Shaw Farm, Stanton St Bernard

Bat Survey Report

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For: Alex Marshall

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General Notes

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Contents

1 Introduction 4
1.1 Purpose of the Report 4
1.2 Ecological Context 4
1.3 Structure of the Report 4
2 Methods 6
2.1 Background Data Search 6
2.2 Habitat Assessment 6
2.3 Daytime Bat Survey 6
2.3.1 General 6
2.3.2 Weather 7
2.3.3 Method 7
2.4 Dusk Surveys 9
2.4.1 General 9
2.4.2 Personnel 9
2.4.3 Equipment 10
2.4.4 Weather 11
3 Results 12
3.1 Background Data Search 12
3.2 Habitat Assessment 12
3.3 Daytime Bat Survey 13
3.3.1 Description of the Stable Block 13
3.4 Dusk Surveys 18
3.4.1 General 18
3.4.2 Dusk Survey 1 – 01.06.22 18
3.4.3 Dusk Survey 2 – 28.06.22 18
3.4.4 Dusk Survey 3 – 26.09.22 18
3.4.5 Dusk Survey Results Summary 19
3.5 Survey Constraints 19
3.5.1 General 19
4 Legislation 20
5 Evaluation and Conclusions 21
5.1 Confirmation of Results 21
5.2 Mitigation and Compensatory Roosting Provision 22
5.2.1 Timings 22
5.2.2 Toolbox Talk 22
5.2.3 Inspection and Exclusion 22
5.2.4 Bat Loft 23

5.2.5 Lighting 25
5.2.6 Enhancement 26
6 References 27
7 Figures 28

Executive Summary

1. This report describes the results of bat surveys carried out by Cotswold Ecology Ltd on a Stable Block at Shaw Farm, New Town, Stanton St Bernard, SN8 4LU (Ordnance Survey Grid Reference SU 131 654). A site location map is given in Figure 1 and an aerial photograph of the site is shown in Figure 2.

2. A detailed daytime bat survey was carried out on 01.06.22 in connection with proposals to convert the Stable Block for living space. The roof will not need to be replaced. Three dusk surveys were then carried out in June and September 2022.

3. The immediate and surrounding habitats of the Stable Block provide excellent foraging and commuting opportunities for bats.

4. The evidence recorded during the surveys indicates that the Stable Block is being used by a breeding roost (maximum count 24 bats) of Brown Long-eared Bats (*Plecotus auritus*). The bats are likely to be using the building throughout the year, including the hibernation period.

5. The bats are roosting between the brickwork of the chimney and the sarking and at the apex of the roof space in the loft void of the southern section of the building. Bats are accessing the loft void via gaps at the eaves on the northern elevation and flying through to the loft space in the southern section.

6. As roosting bats are present, a European Protected Species (EPS) licence will be required from Natural England before the roosting spaces can be blocked or demolished. Natural England allow 30 working days to process full EPS bat licence applications (although are currently working at around 45 working days) and require listed building consent with all relevant conditions discharged (that are capable of being discharged) prior to accepting the application.

7. The mitigation and compensation detailed in Section 5.2 is suggested for the EPS licence which includes timing constraints, a toolbox talk, pre-works exclusion and the provision of a new bat loft in the adjacent building. Three bat boxes are suggested as an enhancement to the scheme.

1 Introduction

1.1 Purpose of the Report

This report describes the results of bat surveys carried out by Cotswold Ecology Ltd on a Stable Block at Shaw Farm, New Town, Stanton St Bernard, SN8 4LU (Ordnance Survey Grid Reference SU 131 654). A site location map is given in Figure 1.

The Stable Block is already partially used as an office and pool room. The proposals include the conversion of the remainder of the building for living space.

A detailed daytime bat survey was carried out on the building to assess the potential for works to impact upon bat populations and determine if further surveys and/or a Natural England licence application would be required for works to proceed. Three dusk surveys were then carried out in June and September 2022.

1.2 Ecological Context

The Stable Block is a detached building to the east of the farmhouse at Shaw Farm. There is a new detached agricultural barn to the east, with additional barns set around a central courtyard to the north and north-west. There is a swimming pool and gardens to the south. Beyond the buildings, the site lies in open countryside dominated by mixed agricultural land and woodland.

The Wansdyke Path lies approximately 93 m to the south which is enclosed within a band of broad-leaved trees. Boreham Wood lies approximately 141 m to the north. West Woods comprising approximately 383 ha of woodland lies 580 m to the north-east and is connected to the site by woodland and hedgerows.

The immediate and surrounding habitats provide excellent foraging and commuting opportunities for bats.

An aerial photograph of the site is shown in Figure 2.

1.3 Structure of the Report

The remainder of this report is structured as follows:

- Section 2 describes the survey and assessment methods;
- Section 3 presents the survey results;

- Section 4 provides relevant legislation;
- Section 5 gives an evaluation of the results and provides a mitigation strategy;
- Section 6 lists the references; and
- Section 7 provides figures.

2 Methods

2.1 Background Data Search

Aerial photographs and Ordnance Survey maps were reviewed to assess the site in the context of surrounding habitats. In addition, the MAGIC (the Multi-Agency Geographic Information for the Countryside) website was searched for records of European Protected Species (EPS) bat licence applications in the area. The MAGIC website was also searched for any statutory sites designated for bats within 10 km of the site.

2.2 Habitat Assessment

Habitats on and surrounding the site were assessed for their suitability for foraging and commuting bats. Although foraging requirements differ between species, good bat foraging habitat generally includes sheltered areas and habitats with good numbers of insects, such as woodland, scrub, hedges, watercourses, ponds, lakes and more species-rich or rough grassland. For commuting, well-connected hedgerows, woodland edge, watercourses and other linear features are generally considered to be of high value.

2.3 Daytime Bat Survey

2.3.1 General

A daytime bat survey was undertaken by James Pattenden on 01.06.22. The bat survey was carried out according to standard bat surveying guidelines issued by the Bat Conservation Trust (Collins, 2016).

James Pattenden holds a Natural England survey licence for bats (Class 2 licence number 2015-106-CLS-CLS and Bat Low Impact Class Licence, CL21 - RC162, Annex B and D) and has held over 50 bat mitigation licences from Natural England and Natural Resources Wales (NRW). James is also a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) and has 17 years of experience in ecological surveying for developments.

2.3.2 Weather

Weather conditions during the survey were sunny and warm. Cloud: 3/8 Octas; Wind:1 Beaufort; Temperature: 18°C.

2.3.3 Method

As bats are crevice-dwelling mammals it is often difficult to thoroughly inspect buildings for bats and evidence of bats without a destructive search, which is not generally practical or acceptable. An example of this would be where bats roost in between the roof tiles and the lining. These areas cannot be inspected, but a surveyor would know that bats might roost here because there are places where bats could gain entry from the outside.

The building was therefore assessed for bat roost potential according to the following factors that influence the likelihood of bat roosting:

- Surrounding habitat: whether there are potential flight-lines and bat foraging areas nearby.
- Construction detail: the type and construction of architectural features such as attics, soffit boxes, lead flashing and hanging tiles that could be used by roosting bats. Some construction details and materials are more favourable to bat occupation than others.
- Building condition: whether the building has no roof or has a sound roof without any potential bat-access points.
- Internal conditions: bats favour sheltered locations with a stable temperature regime, protection from the elements and little wind/light/rain penetration.
- Potential bat-access points: whether there is flight and crawl access.
- Potential roosting locations: descriptions of all bat-accessible voids, cracks and crevices.

A description of the building was recorded onto specially-designed survey sheets, and digital photographs were taken as a record. The development was categorised into a standard scheme as follows:

Table 1. Classification criteria for Bat Roosting Potential (BRP) of Buildings and Built structures

Category (Potential to support roosting bats)	Description
Negligible Potential	Buildings with no features suitable for supporting roosting bats. Modern, well maintained buildings or built structures that provide few opportunities for bat access/roosting (i.e. with no cracks or crevices); composed of prefabricated steel and sheet materials; no internal loft space; high level of regular disturbance; high interior light levels and subject to large temperature fluctuations. Buildings may be surrounded by poor or sub-optimal bat foraging habitat. No evidence of bats found.
Low Potential	Buildings with limited features to support roosting bats - shallow crevices where mortar is missing between brickwork. Buildings may have large open locations subject to large temperature fluctuations. Buildings may be surrounded by poor or sub-optimal bat foraging habitat. No evidence of bats found.
Moderate Potential	Buildings with some features suitable for roosting bats – building usually of brick or stone construction with a small number of features suitable for roosting bats – loose roof or ridge tiles, gaps in brickwork, gaps under fascia boards, and/or sealed internal loft space. No evidence of bats found.
High Potential	Buildings with a large number of features or extensive areas with potential for roosting bats. Sheltered locations with a stable temperature regime and suitable access points. Features can include: weatherboarding and/or hanging tiles with gaps/large (>20cm) roof timbers with mortise joints, cracks, holes; poorly maintained fabric providing ready access into roofs, walls, but at the same time not being draughty and cool; large and complicated roof void with unobstructed flying spaces. No evidence of bats found.
Confirmed Roost	Bats or evidence of bats recorded within the building during the initial inspection surveys or during dusk/dawn surveys. A confirmed record (supplied by records centre/local bat group) would also apply.

External and internal features of the buildings were then inspected for evidence of bats.

In this case, visual, systematic examinations were made for bats and evidence of bats, both internally and externally, of the following:

- wall, window and door surfaces;
- window and door frames;
- wall bases;
- wall ledges and wall tops (where accessible);
- cracks, crevices and sheltered voids; and
- floors and stored items.

Evidence of roosting bats includes droppings, urine stains, staining from fur-oils, scratch marks, wear marks, feeding remains, dead bats, odour, squeaking and chattering, and in some cases the absence of cobwebs.

2.4 Dusk Surveys

2.4.1 General

Three dusk surveys were undertaken in June and September 2022. The bat surveys were carried out according to standard bat surveying guidelines issued by the Bat Conservation Trust (Collins, 2016).

2.4.2 Personnel

Dusk survey were carried out by three surveyors, all led by James Pattenden. James was assisted by Rhian Esfandiarinia, Lorraine Trowers, Rob Williams and Jessica Williams. Rob Williams holds a Class 2 licence for bats (licence number 2018-37236-CLS-CLS). All other surveyors are trained and experienced in using bat detectors and surveying buildings for bats.

Surveyor locations are provided in Figure 3.

2.4.3 Equipment

Surveyors used Elekon Batlogger M, Anabat Scout and Echo Meter Touch Pro bat detectors to listen and view the echolocations of bats during the survey. Echolocations were recorded and if required, later analysed using BatSound and Bat Explorer software.

Surveyors on two aspects (including the roost access points) were paired with Canon XA10 and XA40 camcorders coupled with two Nightfox XB5 torches, an iRedzilla IR torch and two 12 LED 90° wide angle IR illuminators. The footage from the darker periods of the surveys were then viewed in the office at normal speed to determine if any bats had emerged. A typical screenshot of the field of view from the darkest part of the surveys is provided in Plates 1 and 2 below, as suggested by the interim NVA Guidance Note (Bat Conservation Trust, 2022). Batteries and SD cards were sufficient to last the entire survey without a requirement to be changed.





Plate 1. Field of view of the IR camera deployed to the west of the Stable Block.

Plate 2. Field of view of the IR camera deployed on the northern gable wall of the Stable Block.

Surveyors used hand held radios to communicate with each other and ensure that bats passing over the ridge line of the buildings were only flying past and not emerging from the building.

2.4.4 Weather

Weather conditions during the surveys were suitable for bat activity and are shown in Table 2 below. All timings followed best practice guidelines (Collins, 2016).

Table 2 – Survey timing and weather conditions

Date	01.06.22	28.06.22	26.09.22
Sunset/Sunrise	21:14	21:28	18:58
Survey start time	21:00	21:15	18:40
Survey end time	23:00	23:00	20:30
Survey start Temp (Air) °C	14	16	15
Wind (Beaufort Scale)	1	2	1-2
Cloud (Oktas Scale)	1	8	8
Weather Notes	Warm with light winds	Light spotting of rain close to sunset but otherwise dry	Heavy clouds and spots of rain prior to survey, but otherwise dry

3 Results

3.1 Background Data Search

The nearest relevant statutory designated site is Pewsey Downs National Nature Reserve (NNR), Site of Special Scientific Interest (SSSI) and Special Area of Conservation (SAC) which is designated for its chalk grassland and associated fauna. The designated site is located approximately 1.8 km to the south.

The only designated site within 10 km of the site which mentions bats in the citation is Savernake Forest SSSI, located approximately 7.2 km to the east, but only states that bats are present in the ancient woodland and as such, bats are not the primary reason for the designation.

The closest European Protected Species (EPS) development licence (2015-10285-EPS-MIT) issued was for work affecting a non-breeding Common Pipistrelle (*Pipistrellus pipistrellus*), Soprano Pipistrelle (*P.pygmaeous*) and Whiskered Bat (*Myotis mystacinus*) roost, located at Ordnance Survey Grid Reference SU 1280 6789, located at West Overton approximately 2.5 km to the north of the site.

The nearest EPS development licence affecting a breeding roost is for works located on a site south of Little Abbots, approximately 5.8 km to the south (reference 2019-42307-EPS-MIT). The licence included both Brown Long-eared Bats (*Plecotus auritus*) and Common Pipistrelle but it is unknown which bat species was roosting on the site.

3.2 Habitat Assessment

The Stable Block is set on the eastern edge of a series of barns and farm buildings (including the farmhouse) set around a central courtyard. There is a swimming pool and gardens to the south. Beyond the buildings, the site lies in open countryside dominated by mixed agricultural land and woodland. The Wansdyke Path lies approximately 93 m to the south which is enclosed within a band of broad-leaved trees. Boreham Wood lies approximately 141 m to the north. West Woods comprising approximately 383 ha of woodland lies 580 m to the north-east and is connected to the site by woodland and hedgerows.

The immediate and surrounding habitats provide excellent foraging and commuting opportunities for bats.

3.3 Daytime Bat Survey

A description of the Stable Block and results of the daytime inspection are provided below. Photographs of the building and evidence recorded during the survey are provided in Plates 3-12 below.

3.3.1 Description of the Stable Block

The Stable Block is a single storey L-shaped detached building with brick walls. The roof is covered in concrete ridge and roof tiles and is lined with wooden sarking. There is a bell tower on the northern roof section and a brick chimney in the southern section.

Internally the building is divided into two sections. The northern section (on an east-west axis) is used for storage and has small loft void measuring approximately 1.25 m from floor to apex. The floor of the loft void is missing on the eastern end and so the roof and so the underside of the sarking is visible from ground level. There are windows on most elevations allowing light into the internal space.

The southern section (on a north-south axis) has converted rooms on the ground floor comprising an office, stores and a pool changing/pump room. The floor of the loft space is boarded out with windows on both the southern gable wall and the western wall (associated with a wooden door, possibly a hay loft entrance, shown in Plate 4). The loft space is approximately 2.25 m in height from floor to apex and is accessed from an open doorway via a fixed ladder in the northern section.





Plates 3 and 4. Views of the Stable Block from the west.



Plate 5. View of the Stable Block from the north-east



Plate 6. View of the southern gable wall.





Plate 7. Internal view of the loft void in the southern section, showing partition wall with darker area beyond.

Plate 8. Internal view of the lighter areas in the loft void in the southern section.





Plate 9. Internal view of the roof of the northern section where the floor of the loft void is missing.

Plate 10. View of the loft void in the northern section.

Potential Bat-access Points

There are gaps at the eaves in the northern wall that would allow access into the open space of the northern section. There is also a gap at the eaves on the southern gable wall that would allow bat-access to the loft void in the southern section.

Once inside the building bats could freely move between the internal space of the northern section and the loft void of the southern section via an open doorway at the top of a fixed ladder.

There are also gaps under the roof and ridge tiles which would lead to the space between the tiles and the lining.

The converted sections in the ground floor of the southern section are in use and sealed from bat-access.

Potential Roosting Locations

The loft void in the northern section is dark and undisturbed and suitable for day roosting although is relatively small in height. The internal space of both the northern section and most of the loft void in the southern section are light due to the presence of windows and would not be suitable for day roosting. There is a small section in the loft void of the southern section separated by a partition wall which creates a darker area which is suitable for free hanging bat species such as Brown long-eared Bat and Lesser Horseshoe.

Within the loft void of the southern section there are crevice roosting opportunities behind the chimney and between the chimney and wooden beams. The gap between the wooden sarking and the ridge and roof tiles would provide roosting opportunities for crevice roosting bats.

Evidence of Bats

Four large collections of bat droppings were recorded in the loft void of the southern section, each containing several hundred droppings. The droppings were medium-sized and knobbly and indicative of Brown Long-eared Bat and were a mixture of ages indicating long-term use. The droppings were all recorded around the base of the chimney below gaps where bats could access the space behind the chimney. At least 6 Brown Long-eared Bats were observed behind the chimney although the view was restricted and more bats were likely to be present.

One dead Brown Long-eared Bat was observed hanging on the ridge beam in the darker section of the loft space.

Scattered bat droppings were recorded throughout the remainder of the loft void in the southern section and throughout the northern section, including in the loft void, although no collections of droppings indicating roosting locations were observed. The bat droppings were all of a similar shape and size indicating Brown Long-eared Bat.

The number of droppings indicates that the building is being used by a breeding roost of Brown Long-eared Bats.

Given the presence of bat droppings in locations and concentrations that would indicate roosting bats, the building has been classified as a **Confirmed Roost** according to the Classification criteria for Bat Roosting Potential (BRP) of Buildings and Built structures. If no droppings were observed, the number of potential bat-access points to the space between the tiles and the lining, coupled with the excellent location of the building for bat foraging and commuting, would mean the building would be classified as having **High Bat Roosting Potential**.



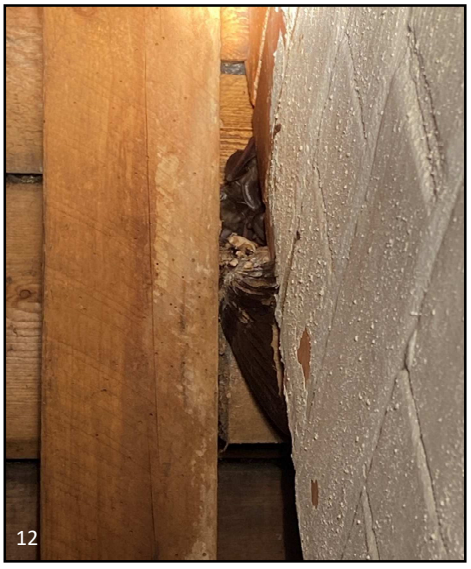

Plate 11. Typical view of concentrated piles of bat droppings recorded in the loft void of the southern section.

Plate 12. Brown Long-eared Bats observed between the wooden sarking boards and the chimney (behind dead bird remains).

3.4 Dusk Surveys

3.4.1 General

A summary of each of the bat dusk surveys is provided below. Detailed observations from each surveyor for each survey have not been included in this report, but can be made available upon request.

3.4.2 Dusk Survey 1 – 01.06.22

21 Brown Long-eared Bats were recorded emerging from the building. Emergences commenced at 21:50 until 22:38. All bats emerged from gaps at the eaves on the northern elevation with bats flying both east towards open countryside and around the western elevation (front) of the building. No other bats were recorded emerging from the building.

Other species recorded included several foraging passes of Common and Soprano Pipistrelle bats and a single *Myotis* sp. pass.

3.4.3 Dusk Survey 2 – 28.06.22

24 Brown Long-eared Bats were recorded emerging from the building. Emergences commenced at 21:59 until 22:56. All bats again emerged from gaps at the eaves on the northern elevation. No other bats were recorded emerging from the building.

Other species recorded included several foraging passes of Common and Soprano Pipistrelle bats and a small number of Noctule (*Nyctalus noctula*) passes.

3.4.4 Dusk Survey 3 – 26.09.22

Three Brown Long-eared Bats were recorded emerging from the building, all from the eaves on the northern elevation as per previous surveys. A single bat returned to roost at 20:18. No other bats were recorded emerging from the building.

Bat activity was low at the start of the survey with regular passes of Common and Soprano Pipistrelle later. Occasional Noctule passes were recorded together with foraging and commuting Brown Long-eared Bats.

3.4.5 Dusk Survey Results Summary

A maximum count of 24 Brown Long-eared Bats were recorded emerging from the Stable Block. The bat-access points were all along the eaves on the northern elevation.

Other than the emerging Brown Long-eared Bats, activity was good with frequent passes by Common and Soprano Pipistrelles throughout most of the survey period. Species recorded mostly comprised of Common Pipistrelle with the occasional pass of Soprano Pipistrelle (*P.pygmaeous*), Noctule (*Nyctalus noctula*), and *Myotis* sp. bats.

3.5 Survey Constraints

3.5.1 General

As the roof of the Stable Block is lined, areas of the building where bats may have roosted (e.g. between the tiles and the lining) were not able to be inspected. The dusk surveys were carried out in order to prove likely absence of crevice-dwelling bats in these locations.

This data can be considered to be accurate for a maximum of 12-18 months, as per guidance issued by CIEEM (CIEEM, 2019). Bats frequently move around and adopt new roosting sites and therefore if more than one year elapses prior to commencement of the works it may be advisable to conduct a further inspection to insure up-to-date information.

4 Legislation

All species of British bat are protected by *The Wildlife and Countryside Act 1981* (as amended) extended by the *Countryside and Rights of Way Act 2000*. This legislation makes it an offence to:

- intentionally kill, injure or take a bat;
- possess or control a bat;
- intentionally or recklessly damage, destroy or obstruct access to a bat roost; and
- intentionally or recklessly disturb a bat whilst is occupies a bat roost.

Bats are also European Protected Species listed on *The Conservation (Natural Habitats, & c.) Regulations 2017* (as amended). This legislation makes it an offence to:

- deliberately capture, injure or kill a bat;
- deliberately disturb a bat (in such a way as to be likely to significantly affect, (i) the ability of a significant group of bats to survive, breed or rear/nuture their young; and (ii) the local distribution or abundance of the species concerned);
- damage or destroy a breeding site or resting place of a bat; and
- possess, control, transport, sell, exchange a bat, or offer a bat for sale or exchange.

The above legislation has recently been amended by the *Conservation of Habitats and Species Regulations (Amendment) (EU Exit) Regulations 2019* which continue the same provision for European Protected Species, licencing requirements and protected areas after Brexit.

All bat roosting sites receive legal protection even when bats are not present.

5 Evaluation and Conclusions

5.1 Confirmation of Results

The evidence recorded during the survey indicates that the Stable Block is being used by roosting Brown Long-eared Bats. The survey results would indicate roosting behind the chimney and at the apex of the roof space in the loft void of the southern section of the building with bats accessing the roosting space via gaps at the eaves on the northern elevation and flying through to the loft space in the southern section. The numbers of bats recorded would indicate a breeding colony of bats (maximum count of 24 bats) with lower numbers (maximum count of three) recorded during the transitional period. It is likely that this species uses the building throughout the year, including the winter hibernation period.

As roosting bats are present, a European Protected Species (EPS) development licence will be required from Natural England before the roosting spaces can be blocked or demolished.

Given the presence of a breeding roost, it would not be appropriate to register the site under the Bat Low Impact Class Licence (BLICL) scheme. A full development licence application would therefore be required.

Natural England allow 30 working days to process full EPS bat licence applications and require full planning permission or listed building consent with all relevant conditions discharged (that are capable of being discharged) prior to accepting the application.

The Bat Mitigation Guidelines (Mitchell-Jones, 2004) state that for this status of roost (maternity site of common species) suggest the following:

Timing Constraints. More of less like-for-like replacement. Bats not to be left without a roost and must be given time to find the replacement. Monitoring for 2 years preferred.

The mitigation and compensation detailed in Section 5.2 is suggested for the EPS licence.

5.2 Mitigation and Compensatory Roosting Provision

5.2.1 Timings

The Stable Block is likely to be used by hibernating Brown Long-eared Bats and has been confirmed as being used during the breeding period. These sensitive periods must therefore be avoided when commencing works. Works should therefore commence either between March and April or between September and November inclusive. These timings are also temperature dependant (see Section 5.2.3 below).

The bat loft detailed in Section 5.2.4 should be constructed prior to the exclusion of the existing roost and time given for bats to find the replacement roost.

5.2.2 Toolbox Talk

Immediately prior to the commencement of destructive works, a site briefing will be given by a bat licensed ecologist to ensure that all contractors are fully aware of the conditions of the EPS Licence. This 'toolbox' talk will be held with the construction team before any roof and internal work is undertaken and will discuss the adoption of appropriate methodologies to exclude the building to ensure no harm to bats occurs.

5.2.3 Inspection and Exclusion

An inspection of the Stable Block and exclusion will be carried out by a licenced and experienced bat ecologist prior to works commencing.

One-way access gates will be fitted over the confirmed access points on the northern gable wall, most likely using acetate sheets to allow bats out, but block access back into the building. All bats to be affected by the proposals will be excluded by using these devices.

All other potential bat-access points into the building will be blocked using plastic mesh (insect screening).

These exclusion devices will stay in place for at least 3 nights of suitable weather conditions (temperatures over 8°C, no rain or strong winds). The building would then be considered unsuitable for roosting bats and works would be able to continue without the presence of a licenced ecologist.

5.2.4 Bat Loft

To replace the loss of the Brown Long-eared Bat roost, a dedicated bat loft will be created in the barn located immediately adjacent (approximately 5 m north) of the Stable Block (shown in Figure 2 and Plates 13 and 14). The bat loft should be constructed prior to the exclusion of the existing roost and time given for bats to find the replacement roost.

The location was chosen due to the proximity of the barn to the Stable Block with the new entrance to the bat loft located very close to the existing entrance. The barn has a north-south axis which is the same as the existing roosting location in the Stable Block and will therefore benefit from the west-facing pitch to keep temperatures warm during the breeding period. The barn has been inspected and although bats have been flying around inside the barn, there was no evidence of roosting in the area that the bat loft is to be created.





Plate 13. View of the barn to the north of the Stable Block, viewed from the south-west

Plate 14. View of the barn to the north of the Stable Block, viewed from the south-east

The whole of the first floor will be provided as a dedicated flight space for Brown Long-eared Bats, measuring approximately 4 m wide. At least 6 m of ridge length will be provided from the southern gable wall. An internal partition wall will be installed to separate the bat loft from the remainder of the barn, with a door for cleaning and monitoring purposes.

The entrance to the loft will be 350 mm in width and 250 cm in height and cut into the base of the existing wooden doorway on the first floor of the southern gable wall. The floor of the entrance will be sloped and lined with metal flashing to prevent water ingress. Internally a wooden turnstile baffle will be installed, as per the designs detailed in the Lesser Horseshoe Conservation Handbook (Schofield, 2008). Examples are shown in Plates 15 and 16. The internal area of the baffle and surrounding floor will be painted black to reduce light spill into the loft. The turnstile baffle will reduce the amount of light and heat ingress into the loft space.





Plate 15 and 16. Example of a turnstile baffle at the entrance to a bat loft.

Two 1000 mm high baffles will be suspended at the apex of the loft between the entrance and the partition wall to reduce light and wind ingress from the bat-access point.

A hot box will be created in the northern area of the loft void, adjacent to the partition wall, constructed of rough untreated 12 mm ply boarding measuring 1500 mm in length. An example is shown in Plate 17. The walls will be lined with insulation board. There will be an opening in the floor of the hotbox measuring 300 mm x 300 mm. An inspection hatch will also be created to allow for monitoring and cleaning. Internally metal mesh will be nailed on to the roof on both pitches to

provide perching opportunities. No artificial heating will be required due to the location of the west-facing pitch and the use of insulation on the walls of the hot box.

Rough wooden batons and areas of metal mesh will be nailed onto the wooden sarking boarding between the two baffles close to the apex to allow perching opportunities for bats outside the hot box.

The loft is currently lined with wooden sarking boards and the roof is in good condition. As a result, no works will be required to modify the structure of the roof or the lining.



Plate 15. Example of hot box with bat-access point (and inspection hatch) in the floor of the box

5.2.5 Lighting

There are no plans for any additional lighting on the site, other than the occupation of the building which is currently only partially used. However, should the proposals change, any proposals for lighting should be restricted, as Brown Long-eared Bats are sensitive to lighting. Potential lighting that is installed on the site should be directed down and away from the barn and new roost entrances. This would allow light sensitive species to pass through the site and keep the roosting features dark. Best practice should be followed with regard to external lighting design, as detailed in *Bats and Artificial Lighting in the UK - Guidance Note 08/18* (ILP and BCT, 2018). This includes:

- No mercury or metal halide lamps (LEDs are preferred);

- Lighting should be directed to where needed and spillage should be avoided e.g. lighting directed only into doorways and luminaire designed appropriately, including the use of hoods, cowls, shields etc to avoid spillage;
- Downward-facing wall-mounted lighting should be used to keep light spill below 3m from ground level;
- Internal luminaries can be recessed where installed in proximity to windows to reduce glare and light spill;
- Only light areas which need to be lit, and use the minimal level of lighting required to comply with guidance such as Institute of Lighting Engineers Guidance Notes for the Reduction of Obtrusive Light (2005);
- Use movement sensors and short (1 minute) timers; and
- No lamps greater than 150W for security lighting.

5.2.6 Enhancement

As an enhancement to the scheme, three bat boxes will be installed on tree on the estate, close to the Stable Block. The bat boxes will be suitable for Brown Long-eared Bats and other medium sized crevice roosting species. The boxes will be made of woodcrete or other long-lasting material (not wood) e.g. Schwegler 2FN.

6 References

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Collins, J. (ed.) (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn.) The Bat Conservation Trust, London. ISBN-13 978-1-872745-96-1.

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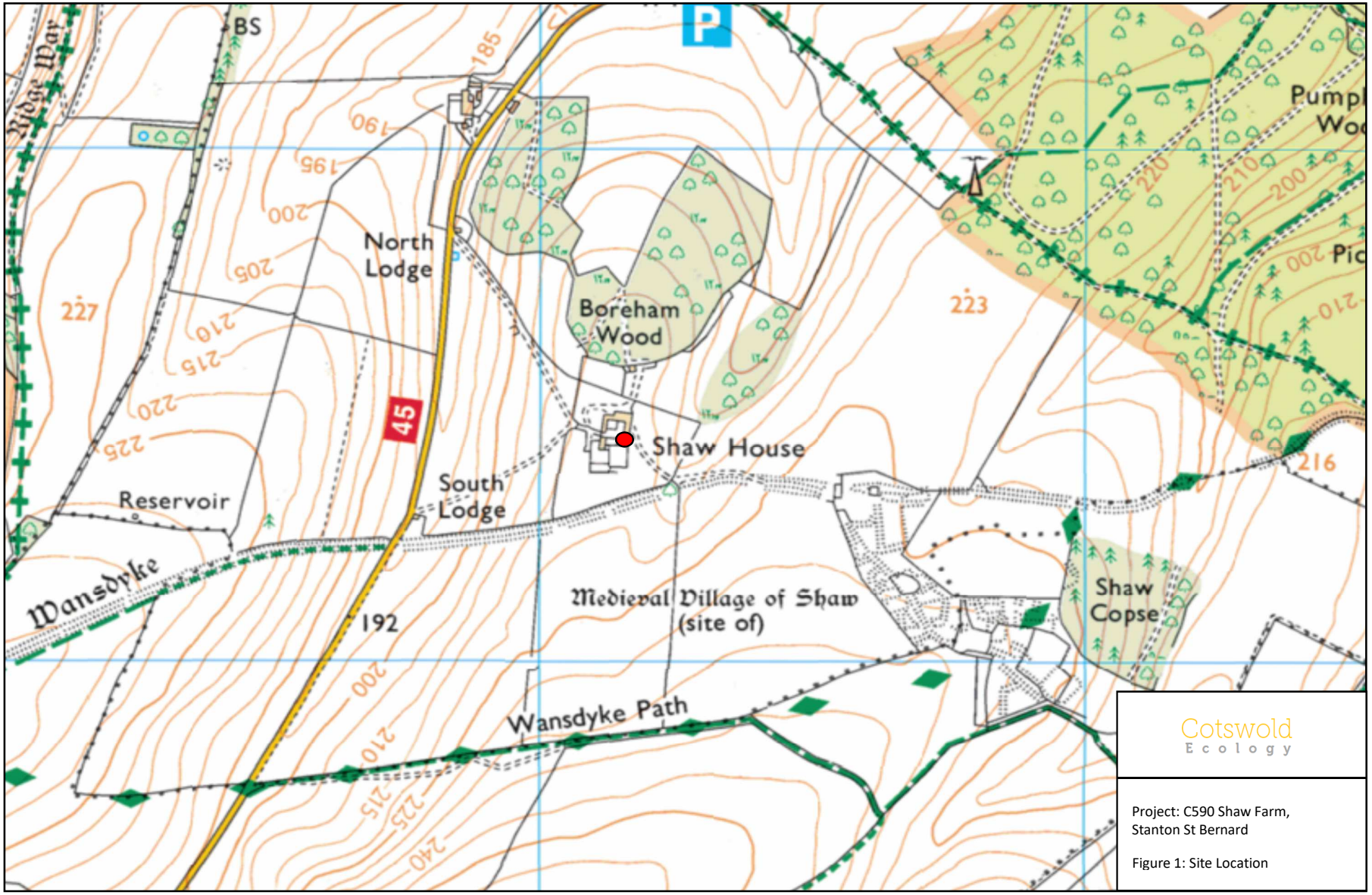
7 Figures

Figure 1. Site Location Plan

Figure 2. Aerial Photograph

Figure 3. Surveyor Locations

Figure 4. Survey Results



Cotswold Ecology

Project: C590 Shaw Farm, Stanton St Bernard

Figure 1: Site Location

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Cotswold Ecology

Project: C590 Shaw Farm, Stanton St Bernard

Figure 2: Aerial Photograph

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Figure 3: Surveyor Locations

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Figure 4: Survey Results

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