July and October than in any other recording session.

3.14.9 All other species had much less activity, each with an average of less than nine passes per night over the survey period.

3.14.10 The Static 8 location recorded the least amount of bat activity out of all of the static locations, with a total of only 9449 calls over the entire recording period.

Table 1.12: Bat static survey summary for location S8.

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
06/04/23 – 10/04/23	4	10.75	53.75	157.50	1.00	2.25	16.75	1.75	35.00	0.00	0.75	0.00	0.00	**23.29**
20/04/24 – 21/04/23	4	0.00	12.25	15.50	0.25	0.00	1.50	0.25	0.75	0.00	0.00	0.00	0.00	**2.54**
04/05/23 – 10/05/23	6	1.67	68.83	35.00	0.17	1.33	11.33	0.17	16.17	0.00	0.00	0.00	0.00	**11.22**
19/05/23 – 24/05/23	5	8.00	225.80	106.20	0.60	0.60	42.80	3.60	14.80	1.80	0.00	0.20	0.00	**33.70**
01/06/23 – 03/06/23	2	13.00	76.00	34.00	98.00	0.00	50.00	7.00	2.00	0.00	0.00	0.00	0.00	**23.33**
13/06/23 – 20/06/23	7	0.00	121.14	37.86	0.00	0.29	48.14	0.43	16.86	0.00	0.00	0.14	0.00	**18.74**
07/07/23 – 09/07/23	2	4.50	168.00	41.50	1.00	1.50	72.00	3.00	54.00	0.50	0.00	0.50	0.00	**28.88**
13/07/23 – 14/07/23	1	0.00	10.00	44.00	474.00	0.00	0.00	12.00	18.00	43.00	0.00	0.00	0.00	**50.08**
07/09/23 – 09/09/23	2	0.00	16.00	87.00	155.00	0.00	0.00	70.00	8.00	4.50	0.00	3.00	0.00	**28.63**
12/09/23 – 15/09/23	3	15.00	45.00	95.67	0.00	0.00	61.67	5.33	3.00	0.00	0.00	0.00	0.00	**18.81**
04/010/23 – 07/10/23	3	3.00	25.00	30.67	0.33	0.00	11.33	1.00	62.00	0.00	10.67	0.67	0.00	**12.06**
11/10/23 – 13/10/23	2	7.00	23.00	19.50	0.00	0.00	14.00	2.00	10.50	0.00	0.00	0.50	0.00	**6.38**
Average		**5.24**	**70.40**	**58.70**	**60.86**	**0.50**	**27.46**	**8.88**	**20.09**	**4.15**	**0.95**	**0.42**	**0.00**	**21.47**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.15 Location S9 (2023)

3.15.1 A summary of the survey dates, number of nights deployed, and bat passes for location S8 is provided in **Table 0.7**. A summary of the average bat passes per night by species recorded at location S5 is provided in **Table 0.1**. Totals of bat passes per recording period, per species are provided in Appendix B.

3.15.2 In **Table 0.7** and **Table 0.1**, the data are presented as the total numbers of bat passes divided by the number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between recording sessions as some ran for longer periods than others. It also makes the data recorded more comparable between static locations.

Table 1.13: Bat static survey summary for location S9.

Survey dates	Number of nights detector deployed	Total number of bat passes	Average bat passes/night
06/04/23 – 10/04/23	4	497	124.25
20/04/24 – 24/04/23	4	69	17.25
05/05/23 – 10/05/23	5	1173	234.60
19/05/23 – 24/05/23	5	2818	563.60
13/06/23 – 17/06/23	4	1563	390.75
07/07/23 – 13/07/23	7	1921	274.43
15/08/23 – 18/08/23	3	750	250.00
13/07/23 – 14/07/23	4	593	148.25
07/09/23 – 09/09/23	5	3345	669.00
12/09/23 – 15/09/23	2	347	173.50
04/010/23 – 07/10/23	4	622	155.50
11/10/23 – 13/10/23	13	2874	221.08

3.15.3 At least nine species of bats were recording at location S9 in 2023, including common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis sp*., noctule, Leisler's bat, serotine and brown long-eared bat. Common and soprano pipistrelle were the only species that recorded during each of the recording sessions at this location.

3.15.4 Common pipistrelle were the most frequently recorded species at this location, with an average of 199.00 passes per night over the survey period. The highest amount activity was recorded in August 2023 (average of 480.40 passes/night), and the second highest in May 2023 (average of 445.40 passes/night). Almost four times as many common pipistrelle calls were recorded than any other species.

3.15.5 The species with the next highest level of activity was soprano pipistrelle with an average of 53.60 passes per night over the survey period. The highest soprano pipistrelle activity was recorded in August 2023 (average of 175.20 passes per night).

3.15.6 All other species had much less activity, each with an average of five or fewer passes per night over the survey period.

Table 1.14: Bat static survey summary for location S8.

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
06/04/23 – 10/04/23	4	0.00	78.75	43.25	0.00	0.00	0.25	1.00	0.50	0.00	0.50	0.00	0.00	**124.25**
20/04/24 – 24/04/23	4	0.75	8.00	5.75	0.00	2.25	0.50	0.00	0.00	0.00	0.00	0.00	0.00	**17.25**
05/05/23 – 10/05/23	5	12.60	171.60	22.00	0.20	6.20	16.20	3.80	0.20	1.40	0.40	0.00	0.00	**234.60**
19/05/23 – 24/05/23	5	1.80	445.40	107.20	0.00	1.80	6.00	0.00	1.20	0.20	0.00	0.00	0.00	**563.60**
13/06/23 – 17/06/23	4	3.25	279.75	93.00	0.00	8.75	.00	.00	3.50	1.50	0.00	0.00	0.00	**390.75**
07/07/23 – 13/07/23	7	0.14	214.57	48.71	4.86	0.00	1.57	0.00	1.71	2.29	0.00	0.57	0.00	**274.43**
15/08/23 – 18/08/23	3	0.33	225.00	21.67	0.00	0.00	0.00	0.00	2.33	0.67	0.00	0.00	0.00	**250.00**
13/07/23 – 14/07/23	4	0.75	95.75	46.50	0.00	0.00	4.00	0.00	1.00	0.00	0.25	0.00	0.00	**148.25**
07/09/23 – 09/09/23	5	1.20	480.40	175.20	0.00	0.00	4.20	0.00	5.20	0.00	2.80	0.00	0.00	**669.00**
12/09/23 – 15/09/23	2	0.00	105.00	17.50	0.00	0.00	0.50	0.00	42.00	8.00	0.00	0.50	0.00	**173.50**
04/010/23 – 07/10/23	4	0.25	111.50	26.25	0.50	0.50	9.75	0.00	3.25	1.75	1.75	0.00	0.00	**155.50**
11/10/23 – 13/10/23	13	5.85	172.31	36.15	0.08	0.31	4.92	0.00	0.38	0.46	0.62	0.00	0.00	**221.08**
Average		**2.24**	**199.00**	**53.60**	**0.47**	**1.65**	**3.99**	**0.40**	**5.11**	**1.36**	**0.53**	**0.09**	**0.00**	**268.52**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.16 Static Survey Overview 2022 and 2023

3.16.1 A summary of the average bat passes per night by species recorded at each static location over the survey period is provided in **Table 1.4**and **Table 3.26**. Data are presented as the total numbers of bat passes during the entire survey period divided by the total number of nights over which the calls were recorded to show an average number of bat contacts per night. This allows more comparability between the static locations as recording period differed between locations.

3.16.2 At least nine species of bats were recording at every static location during the course of the 2022 and 2023 survey period: common, soprano and Nathusius' pipistrelle, barbastelle, *Myotis* sp., noctule, Leisler's bat, serotine and brown long-eared bats.

3.16.3 Overall, the highest amount of bat activity across all static recording sessions was recorded at location S6 (mature treeline surrounded by improved grassland) with an average of 1,436.85 passes per night in 2022 and 497.79 passes per night in 2023.

3.16.4 Common pipistrelle was the most frequently recorded species across all locations and had the highest activity at every location except location S5 and D2 in 2022 where it came second to soprano pipistrelle. The highest average amount of common pipistrelle activity was recorded at location S6 (744.46 passes/night). This is roughly twice to seven times higher than at the other static locations. At all the static locations this species had fairly moderate to high levels of activity.

3.16.5 Soprano pipistrelle had the second highest activity at most of the locations, except location S5 where it had the highest activity (324.62 passes/night in 2022) and location D2 where it had the highest activity (114.97 passes/night). Overall this species had fairly high activity at locations S5 and S6 and low to moderate activity at the other locations.

3.16.6 Low levels of activity from Nathusius' pipistrelle were recorded at all locations, with the highest activity at location S8 (60.86 passes/night). Nathusius' pipistrelle activity was much lower at all other sites. The higher activity at location S8 can be attributed to the 474.00 passes per night recorded during the mid-July session at this location (Error! Reference source not found.), as well as the 155.00 passes per night r ecorded in the early September session, This is higher than recorded during any other session at all locations.

3.16.7 Most noctule activity was recorded at location S8 (22.84 passes/night respectively) with low levels at all locations, and confirmed noctule activity fairly evenly spread across the site. The highest confirmed Leisler's bat activity was also at location S8 (4.15 passes/night) and was very low at all locations.

3.16.8 Serotine activity was very low at all locations, with less than one pass per night at all locations apart from D1 where an average of 1.17 passes per night was recorded across all sessions. Call recordings identified as having parameters similar to serotine and *Nyctalus sp*. were also less than one pass per night at all locations (except S6, D1, D2, S6, S8 and S9 where none were identified) and therefore would not significantly change serotine activity levels if these calls were from a serotine.

3.16.9 *Myotis sp.* activity was between ten and 125 passes per night at locations S1, S5, S6, S7 and S8, which is relatively moderate to high activity given that *Myotis* species

are less common in the UK. *Myotis sp.* activity was fairly low at the other locations. Much of the high activity at location S6 can be attributed to the 519.20 passes per night recorded in August 2022, as well as activity in early September 2022 (83.67 passes/night) and early June 2022 (119.00 passes/night) (**Table 0.1**).

3.16.10 Brown long-eared bat activity was low across the site, with the highest activity at location D1 (10.00 passes/night). However, it should be noted that a peak of 12 passes per night was recorded during the early September 2022 recording session at location S6 (**Table 0.1**), which was at least three times higher than activity recorded during any other session at all locations.

3.16.11 Barbastelle activity was highest at location S5 with an average of 10.51 passes per night across all sessions. Looking at the activity per recording session at each location, barbastelle activity was not spread evenly over the survey period at locations S1, S4, S5 and S6 (see previous tables in this section). Peak activity at these locations were 18.83 passes per night in April 2022 at location S1, 25.67 passes per night in August 2022 at location S4, 64.00 passes per night in August 2022 at location S5, and 12.00 passes per night in August 2022 at location S6. Given the rarity of barbastelle within the UK, these activity levels can be considered high.

Table 1.15: Average total bat passes per static location 2022

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
S1	57	4.02	114.52	12.46	0.11	0.15	9.64	0.62	3.33	0.33	0.16	0.31	0.01	145.66
S2	49	0.74	181.78	53.80	0.01	0.02	2.02	0.11	7.32	1.15	1.79	0.77	0.11	249.62
S3	56	0.22	76.61	14.01	0.04	0.92	1.25	0.18	10.15	0.16	18.21	0.09	0.19	122.03
S4	56	3.97	55.77	11.93	0.11	1.12	5.94	0.06	7.60	0.46	6.46	0.03	0.17	93.62
S5	47	10.51	252.61	324.62	8.87	0.54	22.71	0.82	6.58	0.02	1.22	0.07	0.13	628.7
S6	28	4.83	744.46	527.57	0.53	13.15	128.91	3.90	11.76	1.09	0.20	0.45	0.00	1436.85
D1	69	1.58	527.42	264.00	0.50	0.00	8.25	10.00	6.17	1.67	0.00	1.17	0.00	820.76
D2	71	1.21	108.66	114.97	2.91	3.80	11.00	1.37	5.93	1.56	0.00	0.18	0.00	251.59
Total	**433**	**27.08**	**2061.83**	**1323.36**	**13.08**	**19.7**	**189.72**	**17.06**	**58.84**	**6.44**	**28.04**	**3.07**	**0.61**	3748.83

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

Table 1.26: Average total bat passes per static location 2023

Survey dates	Number of nights detector deployed	Bb	Pp	Py	Pn	Psp	Msp	Pl	Nn	Nl	Nsp	Es	Es/Nsp	Total
S5	74	1.15	147.04	130.41	0.38	8.65	7.67	0.12	18.61	0.13	2.43	0.04	0.01	316.66
S6	68	0.78	251.56	207.95	0.27	4.00	10.02	1.47	21.61	0.01	0.03	0.08	0.00	497.79
S7	65	6.89	240.32	101.42	0.40	0.62	17.01	0.67	22.84	0.72	0.68	0.58	0.04	392.19
S8	41	5.24	70.40	58.70	60.86	0.50	27.46	8.88	20.09	4.15	0.95	0.42	0.00	257.65
S9	60	2.24	199.00	53.60	0.47	1.65	3.99	0.40	5.11	1.36	0.53	0.09	0.00	268.43
Total		**16.35**	**909.00**	**552.67**	**62.39**	**15.42**	**66.41**	**11.55**	**88.26**	**6.37**	**4.62**	**1.20**	**0.05**	**1732.72**

Bb – Barbastelle, Pp - Common pipistrelle, Py - Soprano pipistrelle, Pn - Nathusius' pipistrelle, Psp: *Pipistrellus* species.; Msp - *Myotis* species, Pl -Brown long-eared bat, Nn - Noctule, Nl - Leisler's Bat, Nsp – *Nyctalus* species, Es - Serotine Bat; ES/NSP: serotine or *Nyctalus* bat

3.17 Walked Transects and Trapping 2024

3.17.1 A summary of key bat data (barbastelle as the primary target species) is provided below arising from the transects undertaken in each wood on the 14 May 2024, where each wood also had three statics set out for the duration of the transect (see Figures 2.3, 2.4 and 2.5). Sunset was at 20:50 on the 14 May 2024.

Pinsley Wood Walked Transect

3.17.2 Static 3: Confirmed barbastelle calls at 21:23 (33 mins after sunset), 21:30 (40 mins after sunset), 21:33 (43 mins after sunset), and 21:49 (59 min after sunset).

3.17.3 Static 2: No barbastelle detected.

3.17.4 Static 1: Confirmed barbastelle calls at 21:45 (55 mins after sunset), 21:45 (55 mins after sunset), 22:34 22:37, 22:38, 22:40, 22:41, and 22:41 (all >1 hour after sunset).

3.17.5 Handheld detector: Confirmed barbastelle recording at 22:41 (51 mins after sunset) along the central ride close to static location 1.

Burleigh Wood Walked Transect

3.17.6 Static 3: Confirmed barbastelle call at 22:02:15 (72 mins after sunset).

3.17.7 Static 2: No barbastelle detected.

3.17.8 Static 1: No barbastelle detected.

3.17.9 Handheld detector: No barbastelle detected.

Bladon Heath Wood Walked Transect

3.17.10 Static 3: No barbastelle detected.

3.17.11 Static 2: No barbastelle detected.

3.17.12 Static 1: Confirmed barbastelle call at 21:24 (34 mins after sunset)

3.17.13 Handheld detector: No barbastelle detected.

3.17.14 Whiskered bats were detected at static locations 3 and 1 in Burleigh Wood, static location 3 in Pinsley Wood, and on all handheld detectors (i.e., in all woods). Bechstein's bats were detected at static locations 3 and 1 in Burleigh Wood, and on the handheld detector in Bladon Heath. The confidence in assigning any *Myotis* calls to species level from sonograms only in the absence of other species identification methods (such as in hand) is inevitably constrained.

Static Detector Results: Burleigh Wood and Bladon Heath Wood May 2024

3.17.15 The following results are arising from the static surveys to Burleigh Wood and Bladon Heath Wood between 21 May and 28 May 2024 (see Figure 2.6).

Burleigh Wood static detector results:

3.17.16 Confirmed barbastelle calls were recorded on static O2 on 22nd May at 23:02 (121 min after sunset), 24 May 2024 at 02:46 (123 mins before sunrise), 25

May 2024 at 22:11 (65 mins after sunset) and 22:14:51 (68 mins after sunset), 27 May 2024 at 22:37 (59 mins after sunset).

3.17.17 Confirmed barbastelle calls were recorded on static J4 on 23 May 2024 at 01:55 (3.05 hours before sunrise), 03:28 (92 mins before sunrise), and 03:31 (89 mins before sunrise), 25 May 2024 at 02:16 (2.39 before sunrise), and 21:41 (35 mins after sunset) 27 May 2024 at 03:26 (90 before sunrise), and 03:49 (69 mins before sunrise).

3.17.18 No barbastelle calls were detected on static J5.

Bladon Heath Wood static detector results:

3.17.19 Static A: One confirmed Barbastelle call was recorded on 28 May 2024 at 03:14 (128 mins before sunrise)

Static B: No barbastelle calls were detected were detected on statics B, C and D.

3.17.20 Whiskered/Brandts bats were detected at all static locations in Bladon Heath and at J4 and O2 in Burleigh Wood. Bechstein's were identified at static location C in Bladon Heath, and O2 and J4 in Burleigh Wood. However, it is noted that the confidence in assigning calls of bats belonging to the *Myotis* genus to species level from sonograms only in the absence of other species identification methods (such as in hand) is constrained.

Trapping surveys May 2024

3.17.21 Trapping was undertaken in Pinsley Wood on 22 May 2024. One male common pipistrelle was captured.

3.17.22 Trapping was undertaken in Bladon Heath Woodland on 28 May 2024 and five bats were captured. Details of the bats captured is provided in Table 3.27.

Table 0.27: Biometric data of bats captured in May 2024.

Date & Location	Trap	Species	Sex	Forearm (mm)	Weight (g)
22.5.24 – Pinsley Wood	1	Common pipistrelle	Male	28.7	4.2
29.5.24 – Bladon Heath Wood	1	Natterer's	Male	36.2	6
29.5.24 – Bladon Heath Wood	2	Brown long-eared	Male	37.3	7.9
29.5.24 – Bladon Heath Wood	2	Brown long-eared	Female	38.2	8.8
29.5.24 – Bladon Heath Wood	2	Natterer's	Female	38.8	7.2
29.5.24 – Bladon Heath Wood	2	Leisler's bat	Male	41.9	14

4 Evaluation

4.1 Bat Activity Static Surveys

4.1.1 From field surveys undertaken between April and October 2022 and between April and October 2023, at least nine bat species have been identified within the site boundary. These include:

- One of the rarest species in England – barbastelle;
- Four of the rarer species in England – Leisler's bat; Nathusius' pipistrelle, noctule and serotine;
- Three common species within England – common pipistrelle, soprano pipistrelle and brown long-eared bat; and
- *Myotis* species – rarer to rarest depending on the species, and five *Myotis* species are known to be present within Oxfordshire: Brandt's bat *Myotis brandtii,* Daubenton's bat *Myotis daubentonii*, Natterer's bat *Myotis nattereri* and whiskered bat *Myotis mystacinus* (all rarer species in England) and Bechstein's bat *Myotis bechsteinii* (one of the rarest species in England) all of which have been recorded in Oxfordshire (Oxfordshire Bat Group, 2023).

4.1.2 Species classified as common, rarer and rarest are based on their population within England (CIEEM, 2010).

4.1.3 The species recorded within the Project site during the static surveys account for at least nine, and potentially 13 of the 14 known species within Oxfordshire, including some of the rare and rarest species. Distribution of these species within Oxfordshire are described as (OBG, 2023):

- Barbastelle – widespread though uncommon;
- Bechstein's bat – very rare;
- Brandt's bat – uncertain, few in-hand identifications;
- Brown long-eared bat – widespread and relatively common;
- Common pipistrelle – common and widespread;
- Daubenton's bat – widespread;
- Leisler's bat - widespread though uncommon;
- Nathusius' pipistrelle – rare;
- Natterer's bat – widespread though uncommon;
- Noctule - widespread though uncommon;
- Serotine - widespread though uncommon;
- Soprano pipistrelle - common and widespread; and
- Whiskered bat - uncommon

4.1.4 Given the proximity of riverways and woodland to the site and the static locations, it is very likely that Daubenton's bats were recorded by the static detectors given these species are known to forage over water. It is considered possible that the

other *Myotis* species were also recorded as these are associated with woodland foraging.

4.1.5 In 2022, the highest level of bat activity overall was recorded at location S6, with common pipistrelle, soprano pipistrelle, and *Myotis sp.* having their highest activity levels over the survey period at this location. The static recorder at location S6 was on a mature treeline forming a linear connection between a small woodland and the River Evenlode. There is also a farmhouse to the north of the woodland. This location is likely a key commuting and foraging route for these species between roosting sites (the woodland and farmhouse or other buildings) and the river.

4.1.6 In 2022, the static recorded at location S5 was also located near the River Evenlode and this likely accounts for the levels of activity located here, particularly that of soprano pipistrelle and *Myotis* species as both soprano pipistrelle and Daubenton's bat are associated with ponds and waterways. Blenheim Woods is also located north of location S5 and bats could be commuting along the river from it.

4.1.7 In 2022, the lowest activity overall was recorded at location S4, which was located between two patches of woodland. Cassington Road is located between the woodland, and perhaps this factors into the lower activity. Overall activity at locations S1 and S3 were at similar levels..

4.1.8 In 2023, S7, which was located on the main driveway connecting Blenheim Estate to Bladon Heath Wood had a high amount of bat activity but, specifically a high number of barbastelle and *Myotis* bat passes, which were recorded soon after sunset indicating the likely presence of roosts in proximity to the Project site.

4.1.9 The static detectors deployed in 2022 and 2023 confirmed the presence of an Annex II species, barbastelle bat, and a large number of *Myotis* bats was recorded in and around the woodlands to the central area of the Project site in 2023. Overall, the features on site appear to be important to a high diversity of UK and Oxfordshire bat species, including some of the rarest species, such as barbastelle. This is particularly the case with the mature tree lines leading to the River Evenlode at locations S5 and S6.

4.1.10 The static detectors confirmed that species recorded within the Project site account for at least nine, and potentially 13 of the 14 known species within Oxfordshire. However, the statics did not provide detail on where bats were roosting within Project site and, as such, could not provide information on where the important ecological receptors were located within the Project site. The statics also did not provide information on what species of *Myotis* bats were present and whether the bats recorded were male bats and/or breeding females. Therefore, further advanced and targeted surveys were recommended and undertaken in 2024 in order to provide more data for a robust assessment, specifically with respect to the roost locations of barbastelle and *Myotis* spp.

4.2 Bat Trapping Surveys – May 2024

4.2.1 The target species of barbastelle was not caught on any of the two nights of trapping.

4.2.2 A low number of bats (six) were captured in May 2024 during the trapping surveys in Pinsley Wood and Bladon Heath Wood. Male Natterer's, common pipistrelle and Leisler's bat were confirmed present. In addition, female brown long-eared were confirmed present, one of which was confirmed to be pregnant indicating the likely presence of brown long-eared breeding roosts in Bladon Heath Wood.

4.3 Woodland Transects and Static Surveys May 2024

4.3.1 Simultaneous walked transects to ascertain the presence of barbastelle bats in the woodlands across the central area of the Project site, Pinsley Wood, Burleigh Wood and Bladon Heath wood, were undertaken in May 2024.

4.3.2 The presence of multiple passes of barbastelle bat calls (>4 passes) within an hour after sunset (was recorded on both the static and handheld detectors in Pinsley Wood, indicating the likely presence of a barbastelle roost in Pinsley Wood (O'Malley *et al.* 2023).

4.3.3 Low numbers of barbastelle calls (<4 passes) within an hours after sunset was recorded on only the statics in Burleigh Wood and Bladon Heath Wood. However, multiple *Myotis* species were recorded in Bladon Heath Wood.

4.4 Importance of Assemblage

4.4.1 In line with the Bat Mitigation Guidelines (BCT, 2023), an assessment of the importance of the bat assemblage on site has been undertaken, see Table 4.1, below.

Table 4.1 – Valuation of bat assemblage on site

Species	Importance of roosts	Importance of commuting and foraging habitat	Importance of assemblage
Widespread Common pipistrelle Soprano pipistrelle Brown long-eared	Limited evidence of roosts on site for either pipistrelle species or BLE (though smaller roosts undoubtedly exist). **Does not exceed district importance**	Continuous high-quality habitat that is well connected to the wider landscape. Has been found to be important for many species of both commuting and foraging bats, with the northern hedgerow, north / south hedgerow, southern hedgerow and woodland all recording relatively high numbers of call registrations during the surveys, which could indicate reliance on	1 point per species Score 3 for this part of the assemblage (of a maximum of 3)
Widespread but not as abundant in all geographies Daubenton's bat Natterer's bat Noctule	No evidence of roosts for Daubenton's bat or noctule, though smaller tree roosts undoubtedly exist. **Does not exceed district importance**		2 points per species Score 2 for this part of the assemblage (of a maximum of 6)
Rarer or restricted distribution Myotis Serotine Leisler's bat	No evidence of roosts existing, smaller tree roosts undoubtedly exist. **Does not exceed district importance**		3 points per species Score 6 for this part of the assemblage (of a maximum of 12)

Nathusius' pipistrelle		these features within the wider landscape.	
Rarest species and very rare Barbastelle Bechstein's	**Annex 2** No evidence of bats using the site for roosting. **Does not exceed district importance**	Those areas of woodland are well used across the year by a diverse assemblage including barbastelle. Taking the above into account, the mosaic of habitats within the Zone of Influence is considered to be of regional importance. However, the area to be developed comprises species-poor fields, which are of much lower value. 1 point per species	4 points per species Score 4 for this part of the assemblage (of a maximum of 4)
Overall score: Assemblage Score 25/25 = 100%; meets threshold for national importance – i.e. Assemblage score meets or exceeds 70% of the maximum score			

5 Conclusion

5.1.1 The extensive bat activity (statics), woodland transects, trapping and radio-tracking have identified an assemblage of bats that are at least of national importance.

5.1.2 The surveys have confirmed the presence of at least one Annex II species of bat, with barbastelle present across the Project area.

5.1.3 Taking the above into account, the mosaic of habitats within the Zone of Influence is considered to be of at least national importance. However, the area to be developed comprises species-poor fields, which are of much lower value for bats.

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Annex A

Figures

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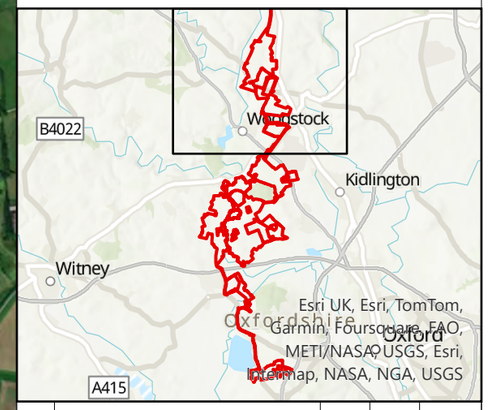
Legend

- Project Site Boundary
- Hedgerow Removal Locations



Rev	Description	By	CB	Date

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Client	PVDP
Project	Botley West Solar Farm
Title	Hedgerow removal locations

Status	Drawn By	PM/Checked By
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Project Number	**Scale @ A3**	**Date Created**
NP12426	1:25,000	MAY 2024
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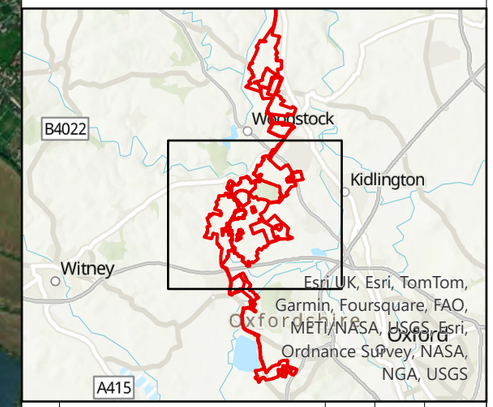
- Project Site Boundary
- Hedgerow Removal Locations



Rev	Description	By	CB	Date

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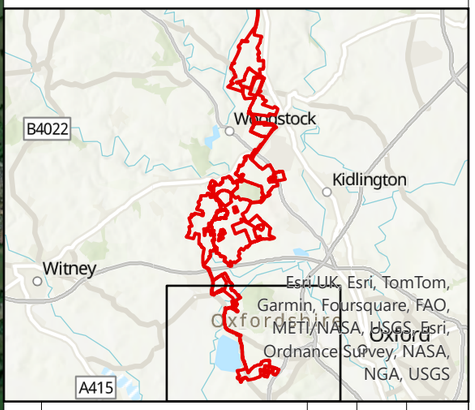
Legend

- Project Site Boundary
- Hedgerow Removal Locations



Rev	Description	By	CB	Date

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Project	Botley West Solar Farm
Title	Hedgerow removal locations

Status	Drawn By	PM/Checked By
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Legend

- Site boundary
- Bat static detector location 2022

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Project Botley West Solar Farm

Title Bat Statics 2022

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NPI00019	1:15,000	OCT 2024
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Legend

- Site boundary
- Bat static detector location 2022

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- Site boundary
- Bat static detector location 2022

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Legend

- Order Limits
- Bat static detector locations 2023

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Project	Botley West Solar Farm
Title	Bat Statics 2023

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Annex B

Radio Tracking Report

Botley West Solar Farm, Oxfordshire

Bat Radio-tracking Survey Report 2025

Prepared for: PhotoVolt Development Partners GmbH (PVDP) for the Applicant, SolarFive Ltd (SolarFive)

Author	Rosie McLaughlin BSc (Hons) MSc MCIEEM Dr Stephanie Murphy BSc (Hons) MSc PhD MCIEEM CEnv			
Version	**Checked by**	**Approved by**	**Date**	**Type**
V1.0	Nicholas Betson	Nicholas Betson	10/09/25	Final for Issue

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Contents

Executive Summary

Sylvan was commissioned by PhotoVolt Development Partners GmbH (PVDP) to undertake advanced bat survey techniques in the form of bat trapping and radio-tracking to inform the proposed development for the installation and operation of approximately 840MWe of solar generation in parts of West Oxfordshire, Cherwell and Vale of White Horse Districts (the Project). The purpose of the surveys was to determine the importance of the 'Project Area' for bat populations in relation to the wider landscape and to ascertain important features used by the bat assemblage, especially Annex II bats, within the landscape.

A total of 602 bats from 13 species were captured over nine nights between August and September 2024, and 346 bats from 11 species over five nights in May 2025. The thirteen species captured included barbastelle *Barbastella barbastellus*, Bechstein's *Myotis bechsteinii*, Brandt's *Myotis brandtii,* brown long-eared *Plecotus auritus*, common pipistrelle *Pipistrellus pipistrellus*, Daubenton's *Myotis daubentonii,* Leisler's *Nyctalus leisleri*, Nathusius' pipistrelle *Pipistrellus nathusii,* Natterer's *Myotis nattereri*, noctule *Nyctalus noctule*, serotine *Eptesicus serotinus*, soprano pipistrelle *Pipistrellus pygmaeus* and whiskered *Myotis mystacinus*

Breeding females from ten species were captured during the surveys. These species included the Annex II bat species barbastelle and Bechstein's bat as well as Brandt's bat, brown long-eared bat, common pipistrelle, Daubenton's bat, Natterer's bat, serotine, soprano pipistrelle, and whiskered bat.

Radio-transmitter tags were fitted to 24 barbastelle, six Bechstein's bat, one Daubenton's bat and one Natterer's bat. As a result, 50 roosting locations were confirmed, and three estimated roosting locations were identified.

A total of 20 barbastelle maternity roosts (predominately within Blenheim Estate and Pinsley Wood), six barbastelle autumnal dispersal roosts (Pinsley Wood and Burleigh Wood), one estimated (due to access constraints) autumnal dispersal roost (Begbrooke Wood), two barbastelle summer roosts (Wytham Woods and Blenheim Estate) and 14 barbastelle solitary roosts were subsequently identified. A total of seven Bechstein's maternity roosts were identified (Bladon Heath Wood and Burleigh Wood), two estimated (due to access constraints) Bechstein's maternity roosts (Tackley Wood) and one autumnal dispersal roost (Bladon Heath Wood) were subsequently identified. A Daubenton's maternity roost colony was subsequently identified in Blenheim Estate. Three different trees used by the Natterer's maternity roost colony were subsequently identified in Bladon Heath Wood.

Radio-tracking data was gathered for barbastelle and Bechstein's bats. Core foraging areas for barbastelle within the Project Area were identified along the River Evenlode, River Glyme, near to the sewage works north of the village of Worton, adjacent to the Cotswold (Oxford to Hereford) railway line, at a woodland patch and adjacent ditch between the sewage works and Burleigh Road, along the Cotswold railway line east of the sewage treatment works directly north of Worton, and in arable fields adjacent to Worton Heath and Begbroke Wood. Core foraging areas for Bechstein's bat were identified in Bladon Heath, outside the Project site.

1 Introduction

OVERVIEW

1.1 PVDP has submitted an application on behalf of SolarFive Ltd for development consent to the Planning Inspectorate (PINS) under the Planning Act 2008 (PINS Ref EN010147). The proposal is to install and operate approximately 840MWe of solar generation in parts of West Oxfordshire, Cherwell and Vale of White Horse Districts (the Project).

1.2 The Project will be located in the county of Oxfordshire, across an area of approximately 1,300 ha. The Project extends from an area of land in the north (the Northern Site Area), situated between the A4260 and the Dorn River Valley near Tackley and Wootton, through a central section (the Central Site Area), situated broadly between Bladon and Cassington, and connecting to a section further south (the Southern Site Area) near to Farmoor Reservoir and north of Cumnor, where the Project will connect to the National Grid transmission network. The name 'Botley West' is derived from the location of the grid connection point. The illustrative masterplan submitted with the application is available here.

1.3 PVDP has contracted Sylvan Ltd to provide specialist bat consultancy services to identify potential constraints that may affect the design of the proposals.

SITE DESCRIPTION

1.4 The Project site is located in rural Oxfordshire near to Blenheim Palace and the villages of Bladon, Woodstock, Cassington and Cumnor. It comprises approximately 1,300 ha of mainly arable land with over 90 km of hedgerow dividing fields. The majority of the land proposed for the Project is currently used for arable crops or is otherwise down to pasture. The River Evenlode runs through the centre of the Project site in a north-south orientation.

1.5 The wider landscape is rural in nature with blocks of woodland, including ancient woodland, other riparian systems (the rivers Glyme, Dorn and Cherwell are nearby) and large water bodies including the lakes within Blenheim Palace and Farmoor Reservoir.

1.6 RPS has produced an Environmental Statement (ES) for the Project. The Project would be constructed within arable fields with features that might be used by bats for foraging/roosting/commuting (such as hedgerows) retained under the proposals.

PREVIOUS STUDIES

1.7 RPS has undertaken baseline ecological surveys to inform the Environmental Statement. An initial assessment concluded that as the Project would be constructed within arable fields with features that might be used by bats for foraging/roosting/commuting retained under the proposals, extensive bat survey work was not necessary.

1.8 As such, the aim of the initial baseline studies undertaken in 2022 was to determine the general level of bat activity across the Project site through the use of static monitoring of key landscape features and the likely assemblage of bat species present.

1.9 Bat activity surveys were undertaken within the Project site boundary to gain information about the use within the site by bats between April and October 2022 and, also, between April and October 2023 (presented within the application at ES Appendix 9.4 [APP-153]. The static detector surveys focused on areas of higher-value habitats which were identified as being most suitable for foraging and commuting bats. The woodland edges, hedgerows and land close to the River Evenlode were considered to provide good value foraging and commuting habitat for bats and would likely support a variety of night-flying invertebrates for bats to forage upon. These features were linked via hedgerows (on and off site) and other linear features to areas of suitable foraging and roosting habitat within the wider Project site and wider landscape.

1.10 The species recorded within the Project site account for at least nine, and potentially 13 of the 14 known species within Oxfordshire, including some of the rare and rarest species. Distribution of these species within Oxfordshire are described as (OBG, 2023) included:

- Barbastelle *Barbastella barbastellus* – widespread though uncommon;
- Bechstein's bat *Myotis bechsteinii* – very rare;
- Brandt's bat *Myotis brandtii* – uncertain, few in-hand identifications;
- Brown long-eared bat *Plecotus auritus* – widespread and relatively common;
- Common pipistrelle *Pipistrellus pipistrellus* – common and widespread;
- Daubenton's bat *Myotis daubentonii* – widespread;
- Leisler's bat *Nyctalus leisleri* - widespread though uncommon;
- Nathusius' pipistrelle *Pipistrellus nathusii* – rare;
- Natterer's bat *Myotis nattereri* – widespread though uncommon;
- Noctule *Nyctalus noctula* - widespread though uncommon;
- Serotine *Eptesicus serotinus* - widespread though uncommon;
- Soprano pipistrelle *Pipistrellus pygmaeus* - common and widespread; and
- Whiskered bat *Myotis mystacinus* – uncommon

1.11 Overall, the features on site appeared to be important to a high diversity of UK and Oxfordshire bat species, including some of the rarest species, such as barbastelle.

1.12 The baseline activity static surveys identified that barbastelle bats, specifically, are present throughout the survey area using hedgerows and watercourses but the locations of the roosts were unknown. In May 2024 walked transects and acoustic static surveys of Pinsley Wood, Burleigh Wood and Bladon Heath identified the presence of barbastelle bats soon after sunset, which could indicate the presence of maternity colonies in the vicinity of proposed development.

RELEVANT LEGISLATION AND PLANNING POLICY

1.13 The following key pieces of nature conservation legislation are relevant to this assessment:

- The Conservation of Habitats and Species Regulations 2017 (as amended);
- The Wildlife and Countryside Act 1981 (as amended); and
- Natural Environment and Rural Communities Act 2006.

1.14 All native UK bat species are protected under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species Regulations 2017 (as amended). Under this combined legislation it is an offence to:

- deliberately capture, injure or kill a bat;
- intentionally or recklessly disturb a bat whilst occupying a place of shelter or protection;
- possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat; and
- deliberately disturb a bat species.

1.15 Disturbance of the species includes in particular any disturbance which is likely to impair their ability to survive, to breed or reproduce, or to rear or nurture their young, or in the case of animals of a hibernating or migratory species, to hibernate or migrate. Under the legislation it is therefore an offence to;

- damage or destroy a bat breeding site or resting place of a bat;
- intentionally or recklessly obstruct access to any structure or place used by a bat for shelter or protection.

1.16 In addition, certain rarer species of bat including Bechstein's bat and barbastelle are listed on Annex II of the EC Habitats Directive (Council Directive 92/43/EEC), for which specific protection through the establishment of Special Areas of Conservation (SAC) applies.

1.17 In accordance with Section 41 of the Natural Environment and Rural Communities Act (2006), several bat species are also identified on the England Biodiversity List as Species of Principal Importance. The presence of bats represents a material consideration in the planning process.

REQUIREMENT FOR SURVEYS

1.18 A bat research licence (Sci-Con) was applied for to undertake trapping and radiotracking of bat species including barbastelle, Bechstein's, lesser horseshoe and the woodland bat assemblage, to develop a more comprehensive knowledge of the potential ecology constraints to the Project, to inform appropriate design and mitigation and to avoid impacts to important ecological receptors, including rare and Annex II bat species roosts, by informing the masterplan design.

1.19 Bat survey work is required within and adjacent to the Project site to identify potential constraints that may affect the design of the proposals. Advanced bat surveys were required because the data on woodland species including Bechstein's bats, which are a cryptic species, cannot be reliably obtained using standard survey techniques (such as

activity surveys and/or automated surveys) alone due to overlapping call parameters within the genus *Myotis*. The advanced bat surveys detailed in this report were undertaken under Natural England Project Licence (Dr Stephanie Murphy: 2024-68876-SCI-SCI) and involved trapping, attaching radio-transmitter tags and ringing target species.

2 Methodology

DESK STUDY

2.1 A desk study of bat records within Wytham Wood was undertaken by Dr Danielle Linton in 2025 to supplement the desk study of bat data reported in ES Appendix 9.1 Desk Study [APP-150].

FIELD SURVEY

2.2 The methods generally followed the standard best practice guidance for trapping and radio-tracking (Collins, 2023). Any specific deviations due to objectives of the surveys are highlighted where necessary.

2.3 The sites selected for trapping were guided by known roosts from biological records data, previous survey data, using analysis of aerial photography and OS map data to assess the landscape and habitat connectivity and a site walkover. Sites were chosen to maximise coverage of the habitats of high suitability within the Site Boundary.

2.4 Initial trapping surveys focussed on nine key areas located within and adjacent to the Project site, which are shown in Figures 2.1 to 2.3. These trapping locations were subject to a ground truthing assessment to confirm that there was suitable habitat for trapping surveys in these areas.

TRAPPING SURVEYS

2.5 Trapping was undertaken at nine locations by up to five trapping teams each night over four nights in post-maternity season (August 2024), five nights for autumnal dispersal season (September 2024) and five nights in the pre-maternity season (May 2025).

2.6 Three traps, using a combination of harp traps and mist nets, were set at each location. Each trap or net was fitted with an Autobat acoustic lure to increase the likelihood of catching bats present within the vicinity of the traps. Acoustic lures were not deployed on traps within 50m of known roosts.

2.7 Trapping commenced at sunset and continued for a maximum of six to eight hours per night depending on the conditions, capture success and general bat activity. If the weather became unsuitable during a survey (i.e. temperatures fell below 8°C and/or heavy rain and/or strong wind), the survey was terminated to avoid captured bats becoming torpid.

2.8 When bats were captured in either a harp trap or mist net they were removed by a suitably experienced and qualified person (under the direction of the licence holder or accredited agent) and transferred to a clean cloth bag. Biometric data were recorded for each bat of the target species including weight, sex, breeding status and forearm measurements. Bats not selected for radio-tracking were released immediately at the site of capture. Bat workers wore face masks and used disposable gloves to minimise the risk of human to bat disease transfer (and vice versa) and a clean cloth bag was used for each bat to minimise the risk of disease transfer between bats.

2.9 Table 2.1 details the initial trapping survey locations, dates and durations.

Table 2.1: Trapping survey effort

Date	Survey locations	Duration of each trapping session
August 2024	1, 2, 3, 4, 5, 6, 8, 9	4 nights
September 2024	3, 4, 5, 6	5 nights
May 2025	2, 3, 4, 5, 6, 8, 9	5 nights

2.10 Surveys were undertaken by the licence holder and/or appointed accredited agents under licence obtained from Natural England (reference 2024-68876-SCI-SCI and 2025-70918-SCI-SCI).

RADIO TRACKING SURVEYS

2.11 Bats were selected for radio-tagging on the basis of their apparent health and body condition. No underweight bats were selected for radio-tagging. The weight of the radio-tag was always less than 5% of the animal's weight.

2.12 Female bats, and in particular reproductive females (avoiding heavily pregnant bats), were radio-tagged in preference to male bats as this enabled the location of breeding colonies to be determined. Transmitters were attached to the focal animal using Skin-Bond® (Pfizer Inc) to the area between the shoulder blades from which fur had been clipped.

2.13 The animals that were fitted with radio-transmitters were released at the location of capture and only held for the minimum time necessary to obtain the required data and to be fitted with radio-tags, as necessary.

2.14 Each bat that was radio-tagged was also ringed (recently juvenile bats were not ringed) and had a 2.9mm metal ring fitted to their forearm which had a unique serial number

and the inscription 'London Zoo' (London Zoo has an arrangement with the Bat Conservation Trust to notify it of any ring or number sent in). Ringing bats allows for on-going monitoring and ensures that bats captured later in the season are not radio-tagged subsequently.

2.15 The locations of radio-tagged bats were determined during the day (daytime roost locations) by radio-tracking on foot by a minimum of two surveyors using a Biotrack 'Sika' receiver and a Yagi 3-element antenna on a height-adjustable and portable mast. A Yagi 5-element antenna was also used to determine roosting locations when signals were weaker due to distance or obstruction.

ROOST COUNT SURVEYS

2.16 Roosts were identified by locating the radio-tagged bats during the day (as detailed in Paragraph 2.16 above) and counts of bats emerging were carried out that night, where access allowed.

2.17 The surveys were carried out in appropriate weather conditions following standard guidelines (Collins, 2023) and when bats are likely to be active. The dusk surveys commenced approximately 15 minutes before sunset and continued until it was considered all bats had left the roost.

2.18 An infra-red camera (such as the Canon XA-20) equipped with night vison aids (such as the IR Lab Outdoor IR Illuminator LIR-IC88), or thermal imaging camera was used to aid accurate counts of bats emerging from the roost. Full spectrum bat detectors, such as Elekon Batlogger M, were used to detect bat echolocation calls of any emerging bats and identify species where possible. Video and recordings were analysed later to ensure accurate assessment of numbers. The flight direction of the bats was recorded and correlated with known flightlines.

RADIO-TRACKING SURVEYS

2.19 The movements of active bats at dusk, night and at dawn, were ascertained by multiple teams of surveyors using the radio-tracking equipment described above. Each team was positioned in separate locations within the landscape with their exact location recorded (Eastings, Northings recorded with GPS unit). Each team was in constant communication with each other via handheld two-way radios or mobile telephones.

2.20 When bats commenced emergence from their roost location and / or their radio-tag was picked up whilst in flight, the surveyor teams took close approach estimates of location (if the bat was in the immediate vicinity). If bats were located some distance between the surveyors and / or surveyors' access was not permitted to the area in which the bat was situated simultaneous compass bearings on the direction of the strongest radio signal were taken. Through triangulating simultaneous bearings (using LOAS software; version 2.12, Ecological Software Solutions), surveyor teams were able to record 'fixes' (the point at which two or more separate team's bearings cross) of the bats' locations within the landscape, (i.e. locations at which simultaneous bearings crossed).

2.21 The positions of the radio-tagged bats were received at intervals after leaving the roost and were used to identify flightlines, which are important connectivity features between the roosting locations and foraging areas and between separate foraging areas. Post survey, these flightlines were mapped and connectivity features between roosting sites and foraging areas used by two or more radio-tracked bats were confirmed as 'key flightlines'.

2.22 The cumulative home range size was plotted against the number of successive locations for all bats radio-tracked in order to determine the point at which the foraging area reached an asymptote, indicating that sufficient data has been gathered from each bat. Estimates of range size for this analysis will be based on 95% kernels and 50% kernels, obtained using BIOTAS software (version 2.0 Alpha, Ecological Software Solutions).

2.23 Each bat fitted with a radio-tag was followed for a minimum of three nights and a maximum of six nights, depending on the results obtained from the estimates of home range analysis (i.e. whether sufficient data had been collected). Bats were radio-tracked concurrently.

DATA VALIDITY AND LIMITATIONS

2.24 It is important to note that even where data are held, a lack of records for a defined geographical area does not necessarily mean that there is a lack of ecological interest; the area may be simply under-recorded. Bats are highly mobile animals and can move roost sites both within and between years.

2.25 Data from bat surveys should be considered to be valid for a period of 18 months, unless there are any meaningful changes to the buildings or other habitats within the site.

3 Results

DESK STUDY

3.1 The desk study for bats within the wider area is reported in ES Appendix 9.1 Desk Study [APP-150]. A supplementary desk study reporting the studies of bat populations at Wytham Woods since 2007 has subsequently been undertaken.

3.2 Barbastelle bats, including pregnant and post-lactating females, have been caught in mist-nets across Wytham Woods during previous studies. Barbastelle calls have been detected on the majority of bat walks within the woods (educational events and research survey transects). Barbastelle calls were recorded on 288/500 (57%) nights and at all sampling locations (n = 25) using static detectors across Wytham during 2020 - 2023. Barbastelle tree roosts have been located via radio-tracking and from endoscope inspection of likely features. Twenty-two roost features in 21 trees distributed throughout the woods have been occupied by barbastelle bats on at least 37 occasions, and confirmed occupations have been recorded in every month of the year. The majority of known roost features are low (accessed by ladder) and have only been used by solitary individuals (maximum confirmed roost count = 2). Solitary roosting barbastelle have also been found in a 1FF bat box, and in a building (observed behind weatherboarding) within Wytham Woods. Despite catching pregnant and post-lactating females during trapping surveys, no confirmed maternity roosts are known in Wytham Woods.

3.3 Male Bechstein's bats have been caught during trapping in August 2024 (near the northern edge of the wood) and September 2006 (beside a pond in the centre of the woods). A solitary individual (sex unknown) was found roosting in a tree in September 2023 (also in the northern section of the wood).

3.4 There are eight colonies of Natterer's bats spread across Wytham Woods (over 1,600 day roosts have been recorded in more than 800 roost features). An estimated 250 – 350

ringed individuals per annum have been encountered twice a year on average (up to 795 captures per annum) since 2007.

3.5 There are five colonies of Daubenton's bats spread across Wytham Woods (nearly 2,000 day roosts have been recorded in almost 700 roost features). An estimated 500 - 900 ringed individuals per annum have been encountered once a year on average (up to 1,049 captures per annum) since 2007.

3.6 There are at least 20 colonies of brown long-eared bats spread across Wytham Woods and beyond; ringed individuals have been recorded from roosts in nearby Oxford, Cassington, and Eynsham, or have been caught foraging or commuting near Farmoor Reservoir and at Wolvercote tunnel. Over 750 day roosts have been recorded in more than 600 roost features. An estimated 300 or more ringed individuals per annum have been encountered once a year on average since 2007.

3.7 Noctules, Leisler's bats and Nathusius' pipistrelle bats have been caught during trapping, found in tree or box roosts, and recorded on detectors across Wytham Woods. Whiskered bats, including breeding females, have been caught during trapping and found roosting in a building within Wytham; with a maximum roost count of 67 bats. Brandt's bats, including breeding females, have been caught during trapping but no known roosts have been recorded.

3.8 Soprano pipistrelles roost in boxes, trees, and a building within Wytham; with a maximum roost count of 237 bats. Common pipistrelle are frequently recorded on detectors but roosts are rarely confirmed.

3.9 There are no confirmed records of Alcathoe's bat, serotine or horseshoe bats in Wytham Woods.

TRAPPING SURVEYS

3.10 A total of 602 bats from 13 species were captured over nine trapping nights between 5th and 8th August 2024 and 26th and 30th September 2024. A total of 347 bats from 11 species were captured over five nights between 18th and 22nd May 2025. Figures 2.1-2.3, in Appendix 1, show the trapping locations. The trapping results are summarised by species in Tables 3.1 and 3.2 below and the detailed trapping data and biometric data is provided in Appendix 3.

Table 3.1: Trapping results by species – August & September 2024

Species	**Male**	**Female**	**Total**
Barbastelle	8	9	17
Bechstein's bat	3	4	7
Brandt's bat	3	0	3
Brown long-eared bat	44	35	79
Common pipistrelle	63	57	120
Daubenton's bat	19	16	35
Leisler's bat	2	1	3
Nathusius' pipistrelle	1	0	1
Natterer's bat	65	41	106
Noctule	21	9	30
Serotine	1	1	2
Soprano pipistrelle	92	77	169
Whiskered bat	19	11	30
Total	**341**	**261**	**602**

Table 3.2: Trapping results by species – May 2025

Species	**Male**	**Female**	**Total**
Barbastelle	6	6	12
Bechstein's bat	0	4	4
Brandt's bat*	0	5	5
Brown long-eared bat	26	17	43
Common pipistrelle	19	13	32
Daubenton's bat	25	18	43
Leisler's bat	3	0	3
Natterer's bat	25	12	37
Noctule	6	0	6
Soprano pipistrelle	73	67	140
Whiskered bat*	10	6	16
Whiskered/Brandt's bat*	0	5	5
Total	**193**	**153**	**347**

*cryptic species confirmed by DNA analysis (see Appendix 4)

3.11 The number of bats caught across each trapping location is shown in Tables 3.3, 3.4 and 3.5 below.

Table 3.3: Trapping results by location August 2024

Location	Number of bats
1	44
2	87
3	78
4	34
5	45
6	142
8	46
9	25
Total	**501**

Table 3.4: Trapping results by location September 2024

Location	Number of bats
3	26
4	13
5	8
6	54
Total	**101**

Table 3.5. Trapping results by location – May 2025

Location	Number of bats
2	17
3	55
4	31
5	15
6	86
8	68
9	75
Total	**347**

RADIO-TRACKING

3.12 A total of 10 barbastelle, three Bechstein's bats, one Natterer's bat and one Daubenton's bat were selected for radio-tracking in the post maternity period during August 2024. A total of three barbastelle and one Bechstein's bat were selected for radio-tracking during the autumnal dispersal period in September 2024. A total of 11 barbastelle and two Bechstein's bats were selected for radio-tracking during the pre-maternity period in May 2025. The sex, breeding status and bat identification numbers are shown in Tables 3.6, 3.7 and 3.8 below.

Table 3.6 Radio-tagged bats August 2024

Bat identification number		**Trapping location**	**Species**	**Sex**	**Breeding status**
1	Md01	6	Daubenton's bat	F	Post-lactating
2	Mb01	6	Bechstein's bat	F	Post-lactating
3	Mn01	6	Natterer's bat	F	Post-lactating
4	Bb01	6	Barbastelle	M	Adult
5	Mb02	6	Bechstein's bat	M	Juvenile
6	Bb02	6	Barbastelle	F	Post-lactating
7	Bb03	5	Barbastelle	F	Juvenile
8	Bb04	6	Barbastelle	M	Adult
9	Bb05	8	Barbastelle	F	Post-lactating
10	Mb03	1	Bechstein's bat	F	Post-lactating
11	Bb06	2	Barbastelle	F	Post-lactating
12	Bb07	8	Barbastelle	M	Adult
13	Bb08	3	Barbastelle	F	Non-breeding
14	Bb09	3	Barbastelle	F	Lactating
15	Bb10	3	Barbastelle	M	Adult

Table 3.7: Radio-tagged bats – September 2024

Bat identification number		Trapping location	Species	Sex	Breeding status
16	Mb04	6	Bechstein's bat	F	Post-lactating
17	Bb11	4	Barbastelle	F	Post-lactating
18	Bb12	5	Barbastelle	M	Adult
19	Bb13	4	Barbastelle	F	Non-breeding

Table 3.8: Radio-tagged bats – May 2025

Bat identification number		Trapping location	Species	Sex	Breeding status
20	Bb14	5	Barbastelle	M	Adult
21	Mb05	6	Bechstein's bat	F	Parous
22	Mb06	5	Bechstein's bat	F	Non-parous
23	Bb15	4	Barbastelle	F	Pregnant
24	Bb16	4	Barbastelle	F	Non-parous
25	Bb17	4	Barbastelle	F	Parous
26	Bb18	6	Barbastelle	M	Adult
27	Bb19	6	Barbastelle	F	Pregnant
28	Bb20	6	Barbastelle	F	Pregnant
29	Bb21	3	Barbastelle	M	Adult
30	Bb22	4	Barbastelle	M	Adult
31	Bb23	4	Barbastelle	F	Pregnant
32	Bb24	9	Barbastelle	M	Adult

ROOSTS, FORAGING AREAS AND FLIGHT LINES

Roosts (all species)

3.13 A total of 51 roosts were identified during the 2024 and 2025 surveys. The locations of the roosts are detailed in Figures 3.1, 3.2 and 3.3 in Appendix 1.

3.14 This comprised 24 confirmed roosting locations and two 'estimated' roosting locations (estimated from triangulation as precise roosting location not determined due to access constraints) from 15 radio-tagged bats in August 2024 (Roosts R1 – R26).

3.15 A total of seven confirmed roosting locations were identified from four radio-tagged bats in September 2024. Additionally, one estimated roosting location (roosting location not determined due to adverse weather constraints) were identified from one barbastelle bat in September 2024 (Roosts R27-R34).

3.16 A total of 17 confirmed roosting locations were identified from 13 radio-tagged bats in May 2025 (Roosts R35-R51).

3.17 Dusk emergence surveys were undertaken on 15 of the 24 confirmed roosts in August 2024, five of the seven confirmed roosts in September 2024 and ten of the 17 confirmed roosts in May 2025. Dusk emergence surveys were not undertaken where the bat(s) were visibly observed roosting (and confirmed roosting alone).

3.18 The location of these roosts, number of bats recorded emerging and roost characterisation are detailed in Table 3.9.

Emergence surveys of radio-tagged bats

3.19 A total of 15 emergence surveys were undertaken on the 24 confirmed roosts for barbastelle, Bechstein's and Natterer's bat in August 2024. This included unmanned surveys where a bat detector & thermal imaging (TI) camera (trained on the feature which

was emitting the signal) to obtain simultaneous colony count due to the fission fusion nature of tree-roosting bats.

3.20 On 6th August 2024 an emergence survey was undertaken on Mb01 and roost in an oak tree in Bladon Heath (R2). A total of 43 Bechstein's bats were recorded emerging from R2 including the tagged bat. Due to the number of bats recorded emerging from this roost, and the breeding status of the tagged bats, this was classified as a maternity roost for Bechstein's bat.

3.21 On 6th August 2024 an emergence survey was undertaken on the Bb01 roost in a dead ash tree (R8) on the Blenheim Estate in wet woodland adjacent to the River Glyme. Post survey analysis of the TI camera footage and ultrasound recording confirmed that a single barbastelle bat emerged from R8 and, as such, it was classified as a solitary roost (male roost).

3.22 On 6th August 2024 an emergence survey was undertaken on Bb03 roost in a dead oak tree (R15) on the parkland on Blenheim Estate. A total of 12 barbastelle bats were recorded emerging from the R15 including the tagged bat. Due to the number of bats recorded emerging from this roost, it was classified a maternity roost for barbastelle.

3.23 On 7th August 2024 a simultaneous emergence survey was undertaken on Mb01 and Mb02 roosting in R2, R3 and R10 concurrently. No bats emerged from R2 but 42 Bechstein's bats emerged from R3 and 19 Bechstein's bats emerged from R10. Due to the number of bats recorded emerging from these roosts they were classified as maternity roosts for Bechstein's bats.

3.24 On 7th August 2024 an emergence survey was undertaken on the Bb01 roost R9 in a dead ash tree (R9) on the Blenheim Estate in wet woodland adjacent to the River Glyme. Post survey analysis of the TI camera footage and ultrasound recording confirmed that a single barbastelle bat emerged from R9.

3.25 On 7th August a repeat emergence survey was undertaken on Bb03 in a dead oak tree (R15) on the parkland on Blenheim Estate. A total of 14 barbastelle bats were recorded emerging from the R15 including the tagged bat. This was an increase in two barbastelle bats from the previous survey of the maternity roost.

3.26 On 8th August 2024 an emergence survey was undertaken on Bb02 roost in oak tree canopy (R13) in Burleigh Wood. A total of six barbastelle bats were recorded emerging from the R13 including the tagged bat. Due to the number of bats recorded emerging from this roost, and given Bb02 was post-lactating, it was classified a maternity roost for barbastelle.

3.27 On 8th August an emergence survey was undertaken on Bb03 in a dead oak tree (R16) on the parkland on Blenheim Estate (adjacent to R15). A total of six barbastelle bats were recorded emerging from the R16 including the tagged bat. Due to the number of bats recorded emerging from this roost, and the breeding status of the tagged bat (juvenile female) it was classified a maternity roost for barbastelle.

3.28 On 8th August 2024 an emergence survey was undertaken on Mn01 roost in an oak tree (R5) in Bladon Heath. A total of 25 Natterer's bats were recorded emerging from R5. Due to the number of bats recorded emerging from this roost and the breeding status of the tagged bat, this was classified as a maternity roost for Natterer's bat.

3.29 On 9th August 2024 an emergence survey was undertaken on Mn01 roost in a sweet chestnut tree (R7) in Bladon Heath. A total of 15 Natterer's bats were recorded emerging from R7. Due to the number of bats recorded emerging from this roost and the breeding status of the tagged bat, this was classified as a maternity roost for Natterer's bat.

3.30 On 9th August 2024 an emergence survey was undertaken on Bb02 in an oak tree (R14) in Dornford Grove, woodland adjacent to River Dorn. A total of five barbastelle bats were recorded emerging from the R14 including the tagged bat, but there was also a potential second exit point high in the canopy not visible. Due to the number of bats recorded

emerging from this roost, and the breeding status of the tagged bat (post-lactating female) it was classified a maternity roost for barbastelle.

3.31 On 9th August 2024 an emergence survey was undertaken on Bb08 roosting in a pine tree (R23) in parkland on the Blenheim Estate. A total of seven barbastelle bats were recorded emerging from the R23 including the tagged bat. Due to the number of bats recorded emerging from this roost, it was classified a maternity roost for barbastelle.

3.32 On 10th August 2024 an emergence survey was undertaken on Bb06 roosting in R23, a pine tree in parkland on the Blenheim eEstate (roost used by Bb08 on 9th August 2024). A total of 17 barbastelle bats were recorded emerging from the R23 including Bb06 (but not Bb08).

3.33 On 10th August 2024 a repeat emergence survey of R19 was undertaken as Bb09 was radio tracked to that location. This was the roost tree used by Bb05 on 8th August 2024. Post survey analysis of the TI camera footage and ultrasound recording confirmed that a single barbastelle bat emerged from R19 and, as such was classified as a summer day roost for breeding female Bb09 (in addition to functioning as a solitary roost for male barbastelle Bb05).

3.34 On 10th August 2024 an emergence survey was undertaken on the Bb10 in a Pacific cedar roost tree (R17) on the Blenheim Estate. Post survey analysis of the TI camera footage and ultrasound recording confirmed that a single barbastelle bat emerged from R17 and, as such, it was classified as a solitary roost (male roost).

3.35 A total of five emergence surveys were undertaken on the seven confirmed roosts for barbastelle and Bechstein's in September 2024.

3.36 On 30th September 2024 an emergence survey was undertaken on Mb04 roosting in a mature ash tree in Bladon Heath (R26). A total of 3 Bechstein's bats were recorded emerging from R26 including the tagged bat. Due to the number of bats recorded

emerging from this roost, the breeding status of the tagged bats, and timing of the survey, R26 was classified as an autumnal dispersal roost for Bechstein's bat.

3.37 On 1st October 2024 an emergence survey was undertaken on the Bb11 roost in a dead oak tree (R27) in Pinsley Wood within the plantation area. Post survey analysis of the TI camera footage and ultrasound recording confirmed that a single barbastelle bat emerged from R27. Due to the number of bats recorded emerging from this roost, the breeding status of the tagged bats, and timing of the survey, R27 was classified as an autumnal dispersal roost for barbastelle bat.

3.38 On 1st October 2024 an emergence survey was undertaken on the Bb13 roosting in a live oak tree (R30) in Pinsley Wood. A total of three barbastelle bats were recorded emerging from R30 including the radio-tagged bat. Due to the number of bats recorded emerging from this roost, the breeding status of the tagged bats, and timing of the survey, R30 was classified as an autumnal dispersal roost for barbastelle bat.

3.39 On 2nd October 2024 an emergence survey was undertaken on the Bb12 roosting in a oak tree (R28) in Burleigh Wood. Only the radio-tagged barbastelle bat was recorded emerging from R28. Due to the number of bats recorded emerging from this roost, the breeding status of the tagged bats, and timing of the survey, R28 was classified as an autumnal dispersal roost for barbastelle bat

3.40 On 2nd October 2024 an emergence survey was undertaken on the Bb14 roosting in a dead oak tree (R32) in Pinsley Wood. Only the radio-tagged barbastelle bat was recorded emerging from R32. Due to the number of bats recorded emerging from this roost, the breeding status of the tagged bats, and timing of the survey, R32 was classified as an autumnal dispersal roost for barbastelle bat

3.41 A total of 10 emergence surveys were undertaken on nine of the confirmed roosts for barbastelle and Bechstein's bat in May 2025.

3.42 On 19th May 2025 an emergence survey was undertaken on the Bb16, Bb19 and Bb20 roost in a tree on the Blenheim Estate in the woodland adjacent to Bladon village. The three radio-tagged bats were recorded emerging from the roost but no other bats were recorded emerging. Due to the breeding status of the radio-tagged bats, this was considered to be a maternity roost for barbastelle.

3.43 On 20th May 2025 an emergence survey was undertaken on Bb15 roost in a dead oak tree in Pinsley Wood. A total of 17 bats were recorded emerging from the roost including the tagged bats. Due to the number of bats recorded emerging from this roost, this was classified a maternity roost for barbastelle.

3.44 On 20th May 2025 an emergence survey was undertaken on the Bb16, Bb19 and Bb20 roost in a tree on the Blenheim Estate in the woodland adjacent to Bladon village. The three radio-tagged bats were recorded emerging from the roost, but no other bats were recorded emerging. Due to the breeding status of the radio-tagged bats, this was classified as a maternity roost for barbastelle.

3.45 On 21st May 2025 an emergence survey was undertaken on the Mb05 and Mb06 roost in an oak tree in Burleigh Wood. A total of 49 bats were recorded emerging from the roost including the tagged bats. Due to the number of bats recorded emerging from this roost, and the breeding status of the tagged bats, this was considered to be a maternity roost for Bechstein's bat.

3.46 On 21st May 2025 an emergence survey was undertaken on the Bb15 roost in an oak tree in Pinsley Wood. A total of 18 bats were recorded emerging from the roost including the tagged bat. Due to the number of bats recorded emerging from this roost, and the breeding status of the tagged bats, this was considered to be a maternity roost for barbastelle.

3.47 On 22nd May 2025 a further emergence survey was undertaken on a different oak tree used by bat Bb15 in Pinsley Wood. A total of 10 bats were recorded emerging from the

roost including the tagged bat. Due to the number of bats recorded emerging from this roost, this was considered to be a maternity roost for barbastelle.

3.48 On 22nd May 2025 an emergence survey was undertaken on the Bb23 roost in an oak tree in Pinsley Wood. A total of eight bats were recorded emerging from the roost including the tagged bat. Due to the number of bats recorded emerging from this roost, and the breeding status of the tagged bats, this was considered to be a maternity roost for barbastelle.

3.49 On 23rd May 2025 an emergence survey was undertaken on the Bb16, Bb19 and Bb20 roost in a dead oak tree on the Blenheim Estate in the woodland adjacent to Bladon village. The three radio-tagged bats were recorded emerging from the roost along with two common pipistrelle bats. Due to the breeding status of the tagged bats, this was considered to be a maternity roost for barbastelle.

3.50 On 23rd May 2025 an emergence survey was undertaken on the bat Bb24 roost in an oak tree in Saddle Copse. Only the tagged bat was recorded emerging from the roost. Due to the number of bats recorded emerging from this roost, and the breeding status (adult male) of the tagged bat, this was considered to be a solitary roost for barbastelle.

3.51 On 23rd May 2025 an emergence survey was undertaken on the Bb24 roost in a single storey farm workshop. No bats were observed emerging from the roost but the tagged bat left the building unseen by the surveyors or cameras. This building was considered to be a solitary roost based on the breeding status of the tagged bat.

Table 3.9 Roost locations and roost characterisation

Roost number	Bat number		Species	Estimated/ confirmed roost	Easting	Northing	Description	Emergence date	Roost count	Roost characterisation
R1	1	Md01	Daubenton's bat	Confirmed	443392	215840	Oak tree to west of Great Lake. Multiple features on main stem and dead branches. Multiple hot spots on main stem.	n/a	n/a	Maternity (based on breeding status of radio-tagged bat)
R2	2	Mb01	Bechstein's bat	Confirmed	445215	214133	Dead ash tree with woodpecker holes	06/08/2024 & 07/08/2024	19	Maternity
R3	2	Mb01	Bechstein's bat	Confirmed	444987	213682	Dead ash tree with woodpecker holes	07/08/2024	43	Maternity
R4	2	Mb01	Bechstein's bat	Confirmed	444807	213776	Dead ash tree with	n/a	n/a	Maternity (based on breeding status

Roost number	Bat number		Species	Estimated/ confirmed roost	Easting	Northing	Description	Emergence date	Roost count	Roost characterisation
							woodpeckers holes			of radio-tagged bat)
R5	3	Mn01	Natterer's bat	Confirmed	445045	213660	Live oak, major vertical split from loss of leader / main limb @ c.7m	09/08/2024	25	Maternity
R6	3	Mn01	Natterer's bat	Confirmed	445524	213534	Live oak – multiple features	n/a	n/a	Maternity (based on breeding status of radio-tagged bat)
R7	3	Mn01	Natterer's bat	Confirmed	445630	213495	Sweet chestnut	09/08/2024	15	Maternity
R8	4	Bb01	Barbastelle	Confirmed	444737	214760	Large dead ash in riparian wet woodland adjacent to River Glyme. Multiple features	06/08/2024	1	Solitary

Roost number	Bat number		Species	Estimated/ confirmed roost	Easting	Northing	Description	Emergence date	Roost count	Roost characterisation
R9	4	Bb01	Barbastelle	Confirmed	444765	214828	Large dead ash in riparian wet woodland adjacent to River Glyme. Split bark at 6.5m	07/08/2024	1	Solitary
R10	5	Mb02	Bechstein's bat	Confirmed	444903	213630	Dead ash tree with woodpecker holes	07/08/2024	19	Maternity
R11	5	Mb02	Bechstein's bat	Confirmed	445019	213773	Sycamore – branch / rot hole feature c5m on main stem	n/a	n/a	Maternity (based on breeding status of radio-tagged bat)
R12	5	Mb02	Bechstein's bat	Confirmed	445378	213924	Oak – woodpecker hole on main stem c7m	n/a	n/a	Maternity (based on breeding status of radio-tagged bat)

Roost number	Bat number		Species	Estimated/ confirmed roost	Easting	Northing	Description	Emergence date	Roost count	Roost characterisation
R13	6	Bb02	Barbastelle	Confirmed	444669	213721	Oak tree – very high in canopy hot spot identified with TI but obscured by foliage	08/08/2024	6	Maternity
R14	6	Bb02	Barbastelle	Confirmed	444651	219755	Oak tree – very high in canopy hot spot identified with TI but obscured by foliage	09/08/2024	5	Maternity
R15	7	Bb03	Barbastelle	Confirmed	442828	215799	Dead oak parkland tree – loose bark plate c6m	06/08/2024 & 07/08/2024	12 14	Maternity
R16	7	Bb03	Barbastelle	Confirmed	442879	215756	Dead oak parkland tree – loose bark plate c6m	09/08/2024	6	Maternity

Roost number	Bat number		Species	Estimated/ confirmed roost	Easting	Northing	Description	Emergence date	Roost count	Roost characterisation
R17	8	Bb04	Barbastelle	Confirmed	442933	216016	Standing dead oak	n/a	n/a	Solitary (based on sex and breeding status of radio-tagged bat)
R18	8	Bb04	Barbastelle	Confirmed	440213	219973	Standing dead oak	n/a	n/a	Solitary (based on sex and breeding status of radio-tagged bat)
R19	9	Bb05	Barbastelle	Confirmed	446096	207116	Ash hazard beam	08/08/2024	1	Summer (visible bat is roosting alone)
R20	9	Bb05	Barbastelle	Confirmed	446165	207059		09/08/2024	1	Summer (visible bat is roosting alone)
R21	10	Mb03	Bechstein's bat	Estimated	446865	222398	n/a	n/a	n/a	Maternity (based on breeding status of radio-tagged bat)

Roost number	Bat number		Species	Estimated/ confirmed roost	Easting	Northing	Description	Emergence date	Roost count	Roost characterisation
R22	10	Mb03	Bechstein's bat	Estimated	446962	221591	n/a	n/a	n/a	Maternity (based on breeding status)
R23	11	Bb06	Barbastelle	Confirmed	443180	216616	Two stem dead oak, loose bark	10/08/2024	17	Maternity
R24	11	Bb06	Barbastelle	Confirmed	443111	214893	Dead ash tree, large fissure on main stem- TI hotpot at c4m on west	n/a	n/a	Maternity (based on breeding status of radio-tagged bat)
R25	12	Bb07	Barbastelle	Confirmed	445651	209080	Dead leaning oak, roost under flaking bark 5m to north – single bat present and ring visible.	08/08/2024 & 09/08/2024 & 10/08/2024	1	Solitary

Roost number	Bat number		Species	Estimated/ confirmed roost	Easting	Northing	Description	Emergence date	Roost count	Roost characterisation
R23	13	Bb08	Barbastelle	Confirmed	443180	216616	Under loose bark on dead pine tree	09/08/2024	7	Maternity
R19	14	Bb09	Barbastelle	Confirmed	446096	207716	Standing dead oak in parkland	10/08/2024	1	Summer (based on roost count)
R17	15	Bb10	Barbastelle	Confirmed	442933	216016	Pacific cedar Tree in parkland	10/08/2024	1	Solitary (based on roost count, sec and breeding status)
R26	16	Mb04	Bechstein's bat	Confirmed	446103	213992	Mature ash tree with woodpecker holes c6m on east main trunk	30/09/2024	3	Autumnal dispersal
R27	17	Bb11	Barbastelle	Confirmed	442675	213622	Dead oak in dense plantation mixed wood, with many	01/10/2024	2	Autumnal dispersal

Roost number	Bat number		Species	Estimated/ confirmed roost	Easting	Northing	Description	Emergence date	Roost count	Roost characterisation
							areas loose bark			
R28	17	Bb12	Barbastelle	Confirmed	444491	213428	Oak tree of main ride with vertical split on main trunk	02/10/2024	1	Autumnal dispersal
R29	18	Bb13	Barbastelle	Estimated	446564	213216	n/a	n/a	n/a	Autumnal dispersal
R30	18	Bb13	Barbastelle	Confirmed	442989	213462	Live oak with dead branches – split on horizontal branch	01/10/2024	3	Autumnal dispersal
R31	18	Bb13	Barbastelle	Confirmed	442828	213469	Dead tree confirmed via thermal at 10m	02/10/2024	n/a	Autumnal dispersal
R32	19	Bb14	Barbastelle	Confirmed	443190	213525	Dead oak tree with	02/10/2024	1	Autumnal dispersal

Roost number	Bat number		Species	Estimated/ confirmed roost	Easting	Northing	Description	Emergence date	Roost count	Roost characterisation
R33	19	Bb14	Barbastelle	Confirmed	443162	213257	Dead tree confirmed via thermal at 10m	03/10/2024	n/a	Autumnal dispersal
R34	20	Bb15	Barbastelle	Confirmed	444311	214801	Dead tree, confirmed via thermal, 10m	N/A	N/A	Solitary
R39	20	Bb15	Barbastelle	Confirmed	444372	214827	Bat roosting behind think dead Ivy, 2m	N/A	N/A	Solitary
R41	20	Bb15	Barbastelle	Confirmed	444083	215052	Fluting in yew tree	N/A	N/A	Solitary
R36	21	Mb05	Bechstein's	Confirmed	444650	213516	Live oak, Burleigh Wood	21/05/2025	49	Maternity
R40	23	Bb16	Barbastelle	Confirmed	442760	213846	Dead oak c. 35cm DBH, bark plate with holes	20/05/2025	17	Maternity

Roost number	Bat number		Species	Estimated/ confirmed roost	Easting	Northing	Description	Emergence date	Roost count	Roost characterisation
							above & below			
R42	23	Bb16	Barbastelle	Confirmed	442837	213474	Live oak, c.40cm DBH, major vertical split from loss of leader / main limb @ c.7m, roost visible in the split	21/05/2025	18	Maternity
R44	23	Bb16	Barbastelle	Confirmed	442875	213800	Loose bark on dead oak	22/05/2025	10	Maternity
R35	24	Bb19	Barbastelle	Confirmed	444557	214786	Tear out on beech tree, causing split down main stem, 3.5m	19/05/2025	3 (all 3 were tagged bats)	Maternity
R37	24	Bb19	Barbastelle	Confirmed	444136	214804	Transverse snap or bark	20/05/2025	3 (all 3 were tagged bats)	Maternity

Roost number	Bat number		Species	Estimated/ confirmed roost	Easting	Northing	Description	Emergence date	Roost count	Roost characterisation
							plates on dead oak	23/05/2025	3 (all 3 were tagged bats) + 2 common pipistrelle	
R38	26	Bb18	Barbastelle	Confirmed	445088	213810	Knot-hole in dead oak, Bladon	N/A	N/A	Solitary
R45	30	Bb22	Barbastelle	Confirmed	443024	213219	Dead oak c.25cm DBH in dense plantation mixed wood, with many areas loose bark	N/A	N/A	Solitary
R49	30	Bb22	Barbastelle	Confirmed	442741	213802	Loose bark on oak	N/A	N/A	Solitary
R44	31	Bb23	Barbastelle	Confirmed	442875	213800	Bat 4 & 12 in the same tree.	N/A	N/A	Maternity

Roost number	Bat number		Species	Estimated/ confirmed roost	Easting	Northing	Description	Emergence date	Roost count	Roost characterisation
							Loose bark on oak			
R46	31	Bb23	Barbastelle	Confirmed	442815	213836	Loose bark on oak	22/05/2025	8	Maternity
R52	31	Bb23	Barbastelle	Confirmed	442939	213792	Loose bark on oak	N/A	N/A	Maternity
R48	32	Bb24	Barbastelle	Confirmed	446538	205215	Two stem dead oak, loose bark	23/05/2025	1	Solitary
R50	32	Bb24	Barbastelle	Confirmed	446257	205134	Fissure on side of ash tree, approximately 13m, south	N/A	N/A	Solitary
R51	32	Bb24	Barbastelle	Confirmed	446383	205474	Single story farm workshop	25/05/2025	1	Solitary

N/A – not applicable, no emergence survey undertaken of roost on that date

Foraging areas and flightlines

3.52 The fixes obtained during the radio-tracking study were analysed with BIOTAS software to calculate the peripheral foraging areas (95% KDE) and the core foraging areas (50% KDE) of each tracked bat. Figures 3.4-3.15 display visual representations of the home ranges and flightlines for the radio-tracked bats.

Barbastelle foraging areas and flightlines

3.53 Figures 3.4-3.8 Appendix 1 shows the home ranges and flightlines of barbastelle that were radio-tracked during surveys in 2024. This included 10 barbastelle tracked in the post-maternity season (bats 4, 6, 7, 8, 9, 11, 12, 13, 14 and 15) and three tracked in the autumnal dispersal season (bats 17, 18 and 19).

3.54 Figures 3.9-3.10 Appendix 1 shows the home ranges and flightlines barbastelle that were radio-tracked during surveys in 2025. This included 11 barbastelle tracked in the pre-maternity season (bats 20, 23-32).

3.55 Bat 4 (Bb01), a male barbastelle, was caught in Bladon Heath (location 6) on 5th August 2024 and was subsequently recorded roosting in two tree roosts in a strip of woodland between the River Glyme and the village of Bladon. Bb01 was radio-tracked for six nights where its foraging range was up to 8km distance from its roosting site. The core foraging areas for Bb01 were recorded at the sewage works north of the village of Worton adjacent to the Oxford to Hereford railway line, at a small woodland patch and adjacent ditch between the sewage works and Burleigh Road, and at a woodland strip to the south-east of the sewage works to the east of where Yarnton turns into Cassington Road. Bb01 was also recorded foraging along the Oxford to Hereford railway line, around lakes associated with a large water treatment works south of Worton and within the River Glyme and woodland adjacent to its roosting location near Bladon. Flightlines for Bb01 were recorded:

- from its roosting area north along the River Glyme;
- from its roosting area north-east along a woodland strip;
- from its roosting area south-east along field boundaries to Rowell Brook and Begbroke Wood;
- south-west from Begbroke Wood to the Oxford to Hereford railway line;
- north-west/south-east along the Oxford to Hereford railway;
- south-east from Begbroke Wood to waterbodies and water treatment works at Worton; and
- between waterbodies and along watercourses near to Worton.

3.56 Bat 6, (Bb02) a post-lactating female barbastelle, was caught in Bladon Heath on the flightline along the main access track into the woodland (location 6) on 5th August 2024 and recorded roosting in two tree roosts: one in a small patch of woodland adjacent to the River Dorn in Wootton and one in Burleigh Wood approximately 6km south. Bb02 bat was radio-tracked for five nights and core foraging areas were recorded within the woodland at Bladon and in Burleigh Wood. Bb02 was not recorded foraging in any other locations within the wider landscape. Therefore, no additional flightlines were identified.

3.57 Bat 7 (Bb03) a juvenile female barbastelle, was caught in Burleigh Wood (location 5) on 5th August 2024 and recorded roosting in two different tree roosts in Great Park on the Blenheim Estate. Core foraging areas for Bb03 were recorded along the River Evenlode and at a small woodland patch and adjacent ditch between a sewage works and Burleigh Road (same foraging areas as Bb02). Bb03 was also recorded foraging at the woodland at East End, along the River Glyme, Burleigh Wood, Bladon Heath, the Oxford to Hereford railway to the south-west of Burleigh Wood, the River Evenlode, and waterbodies

associated with water treatment works to the south of Worton. Flightlines for Bb03 were recorded:

- from its roosting along watercourses and field boundaries at Jacob's Hill;
- from its roosting area south-west through High Park to the River Glyme;
- south-west from the River Glyme along ditches to the south-east;
- south-west from Burleigh Wood along the River Glyme and to the River Evenlode; and
- along ditches south to the waterbodies south of Worton.

3.58 Bat 8 (Bb04), a male barbastelle, was caught in Bladon Heath on 5th August 2024 and recorded roosting in two tree roosts, one within woodland at Kingswood Brake and one within Great Park. Core foraging areas for Bb04 were identified within the woodland at Bladon Heath and Begbroke Wood. Bb04 was also intermittently recorded foraging around Rowel Brook within the village of Begbroke and around Begbroke Hill. No flightlines between roosting sites and foraging areas were identified for Bb04.

3.59 Bat 9 (Bb05), a post-lactating female barbastelle, was caught in Wytham Wood on 6th August 2024 (location 8) and recorded roosting in two tree roosts, one within the woodland at Radbrook Common and one within Nealing's Copse. Core foraging areas for Bb05 were recorded in close proximity to her roost within Nealing's Copse and at Marley Wood. Bb05 was also recorded intermittently foraging within Burket's Plantation and along a woodland strip south-east from Marley Wood to Marleywood Plantation. No flightlines were identified for Bb05.

3.60 Bat 11 (Bb06), a post-lactating female barbastelle, was caught in woodland adjacent to the River Dorn (location 2) on 6th August 2024 and recorded roosting in two tree roosts,

one within the woodland at East End and one within a small woodland patch between Fourteen Acre Clump and The Lake at Great Park on the Blenheim Estate. Bb06 was not recorded during night-time radio-tracking after she flew quickly north away from the Project site following emergence. Therefore, no core foraging areas or flightlines were identified.

3.61 Bat 12 (Bb07), a male barbastelle, was caught in Wytham Wood (location 8) on 7th August 2024 and recorded roosting in a tree roost in Wytham Great Wood. Bb07 was recorded foraging within Wytham Great Wood only. Therefore, no flightlines were identified.

3.62 Bat 13 (Bb08), a non-breeding female barbastelle, was caught in Blenheim Estate (location 3) at dawn on 7th August 2024 and recorded roosting in a tree roost within a small woodland patch between Fourteen Acre Clump and The Lake at Great Park, in the same tree as Bb06. Core foraging areas were identified within the woodland and at Kingswood Brake, watercourse at Kingswood Bottom, and at the woodland at Tomlin's Copse and Berring's Wood. It was also recorded foraging in woodlands between Ditchley and Wootton within Hill Wood, Out Wood, Big Park, Wiltons Plantation, Sheer's Copse, King's Wood, the watercourse south of Glympton and adjacent woodland patches. No regularly used flightlines were identified for Bb08 but the woodlands where she was foraging within are all in proximity to the River Glyme.

3.63 Bat 14 (Bb09), a lactating female barbastelle, was caught in Blenheim Estate (location 3) at dawn on 7th August 2024 and recorded roosting in a tree in Radbrook Common. A core foraging area for Bb09 was recorded along the Oxford to Hereford railway line east of the sewage treatment works directly north of Worton. Bb09 was also recorded foraging within Bladon Heath, Worton Heath, the woodland adjacent to the River Glyme near Bladon and around fields west of Worton. A key flightline between roost and foraging areas for Bb09 was identified:

- north-west/south-east along the Oxford to Hereford railway line.

3.64 Bat 15 (Bb10), a male barbastelle, was caught in in Blenheim Estate (location 3) at dawn on 7th August 2024 and subsequently recorded roosting in a tree roost in Great Park on the Blenheim Estate. Core foraging areas were recorded within Worton Heath and adjacent arable fields and along a woodland strip and in adjacent arable fields to the east of the sewage works that are located north of Worton. Bb10 was also recorded foraging around the sewage works north of Worton, along the railway line, in Bladon Heath and in the woodland around the River Glyme west of Bladon. Flightlines for Bb10 were recorded:

- north-west/south-east along the Oxford to Hereford railway line, south from the railway line along a watercourse south to the waterbodies at Worton;
- from the River Glyme near Bladon south-east to along Cassington Road; and
- adjacent watercourses to Bladon Heath, and south-west out of Bladon Heath along two arable field boundary hedgerows.

3.65 Bat 17 (Bb11), a post lactating female barbastelle, was caught in Pinsley Wood (location 4) on 28th September 2024 and recorded roosting in a tree in Pinsley Wood and, also, in a tree in Burleigh Wood. Bb11 was recorded foraging within Peagle Wood, Great Park, High Park, New Park, Burleigh Wood, the River Evenlode, the River Glyme, within woodland south of Purwell Farm. Key flightlines for Bb11 between roost and foraging sites were recorded:

- along the River Glyme; and
- along the River Evenlode.

3.66 Bat 18 (Bb12), a male barbastelle, was caught in Pinsley Wood (location 4) on 28th September 2024 and recorded roosting in a tree in Begbroke Wood (although the precise roosting location was not confirmed due to access restrictions). Bb12 was recorded

foraging within Begbroke Wood, Bladon Heath, along Rowel Brook, Pinsley Wood, River Glyme and River Evenlode. Flightlines for Bb12 were recorded:

- along Rowel Brook east of Begbroke, and
- along the River Glyme and River Evenlode.

3.67 Bat 19 (Bb13), a postlactating female barbastelle, was caught in Burleigh Wood (location 5) on 29th September 2024 and recorded roosting in two different tree roosts in Pinsley Wood. Bb13 was recorded foraging within Pinsley Wood, Great Park on the Blenheim Estate, and along the River Glyme. A key flightline for Bb13 between roost(s) and foraging areas was recorded:

- along the River Glyme.

3.68 Bat 20 (Bb14), an adult male barbastelle was caught in Burleigh Wood (Location 7) on 29th September 2024 and recorded roosting in three tree roosts in the woodland around the River Glyme east of Bladon village on the Blenheim Estate. Bb14 was radio-tracked for six nights but was not heard within the survey area the majority of the nights. It was briefly recorded foraging within the Blenheim Estate close to its roosting locations. No flightlines were recorded for Bb14.

3.69 Bat 23 (Bb15), a pregnant female barbastelle was caught on the edge of Pinsley Wood (Location 4) on 18th May 2025 and recorded roosting in three tree roosts in Pinsley Wood. Bb23 was recorded roosting within one of the same trees. Bb15 was recorded foraging within Pinsley Wood, along the River Evenlode between Burleigh and Pinsley Wood and briefly within the Blenheim Estate. A key flightline for Bb15 was recorded:

- along the River Evenlode.

3.70 Bat 24 (Bb16), a non-parous female barbastelle was caught in Pinsley Wood (Location 4) on 18th May 2025, and recorded roosting in two tree roosts in the woodland on the Blenheim Estate adjacent to the River Glyme east of Bladon village. Bb19 and Bb20 were also recorded roosting within the same tree during the same period. Bb16 was recorded foraging along the River Evenlode around Cassington, between Pinsley and Burleigh Wood, along the River Glyme within the Blenheim Estate, along the Oxford to Hereford railway line and at a waterbody south of Worton. A key flightline for Bb16 was recorded:

- along the railway line near the sewage works north of Yarnton Road.

3.71 Bat 25 (Bb17), a parous female barbastelle was caught in Pinsley Wood (Location 4) on 18th May 2025. No roosts were identified for Bb17, and she was not recorded within the survey area for the majority of the radiotracking nights. Contact was intermittent with Bb17 and a single fix was recorded along the railway line indicating that the radio-tag was active, but Bb17 did not regularly forage or roost in the survey area. No flightlines were recorded for Bb17.

3.72 Bat 26 (Bb18), an adult male barbastelle caught on the flightline along the main access track into Bladon Heath (location 6) on 18th May 2025 and was subsequently recorded in a tree roost in this woodland. Bb18 was recorded foraging within Bladon Heath, on the River Glyme, along the Oxford to Hereford railway line south of Bladon Heath and in Begbroke Wood. No flightlines between the roost in Bladon Heath and they foraging areas were recorded for this Bb18.

3.73 Bat 27 (Bb19), a pregnant female barbastelle was caught in the north of Bladon Heath (Location 6) and recorded roosting in two tree roosts in the woodland on Blenheim Estate adjacent to the River Glyme east of Bladon village. Bb16 and Bb20 were also recorded roosting within the same tree during the same period. Bb19 was recorded foraging extensively within the landscape including Bladon Heath Wood, Burleigh Woods, woodland adjacent to the River Glyme on the Blenheim Estate, along the railway line,

over a waterbody south of Worton and Begbroke Wood. A flightline for Bb19 was recorded:

- along a wooded corridor south of Bladon to the sewage treatment works and gravel pits east of Cassington; and
- the Oxford to Hereford railway line

3.74 Bat 28 (Bb20), a pregnant female barbastelle was caught in Bladon Heath (Location 6) and recorded roosting in two roosts in the woodland on the Blenheim Estate adjacent to the River Glyme east of Bladon village. Bb16 and Bb19 were recorded roosting within the same tree during the same period. Bb20 was recorded foraging within Bladon Heath, the woodland near to its roosts, Begbroke Wood, the Oxford to Hereford railway line, and wooded corridors south of Bladon Heath. A flightline for this Bb20 was recorded:

- along the wooded corridor south of Bladon Heath.

3.75 Bat 29 (Bb21), an adult male barbastelle was caught in Wytham Wood (Location 8) on 18th May 2025. No roosts were identified for Bb21 during the survey period and Bb21 was subsequently recorded foraging within Bladon Heath, the woodland on the Blenheim Estate adjacent to River Glyme, Begbroke Wood and the wooded corridor south of Bladon Heath. No flightlines for Bb21 were identified as the roost location was not determined.

3.76 Bat 30 (Bb22), an adult male barbastelle was caught in Pinsley Wood (Location 4) on 21st May 2025 and recorded roosting in two tree roosts in Pinsley Wood. It was recorded foraging within Pinsley Wood, and extensively along the River Evenlode. A flightline for Bb22 was recorded:

- along the River Evenlode south of Burleigh Wood.

3.77 Bat 31 (Bb23), a pregnant female barbastelle was caught on the eastern edge of Pinsley Wood (Location 4) on 21st May 2025 and recorded roosting in three tree roosts in Pinsley Wood. Bb15 was recorded roosting within one of the same trees during the same period. Bb23 was recorded foraging within Pinsley Wood and along the River Evenlode. A flightline for Bb23 was recorded:

- along the River Evenlode south of Burleigh Wood.

3.78 Bat 32 (Bb24), an adult male barbastelle was caught in Saddle Copse (Location 9) on 22nd May 2025 and recorded roosting in a tree roost in Denman's Copse, a tree roost in Saddle Copse and a building in Denman's Farm north of Denman's Copse. Bb24 was recorded foraging within Denman's Copse, Saddle Copse, the wooded strips adjacent to the A420 and within the small woodland blocks east of Saddle Copse. No flightlines were recorded for Bb24.

Bechstein's bat

3.79 Figures 3.11-3.13 Appendix 1 show the Bechstein's bats that were radio-tracked during surveys in 2024. This included three Bechstein's bats tracked in the post-maternity season (bats 2, 5 and 10) and one tracked in the autumnal dispersal season (bat 16). Three Bechstein's were post-lactating females. Figure 3.14 Appendix 1 shows the Bechstein's bats that were radio-tracked during surveys in the pre-maternity season in 2025 (bats 21 and 22). This included a non-parous adult female and parous adult female.

3.80 Bat 2 (Mb01), a post-lactating female Bechstein's bat, was caught in Bladon Heath (location 6) on the 5th August 2024 and subsequently recorded roosting in three different tree roosts all on the edge of the woodland at Bladon Heath. Mb01 was radio-tracked for four nights and the core foraging areas for Mb01 were within the woodland at Bladon Heath. Mb01 was not recorded foraging in any other locations during the period it was radio-tracked and, therefore, no flightlines were identified.

3.81 Bat 5 (Mb02), a juvenile male Bechstein's bat, was caught in Bladon Heath (location 6) on the 5th August 2024 and subsequently recorded roosting in three different tree roosts within the woodland at Bladon Heath. Mb02 was radio-tracked for six nights and the core foraging areas for Mb02 were within the woodland at Bladon Heath. Mb02 was also recorded foraging in the woodland on the Blenheim Estate adjacent to the River Glyme to the west of the village of Bladon. No flightlines were recorded for Mb02 as it foraged in woodland close to the roost(s).

3.82 Bat 10 (Mb03), a lactating female Bechstein's bat, was caught in Tackley Wood on 6th August 2024 and recorded roosting in two estimated tree roosts within Tackley Wood. Radio-tracking data from Mb03 was not obtained due to subsequent access constraints and, as such, no foraging or flightline data was generated.

3.83 Bat 16 (Mb04), a post-lactating female Bechstein's bat, was caught in Bladon Heath (location 6) on 29th September 2025 and recorded roosting in a tree in Bladon Heath. It was recorded foraging within Bladon Heath and Begbroke Wood. No flightlines were recorded for Mb04.

3.84 Bat 21 (Mb05), a parous female Bechstein's bat was caught in Burleigh Wood (Location 5) on 18th May 2025 and was subsequently recorded roosting in a tree roost in Burleigh Wood with Mb06. Mb05 was recorded foraging within Bladon Heath. No flightlines were recorded for Mb05 between Burleigh Wood and Bladon Heath.

3.85 Bat 22 (Mb06), a non-parous female Bechstein's bat was caught in Burleigh Wood (Location 5) on 18th May 2025 and recorded roosting in a tree roost in Burleigh Wood with Bat Mb05. Mb06 was recorded foraging within Bladon Heath, Burleigh Wood and the woodland on the Blenheim Estate adjacent to the River Glyme west of Bladon village. No flightlines were recorded for Mb06 between Burleigh Wood and Bladon Heath / Blenheim Estate.

Daubenton's bat foraging area and flightlines

3.86 Bat 1 (Md01), a post-lactating Daubenton's bat was caught in Bladon Heath (location 6) on 5th August 2024 and recorded roosting in a tree roost in Great Park on the Blenheim Estate. Radio-tracking data was obtained for one night and Md01 was recorded foraging within a strip of woodland on the Blenheim Estate between the village of Bladon and the River Glyme, and within the woodland at Bladen Heath. No flightlines were recorded for Md01.

Natterer's bat foraging area and flightlines

3.87 Figure 3.10 Appendix 1 shows the Natterer's bat that was radio-tracked during surveys in 2024 in the post-maternity season.

3.88 Bat 3 (Mn01), a lactating female Natterer's bat, was caught in Bladon Heath (location 6) on 5th August 2024 and recorded roosting in three different tree roosts in Bladon Heath. Mn01 was radio-tracked for three nights, and the core foraging areas were within and directly adjacent to the woodland at Bladon Heath. Mn01 was also recorded foraging in the woodland at Burleigh Wood and adjacent ditches, the Oxford to Hereford railway line and River Evenlode. Mn01 was recorded using flightlines along the River Evenlode.

4 Evaluation

4.1 The high number of bats captured (948) and diversity of species (13) over a total of only 14 nights of trapping in 2024 and 2025 demonstrates the importance of the habitats within and adjacent to the Project site to support a bat assemblage of at least national importance.

4.2 The trapping surveys during confirmed the presence of two Annex II species, barbastelle and Bechstein's bats breeding in good numbers. The presence of breeding Bechstein's bat in Bladon Heath Wood and Burleigh Wood is a first record for the county of Oxfordshire for breeding. Annex II species were radio-tracked to ascertain key habitats for roosting, commuting and foraging within their core sustenance zones (CSZ) to inform the design of the masterplan layout for the Project.

4.3 The trapping surveys also confirmed that at least five species of the genus *Myotis* are present throughout the woodlands in the Central Site Area including Bechstein's, Brandt's, Daubenton's, Natterer's and whiskered bat. DNA samples from cryptic small *Myotis* confirmed the presence of both breeding Brandt's and whiskered bat.

FIELD SURVEY

Trapping

4.4 A total of 602 bats from a 13 species were captured over nine nights in August 2024 and September 2024. Species included barbastelle, Bechstein's bat, Brandt's bat, brown long-eared bat, common pipistrelle, Daubenton's bat, Nathusius' pipistrelle, Natterer's bat, Leisler's bat, noctule, serotine, soprano pipistrelle, and whiskered bat.

4.5 Ringed bats were most frequently re-captured at location 8, (Wytham Wood) where ongoing ringing and monitoring of bats has been undertaken since 2007. Of the 48 bats captured at location 8 in August 2024, a total of seven were ringed (c.16%). Of the 68

bats captured at location 8 in May 2025 a total of 12 were ringed (c18%). Only one other ringed bat was re-captured at location 6, Bb04 a male barbastelle caught in August 2024.

4.6 The most commonly caught bat was soprano pipistrelle with a total of 169 bats captured, followed by common pipistrelle (120 bats). The least commonly caught bats were Nathusius' pipistrelle, serotine and Brandt's bat with just one, two and three bat caught from each species respectively during the survey period.

4.7 Trapping locations were split across nine distinct locations across the Project site. These locations were selected based on them supporting habitat suitable for roosting bats (woodland / parkland). The highest number of bats caught per location was 142 bats in August 2024 and this was recorded within Bladon Heath (location 6).

4.8 A total of 346 bats from a 11 species were captured over four nights in May 2025. Species included barbastelle, Bechstein's bat, Brandt's bat, brown long-eared bat, common pipistrelle, Daubenton's bat, Natterer's bat, Leisler's bat, noctule, soprano pipistrelle, and whiskered bat.

4.9 The most commonly caught bat in May 2025 was soprano pipistrelle with a total of 140 bats captured, followed by brown long-eared bat and Daubenton's bat (43 of each). The least commonly caught bats were Leisler's bat with only three bats caught during the May 2025 survey period.

4.10 The highest number of bats caught per location in May 2025 was 86 bats within Bladon Heath (location 6).

4.11 Bladon Heath (location 6) had the highest number of bats captured in each trapping survey in August and September 2024 and in May 2025. A high proportion of the bats captured at location 6 (>50% on each survey) were caught along the access track into the woodland which captured bats commuting to and from Blenheim Estate (location 3). Based on the numbers and species captured, this was confirmed as a key flightline for

barbastelle, common pipistrelle, Daubenton's, Natterer's, soprano pipistrelle and whiskered bat.

SPECIES

Barbastelle bat

4.12 This species is listed in Annex II of the EU Habitat Directive, categorised as Near Threatened on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016), is a Species of Principal Importance in England, and is considered to be very rare at a national (Bat Conservation Trust, 2025) and regional (Reason and Wray, 2023) level. Although this species' population and range is unknown its habitat status is considered to be in decline (Matthews *et al.*, 2018). Very few breeding sites are currently known in the UK and it is important that surrounding environments of these and winter hibernation sites are maintained (JNCC 2019). The prospects for this species' range and habitat cannot be confirmed to be in a favourable conservation (Zeale, 2024) but this is potentially due to a lack of survey data.

4.13 A total of 29 barbastelle bats were captured across the Project area in 2024 and 2025. Barbastelle were captured at locations 2, 3, 4, 5, 6, 8 and 9. Breeding females and juveniles were captured confirming the presence of breeding colonies. Only one of the barbastelles captured in 2025 was previously radio-tracked in 2024, a male bat Bb04 was re-captured on the Bladon Heath flightline. No other ringed barbastelles were captured.

4.14 A total of 24 of the 29 barbastelle bats captured in 2024 and 2025 were fitted with radio-tags. This resulted in the identification of a total of 37 barbastelle roosts. Twenty-one barbastelle roosts were confirmed post-maternity in August and September 2024, and sixteen barbastelle roosts were identified pre-maternity in May 2025.

4.15 Of the barbastelle roosts identified in August 2024, five roosts were confirmed as maternity roosts from roost counts, and one roost was considered likely to be maternity roosts due to the breeding status of the radio-tagged female within the roost

(lactating/postlactating). Eight barbastelle roosts were identified as male solitary roosts or female day (summer) roosts. The maximum count of barbastelles recorded across all roost sites on a single night in August 2024 was 18 barbastelles (maximum count in a single roost was 17).

4.16 Breeding roosts for barbastelle bats in August 2024 were confirmed predominately in the Blenheim estate (location 3) but a tree roost used by breeding barbastelle bats was also confirmed at Dornford Grove (location 2) and Burleigh Wood (location 5) in August 2024. There was evidence of roosting switching within sites and between sites (e.g. Bb02 roosted in Blenheim Estate, Burleigh Wood and Dornford Grove).

4.17 The seven barbastelle roosts confirmed in September 2024 were all characterised as autumnal dispersal roosts and the maximum count of barbastelles recorded across all roost sites on a single night in September 2024 was five barbastelle. Autumnal dispersal roosts were recorded in Pinsley Wood (location 4), Burleigh Wood (location 5) and Bladon Heath (location 6),

4.18 Of the barbastelle roosts identified in May 2025, four roosts were confirmed as maternity roosts from roost counts, and three were considered likely to be maternity roosts due to the breeding status of the radio-tagged females within the roost (pregnant/parous). Nine barbastelle roosts were identified as male solitary roosts or female day (summer) roosts. The maximum count of barbastelles recorded across all roost sites on a single night in May 2025 was 21 barbastelles (maximum count in a single roost was 17).

4.19 Breeding roosts for barbastelle bats in May 2025 were confirmed predominately in the Blenheim Estate (location 3) and in Pinsley Wood (location 4). There was evidence of roosting switching within sites and between sites (e.g. Bb23 roosted in Blenheim Estate and Pinsley Wood).

4.20 Of all of the roosts identified for barbastelle bats, none were located inside of the Project site but were in woodland habitats immediately adjacent to it.

4.21 Key flightlines and foraging areas for barbastelle bats in both 2024 and 2025 are provided in summary maps in Appendix 2.

Flightlines

4.22 Key commuting routes for barbastelle between roosting sites and foraging areas, termed flightlines, were identified during the radio-tracking. These flightlines are imperative to be maintained permeable through the Project as they are critical for the barbastelle bats to be able to reach their feeding areas with their CSZ.

4.23 The flightlines identified across both years of survey collection have been summarised in Figure 4.1 Appendix 1 and include the following habitat features within and adjacent to the Project Area.

4.24 Key flightlines (habitat features used by multiple radio-tracked barbastelles) included:

- Along the River Glyme;
- Along the River Evenlode;
- Access track into Bladon Heath woodland from the Blenheim Estate;
- south-west from Begbroke Wood / Bladon Heath to the Oxford to Hereford railway line;
- from the River Glyme near Bladon south-east to along Cassington Road;
- north-west/south-east along the Oxford to Hereford railway;
- adjacent watercourses to Bladon Heath, and south-west out of Bladon Heath along two arable field boundary hedgerows; and

- area south-east along field boundaries to Rowell Brook and Begbroke Wood.

4.25 Other habitat features within and in proximity to the Project site used by barbastelle bats to commute between roosts and foraging areas included:

- south-east from Begbroke Wood to waterbodies and water treatment works at Worton;
- between waterbodies and along watercourses near to Worton;
- along watercourses and field boundaries at Jacob's Hill;
- south-west through High Park to the River Glyme;
- south-west from the River Glyme along ditches to the south-east;
- south-west from Burleigh Wood along the River Glyme and to River Evenlode;
- along ditches south to the waterbodies south of Worton;
- north-west/south-east along the Oxford to Hereford railway line, south from the railway line along a watercourse south to the waterbodies at Worton; and
- along a wooded corridor south of Bladon to the sewage treatment works and gravel pits east of Cassington.

Foraging areas

4.26 Barbastelle bats have extensive foraging areas and are known to forage up to 20km from roosting sites (mean 7km) and select riparian zones, broad-leaved woodland, unimproved grassland and field margins for foraging (Zeale *et al*. 2012). The barbastelle bats radio-tracked in the current study returned regularly to forage in their key home

range areas and the core feeding areas (represented by the 50%KDE). For barbastelle bats identified within the Project site post maternity 2024, the 50%KDE included the following areas:

- near to the sewage works north of the village of Worton adjacent to the Oxford to Hereford railway line;
- at a small woodland patch and adjacent ditch between the sewage works and Burleigh Road;
- along the Oxford to Hereford railway line east of the sewage treatment works directly north of Worton;
- along and around the River Evenlode;
- south east of Pinsley Wood;
- woodland south of Purwell Farm; and
- arable fields margins adjacent to Worton Heath and Begbroke Wood.

4.27 The core foraging area (represented by the 50% KDE) for the radio-tracked barbastelle within the Project site pre-maternity in 2025 included the following areas:

- a concentrated area along the River Evenlode; and
- a very small area south-east of Burleigh Farm.

4.28 Key foraging areas were also identified outside the Project site, and these included the following areas post maternity in 2024:

- sewage works north of the village of Worton adjacent to the Oxford to Hereford railway line;
- at a woodland strip to the south-east of the sewage works to the east of where Yamton Road turns into Cassington Road;
- Bladon Heath;
- Begbroke Wood;
- Burleigh Wood;
- Wytham Great Wood;
- Nealing's Copse;
- Marley Wood;
- Kingswood Brake;
- watercourse at Kingswood Bottom;
- woodland at Tomlin's Copse;
- Worton Heath;
- along a woodland strip and in adjacent arable fields to the east of the sewage works that are located north of Worton;
- Berring's Wood; and
- Peagle Wood.

4.29 The 50% KDE core range for radio-tracked barbastelle outside the Project site pre-maternity in 2025 included the following areas:

- the woodland adjacent to the River Glyme east of Bladon village;
- Pinsley Wood;
- Burleigh Wood;
- Bladon Heath;
- east of Begbroke Wood;
- woodland strip south of Begbroke Wood;
- Oxford to Hereford railway line east of Worton;
- waterbody south of Worton; and
- Saddle Copse.

Bechstein's bat

4.30 This species is listed in Annex II of the EU Habitat Directive, categorised as Near Threatened on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016), is a Species of Principal Importance in England, and is considered to be very rare at a national (Bat Conservation Trust, 2010) and regional (Reason and Wray, 2023) level. Although this species' range is considered to be stable, the future prospects for this species' habitat is considered to be in decline (Matthews *et al.*, 2018).

4.31 A total of 11 Bechstein's bats were captured across the Project site in 2024 and 2025. Bechstein's were captured at locations 1, 5, 6 and 8. Breeding females and juveniles were

captured confirming the presence of breeding colonies. No Bechstein's ringed in 2024 were re-captured in 2025.

4.32 A total of 6 of the 11 Bechstein's bats captured in 2024 and 2025 were fitted with radio-tags. This resulted in the identification of a total of 10 Bechstein's roosts. Seven Bechstein's roosts were confirmed post-maternity in August and September 2024, two estimated maternity roosts were identified in August 2024, and one maternity roost was identified pre-maternity in May 2025.

4.33 Of the Bechstein's roosts identified in August 2024, these tree roosts located in Bladon Heath (location 6) were confirmed as maternity roosts from roost counts. The maximum count of Bechstein's recorded across all roost sites on a single night in August 2024 was 62 Bechstein's bat (maximum count in a single roost was 43). A single autumnal dispersal roost was recorded in Bladon Heath in September 2024. Bechstein's bats are typically associated with fission fusion roost dynamics (Kerth *et al*., 2006; Kerth *et al.,* 2011), it is likely they use a number of trees in close proximity to one another throughout the active season.

4.34 Two Bechstein's radio-tagged in May 2025 were subsequently recorded roosting together in a tree in Burleigh Wood. The maximum count of Bechstein's bat on a single night in May 2025 was 49, which confirmed the presence of a breeding colony .

4.35 None of the core foraging areas (represented by the 50%KDE) for radio-tracked Bechstein's bats were located within the Project site in August/September 2024 but a small area of the 50% core range for Bechstein's bats in May 2025 was located within the Project site between Burleigh Wood and Bladon Heath.

4.36 The 50%KDE core range for radio-tracked Bechstein's bats outside the Project site included Bladon Heath only in August/September 2024 and Burleigh Wood, Bladon Heath and the woodland on the Blenheim Estate adjacent to the River Glyme east of Bladon village in May 2025. Bechstein's bats are strongly associated with woodland

habitats (Natural England 2023) but can use more open habitats such as hedgerows and watercourses for foraging or commuting between woodland blocks. However, only very limited evidence of such activity was recorded in the current study, suggesting this species is primarily associated with the woodland for both breeding and foraging.

Brandt's

4.37 Brandt's bat is listed as Least Concern on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016), is a cryptic species because it is so similar to whiskered and alcathoe bat but is thought to be slightly less common and widespread than the whiskered bat. It is found throughout England and Wales (Bat Conservation Trust, 2010). The future prospects for this species' range and habitat are unknown (Matthews *et al.*, 2018).

4.38 A total of three male Brandt's were captured in August and September 2024 in Bladon Heath Woods. Two female breeding Brandt's were captured in Pinsley Wood (location 4), two females in Wytham Wood (location 8) and three females in Saddles Copse (location 9) in May 2025. All female bats were pregnant indicating that breeding roosts are likely to occur throughout the study area, probably in low density otherwise a much higher number of bats, including female and / or juvenile bats would have been recorded during the trapping surveys post maternity.

Brown Long-eared

4.39 The brown long-eared bat is listed as of Least Concern on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016), is a Species of Principal Importance in England, and is considered widespread and relatively common at a national level (Bat Conservation Trust, 2010). The future prospects for this species' range and habitat are considered to be stable (Matthews *et al.*, 2018).

4.40 A total of 79 Brown long-eared bats were captured across all of the eight locations surveyed across the site in August and September 2024. Forty-three brown long eared bats were captured across all of the seven locations surveys in May 2025. Female brown long-eared bats or male and female juvenile brown long-eared bats were recorded present at all eight locations, indicating breeding throughout the area.

Common Pipistrelle

4.41 The common pipistrelle is listed as of Least Concern on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016), is considered to have a widespread distribution at a national level (Bat Conservation Trust, 2010) and is considered to be locally abundant. Future prospects for this species' range and habitat are considered to be stable (Matthews *et al.*, 2018).

4.42 A total of 152 common pipistrelle bats were captured across all of the eight locations surveyed across the site in 2024 and 2025. Breeding female common pipistrelle or male and female juvenile common pipistrelle bats were recorded present at all eight locations, indicating breeding throughout the area.

Daubenton's

4.43 Daubenton's bat is listed as of Least Concern on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016), is considered to have a widespread distribution at a national level (Bat Conservation Trust, 2010) and is considered to be locally abundant. Future prospects for this species' range and habitat are considered to be stable (Matthews *et al.*, 2018).

4.44 A total of 35 Daubenton's bats were captured across all of the eight locations surveyed across the site in August and September 2024. Breeding females were captured at the north, centre and southern area of the Project site and a breeding colony was confirmed to be present (from the one post-lactating female radio-tagged) on the Blenheim estate

(location 3). No core foraging range was identified for the Daubenton's bat radio-tracked in August 2024.

4.45 In May 2025 a total of 43 Daubenton's bat were captured with the majority of bats captured in Wytham Wood (location 8) but also on the Blenheim Estate (location 3) and in Dornford Grove (location 2). The Daubenton's captured at location 2 were along a hedgerow within the Project Area connecting east to west along the River Dorn.

Leisler's bat

4.46 Leisler's bat is listed as of Least Concern on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016) and is considered widespread and relatively rare at a national level (Bat Conservation Trust, 2010). The prospects for this species' range and habitat are considered to be unknown (Matthews *et al.*, 2018).

4.47 A total of six Leisler's bats were captured in 2024 and 2024. Two male Leisler's bats and one female Leisler's bats were caught during the trapping surveys, all at Bladon Heath Woodland in August 2024. Both a juvenile male and a juvenile female were captured, indicating the likelihood of a maternity roost in proximity to the Project site. Three adult male Leisler's were caught during the trapping surveys in May 2025 at location 4, location 6 and location 9.

Nathusius' pipistrelle

4.48 The Nathusius' pipistrelle is listed as of Least Concern on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016) and is considered to have a widespread distribution at a national level (Bat Conservation Trust, 2010) but records are sparse. The species is both migratory and confirmed to breed in the UK. Future prospects for this species' range and habitat are considered to be unknown (Matthews *et al.*, 2018).

4.49 A single male Nathusius' pipistrelle bat was captured during the trapping surveys. Breeding has not been confirmed.

Natterer's

4.50 The Natterer's bat is listed as of Least Concern on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016) and is considered widespread and relatively common at a national level (Bat Conservation Trust, 2010). The prospects for this species' range and habitat are considered to be stable (Matthews *et al*., 2018).

4.51 A total of 106 Natterer's bats were captured across all of the eight locations surveyed across the site in August and September 2024 and 37 Natterer's bat were captured across all of the seven locations surveyed in May 2025. Natterer's bats were the third most frequently caught bat during the trapping surveys. Location 6 (Bladon Heath) captured almost half of the Natterer's in August 2024 (48 bats) indicating the likely presence of breeding nearby.

4.52 A single female post-lactating Natterer's bat was radio-tagged, and this bat used three different tree roosts in Bladon Heath (location 6) in August 2024. The maximum count of Natterer's bat emerging was 25 bats from an oak tree.

4.53 The core foraging range (represented by the 50%KDE) for the radio-tracked Natterer's bat within the Project site included arable field boundaries and watercourse to the south of Bladon Heath and Burleigh Wood in August 2024. Core range for radio-tracked Natterer's bats outside the Project site included Bladon Heath in August 2024.

Noctule

4.54 The noctule bat is listed as of Least Concern on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016) and is considered widespread and relatively common at a

national level (Bat Conservation Trust, 2010). The future prospects for this species' range and habitat are considered to be unknown (Matthews *et al.*, 2018).

4.55 Thirty noctule bats were caught during the trapping surveys in 2024, including 21 males and nine females captured throughout the Project site, including the northern, central and southern woodlands post maternity 2024. The majority of noctules were captured in location 6, Bladon Heath, in August 2024 which included juveniles and breeding females indicating the likely presence of a maternity roost in Bladon Heath. Noctule bats are known to be very responsive to acoustic lures in late summer / early autumn (David Hil pers. comm) and it is likely the bats captured were responding to the lures resulting in a high number being captured post maternity.

4.56 Six male noctules were caught during the pre-maternity trapping surveys in May 2025 at location 3, location 8 and location 9. Both juveniles (male and female) and breeding females were captured post maternity, indicating the likelihood of a maternity roost in proximity to the Project site.

Serotine

4.57 The serotine bat is listed as of Least Concern on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016), is a Species of Principal Importance in England, and is considered widespread and relatively common at a national level (Bat Conservation Trust, 2010). The future prospects for this species' range and habitat are considered to be stable (Matthews *et al.*, 2018).

4.58 Two serotine bats were caught during the trapping surveys, post maternity, both captured at Dornford Grove. Both a male and a breeding female were captured, indicating the likelihood of a maternity roost in proximity to the Project site. No serotine bats were captured pre-maternity in May 2025.

Soprano Pipistrelle

4.59 This species is listed as of Least Concern on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016), is a Species of Principal Importance in England, and is considered to have a widespread distribution at a national level (Bat Conservation Trust, 2010). The future prospects for this species' range and habitat are considered to be stable (Matthews *et al.*, 2018).

4.60 A total of 309 soprano pipistrelle bats were captured across all of the eight locations surveyed across the site in 2024 and 2025. Breeding soprano pipistrelle or male and female juvenile soprano pipistrelle were recorded present at all eight locations, indicating breeding throughout the area.

Whiskered

4.61 Whiskered bat is listed as Least Concern on the IUCN Red List of Threatened Species (Hutson and Paunovic, 2016), is a cryptic species because it is so similar to Brandt's and alcathoe bat but is thought to be more common and widespread than both. It is found throughout England and Wales (Bat Conservation Trust, 2010). The future prospects for this species' range and habitat are unknown (Matthews *et al.*, 2018).

4.62 A total of 30 whiskered bats were captured across all of the eight locations surveyed in August and September and 19 whiskered bats were captured across seven locations surveyed in 2025. Breeding was confirmed in the woodlands across the centre of the Project site.

IMPORTANCE OF ASSEMBLAGE

4.63 In line with the Bat Mitigation Guidelines (Reason and Wray, 2023), an assessment of the importance of the bat assemblage on site has been undertaken, see Table 4.1 below. This assessment has concluded that, based on the bats present on the Project site, the site and its Zone of influence (woodlands and riparian habitats in close proximity) support an assemblage of bats of at least national importance.

Table 4.1: Value of bat assemblage on site

Species	Importance of roosts	Importance of commuting and foraging habitat	Importance of assemblage
Widespread Common pipistrelle Soprano pipistrelle Brown long-eared	Limited evidence of roosts on site for either pipistrelle species or BLE (though smaller roosts undoubtedly exist). **Does not exceed district importance**	Continuous high-quality habitat that is well connected to the wider landscape. Has been found to be important for many species of both commuting and foraging bats, with the northern hedgerow, north / south hedgerow, southern hedgerow and woodland all recording relatively high numbers of call registrations during the surveys, which could indicate reliance on these features within the wider landscape. Those areas of woodland are well used across the year by a diverse assemblage including barbastelle.	1 point per species Score 3 for this part of the assemblage (of a maximum of 3)
Widespread but not as abundant in all geographies Daubenton's bat Natterer's bat Noctule	No evidence of roosts for Daubenton's bat or noctule, though smaller tree roosts undoubtedly exist. **Does not exceed district importance**		2 points per species Score 6 for this part of the assemblage (of a maximum of 6)
Rarer or restricted distribution Myotis Serotine Leisler's bat Nathusius' pipistrelle	No evidence of roosts existing, smaller tree roosts undoubtedly exist. **Does not exceed district importance**		3 points per species Score 12 for this part of the assemblage (of a maximum of 12)
Rarest Annex 2 species and very rare Barbastelle Bechstein's Lesser' horseshoe Greater horshoe	No evidence of bats using the site for roosting. **Does not exceed district importance**	Taking the above into account, the mosaic of habitats within the Zone of Influence is considered to be of regional importance. However, the area to be developed comprises species-poor fields, which are of much lower value. 1 point per species	4 points per species Score 4 for this part of the assemblage (of a maximum of 4)

Overall score: Assemblage Score 23/25 = 90%; meets threshold for national importance – i.e. Assemblage score meets or exceeds 70% of the maximum score

5 Conclusions

5.1 Sylvan Ltd was instructed by PhotoVolt Development Partners GmbH (PVDP), on behalf of SolarFive Ltd, to undertake advanced bat surveys in support of the Botley West Solar Farm Development Consent Order. The study area covers c. 1,300 ha of arable land, woodland blocks and riparian corridors extending from Tackley in the north to Cumnor in the south. The principal aim of the advanced bat surveys was to determine the importance of the Project site for woodland bats, with particular emphasis on the Annex II species barbastelle *Barbastella barbastellus* and Bechstein's bat *Myotis bechsteinii*.

5.2 Over 19 survey nights between August 2024 and May 2025 a combined total of 949 bats of 13 species was captured (602 in late-summer/autumn 2024; 347 in spring 2025). Twenty-four barbastelles and six Bechstein's bats were fitted with radio-transmitters. A further two woodland bat species (one Daubenton's and one Natterer's) were tagged to provide data on roosting locations.

5.3 The radio-tracking survey confirmed that both barbastelle and Bechstein's bat are breeding in the area around the Project site. A total of 41 barbastelle roosts were recorded including:

- 20 maternity roosts – concentrated in Pinsley Wood, Burleigh Wood and parkland trees / woodland within the Blenheim Estate;
- six autumnal dispersal roosts – split between Pinsley, Burleigh and Begbroke Woods;
- two summer day roosts in Wytham Woods and Great Park; and
- 14 solitary (male) roosts dispersed throughout the wider landscape.

5.4 A total of seven confirmed maternity roosts in Bladon Heath and Burleigh Wood (likely one colony using multiple trees) and two estimated maternity roosts were recorded in Tackley Wood where access was unavailable, and one autumnal dispersal roost in Bladon Heath. The presence of a maternity colony of Bechstein's bat is the first record of breeding for this species in Oxfordshire.

5.5 The woodlands throughout the Project site but in particular adjacent to the Central Site Area (Blenheim Estate, Pinsley Wood, Burleigh Wood and Bladon Heath) are considered

to be very important for foraging and roosting bats based on the numbers of bats captured and the number of roosts recorded.

5.6 Foraging and flightline analysis recorded distinct spatial patterns. Barbastelle activity was strongly associated with linear wet features and woodland. Core foraging zones (50% kernel density estimates) lay (i) along the River Evenlode (ii) along field boundaries flanking Worton Heath and Begbroke Wood, and (iii) at the sewage works/Oxford to Hereford railway north of Worton. Regular commuting flight lines linked these foraging areas from roost sites along the River Glyme, Rowel Brook and the Oxford to Hereford railway. Re-use of identical routes by multiple tagged barbastelle bats on successive nights emphasises the importance of these corridors within the CSZ.

5.7 The spatial distribution of Bechstein's bats during the radio-tracking period was over a markedly smaller footprint. All tagged bats restricted core foraging activity to woodland blocks predominately within Bladon Heath and Burleigh Wood.

5.8 The survey work highlights that the Project site supports a bat assemblage of at least national importance with breeding populations of the Annex II species barbastelle and Bechstein's.

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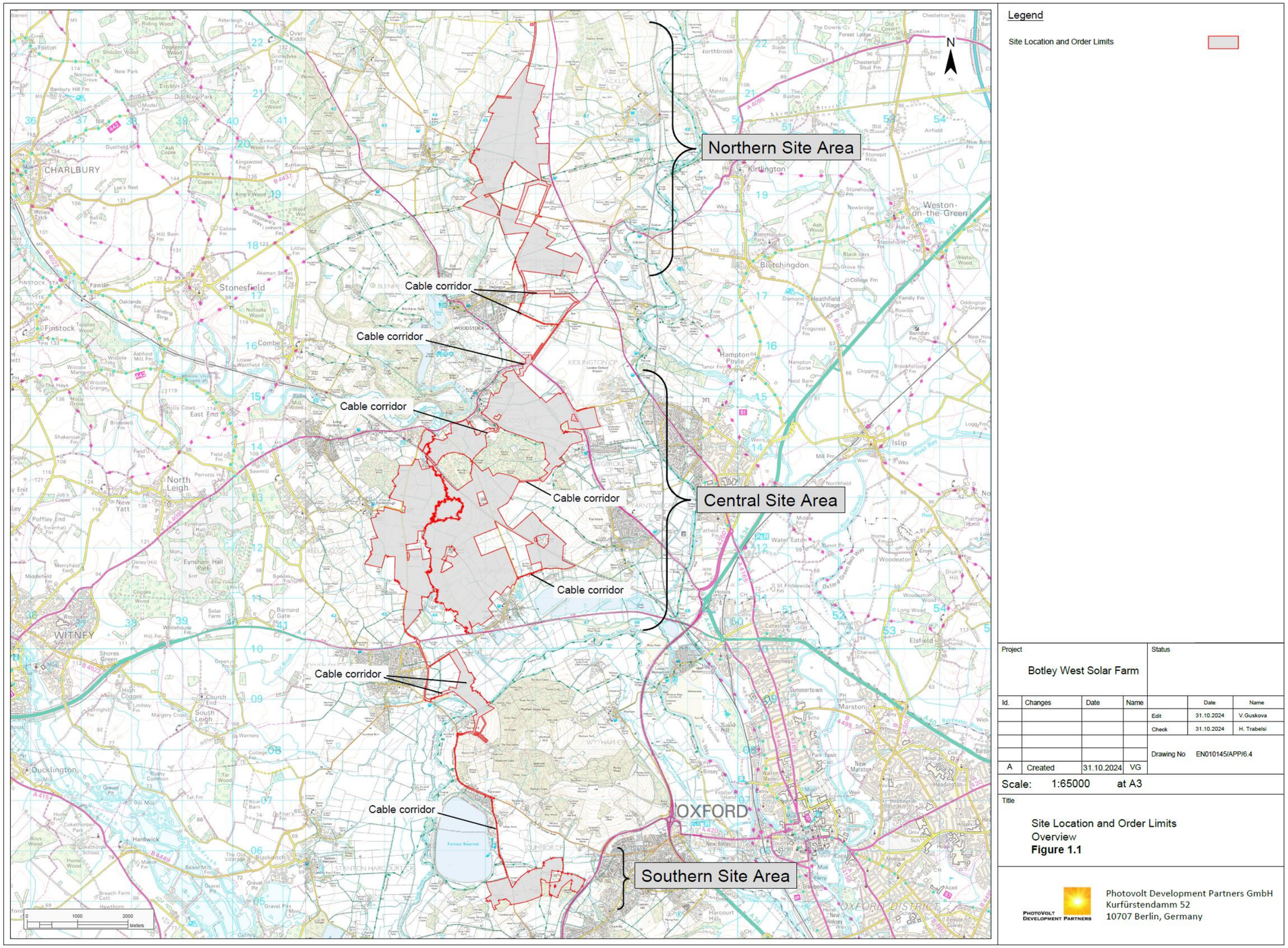
Appendix 1: Survey Maps

Figure 1.1: Site Boundary



Legend

Site Location and Order Limits

Project				Status		
Botley West Solar Farm						
Id.	Changes	Date	Name		Date	Name
				Edit	31.10.2024	V.Guskova
				Check	31.10.2024	H. Trabelsi
				Drawing No	EN010145/APP/6.4	
A	Created	31.10.2024	VG			

Scale: 1:65000 at A3

Title

Site Location and Order Limits
Overview
Figure 1.1

Photovolt Development Partners GmbH
Kurfürstendamm 52
10707 Berlin, Germany

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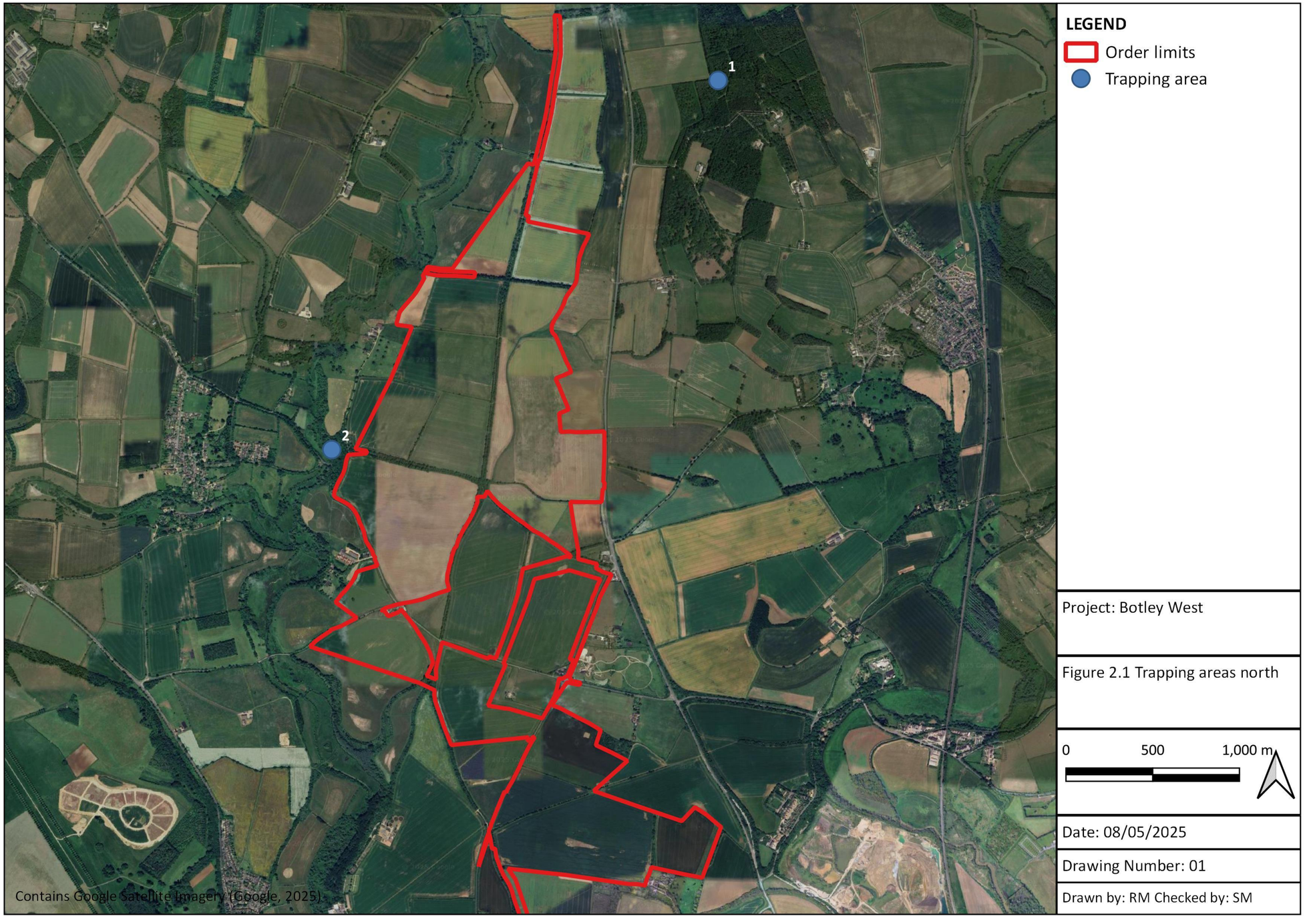
Figure 2.1: Trapping Locations



LEGEND

Order limits

Trapping area

Project: Botley West

Figure 2.1 Trapping areas north

0 500 1,000 m

Date: 08/05/2025

Drawing Number: 01

Drawn by: RM Checked by: SM

Figure 2.2: Trapping Locations

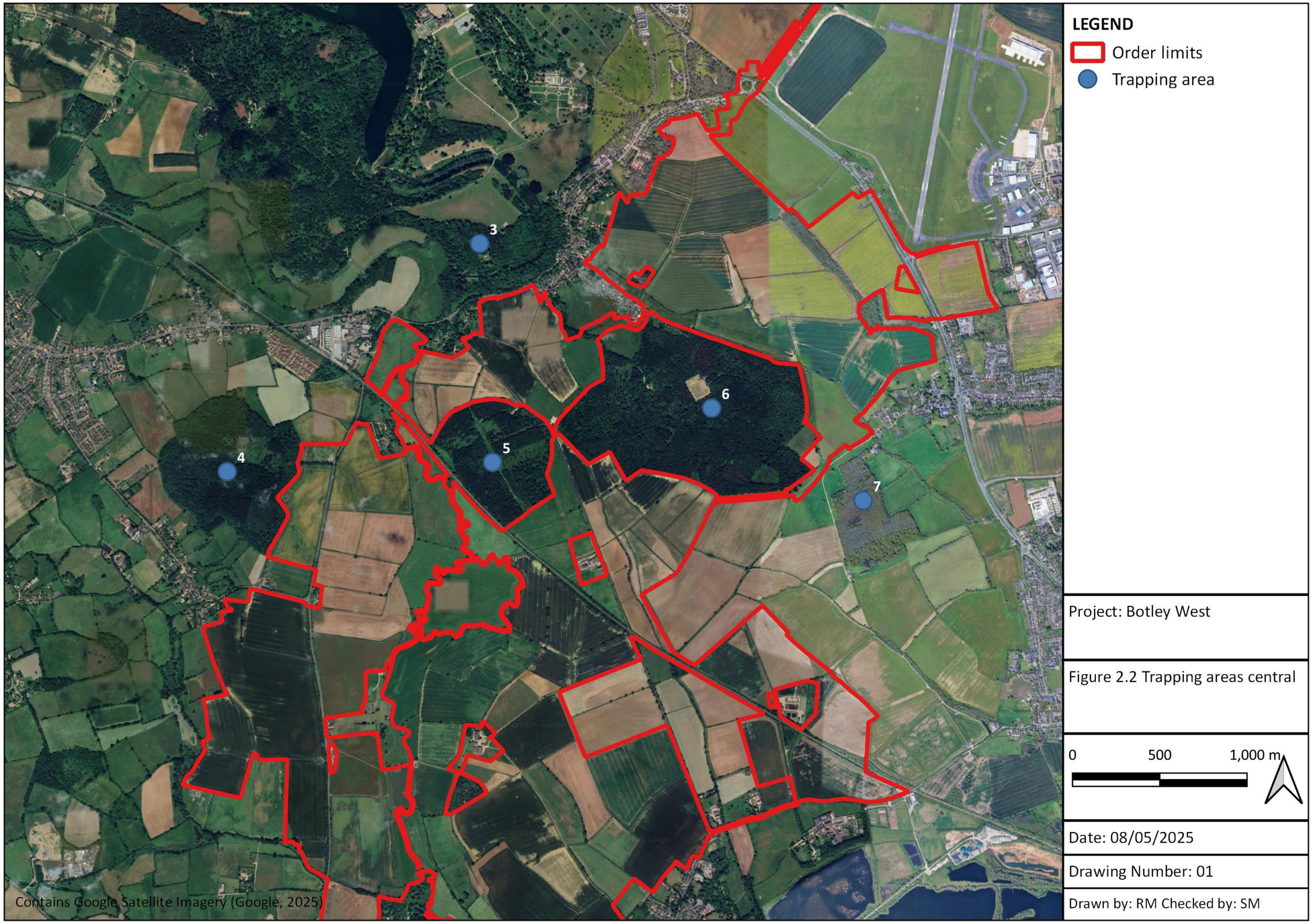


Figure 2.3: Trapping Locations

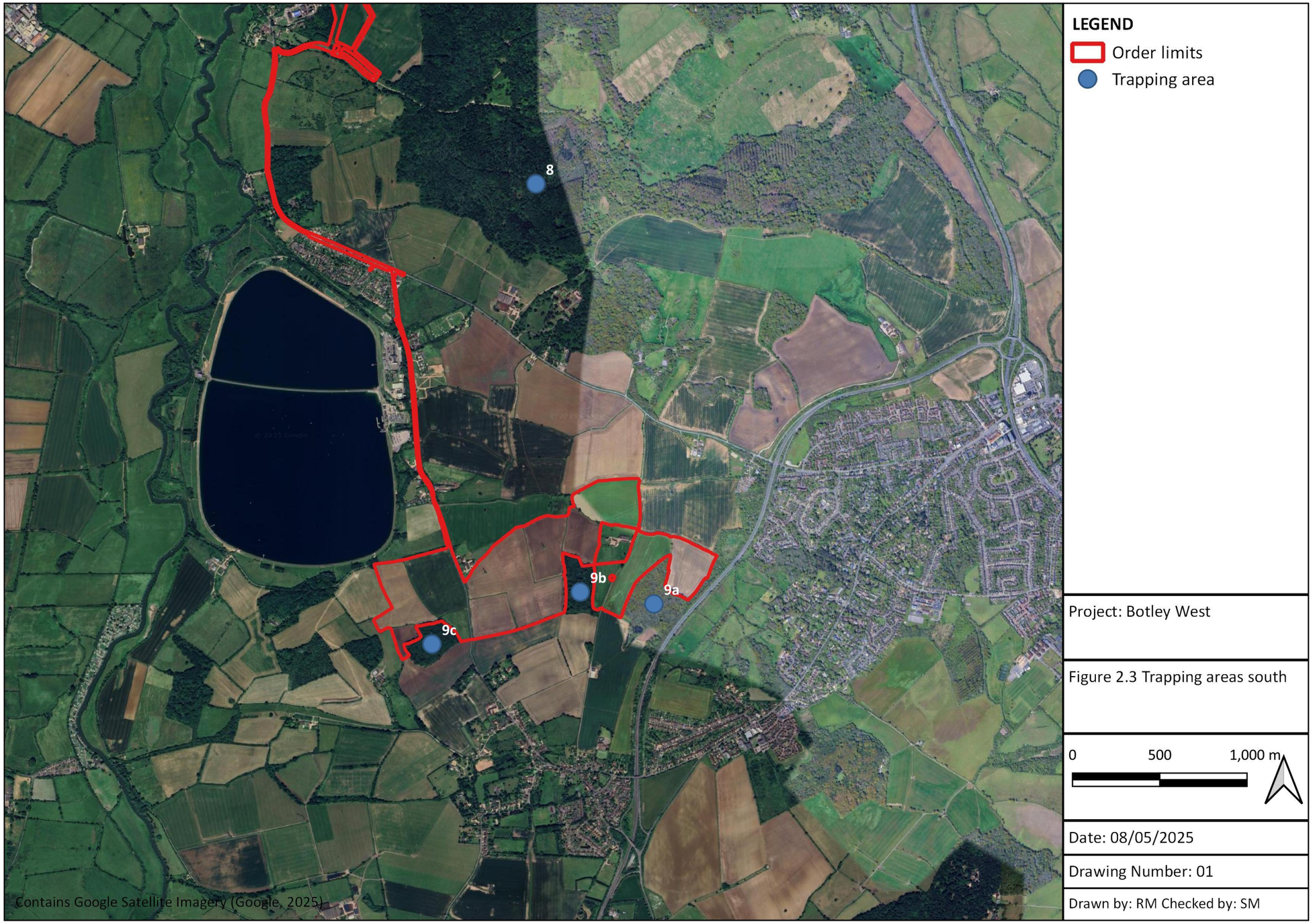
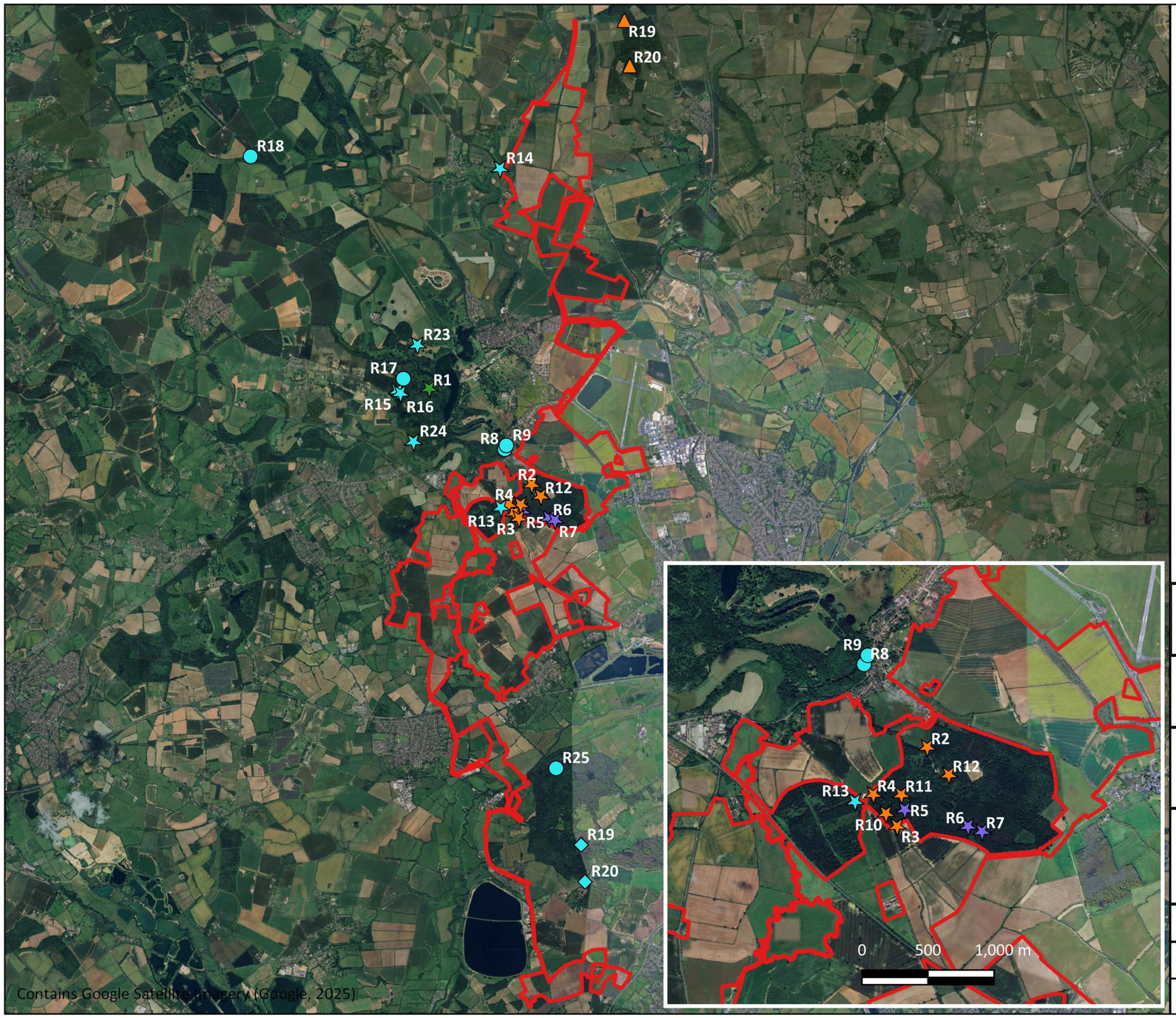


Figure 3.1 Roost location overview - August 2024



LEGEND

- Order limits
- Barbastelle maternity roost - C
- Barbastelle solitary roost - C
- Barbastelle summer roost - C
- Bechstein's bat maternity roost - C
- Bechstein's bat maternity roost - E
- Natterer's bat maternity roost - C
- Daubenton's bat maternity roost - C

C = confirmed
E = estimated

Project: Botley West

Figure 3.1 Roost location overview - August 2024

0 1,000 2,000 m

Date: 08/05/2025

Drawing Number: 01

Drawn by: RM Checked by: SM

Figure 3.2 Roost location overview - September 2024

LEGEND

- Order limits
- Bechstein's autumnal dispersal roost - C
- Barbastelle autumnal dispersal roost - C

C = confirmed
E = estimated

Project: Botley West

Figure 3.2 Roost location overview - September 2024

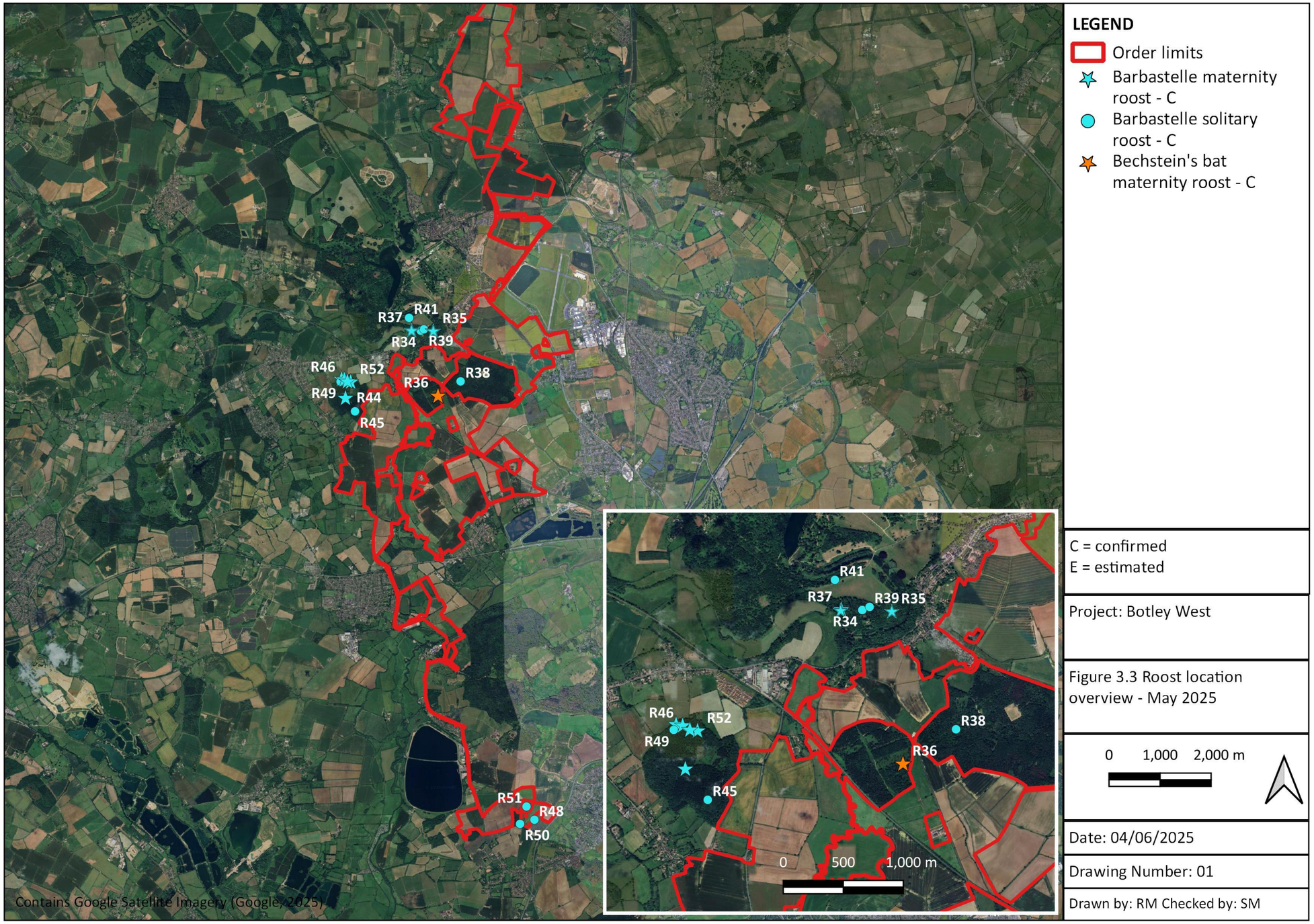
0 500 1,000 m

Date: 08/05/2025

Drawing Number: 01

Drawn by: RM Checked by: SM

Figure 3.3 Roost location overview - May 2025



LEGEND

- Order limits
- Barbastelle maternity roost - C
- Barbastelle solitary roost - C
- Bechstein's bat maternity roost - C

C = confirmed
E = estimated

Project: Botley West

Figure 3.3 Roost location overview - May 2025

0 1,000 2,000 m

Date: 04/06/2025

Drawing Number: 01

Drawn by: RM Checked by: SM

Figure 3.4 Barbastelle roosts, range and flightlines August - north

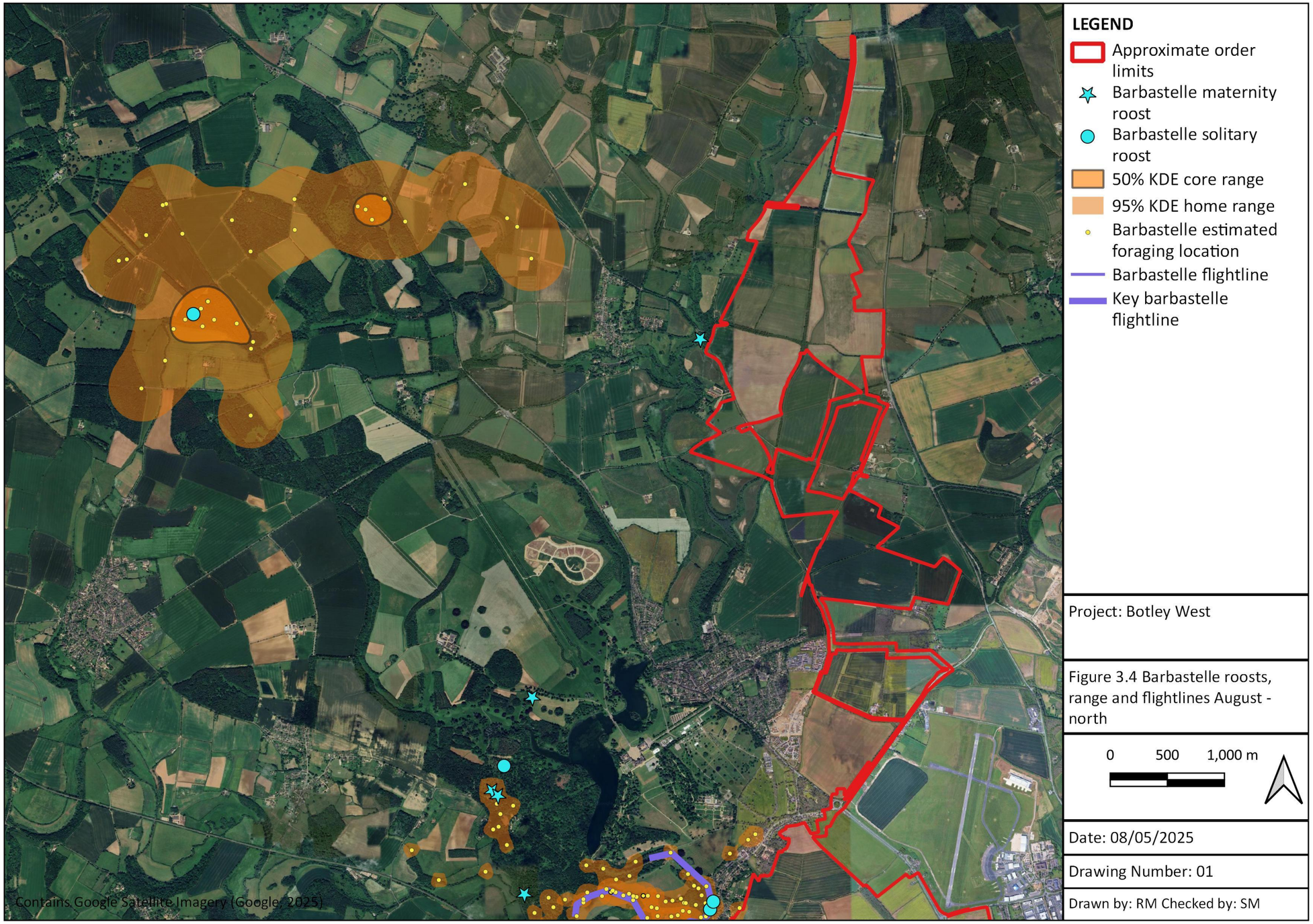


Figure 3.5 Barbastelle roosts, range and flightlines August - central

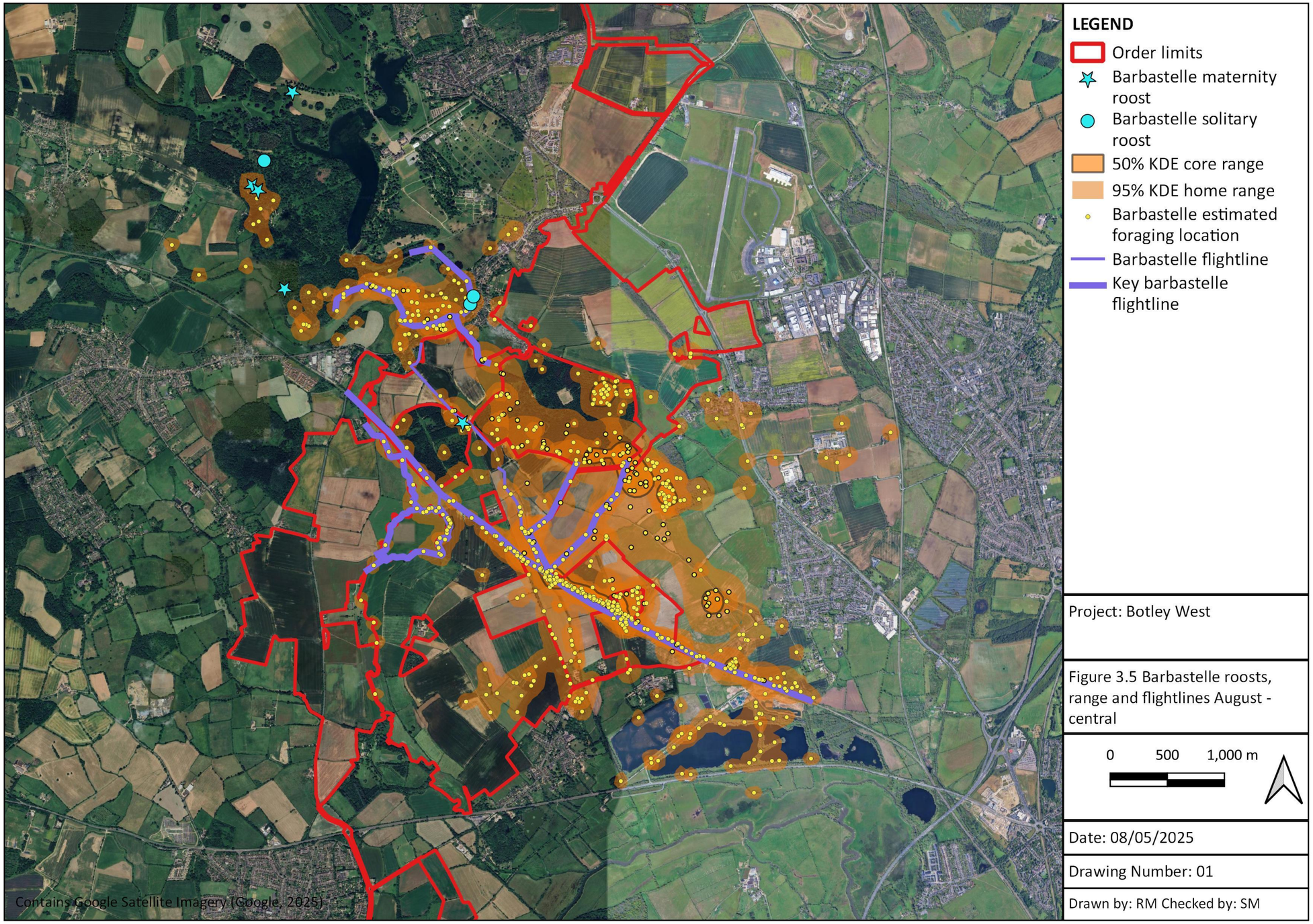
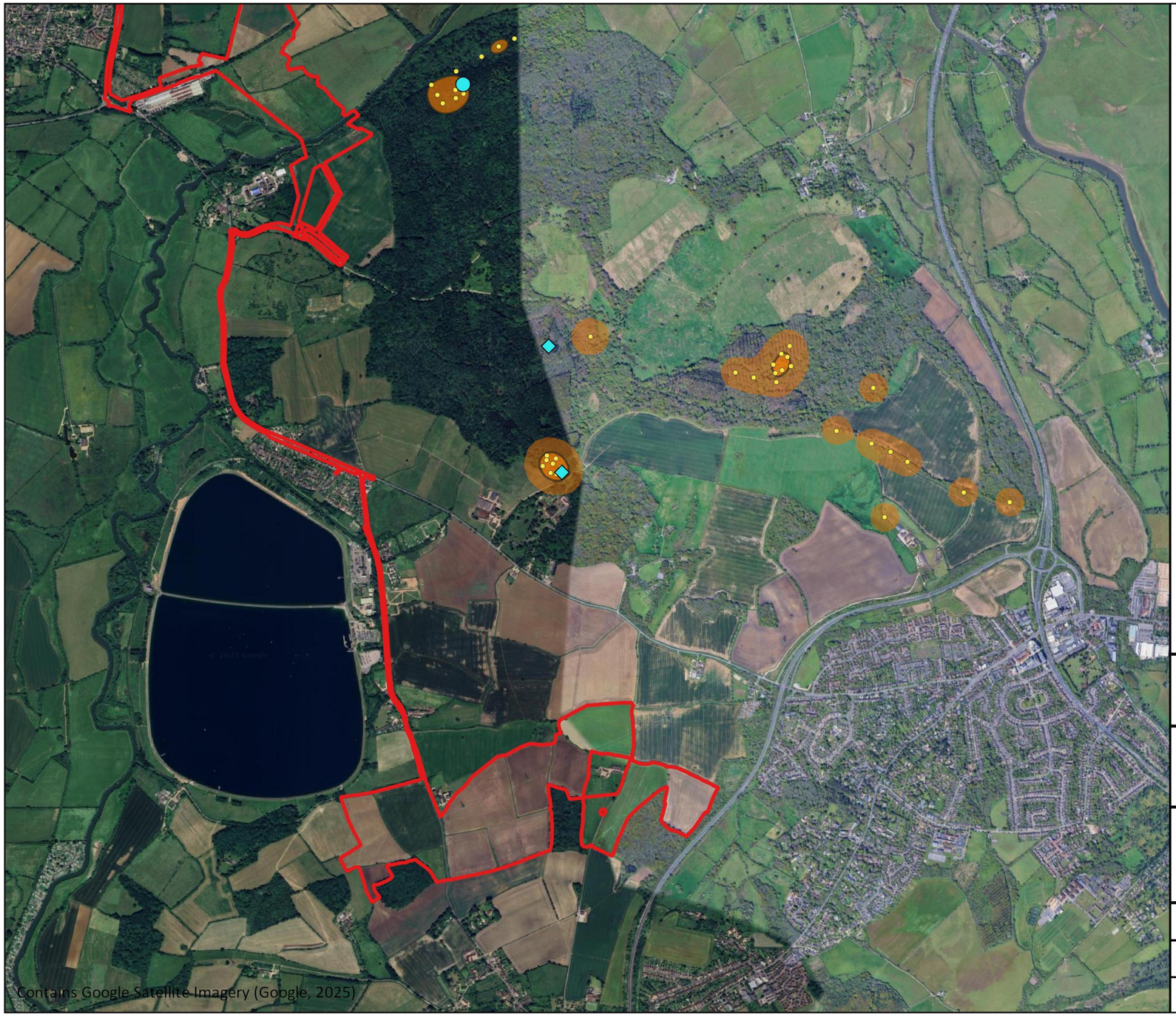


Figure 3.6 Barbastelle roosts, range and flightlines August - south



LEGEND

- Order limits
- Barbastelle solitary roost
- Barbastelle summer roost
- 50% KDE core range
- 95% KDE home range
- Barbastelle estimated foraging locations
- Barbastelle flightline
- Key barbastelle flightline

Project: Botley West

Figure 3.6 Barbastelle roosts, range and flightlines August - south

0 500 1,000 m

Date: 08/05/2025

Drawing Number: 01

Drawn by: RM Checked by: SM

Figure 3.7 Barbastelle roosts, range and flightlines September - north

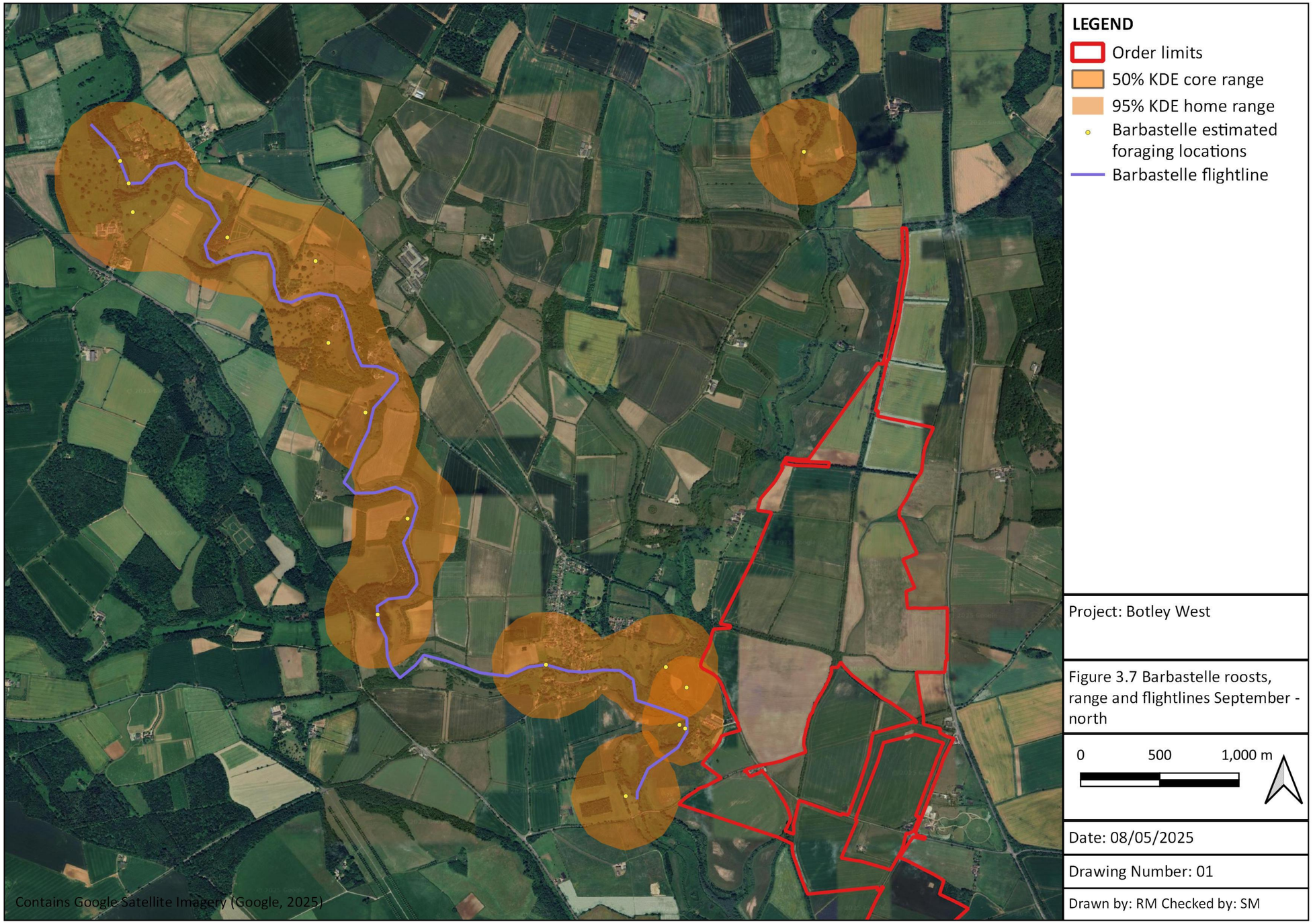


Figure 3.8 Barbastelle roosts, range and flightlines September - central

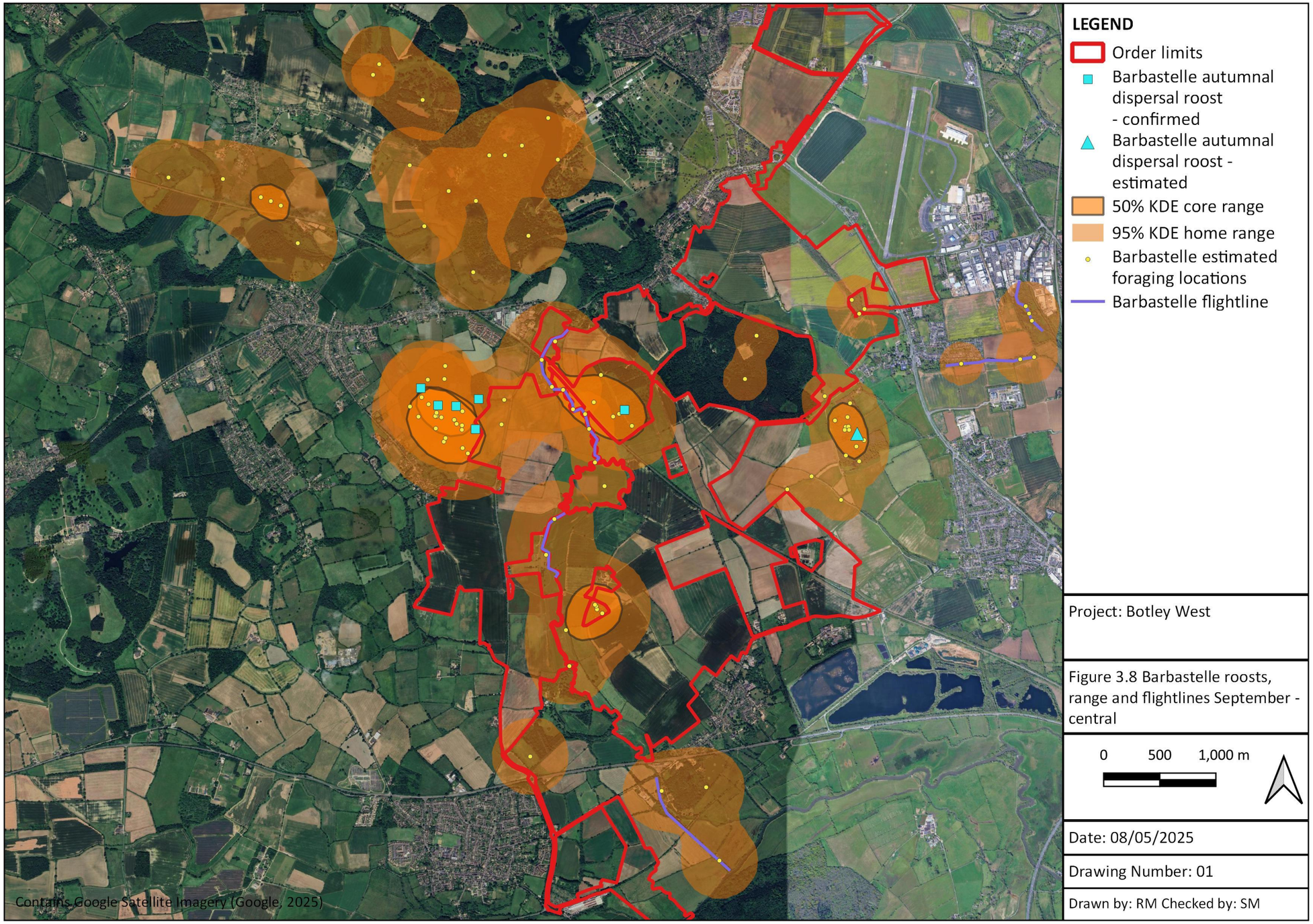
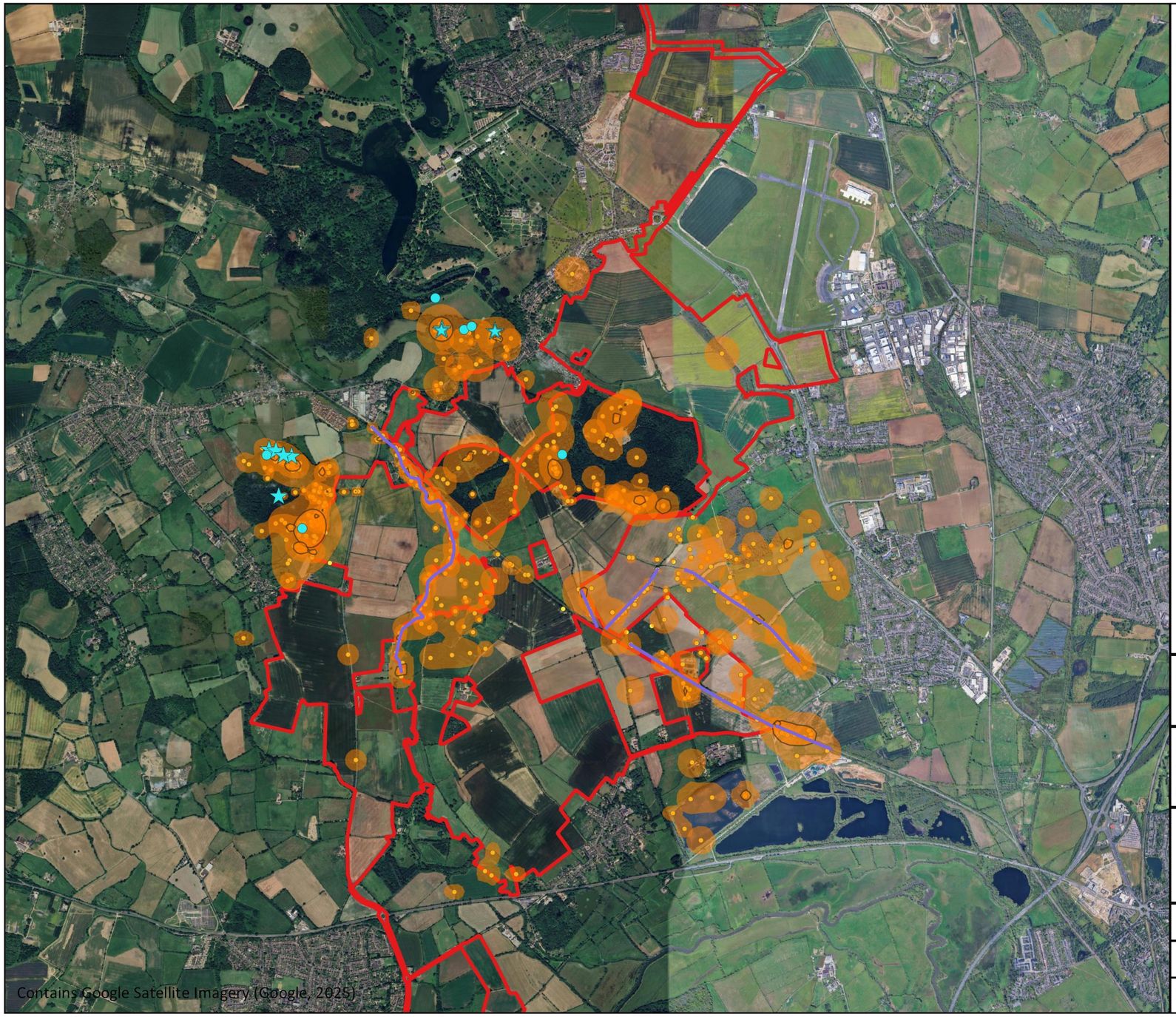


Figure 3.9 Barbastelle roosts, range and flightlines May - central



LEGEND

- Order limits
- Barbastelle maternity roost
- Barbastelle solitary roost
- 50% KDE core range
- 95% KDE home range
- Barbastelle estimated foraging location
- Barbastelle flightline

Project: Botley West

Figure 3.9 Barbastelle roosts, range and flightlines May - central

0 500 1,000 m

Date: 04/06/2025

Drawing Number: 01

Drawn by: RM Checked by: SM

Figure 3.10 Barbastelle roosts, range and flightlines May - south

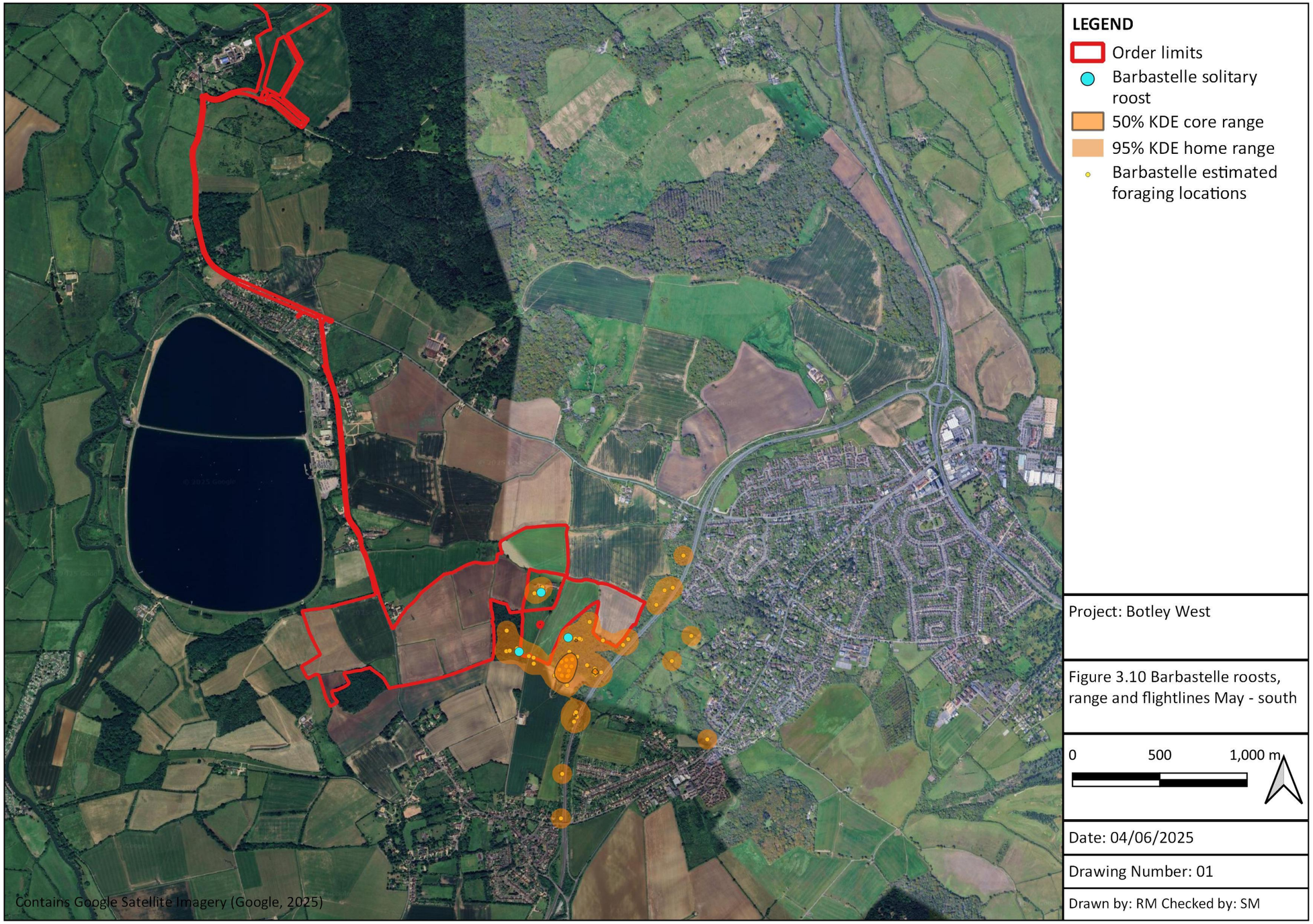


Figure 3.11 Bechstein's bat roosts, range and flightlines August - north

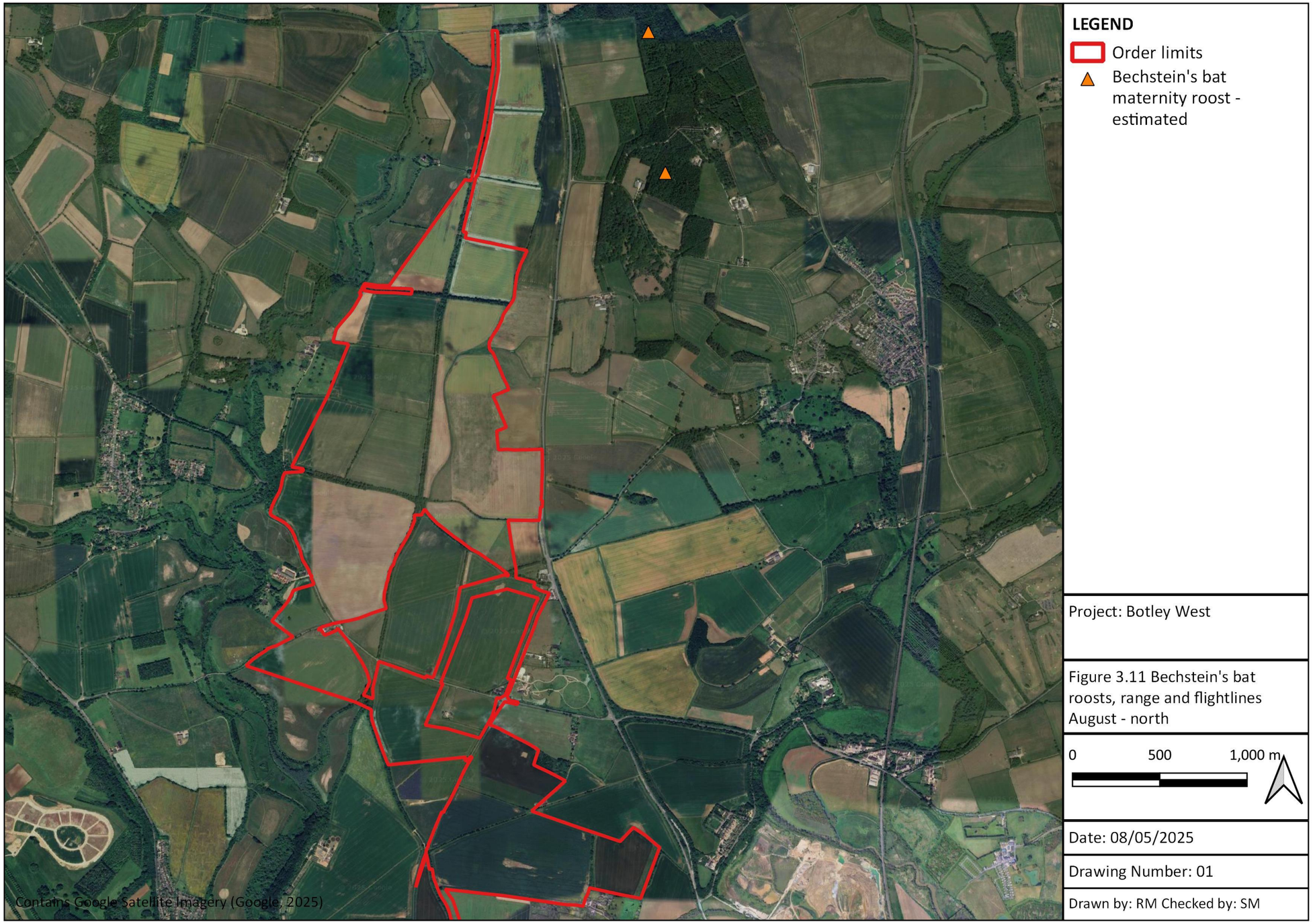


Figure 3.12 Bechstein's bat roosts, range and flightlines August - central

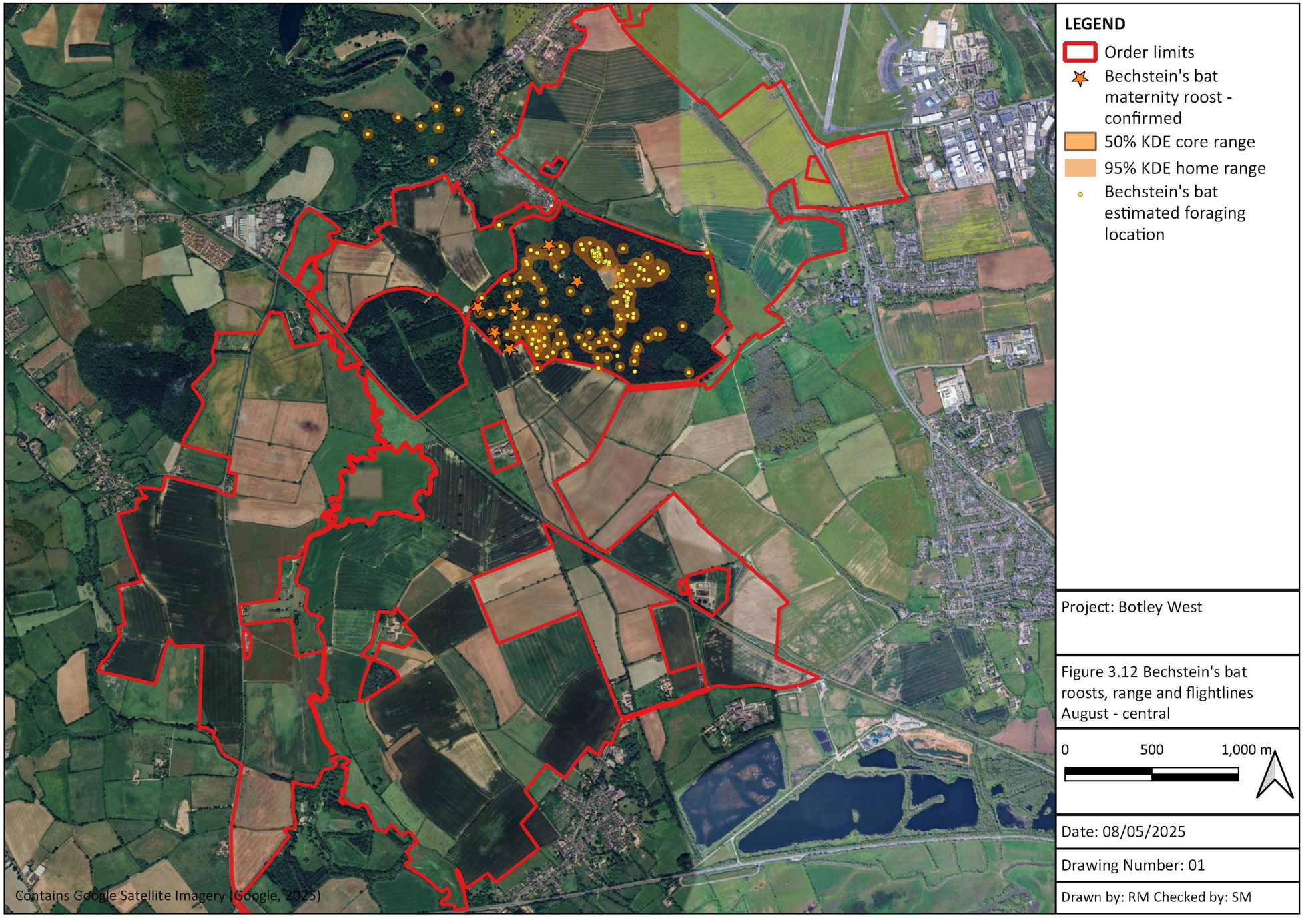


Figure 3.13 Bechstein's bat roosts, range and flightlines September - central

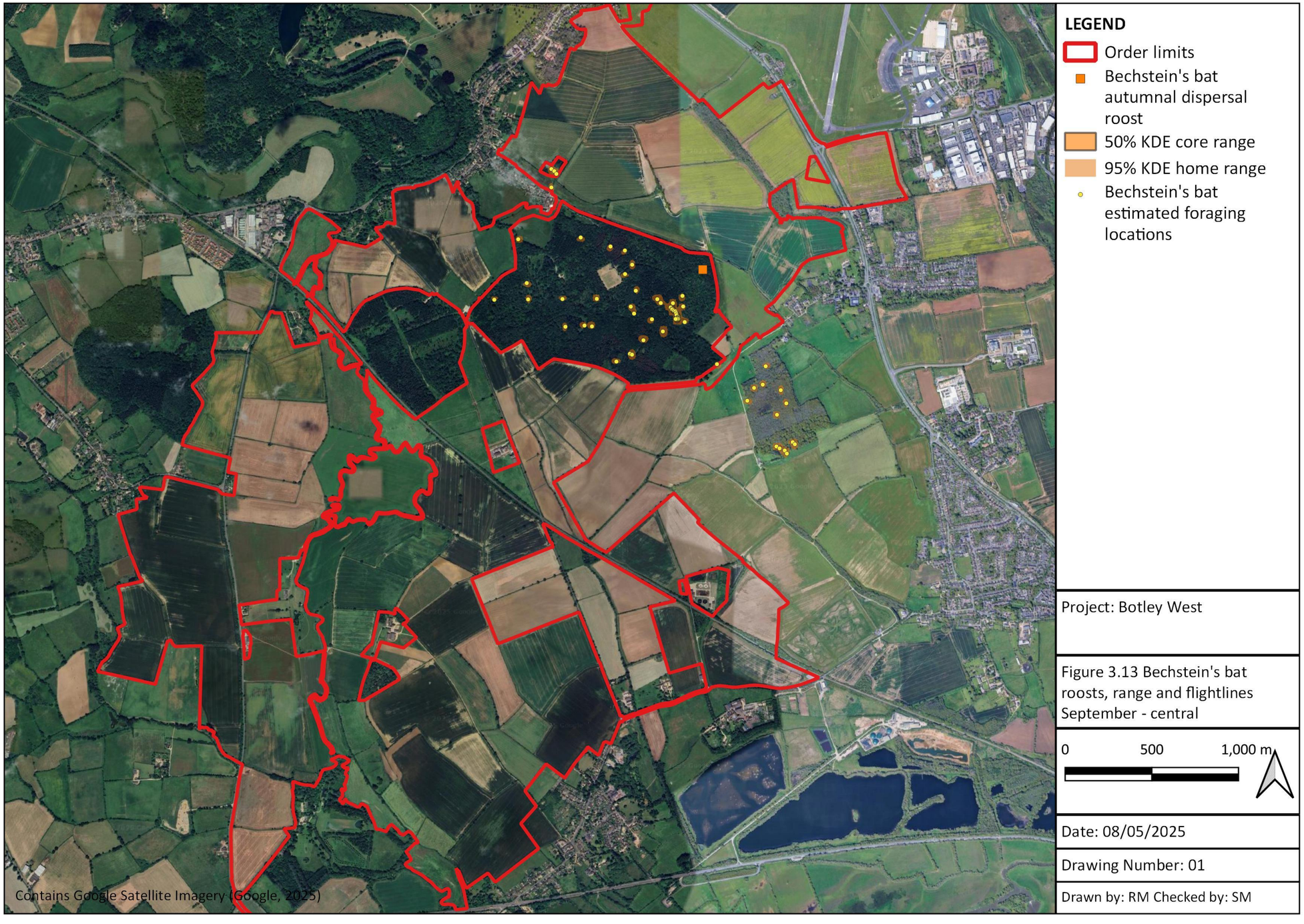


Figure 3.14 Bechstein's bat roosts, range and flightlines May - central

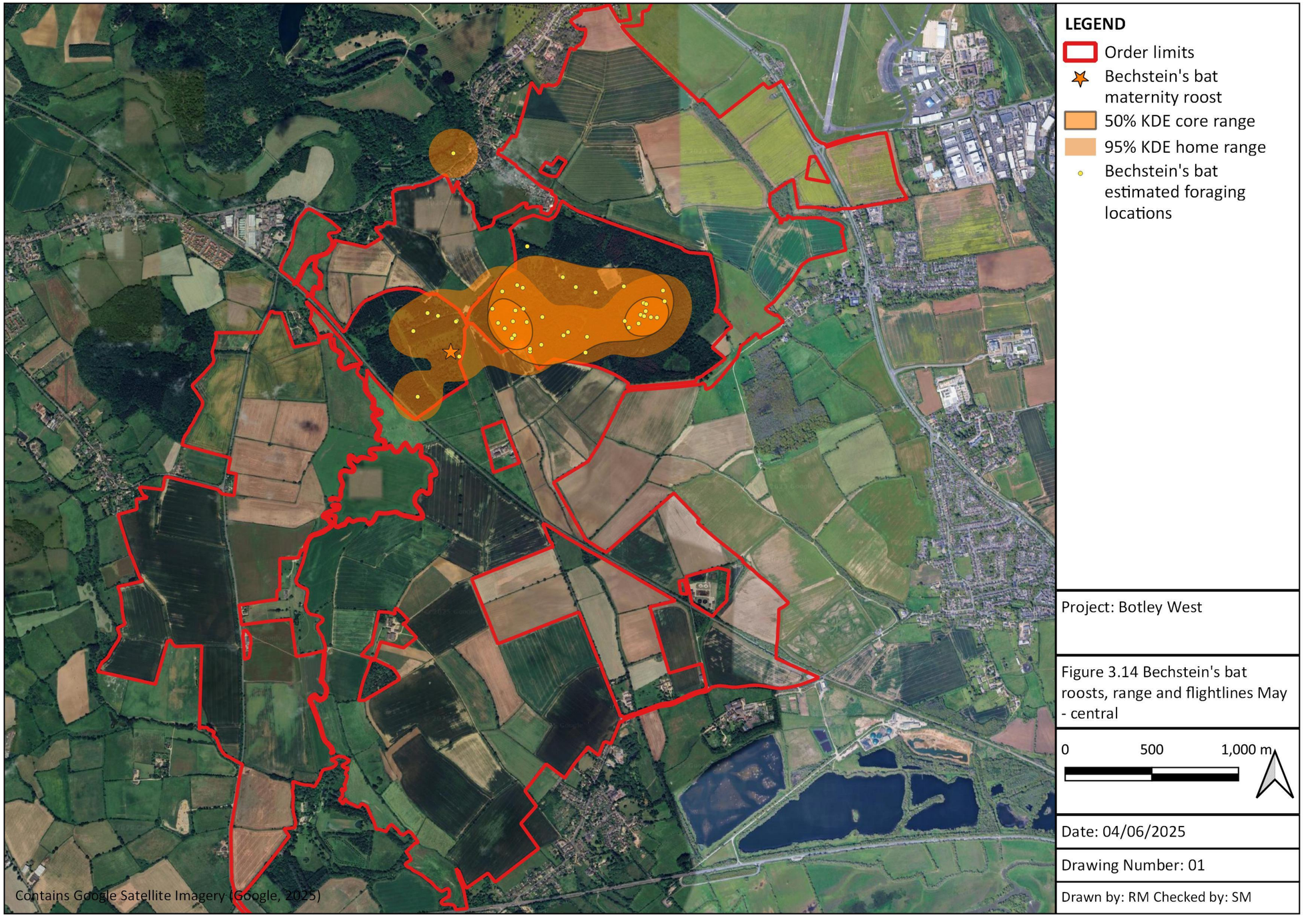
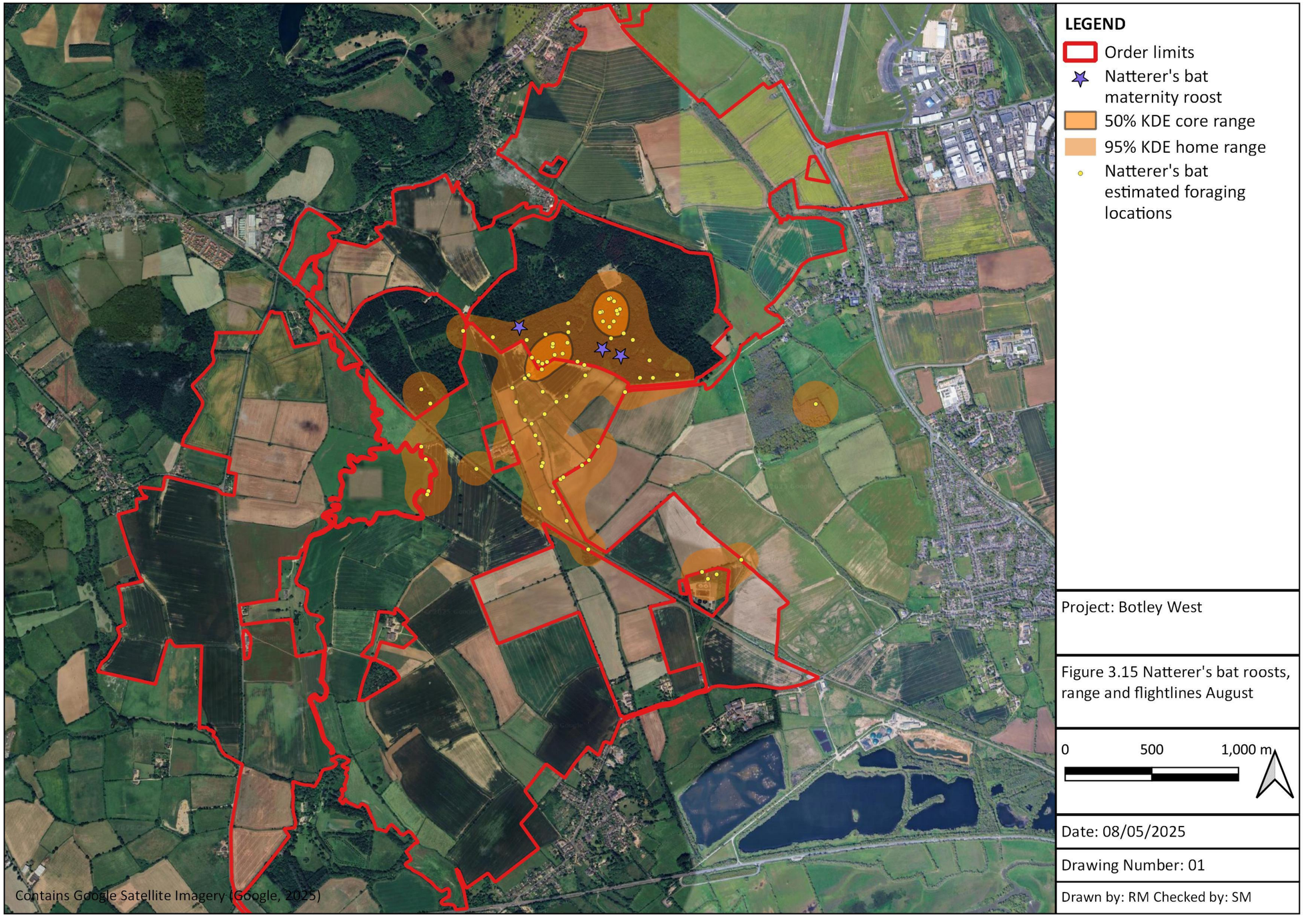
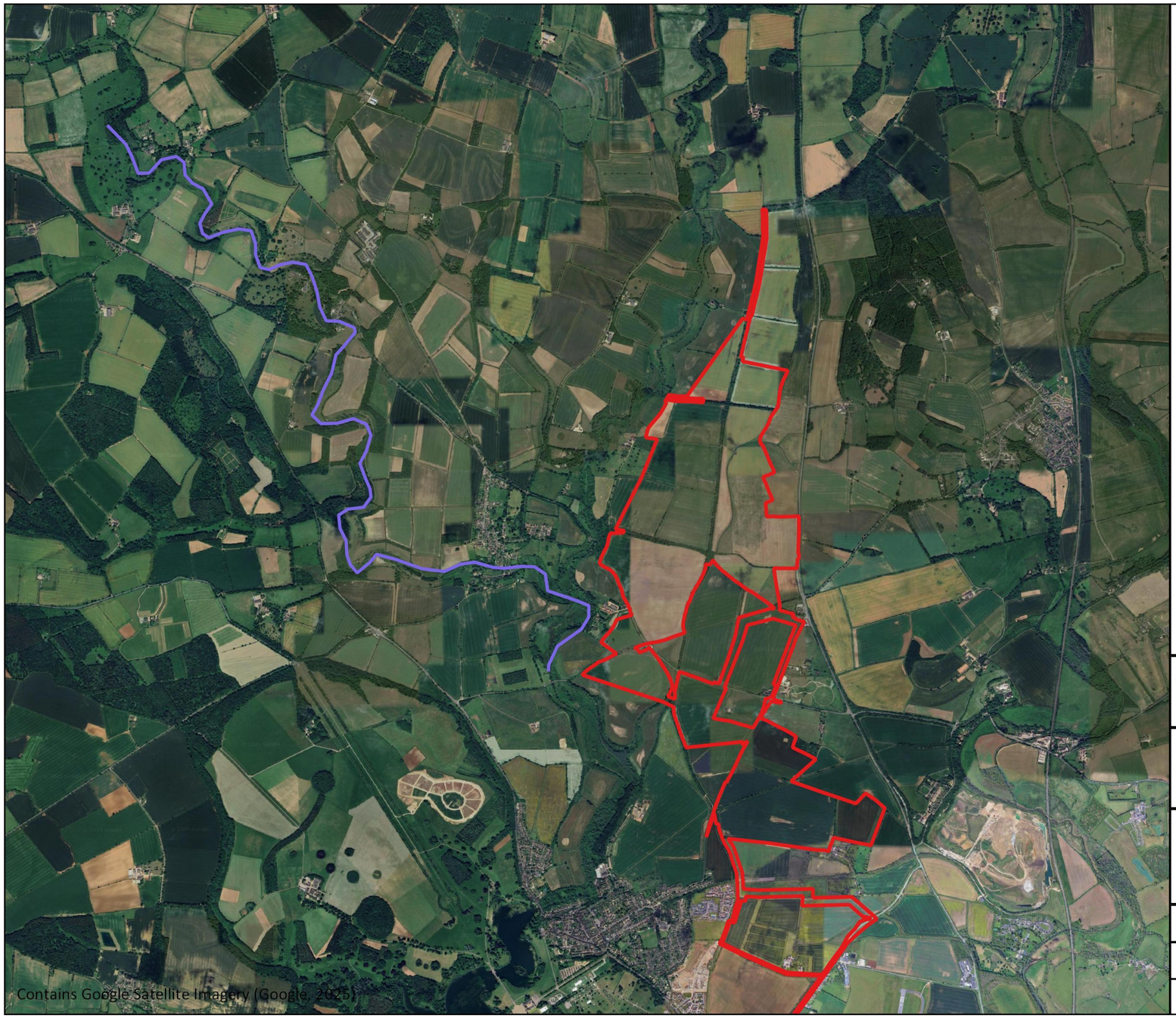


Figure 3.15 Natterer's bat roosts, range and flightlines August





LEGEND

- Order limits
- Barbastelle flightline
- Key barbastelle flightline

Project: Botley West

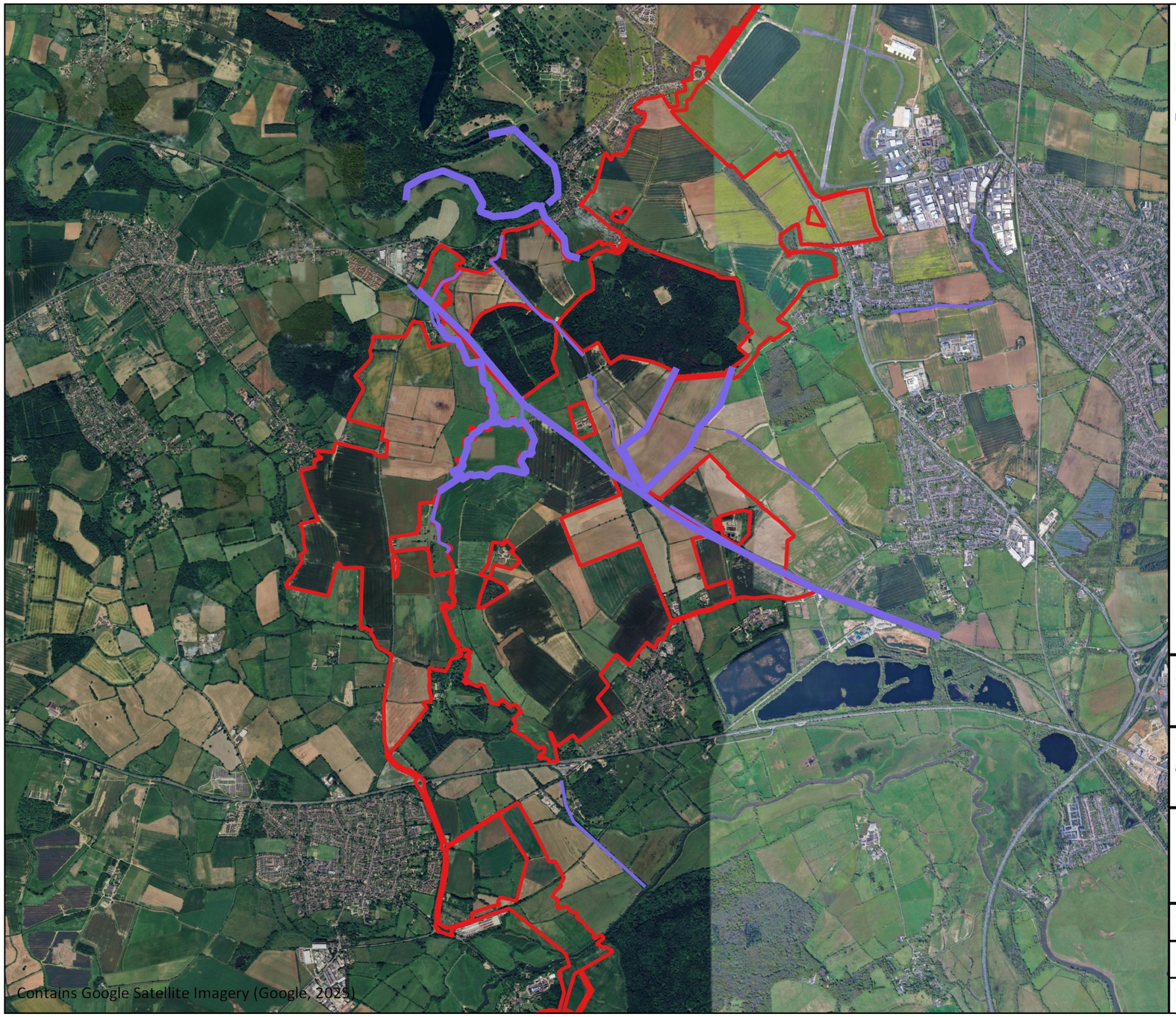
Figure 4.1 Barbastelle flightlines - north

0 500 1,000 m

Date: 21/07/2025

Drawing Number: 01

Drawn by: RM Checked by: SM



LEGEND

- Order limits
- Barbastelle flightline
- Key barbastelle flightline

Project: Botley West

Figure 4.2 Barbastelle flightlines - central

0 500 1,000 m

Date: 21/07/2025

Drawing Number: 01

Drawn by: RM Checked by: SM

Appendix 2: Summary survey maps

Figure 1: Barbastelle roost, range and foraging locations August, September and May - North

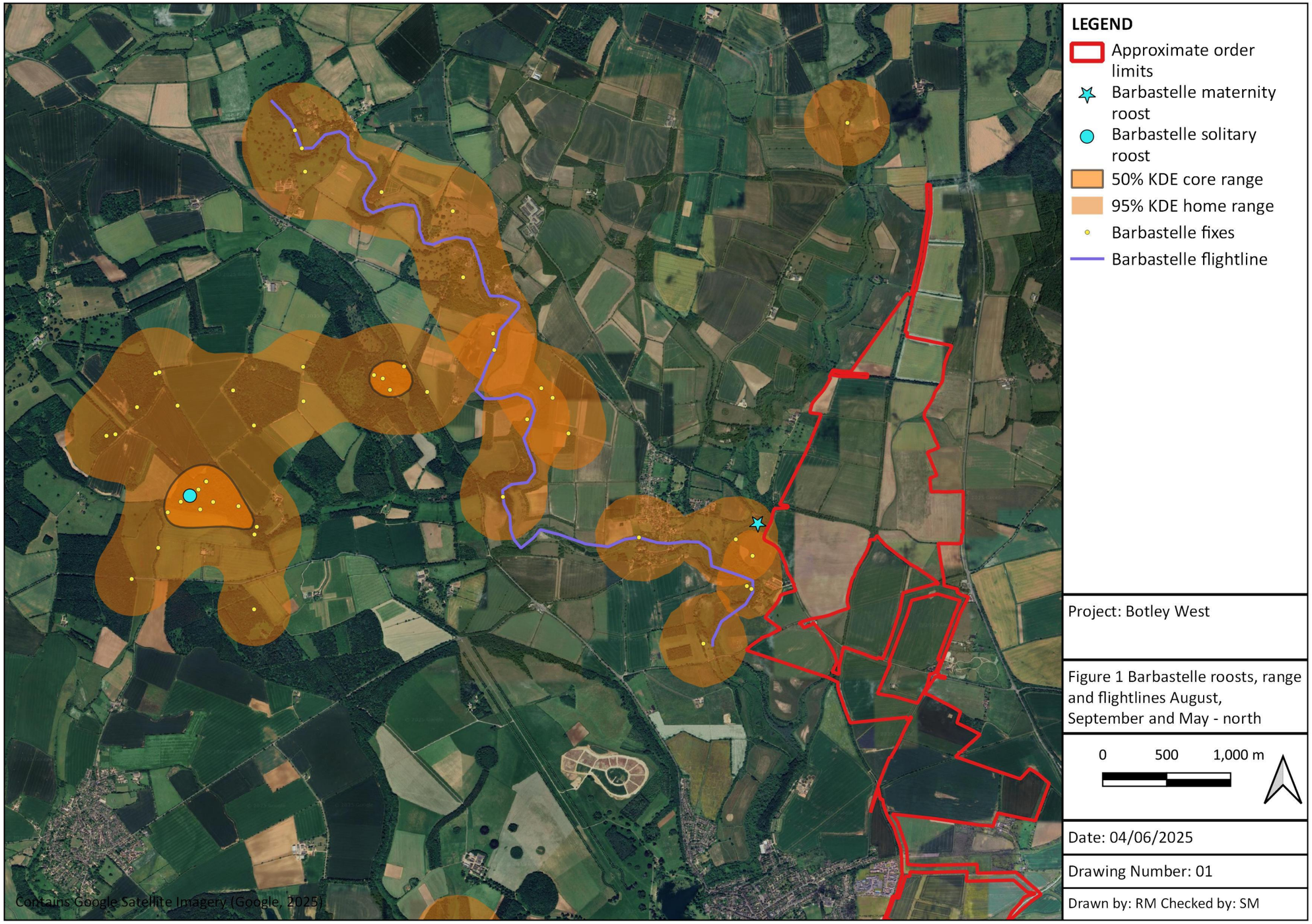


Figure 2: Barbastelle roost, range and foraging locations August, September and May – Central

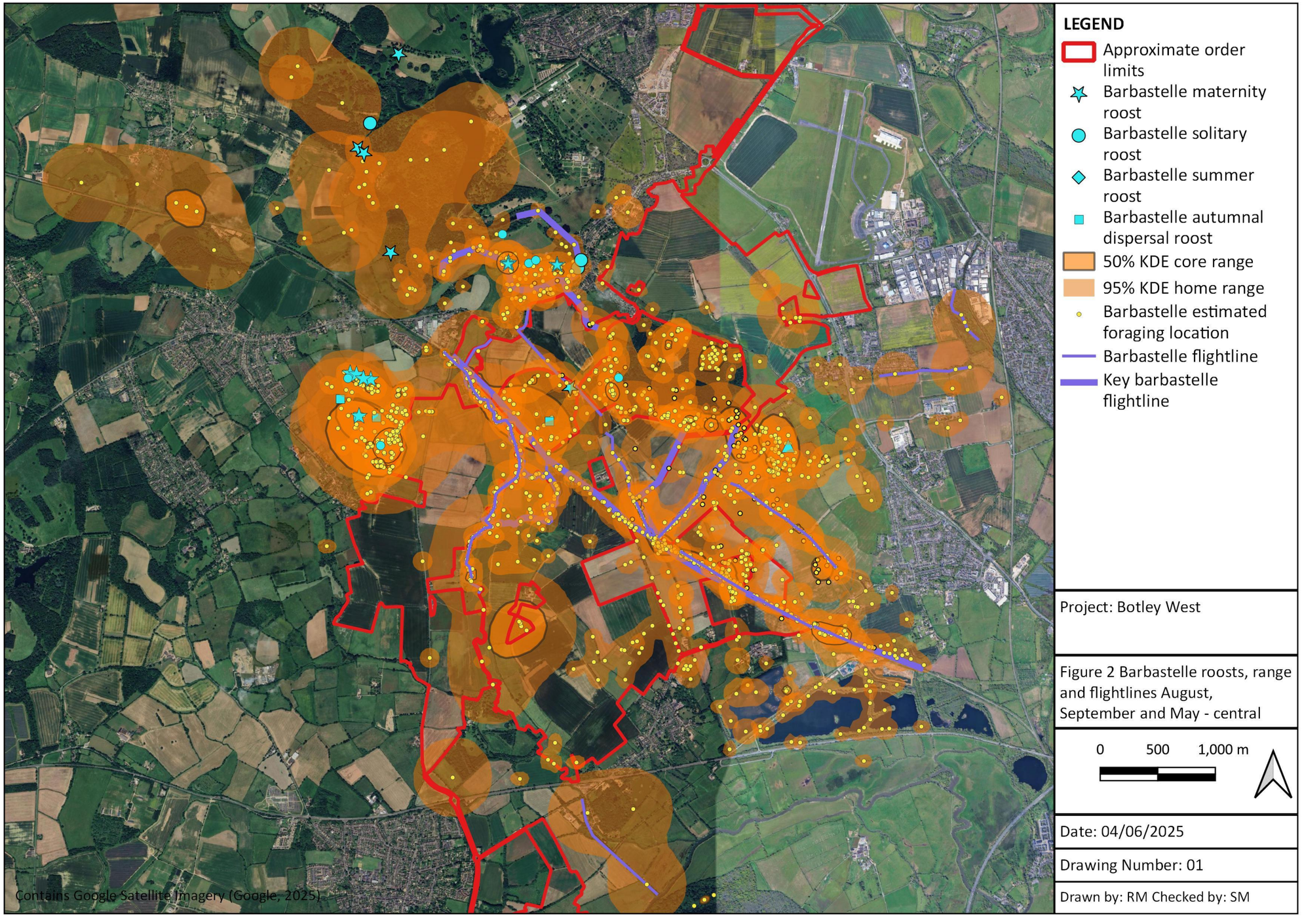


Figure 3: Barbastelle roost, range and foraging locations August, September and May – South

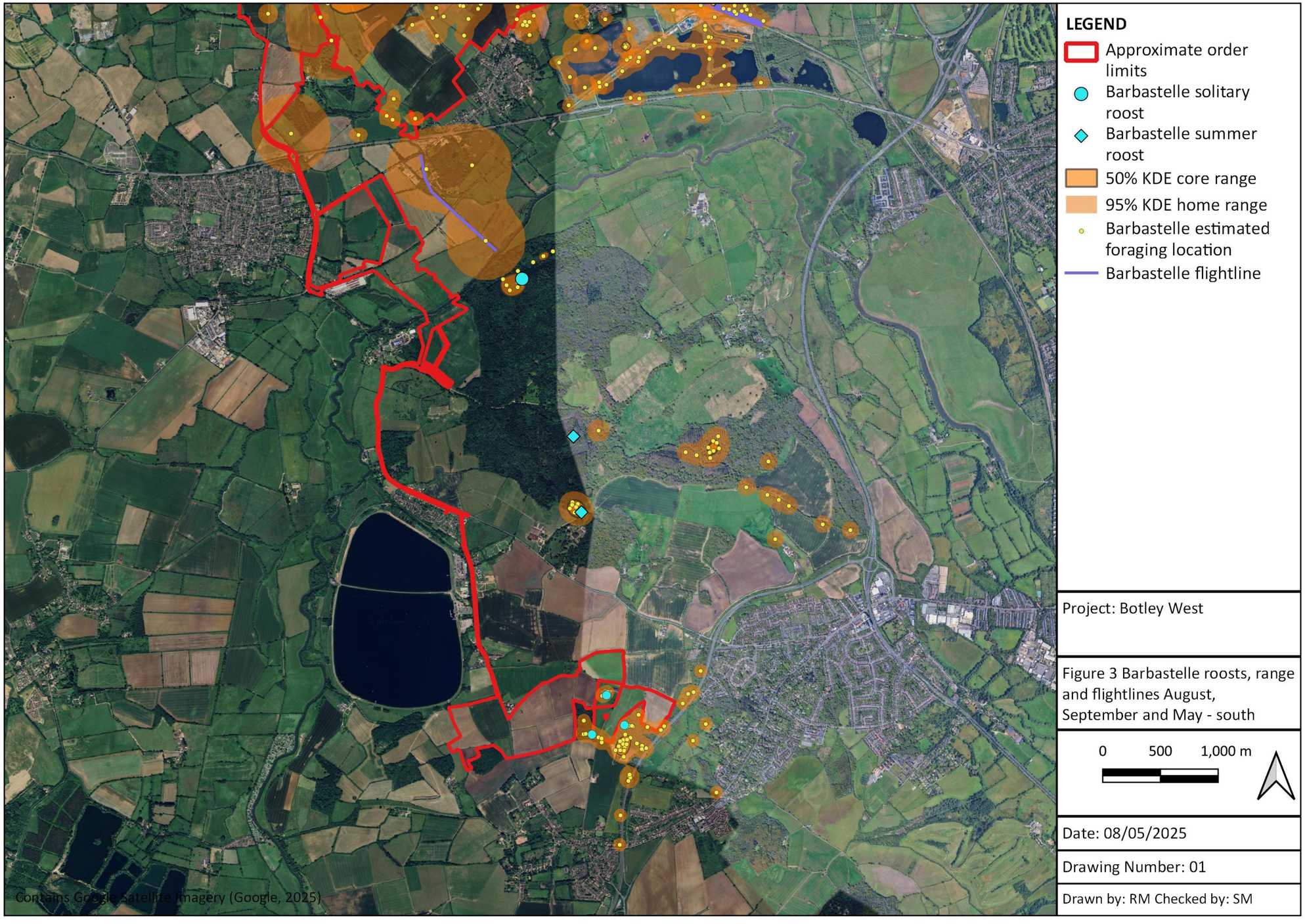
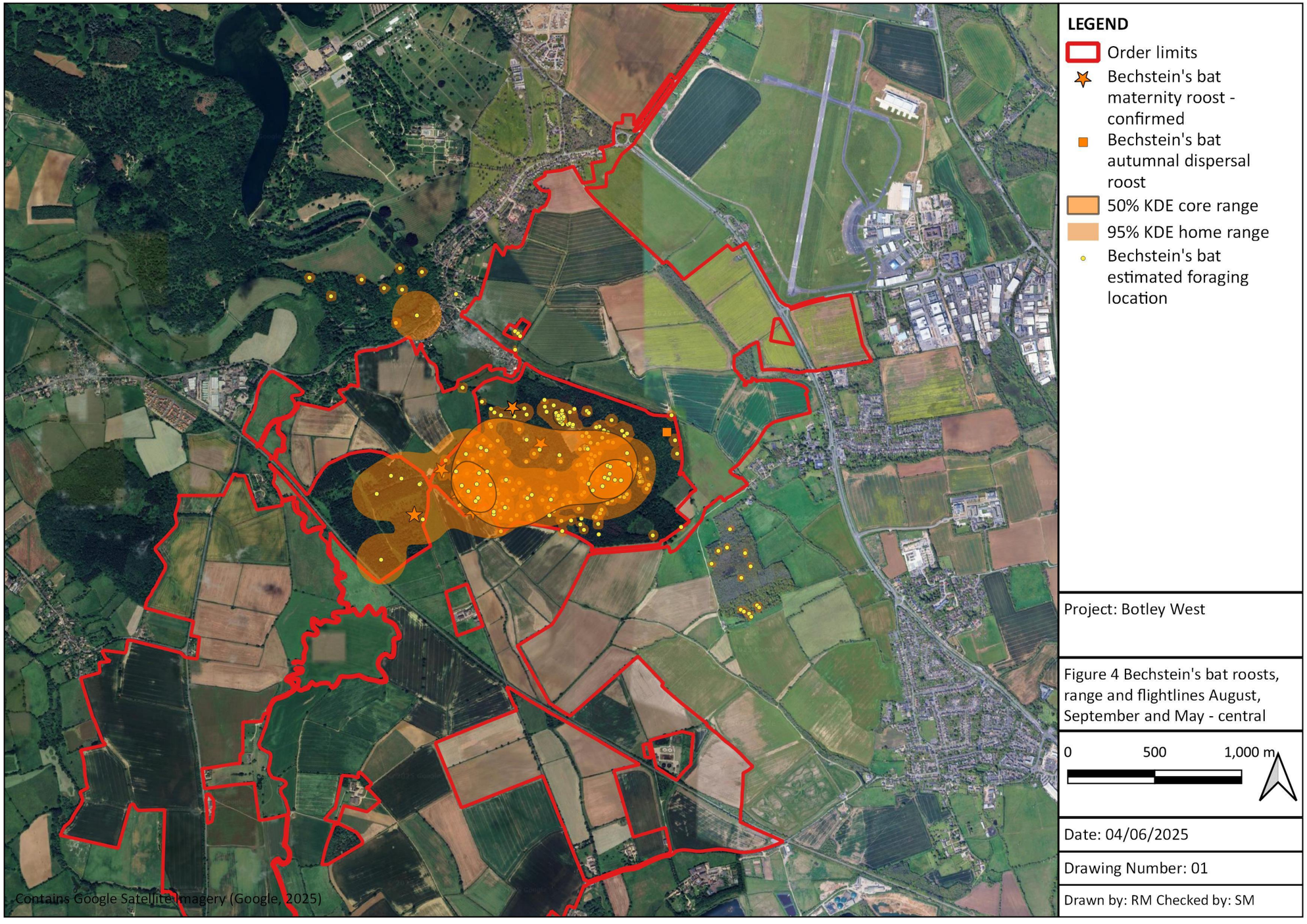


Figure 4: Bechstein's bat roost, range and foraging locations August, September and May – central



Appendix 3: Survey data

Data available on request

Results

Sample ID: EG-2299-1

Sample information:

Sample type: Faecal	**Species group:** Bats
Suspected species: whiskered/brandts	**Site Location:** SP 43289 13510
Comments: - FEMALE Pinlsey Wood - DAH	

Laboratory information:

DNA Extraction Code: EG-2025-1279	**Identification method:** qPCR
Analysis Procedure Notes:	
Laboratory Comments: None	

Species Identified:

Species 1: Myotis mystacinus (Whiskered bat)	**qPCR Ct Value:** 28

Sample ID: EG-2299-2

Sample information:

Sample type: Faecal	**Species group:** Bats
Suspected species: whiskered/brandts	**Site Location:** SP 43289 13510
Comments: FEMALE - Pinlsey Wood - DAH	

Laboratory information:

DNA Extraction Code: EG-2025-1280	**Identification method:** qPCR
Analysis Procedure Notes:	
Laboratory Comments: None	

Species Identified:

Species 1: Myotis mystacinus (Whiskered bat)	**qPCR Ct Value:** 26

Sample ID: EG-2299-3

Sample information:

Sample type: Faecal	**Species group:** Bats
Suspected species: whiskered/brandts	**Site Location:** SP 44491 13755
Comments: FEMALE - BURLEIGH WOOD DAH	

Laboratory information:

DNA Extraction Code: EG-2025-1281	**Identification method:** qPCR
Analysis Procedure Notes:	
Laboratory Comments: None	

Species Identified:

Species 1: Myotis brandtii (Brandt's bat)	**qPCR Ct Value:** 27

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