B E R N W O O D E C O L O G Y

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Upper Pollicott Farm – Buildings B2 & B3

Ashendon

Buckinghamshire

Bat Survey Report

Thomas Betts & Co Ltd.

28th July 2021

TB&C-Upollicott-20.WYG02b (Issue 1)

Proud to be:

Hensmans Farm, Nearton End, Swanbourne, Buckinghamshire, MK17 0SL

Limitations

Ecological assessments can only assess a site at a particular time. This evidence can be used to draw conclusions as to the likely presence or absence of species (animals and plants), population size, use of the site by animals; it is neither definitive nor complete.

Any survey is a snapshot in time and should not be regarded as a complete study. Seasonality and weather conditions may also affect survey results.

The preparation of mitigation strategies, consultation exercise and submission of any licence applications cannot be relied upon until approved [licensed] in writing by third parties. Allowance must be made for both programme and financial change to projects as a result of application failure, amendment or refusal.

Every effort has been taken to provide an accurate assessment of the situation pertaining to this site and information available at the time of the preparation of this report, but no liability can be assumed for omissions, or subsequent changes to design and development.

Surveys have been based on anticipated work resulting from instruction and information supplied at the time of request. Additional works should be anticipated as surveys and proposals for the site progress.

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Quality Assurance

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Executive Summary

Bernwood Ecology have undertaken bat emergence and re-entry surveys at buildings 2&3 at Upper Pollicott Farm, Ashendon, Buckinghamshire. The purpose of the surveys were to identify any actual or potential bat roosting interest on site and evaluate any impacts on any identified roosts from the proposed development. The proposals for the site include the conversion of the agricultural buildings to residential dwellings.

The Preliminary Ecological Appraisal undertaken by Bernwood Ecology on 15th October 2020 determined buildings 2&3 to have a 'high' potential to support roosting bats with some evidence of roosting bats found.

The following bat roosts have been identified during the surveys:

- one (probable) brown long-eared feeding roost in B3b;
- two Natterer's bat day roosts,
  - one sporadically used by low bat numbers in B3b and
  - one used by maximum three bats in B2b; and,
- one common pipistrelle day roost under the bitumen felt in B2a.

Due to the complex structural nature of the buildings, and high levels of activity by individual bats, further roosts of individual bats are highly likely to be present.

Recommendations are made for the proposed works to be undertaken under a Natural England European Protected Species Licence. The mitigation strategy has been outlined in principle.

There is a risk that nesting birds will be encountered during the works; recommendations are made to avoid the damage and destruction of active birds nests.

Any additional or changes in artificial lighting as part of the proposals must be considered in view of the ecological considerations on site.

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1. Introduction and Objectives

1.1 Bernwood Ecology were instructed by Thomas Betts & Co. on 10th May 2021 to undertake bat surveys of the buildings B2 and B3 at the Upper Pollicott Farm, Ashendon, Buckinghamshire, HP18 0HF (SP 70339 13557) (Appendix 1).

1.2 The aims of the emergence and re-entry surveys are to ascertain whether bats are using the buildings for roosting, determine entry/ exit points, and classify the roost through identification of species, numbers, and usage if present.

1.3 The proposals are to convert the agricultural buildings to residential dwellings (Appendix 2).

Previous Ecological Survey

1.4 A Preliminary Ecological Appraisal by Bernwood Ecology was carried out on 10th October 2021. Section b of Building B3 (B3b) was subsequently found to have common pipistrelle *Pipistrellus pipistrellus* and Natterer's bat *Myotis nattereri* droppings following DNA sequencing, as well as evidence of a feeding roost for an unknown species. This building section was therefore determined to support roosting bats. The remaining sections of building B3 and all of B2 were identified as having a 'high' suitability to support roosting bats. Further detailed bat surveys were therefore recommended (Appendix 3).

2. Legal Protection

2.1 The finding of this report represents the professional opinion of qualified ecologists and does not constitute professional legal advice. The client may wish to seek professional legal interpretation of the relevant wildlife legislation cited in this report.

2.2 The following information is a simplified summary of the legislation and the full text of the Wildlife & Countryside Act 1981 (as amended) (WCA 1981), the Conservation of Habitats and Species Regulations 2017 (2017 Regulations) and other legislation together with current published guidelines should be consulted.

European Protected Species

2.3 It is understood that 2017 Regulations will be further amended due to the departure of the UK from the EU on 31st January 2020. From that date the provisions in The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 will apply (see https://www.legislation.gov.uk/uksi/2019/579/contents/made). Existing protection for habitats and species including standards and assessment procedures will remain as they have been prior to the UK leaving the EU.

2.4 The 2017 Regulations and The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 should be read together until further clarification or changes are made available by the UK Government or legal case law.

2.5 All European Protected Species (EPS; great crested newts, bats, otter, white clawed crayfish, hazel dormice, etc.) are protected under the 2017 Regulations and the WCA 1981. It is an offence under section 41 of the 2017 Regulations to:

- deliberately capture, injure or kill any wild animal of a EPS;
- deliberately disturb a EPS (including in particular any disturbance which is likely to impair their ability to survive, breed or reproduce, rear or nurture their young; or to hibernate or migrate; or which affects significantly the local distribution or abundance of the species);
- deliberately take or destroy the eggs of a EPS;
- damage or destroy a breeding site or resting place of a EPS; or,
- possess, control, transport, sell or exchange, or offer for sale or exchange, any live or dead wild animal of a EPS, or any part of, or anything derived from a EPS.

2.6 Section 9(4) (b) and (c) of the WCA 1981 makes it an offence to:

- intentionally or recklessly disturb a EPS while it is occupying a structure or place which it uses for shelter or protection; or,
- intentionally or recklessly obstruct access to any structure or place which any EPS uses for shelter or protection.

2.7 In order for otherwise illegal acts to proceed lawfully, an appropriate licence must be sought under the 2017 Regulations and WCA 1981. Licences for the purpose of development are currently determined by Natural England and must include an appropriate mitigation and monitoring scheme to secure the "favourable conservation status" of the species in the local area.

Wild Birds

2.8 Wild birds are protected under the WCA 1981. The basic principle of the Act is that all wild birds, their nests and eggs are protected by law and some rarer species are afforded special protection. Wild birds are defined as those resident in or visitors to Great Britain, in a wild state (does not include poultry or game bird). Section 1(1) of the WCA 1981 states that it is an offence to intentionally or recklessly:

- kill, injure or take any wild bird;
- take, damage or destroy the nest of any wild bird while that nest is in use or being built; or
- take or destroy an egg of any wild bird.

2.9 Section 1(2) of the WCA 1981 states that it is an offence to possess or control any live or dead wild bird or any part of or anything derived from a wild bird or an egg or part of an egg of a wild bird.

2.10 It is an offence under section 1(5) of the WCA 1981 to intentionally or recklessly:

- disturb any wild bird included in schedule 1 while it is building a nest or is in, on or near a nest containing eggs or young; or,
- disturb dependent young of such a bird.

3. Planning

3.1 The local planning authority has the power to request information under Article 4 of the Town and Country (Planning Applications) Regulations 1988 (SI1988.1812) (S3) which covers general information for full applications.

3.2 The National Planning Policy Framework (NPPF) revised in 2019 requires the planning system and policies to balance economic, social and environmental factors of sustainable development. The environmental component of the NPPF states that any planning application must: *'contribute to protecting and enhancing our natural, built and historic environment; including making effective use of land, helping to improve biodiversity, using natural resources prudently, minimising waste and pollution, and mitigating and adapting to climate change, including moving to a low carbon economy'*. Chapter 15 (Conserving and Protecting the Natural Environment) includes the methods by which this is to be achieved, including:

- protecting and enhancing valued landscapes, sites of biodiversity or geological value;
- recognising the intrinsic character and beauty of the countryside; and,
- minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.

3.3 Planning permission should be refused if: significant harm from a development cannot be adequately avoided, adequately mitigated, or as a last resort compensated for. The presumption in favour of development does not apply where development requiring appropriate assessment under the Habitats Directive is being considered, planned or determined. Planning policies and decisions should limit the impact of light pollution from artificial light on local amenity, intrinsically dark landscape and nature conservation. Please see updated Planning Practice Guidance https://www.gov.uk/government/speeches/local-planning.

3.4 Section 99 of ODPM Circular 06/2005 states: 'It is essential that the presence or otherwise of protected species, and the extent that they may be affected by the

proposed development, is established before the planning permission is granted, otherwise all relevant material considerations may not have been addressed in making the decision. The need to ensure ecological surveys are carried out should therefore only be left to coverage under planning conditions in exceptional circumstances, with the result that the surveys are carried out after planning permission has been granted. However, bearing in mind the delay and cost that may be involved, developers should not be required to undertake surveys for protected species unless there is a reasonable likelihood of the species being present and affected by development. Where this is the case, the survey should be completed and any necessary measures to protect the species should be in place, through conditions and/ or planning obligations, before permission is granted'.

3.5 Local authorities have a duty to consider the three derogation 'tests' of the Habitats Directive: no satisfactory alternative, imperative reasons of overriding public interest (including those of a social or economic nature or beneficial consequences for the environment) and that the favourable conservation status of the species will be maintained. If any of these requirements are not met, the local authority should refuse planning permission regardless of any commitment to obtain a Natural England licence.

4. Methodology

Bat Emergence/ Re-entry Surveys

4.1 Two dusk bat emergence and one dawn re-entry surveys were undertaken (Table 1). The surveys were carried out by E. Dickins MSc. MICEEM (bat survey class licence levels 3 & 4 surveyor: 2016-27135-CLS-CLS/ 2016-27136-CLS-CLS), J. Sowden MSc. ACIEEM (bat survey class licence level 2 surveyor: 2016-24351-CLS-CLS), S. Sanchez MSc. Qualifying CIEEM Member, Z. Paraskevopoulou MBiol., T. Gearing BSc., H. Holt, and J. Damant BSc. in line with best practice guidelines (e.g., English Nature, 2004; Natural England, 2016; and Collins, 2016). Surveyors, and audio and visual equipment were positioned to cover all potential roost entry/ exit points where possible to determine presence/ absence of bat use.

4.2 Surveys were conducted with Anabat Walkabout full spectrum handheld detectors and Pettersson 240X time expansion handheld detectors recording to Tascam digital audio recorders. The surveys were supported by Pettersson D500X remote bat detectors. Details of the remote bat detector settings used are included (Table 2). Night-shot video cameras (Canon XA20, Canon XA30, Sony HDR SR5, and SANNCE 4CH 1080N Security Camera System, 1TB HDD+ 10.1" LCD Screen Monitor Built-in, 4X 2.0MP Outdoor CCTV Cameras System with up to four cameras) paired with infrared lights, plus a Pulsar Helion thermal imaging scope, were used.

Table 1. Bat activity survey details.

Date	Start Time	End Time	Sunset/ Sunrise	Surveyor Initials	Weather Conditions
03/06/2021	21:00	22:45	21:15	ED, JS, SS, JD, HH	17.5 – 16.5°C, light rain at survey start, 90% cloud cover, very light breeze
02/07/2021	03:19	05:04	04:49	ED, TG, SS, JD, ZP	16.5 - 10°C, dry, 50% cloud cover, very light breeze
15/07/2021	21:01	22:46	21:16	JS, JD, TG, HH, ED	20°C, dry, 0% cloud cover, light breeze

Table 2. Pettersson D500X settings.

Settings	Standard (User 0)
Sample frequency	500
Pre trigger	Off
Record length	3
High pass filter	Yes
Auto record	Yes
Trigger sense	Very high
Input gain	45
Trigger level	36
Interval	5
Relative timers	
On/Off	-00:30/+00:30
Batteries	4 x AA 1.5v Alkaline

Biosafety and Biosecurity

4.3 All fieldwork is undertaken in line with the current government and professional (CIEEM, BCT, IUCN, etc.) COVID-19 guidelines at the time, maintaining physical distancing between surveyors, clients, and members of the public as appropriate.

4.4 Hygiene and biosecurity measures set out with Bernwood Ecology's COVID-19 Risk Plan are strictly adhered to, including regular thorough handwashing where possible and, where not, regular use of an appropriate viricidal hand sanitiser.

Data Analysis

4.5 All sonograms recorded using handheld bat detectors were manually verified by Bernwood Ecology to confirm identification using BatSound (v. 3.31).

4.6 All recordings from remote bat detectors were analysed using BatClassify; an automated call extraction and identification software by University of Leeds (Scott 2014; Scott & Altringham, 2014). The software analyses the recordings and returns a 'probability of occurrence' value (0-1) for each species (barbastelle *Barbastella barbastellus*, alcathoe *Myotis alcathoe*, Bechstein's *M. bechsteinii*, whiskered/ Brandt's *M. mystacinus/ M. brandtii*, Daubenton's *M. daubentonii*, Natterer's *M. nattereri*, brown long-eared *Plecotus auritus*, lesser *Rhinolophus hipposideros* and greater *Rhinolophus ferrumequinum* horseshoe, common *Pipistrellus pipistrellus* and soprano *P. pygmaeus* pipistrelle and large species of bats termed 'NSL' [noctule *Nyctalus noctula*, serotine *Eptesicus serotinus*, Leisler's *N. leisleri*]) to be present within a call sequence. The values highest to 1 indicate a higher likelihood of a species present within a call sequence. The presence of other species, including Nathusius's pipistrelle *P. nathusii*, are not considered by the software.

4.7 Scott & Altringham (2014) recommend a standard threshold of acceptance of ≥0.9 for all species. Bernwood Ecology have undertaken a number of verification exercises of sonograms and compared these to BatClassify, resulting in the following observations:

- Barbastelle results ≥0.8 are accurate, but as this is generally an under-recorded species, verification of any records is always undertaken.
- Results for *Myotis* bats are occasionally above the recommended 0.9 threshold, possibly due to the similarities between call characteristics of bats within this genus. Bernwood Ecology found that *Myotis* sp. calls ≥0.5 were reliably emitted by a *Myotis* bat, but identification beyond genus to species was difficult, if not impossible. For this reason, the *Myotis* bats have been grouped and a threshold of ≥0.5 applied; however, this may result in the double-counting of *Myotis* and caution is advised when drawing conclusions on the abundance of this genus within a set of recordings.
- 'NSL', common and soprano pipistrelle results appear to be accurate above ≥0.9.
- Brown long-eared bats are rarely recorded using remote bat detectors, even where high numbers of brown long-eared bats are known, resulting in an underrepresentation of this species on most sites. Verification of brown long-eared calls >0.5 are mostly accurate but verification is required.
- Greater and lesser horseshoe bats have not been positively recorded at any sites where Bernwood Ecology has surveyed; therefore, the recommended threshold of ≥0.9 has been applied.

Scientific Consultation

4.8 In agreement with Conservation Evidence, Bernwood Ecology, as Evidence Champions, will:

- ensure that, where possible, the mitigation work is designed around a scientifically testable approach, observing the Conservation Evidence approach to critical assessment, study design, analysis and reporting;
- build into project planning processes and reports a requirement for ecologists to check the Conservation Evidence website for relevant evidence, and describe the findings in the report; and,
- where possible, publish results reporting on any tests of conservation interventions whether successful or otherwise in agreement with the client in the Conservation Evidence journal and other peer-reviewed journals.

5. Constraints and Limitations

Safe Access

5.1 Part or all the site may be considered to be inaccessible following an assessment of risk and therefore the survey may be constrained. Risks that may limit the survey effort include structurally unsafe structure(s) (including roof joists), confined spaces and dangerous egress and ingress points, asbestos, sharps, livestock, and hostilities from members of the public. Details of any access constraints are provided within the results of the report.

Digital Mapping

5.2 Every effort is made to ensure mapping accuracy; however, the exact locations of features should not be relied upon.

Mobile Species

5.3 Bats are a highly mobile species and move throughout a landscape often using multiple roost sites (depending on the species). Bats may be found in any suitable roosting cavity or void at any time of the year.

6. Results

Bat Emergence/ Re-entry Surveys

6.1 Survey conditions were optimal for the surveys to be considered valid under the BCT Good Practice Guidelines (Collins, 2016). Surveyor positions provided adequate coverage of all aspects of the structure, assisted with high-quality technology. The emergence and re-entry surveys were therefore able to determine bat use with a high degree of confidence.

6.2 Common pipistrelle roosting behaviour was observed in:

- a roof beam in B2c (potential roost);
- under the bitumen felt of the north western projection of B2c (roost);
- from verge of northern gable of B2c (access point, probable roost location);
- a gap in the eastern eaves between B3c and B3d (access point, probable roost location);
- a small hole in the roof of B3d (access point, probable roost location).

6.3 Roosting behaviour was observed of a *Myotis* bat in the eaves adjacent to broken window between B3a and B3b; and of possible brown long-eared bats in the western window or a nearby gap of B3c.

6.4 Common pipistrelles and noctules were the most recorded species, followed by *Myotis* species (likely to be Natterer's bats) and lastly brown long-eared bats. All except noctules were recorded entering and leaving at multiple points in both B2 and B3, though noctule use of the buildings for foraging/ passing through cannot be discounted. Details of the surveys can be found in Table 4, a plan of summarised bat activity in Appendix 4, and details of the static detector recordings are in Appendix 5.

6.5 The remote bat detectors recorded a total of 101 passes: 64 common pipistrelles, 17 *Myotis* (three calls were verified as background noise), 15 'NSL' species (three calls were verified as background noise), two brown long-eared bats, two barbastelles, and one soprano pipistrelle. The majority of the calls were recorded from the eastern aspects of B2 and B3, as well as from B2c (Table 5).

6.6 Three bird nests were recorded: one under the eastern eaves of B3d, one under the ridge of B3a, and one in the roof tiles between B2a and B2b. Additional birds nesting in or on the building cannot be ruled out.

Table 4. Summary of bat emergence survey results.

Time	Species	Description of activity
3rd June 2021 (emergence survey). Sunset: 21:15.		
21:32, 21:35, 21:40	Common pipistrelle	One bat **emerged** from the verge of the northern gable of B2c., and another was seen going in and out of the north western aspect of B2c. A peak count of one foraging bat was recorded in the steel barn northerly adjacent to B2 and in the north western courtyard.
21:43-21:49	Common pipistrelle, noctule, *Myotis* species, and unidentified bat	One pipistrelle **emerged** from the northern verge of B2c, and another flew out from the southern window of B3d. A pipistrelle was observed flying south along the eastern aspects of B2&3. One noctule pass was recorded from the north east, south east and western survey positions. Two *Myotis* bats flew along the ridge of B2b&c. Unidentified social calls were recorded from the north western position.
21:50-21:56	Common pipistrelle	Two bats continuously foraged for five minutes over the south western courtyard. Two bat passes were observed flying south, over B2a and over B3c, and three passes were heard from the north eastern survey position.
21:57	Noctule, common pipistrelle	One brief noctule pass heard at the north western and north eastern sides of B2. One pipistrelle flew over the southern side of B3d.
21:57-22:15	Common pipistrelle	One bat flew out from the southern window of B3d. Continuous foraging by multiple bats was observed in steel barn northerly adjacent to B2 and around the north western courtyard, with one bat seen flying over the barn; and one bat foraged by the south eastern barn door of B3d.
21:59-22:13	Noctule	Two noctule passes were seen flying north from the eastern and western survey positions. Bat passes were recorded from the south western courtyard, and the western (possibly inside B2c), eastern survey positions.
22:01	*Myotis* species	Two bats flew out of the open barn door at the north western elevation of B2c.

Table 4. Continued.

Time	Species	Description of activity
22:05	Unidentified bat	One bat flew into the barn via the northern gable of B2.
22:15-22:20	Common pipistrelle, unidentified bat, *Myotis* species	Continuous foraging of multiple pipistrelle bats was observed in the steel barn (B1) north of B2 and around the north western courtyard. One pipistrelle flew north along the eastern side of B2 & B3. One pipistrelle foraging pass over south western courtyard, and another pipistrelle pass west over B3a were noted. One pipistrelle flew north from south western courtyard. Unidentified social calls were recorded in the north eastern survey position. One *Myotis* bat was seen above the mezzanine floor in B2b flying north towards B2c.
22:24-22:30	Common pipistrelle	One bat flew into B2c twice through the north western door. One bat was observed flying south over B3 and north over B2 & B3, and five bat passes were recorded from the north eastern survey position. One bat foraged in the north eastern side of B2.
22:25-22:26, 22:37, 22:46	Noctule	One bat pass heard from the eastern and western survey positions, and two bat passes were recorded from the south eastern survey position.
22:33-22:43	Common pipistrelle	A peak count of one bat was seen flying south over B3a, and south east and north over B3. One bat was foraging in the south western courtyard. Bat passes were noted from the eastern survey positions.
22:40-22:43	Brown long-eared bat	Two bats were heard from the north eastern survey position.
2nd July 2021 (re-entry survey). Sunrise: 04:49.		
03:43-03:52	Common pipistrelle, brown long-eared bat	One pipistrelle flew north from the southern houses along the eastern aspects of B2&3, and two pipistrelles were seen flying south over B2b. One pipistrelle flew south from the eastern aspect of B3c. One brown long-eared bat flew west from the south western courtyard.

Table 4. Continued.

Time	Species	Description of activity
03:55, 3:57	Common pipistrelle	One bat flew in through the eastern door of B3c. One bat flew west along B2c.
4:00-4:27	Common pipistrelle	Two bats flew in through the south eastern door of B3d and one through the north western door of B2c. Up to two bats showed interest in a roof beam inside B2c before **entering** under the bitumen felt at the north western projection of B2c. One bat entered the steel barn north of B2. One bat was seen **emerging and re-entering** through a small hole in the roof of B3d. Four bats were seen **entering**, possibly through a gap at the southern eaves between B3d and B3c. Commuting activity over B2 from the north western courtyard and over B3a was noted. Five foraging passes with social calls were recorded over the north western courtyard and B2a, and a peak count of two bats were foraging in the north western and south western courtyards.
04:10	Unidentified bat (possible brown long-eared bat)	Two possible brown long-eared bats flew into B3c. One entry point was not identified, and the second **entry** was either through the western window or a gap in the western elevation of B3c.
15th July 2021 (emergence survey). Sunset: 21:16		
21:30	Common pipistrelle	One bat flew out from the north western door of B2c.
21:31-22:05	*Myotis* species, common pipistrelle, noctule, and unidentified bat	One *Myotis* bat **emerged** from the eaves next to a broken window between buildings B3a and B3b. One pipistrelle circled in front of north western barn door of B2c, entry undetermined; and one pipistrelle flew out via the north western barn door of B2c. Noctules were observed to commute north and east over B2c and south east over B3d, with a peak count of two noctules foraging over B2. One pipistrelle flew in circles inside B3b and another looped over B2a. Foraging pipistrelles were recorded in the adjacent steel barn (B1), in the south western courtyard and over B2a. Two unidentified bats were recorded from the south eastern survey position.

Table 4. Continued.

Time	Species	Description of activity
22:11-22:24	Common pipistrelle, noctule, unidentified bat	One pipistrelle flew out from northern window of B2c and flew towards the adjacent steel barn. One pipistrelle flew south along the eastern side of B3 and a peak count of two foraged in the north western courtyard and the adjacent steel barn. Maximum two and one pipistrelles were recorded from the south western and western survey positions, respectively. A peak count of four noctules were recorded commuting from the northern and southern survey positions. An unidentified bat was recorded from the south eastern survey position.
22:25	Brown long-eared bat	One bat observed inside adjacent steel barn (B1).
22:52	Brown long-eared bat	One bat heard briefly from the south western survey positions.
22:55	*Myotis* species	Two bats were recorded socialising inside B2b.

Table 5. Summary of remote bat detecting results by species, genus, or group.

Species	Summary
Barbastelle	There were two recordings, both from inside of B2a, on 03/06/2021.
Myotis species	There were 17 recordings, three of which were verified to be background noise. The remaining 14 were recorded on 15/07/2021: seven from B3b and seven from B2c.
'NSL' species group	There were 15 recordings, three of which were verified to be background noise. The remaining twelve were recorded from the eastern side of B3: two on 03/06/2021 and the other ten on 15/07/2021.
Brown long-eared bat	There were two recordings from B3b on 15/07/2021.
Common pipistrelle	The most frequently recorded species with 64 recordings. The majority of the calls were recorded from the eastern side of B3 on 03/06/2021 and from B2c on 15/07/2021.
Soprano pipistrelle	There was one recording from the eastern side of B3 on 02/07/2021.

7. Discussion and Conclusions

7.1 There was a common pipistrelle day roost in B2c as well as a Natterer's bat day roost of maximum three bats is in B2b recorded during the emergence/ re-entry surveys (Appendix 4). A second Natterer's bat day roost, sporadically used in low numbers identified through DNA analysis, and evidence of a feeding roost (likely to be brown long-eared) were noted in B3b (Appendix 3). The quantity of roosts form a complex site for evaluation which must be taken into account when developing the mitigation strategy and in proving additionality for biodiversity gains for bats under the NPPF (2019). There was no evidence of a maternity roost using the surveyed structures by any species, though the building has high suitability for supporting such a roost.

7.2 In the absence of mitigation, the proposals to demolish the buildings will result in the destruction of several bat roosts of at least three species (common pipistrelle, brown long-eared and Natterer's) and risks the killing and injury of individual bats by unsupervised contractors. The species and quantity of roosts fall outside of the scope of a Bat Mitigation Class Licence and therefore application to Natural England is required through a full bat mitigation licence (A13).

7.3 There were moderate to high levels of foraging activity observed, particularly for noctules, indicating a possible roost nearby but unrelated to B2 & B3. Artificial light

levels at the site are currently low, which is likely to contribute to the observed bat activity levels. Recommendations are made to ensure that any lighting as part of the development does not negatively impact local bat populations.

7.4 The buildings offer breeding bird nesting opportunities under eaves, tiles, in the mezzanine flooring, etc. Nesting birds are to be considered within the works programme and risk register for the project, in addition to the bat interest.

8. Recommendations

8.1 The ecological mitigation hierarchy must be followed by all elements of the project, from design, to construction, to end use, to ensure there is a net gain to biodiversity on site and the favourable conservation status of protected species is maintained. The mitigation hierarchy follows:

- *Avoid*: avoid impacts on biodiversity as a priority.
- *Minimise*: minimise impacts that cannot be completely avoided, through alternations to design, use, scale, location, timing of phases, etc.
- *Mitigate and compensate*: undertake works which will have an impact by implementing safeguarding measures, such as using an Ecological Clerk of Works (ECoW) where there are risks to wildlife. Provide compensation to replace habitats that have been lost as a consequence of proposals.
- *Enhance*: Provide additional habitats and features for wildlife to ensure biodiversity net gain. Habitat offsetting may be required where net biodiversity gain cannot be secured within the site boundary.

8.2 This report is to be read in conjunction with Bernwood Ecology's *Preliminary Ecological Appraisal* (version 3, issued: 25th May 2021) for the site, including its recommendations. The recommendations pertaining to bats and wild nesting birds are repeated below.

8.3 Works to demolish the building will require a bat mitigation licence (A13) to be granted by Natural England. A licence can only be sought from Natural England following the successful granting of planning consent, and only once all matters relating to wildlife that are capable of being discharged are discharged. The application needs to be made in advance of the works starting on site. Time must be allowed for the project ecologist to prepare and complete the application together with allowing a 6–12 week determination period by Natural England (the target of 30 working days for determination is often exceeded). The following are outline mitigation principles for the licence application to assist with the reduction of risk of harm and disturbance to individual bats:

- Works are to be timed to commence in the spring (mid-March to end of April) or autumn (September to mid-October) when bats are unlikely to be torpid, heavily pregnant or rearing young.
- A pre-start briefing is to be given to all site workers from the first day of on-site works by the Named Ecologist or Accredited Agent acting on behalf of the Named Ecologist. The pre-start briefing will include information of the bat roost interest at B2 & B3, the details of the licence for the site and the 'unexpected finds' process.
- Roof tiles and other features which may be suitable for supporting roosting bats in the structures are to be removed by hand and under ecological direction (minimum of Bat Class Licence Level 2) by either the Named Ecologist or an Accredited Agent nominated by the Named Ecologist. Time must be allowed for the ecologist to undertake searches for bats throughout this process.
- Measures to compensate for the losses of these roosts will need to be included in the design proposals for the licence, such as:
  - Crevice woodcrete bat boxes suitable for individual common pipistrelle and Natterer's bat.
  - Creation of dedicated bat roof void within one of the proposed buildings with secure bat access and design to minimise entry of predators such as domestic cats as far as possible.
  - New rooftiles on the replacement dwellings installed with a small lift to recreate the common pipistrelle roosts lost during the demolition of the buildings.

8.4 There is likely to be a requirement for post-development monitoring of the site as a legal obligation under any granted licence. This requirements for such will be dependant on consultation with Natural England through the licence application process but is likely to include at least one presence/ absence survey to determine whether the site remains viable for bats post-development and allow for remediation to be identified and implemented where compensation habitats appear to be unused by bats.

8.5 Only chemical timber treatments and/or chemically treated wood for pests and fungi compliant with Natural England's current guidance are permitted for use in the replacement dwellings (https://www.gov.uk/guidance/bat-roosts-use-of-chemical-pest-control-products-and-timber-treatments-in-or-near-them)..

8.6 The use of breathable roofing membranes or similar (poly-spun fibres that constitute a bat entanglement risk) must not be used on replacement dwellings. Currently, Natural England will only permit the use of traditional bitumen hessian backed felt (type 1F).

8.7 There must be no additional lighting on site that will spill artificial light onto any new or existing bat roost habitat (e.g., bat boxes, bat access points, roosts) or habitats of high ecological vale (surrounding trees/ woodland and hedges). Published guidance on the use of lighting in relation to bats (published by the Institute of Lighting Professionals and the Bat Conservation Trust in September 2018) provides information on lighting types and designs. A lighting designer should be consulted to detail the final lighting design and layout, implementing the following principles:

- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (ideally <2700Kelvin) should be adopted to reduce blue light component.
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2013).
- Any external security lighting should be set on motion-sensors and short (<1min) timers.
- As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.
- The planting of trees, bushes and hedges can be used to mitigate for impacts of artificial lighting through the creation of dark buffers.

8.8 In order to ensure that active nests are not damaged or destroyed during the construction activities, it is advised that vegetation clearance and works on the buildings are started during the autumn or winter months (i.e., September-February) when birds are least likely to be nesting, subject to other protected species recommendations. Works undertaken outside of this period will require a nesting bird check to be conducted by a suitably experienced ecologist no more than 24 hours prior to works starting. If active nests are observed, construction activity within the vicinity must cease and an appropriate safe zone around the nest established until the young have been verified to have fledged by the ecologist.

Age of Survey Data

8.9 It is accepted that ecological surveys have a limited period of validity due to changing habitats and the transient behaviours of some UK wildlife species. Delays on the progression of the project through planning beyond 12-18 months will require the emergence/ re-entry surveys to be repeated (CIEEM, 2019). Please note that licence applications must be supported with data from bat surveys from the current or most recent survey season.

9. References and Further Reading

CIEEM (2015). What to expect from a bat survey: A guide for UK homeowners. [online] http://www.cieem.net/data/files/Bat_Survey_Guidelines_for_UK_Home_Owners_2015.pdf

CIEEM (2019). Advice Note: on the lifespan of ecological reports & surveys. [online] https://cieem.net/wp-content/uploads/2019/04/Advice-Note.pdf

Collins, J. (ed.) (2016). Bat surveys for professional ecologists: Good Practice Guidelines (3rd edn). The Bat Conservation Trust, London.

Institution of Lighting Professionals and Bat Conservation Trust (2018). Bats and artificial lighting in the UK. [online] https://www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/

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Mitchell Jones, A. J. (2004). Bat mitigation guidelines. English Nature, Peterborough.

Natural England (2021). Protected species and site: How to review planning proposals. [online] https://www.gov.uk/guidance/protected-species-and-sites-how-to-review-planning-proposals

Russ, J. (2012). British bat calls: A guide to species identification. Pelagic Publishing, Exeter.

Scott, C. (2014). Software download link (BitBucket): https://bitbucket.org/chrisscott/batclassify/downloads

Scott, C. & Altringham, J. (2014). WC1015 Developing effective methods for the systematic surveillance of bats in woodland habitat in the UK. Downloadable from: http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=178

Stone, E. L. (2013). Bats and lighting: Overview of current evidence and mitigation.

Appendix 1. Site location in relation to existing landscape.

Site Boundary

0 400 800 m

N

Location Plan

Site: Upper Pollicott Farm, Ashendon, Buckinghamshire

Revision and Date: (-) 24/10/2020

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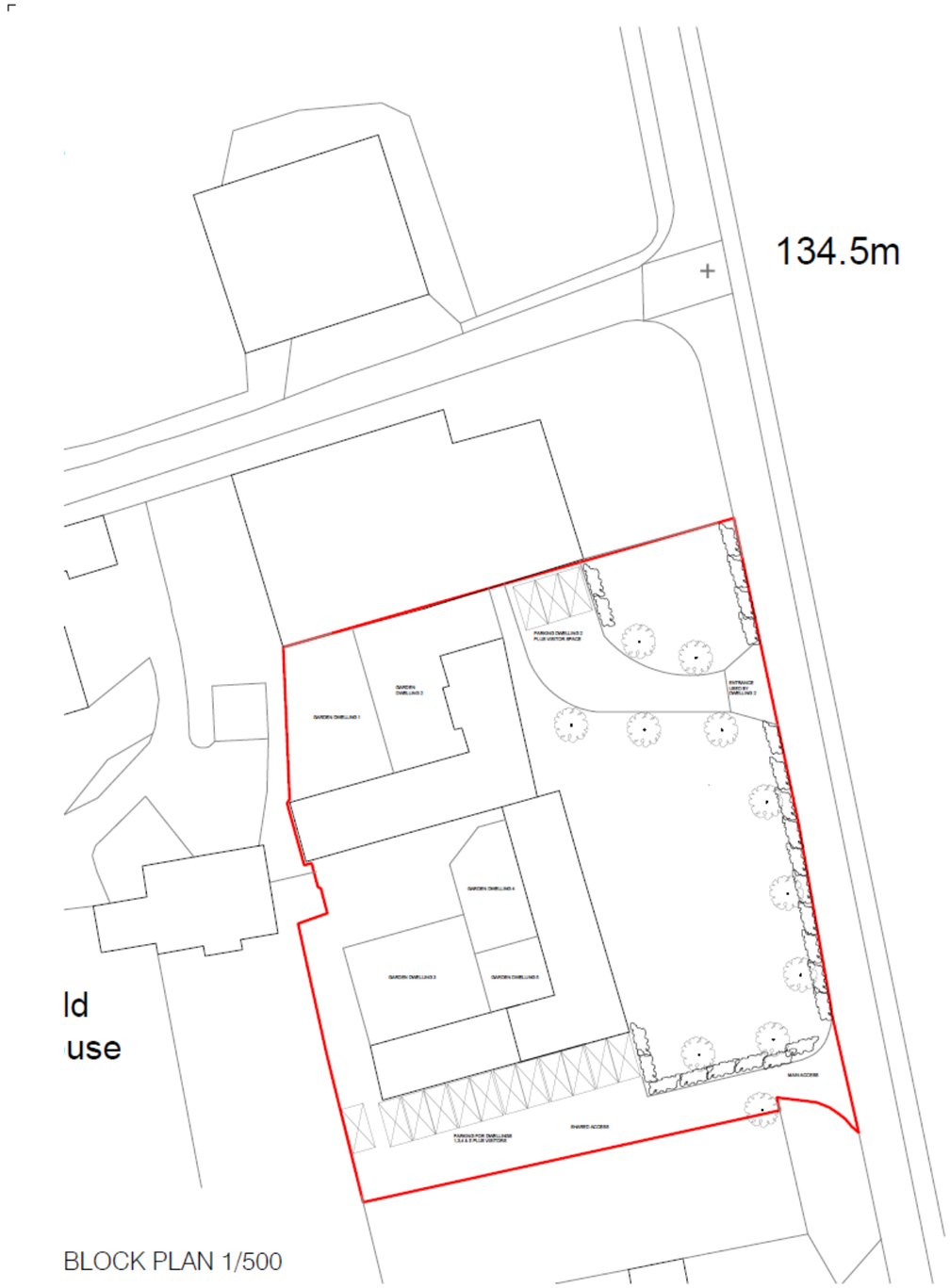
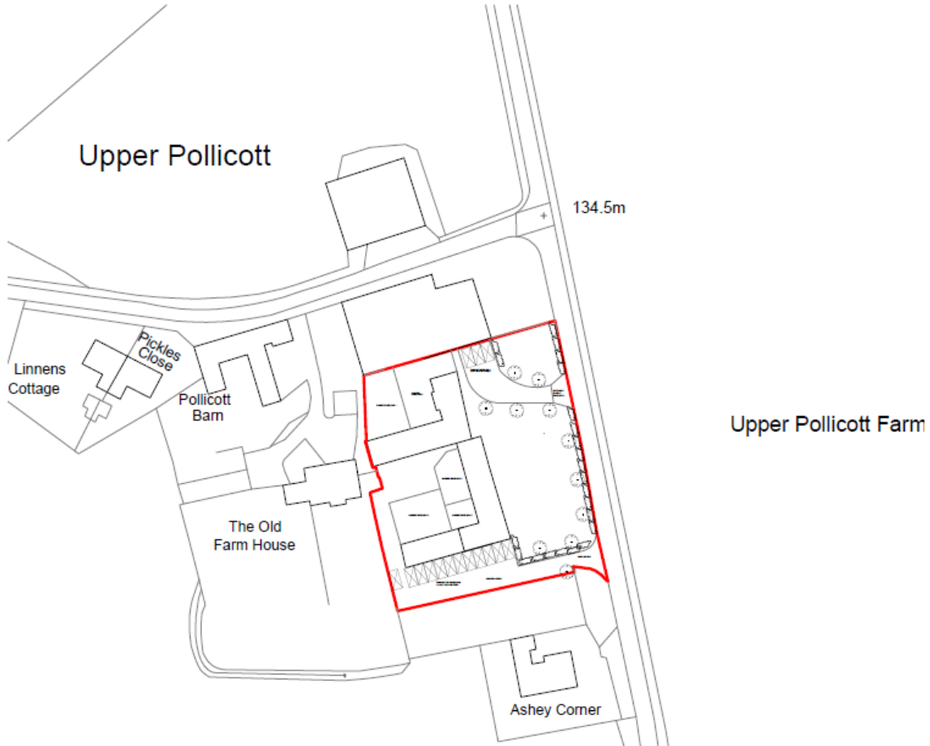
Appendix 2. Proposed block plan.





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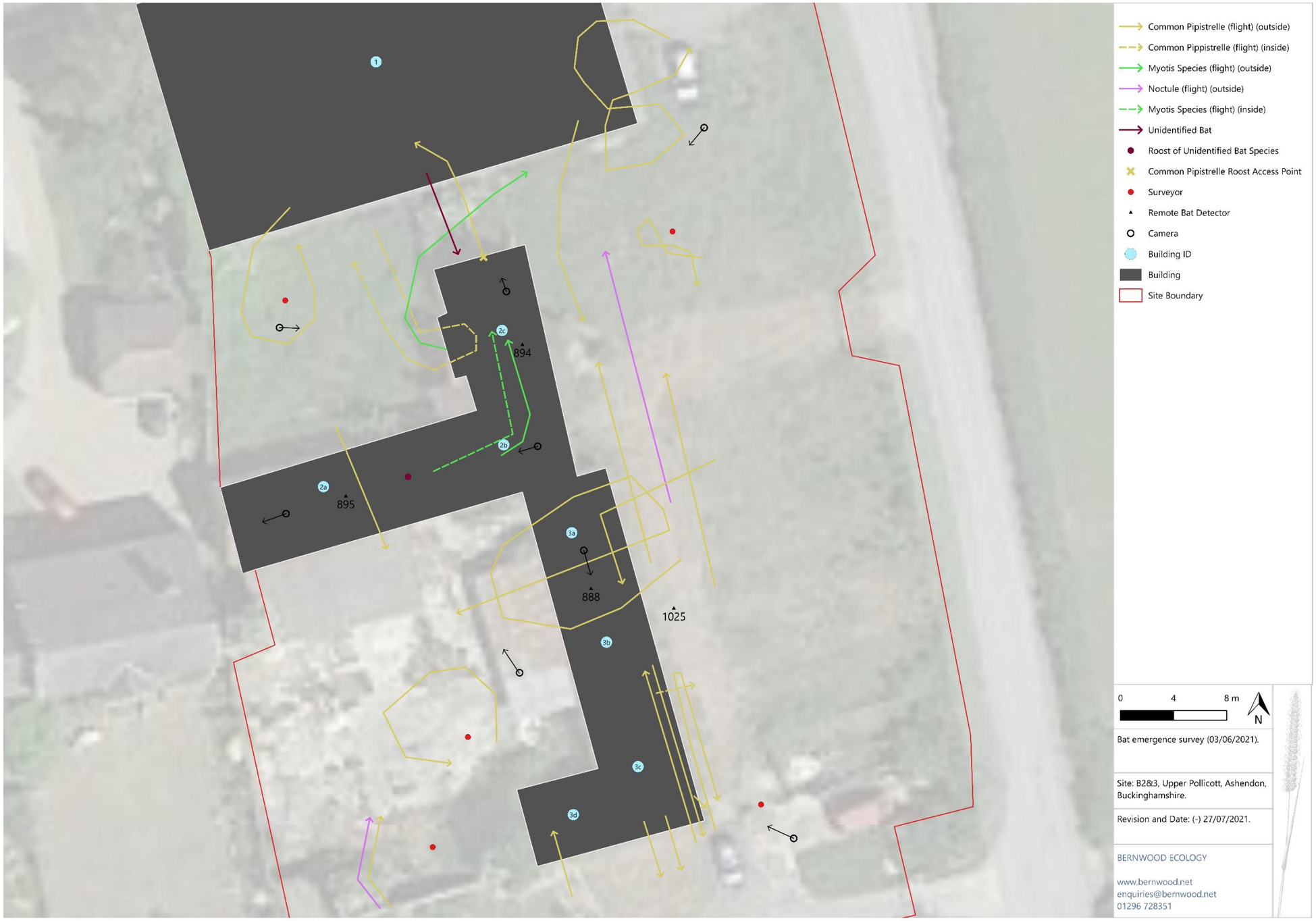
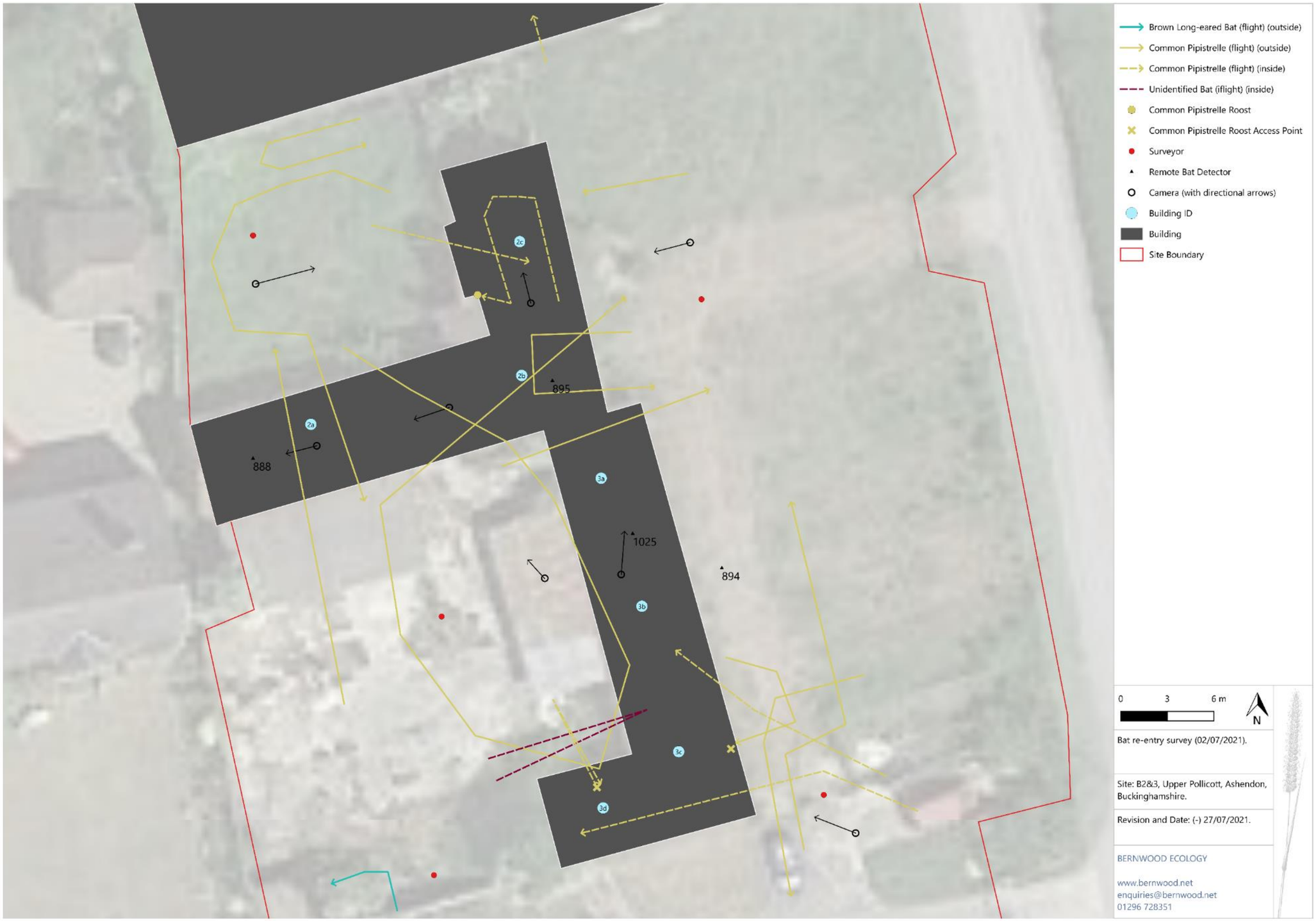
TITLE: SITE/BLOCK PLANS			
CLIENT THOMAS BETTS & CO			
PROJECT PROPOSED BARN CONVERSIONS AT UPPER POLLICOTT FARM ASHENDON, AYLESBURY HP18 0HH			
JOB No. 487	DWG No. 001	A3	SCALE 1:500
DRAWN AT	DATE 11.04.19		REV. C

Appendix 3. Preliminary Roost Assessment summary plan.

Appendix 4. Bat emergence/ re-entry survey summary plans.




Brown Long-eared Bat (flight) (outside)
Common Pipistrelle (flight) (outside)
Common Pipistrelle (flight) (inside)
Unidentified Bat (iflight) (inside)
Common Pipistrelle Roost
Common Pipistrelle Roost Access Point
Surveyor
Remote Bat Detector
Camera (with directional arrows)
Building ID
Building
Site Boundary
2c
2b
2a
3a
3b
3c
3d
888
895
1025
894
0
3
6 m
N
Bat re-entry survey (02/07/2021).
Site: B2&3, Upper Pollicott, Ashendon, Buckinghamshire.
Revision and Date: (-) 27/07/2021.
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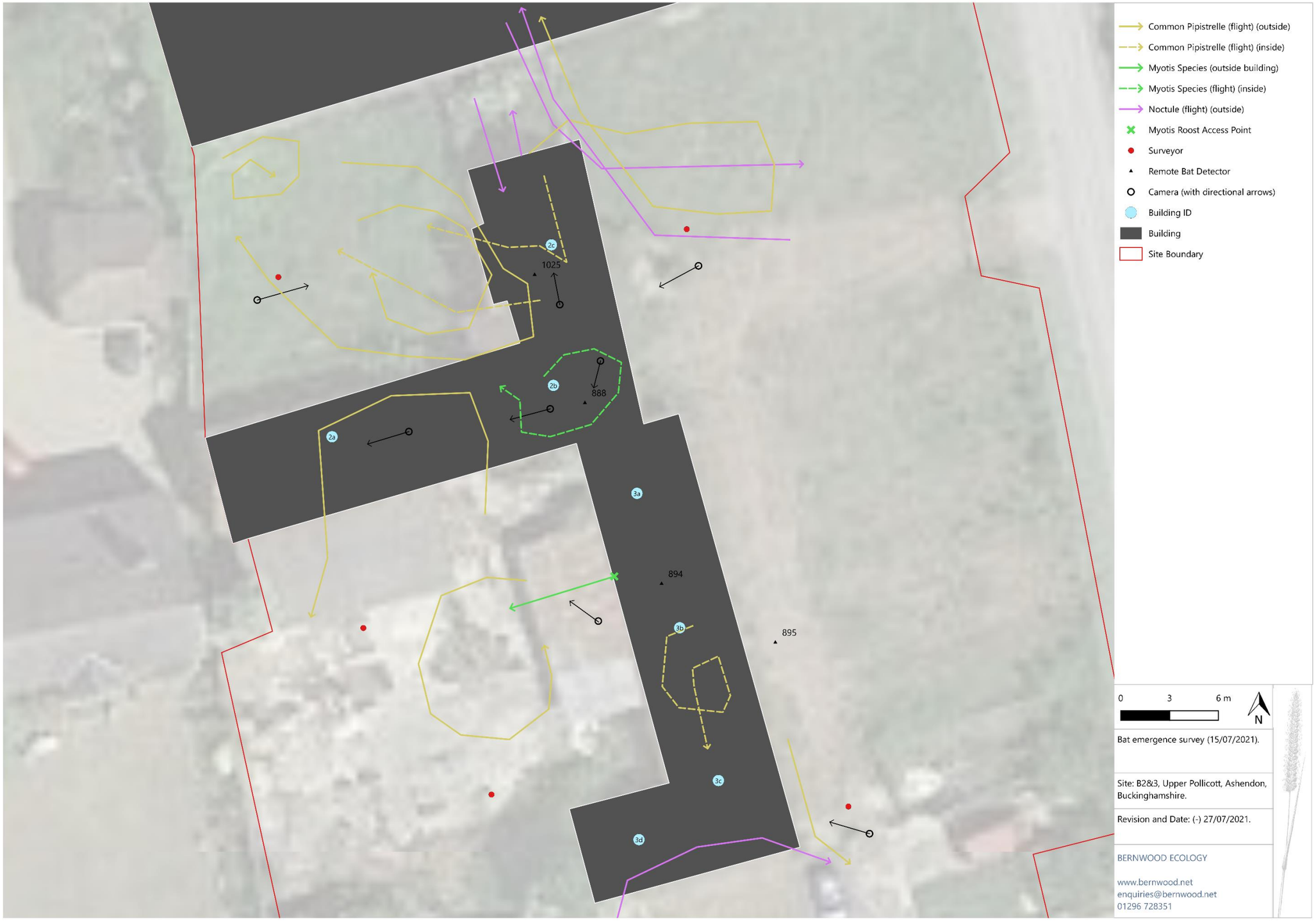
Common Pipistrelle (flight) (outside)
Common Pipistrelle (flight) (inside)
Myotis Species (outside building)
Myotis Species (flight) (inside)
Noctule (flight) (outside)
Myotis Roost Access Point
Surveyor
Remote Bat Detector
Camera (with directional arrows)
Building ID
Building
Site Boundary
2a
2b
2c
3a
3b
3c
3d
1025
888
894
895
0 3 6 m
N
Bat emergence survey (15/07/2021).
Site: B2&3, Upper Pollicott, Ashendon, Buckinghamshire.
Revision and Date: (-) 27/07/2021.
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Appendix 5. Summary of remote bat detector recordings.

The quantity of recordings does not necessarily indicate levels of bat activity, as other noises may also be recorded. Most calls (barbastelle, *Myotis* sp., 'NSL' and long-eared bat) verified for accuracy.

Location	ID	Recording period	No. of recordings		Barbastelle	*Myotis* sp.	'NSL'	Long-eared bat	Common pipistrelle	Soprano pipistrelle
				Detection probability	>0.8	>0.5	>0.9	>0.5	>0.9	>0.9
Inside B3b	888	03/06/21 20:38 to 03/06/21 22:49	87	No. of calls	0	1[1]	1[1]	0	0	0
Inside B2c	894	Failed	-	No. of calls	-	-	-	-	-	-
Inside B2a	895	03/06/21 21:07 to 03/06/21 22:58	44	No. of calls	2	0	0	0	0	0
Outside eastern side of B3	1025	03/06/21 20:57 to 03/06/21 23:15	109	No. of calls	0	0	2	0	28	0
Inside B2a	888	02/07/21 03:09 to 02/07/21 04:58	86	No. of calls	0	1[1]	0	0	0	0
Outside eastern side of B3	894	02/07/21 03:14 to 02/07/21 05:00	78	No. of calls	0	0	2[1]	0	1	1
Inside B2b	895	02/07/21 03:10 to 02/07/21 05:02	123	No. of calls	0	0	0	0	1	0
Inside B3b	1025	02/07/21 03:11 to 02/07/21 5:00	100	No. of calls	0	1[1]	0	0	0	0
Inside B2b	888	15/07/2021 20:19 to 15/07/2021 23:06	119	No. of calls	0	0	0	0	1	0
Inside B3b	894	15/07/2021 20:48 to 15/07/2021 23:15	140	No. of calls	0	7	0	2	6	0
Outside eastern side of B3	895	15/07/2021 20:48 to 15/07/2021 23:03	39	No. of calls	0	0	10	0	0	0
Inside B2c	1025	15/07/2021 20:48 to 15/07/2021 23:01	84	No. of calls	0	7	0	0	27	0

[1] Verified to be background noise