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Bat Survey: Buildings at Church House Farm, Clee St Margaret, Craven Arms SY7 9DT

Grid Reference 356515, 284350

Site Visit 1: 24th August 2020
Site Visit 2: 28th August 2020
Site Visit 3: 28th September 2020
Site Visit 4: 30th September 2020
Report Submitted: 30th November 2020

Report Reference: EG/2430/20.1

Client:
Mr. J. & Mrs. R. Godrich
Church House
Clee St Margaret
Craven Arms
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1. SUMMARY

On 24th August 2020, 28th August 2020, 28th September 2020 and 30th September 2020, at the request of the Mr. J. & Mrs. R. Godrich, Bat Surveys were carried out on three Buildings (Buildings 1 – 3) at Church House Farm, Clee St Margaret, Craven Arms SY7 9DT.

The Bat Surveys comprised an Initial Bat Survey and four nocturnal bat surveys.

There is a proposal to convert some or all of the Buildings into residential use.

1.1 Bat

Building 1 does not provide bat roost habitat and no evidence of bats was found on or within Building 1.

Building 2 provides bat summer roost habitat and contains:

- a Brown Long-eared maternity roost
- a Common pipistrelle day roost

Building 3 provides bat summer roost habitat and contains a Brown Long-eared day roost that is probably associated with the Brown Long-eared maternity roost within Building 2.

It is not thought likely that bats would hibernate within any of the Buildings.

Ideally, proposed development plans should include the retention of, and future protection of, the Brown Long-eared maternity roost situated within Building 2.

Depending on the exact nature of the proposed development; it is likely that development work may require (a) European Protected Species Licence(s) from Natural England.

Should the proposed development require the conversion of Building 1, only; non-licensed mitigation measures may be used to prevent development work triggering Conservation Regulations 2017 offences against bats.

1.2 Barn Owl

No evidence of Barn Owl was found on or within the Buildings.
Barn Owl do not impose a constraint on the proposed development.

1.3 Small Breeding Bird

Development work should be timed to avoid the Small Breeding Bird nesting season. The bird nesting opportunity within the Buildings will need to be replicated on or within the immediate vicinity of the Buildings to (continue to) allow birds to nest there post-development.

2. INTRODUCTION

2.1 Background

In August and September 2020, Bat Surveys were carried out on three Buildings ('Building 1', 'Building 2' and 'Building 3') at Church House Farm, Clee St Margaret, Craven Arms SY7 9DT.

The Bat Surveys were carried out at the request of the Mr. J. & Mrs. R. Godrich, the owners of Church House Farm.

An Initial Bat Survey was carried out on 24th August 2020.

Nocturnal Surveys were carried out on 24th August 2020, 28th August 2020, 28th September 2020 and 30th September 2020.

The Bat Surveys were carried out by Dr. R. M. Jones, experienced field biologist, surveyor, and Natural England Licensed bat worker (Licence number 2015-11179-CLS-CLS) with the assistance of Mr. A. Edwards, surveyor and recorder.

2.2 Report Status

This report has been produced to inform proposed development plans and (a) proposed planning application(s).

The report includes recommendations for mitigation and biodiversity compensation and enhancement.

Following the finalisation of development plans; the report may be upgraded/revised to confirm mitigation measures and/or to confirm (if possible) the likely post-development biodiversity net gain.

2.3 Proposed Development

It is understood there is a proposal to convert some or all of the Buildings into residential use.

Full details of the proposed development may be obtained from Mr. J. & Mrs. R. Godrich.

2.4 Survey Objectives

- To ascertain if bats are present in the Buildings.
- To confirm where bats (if present) are roosting in the Buildings and where they emerge from.
- To determine the species of bat roosting in the Buildings.
- To determine the number of bats that may be roosting in the Buildings.
- To establish the type of roost(s).
- To assess potential impacts of the proposed development on bats.
- To determine if Barn Owls are nesting in, or on, the Building and to assess potential impacts of the proposed development on them.
- To determine if breeding birds are nesting in, or on, the Buildings, and to assess potential impacts of the proposed development on them.
- To make suitable recommendations for further survey work if appropriate.

2.5 Report Objectives

- To report on the findings of the Bat Survey.
- To determine if a European Protected Species Licence, issued by Natural England, is necessary for the proposed development works.
- To make recommendations as to how mitigation and/or compensation measures can be incorporated into the proposed development designs.

2.6 Site Location and Description

The Church House Farm yard and building complex consists of traditional-type (former) agricultural buildings, a series of modern-type (former) agricultural buildings, yard areas and garden areas.

The Buildings are immediately neighboured by:

- a single-vehicle-width highway at the north and east;
- yard areas at the south; and,
- a domestic property, 'Church House', at the west.

Situated within the south area of the Clee St Margaret - a small rural village of domestic properties, agricultural properties and small fields/paddocks.

Clee St Margaret is predominantly surrounded by intensively managed (small) agricultural fields and small woodlands/copses.

Clee Brook, a minor watercourse, flows roughly west-to-east approximately 120m north of the Buildings and roughly southwest-to-northeast approximately 180m west of the Buildings.

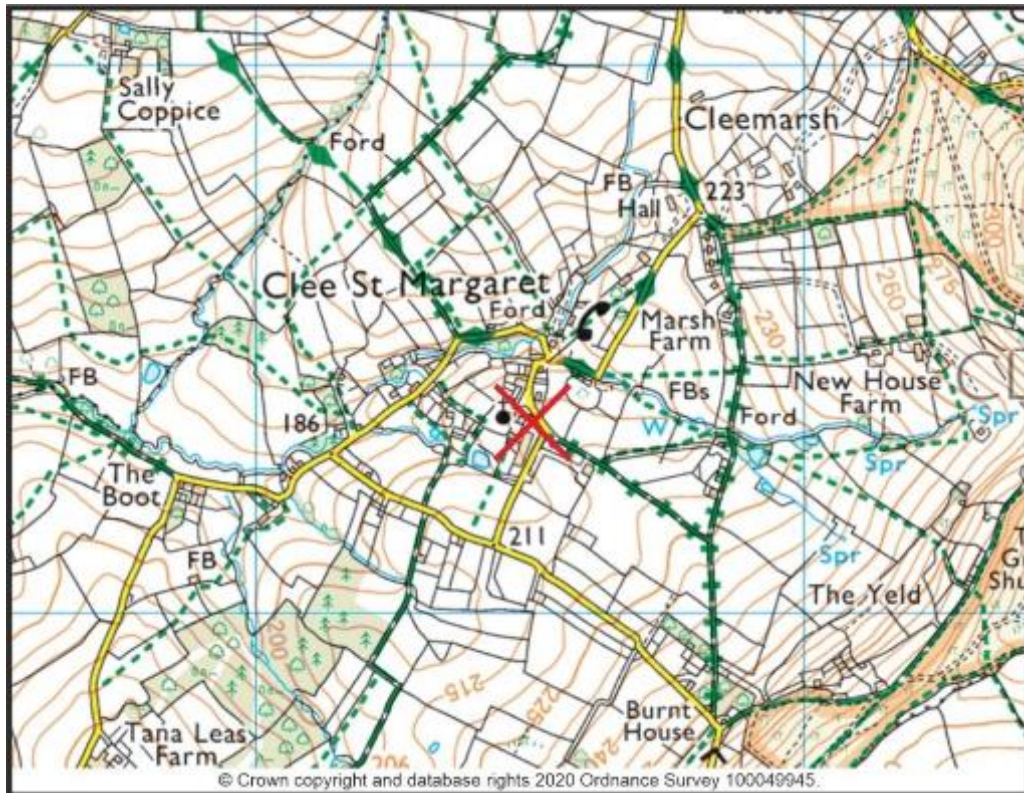
The landscape surrounding the Buildings is well connected by managed and unmanaged agricultural hedges (many of which contained mature trees), highways, Clee Brook and its riparian habitats.

Map 1. Location of Church House Farm.

Map 2. Location of the Buildings at Church House Farm and surrounding habitat types.

Please note: the aerial photograph of habitat types is a 'screenshot' from Google Maps.

Map 1. Location of Church House Farm (indicated by a red cross).



Map 2. Location of the Buildings at Church House Farm (indicated by a red cross) and surrounding habitat types.



3. LEGISLATION

N.B. This is a simplified summary of the legislation.
See other texts or refer to the full legislation for more detail.

3.1 Bat

All bat species (*Rhinolophidae* and *Vespertilionidae*) are protected under the Wildlife and Countryside Act 1981 ("WCA 1981"), the Countryside and Rights of Way Act 2000 and the Conservation of Habitats and Species Regulations 2017 ("Conservation Regulations 2017").

Under the Conservation Regulations 2017 legislation it is illegal to:

- deliberately capture, injure or kill a bat;
- deliberately disturb bats. This includes in particular, disturbance in a way any such which is likely to (i) impair their ability to survive, breed or reproduce, or to rear or nurture their young; (ii) impair their ability to hibernate or migrate; or (iii) to affect significantly the local distribution or abundance of the species to which they belong;
- damage or destroy a breeding site or resting place of a bat;
- to be in possession or control, to keep, transport, to sell or exchange, or to offer for sale or exchange, any live or dead bat, or any part of, or anything derived from such a wild animal.

Under the WCA 1981, it is illegal to:

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

A bat resting place may be a structure a bat uses for breeding, resting, shelter or protection. Resting place sites are protected whether or not bats are in occupation, as they may be re-used by bats.

All species of bat are priority species in the UK Biodiversity Action Plan (HM Government 1994 et seq.) and are Species of Principal Importance under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006.

A European Protected Species (EPS) Development Licence from Natural England may be required for development works triggering Conservation Regulations 2017 offences against bats.

3.2 Barn Owl

Barn Owls are afforded more protection than other species of birds as they are listed under Schedule 1 of the Wildlife and Countryside Act 1981 and the Countryside and Rights of Way Act 2000 and are "Specially protected at all times". They cannot intentionally or recklessly be disturbed when nesting.

In addition, the presence of Barn Owls at a site may require provision of temporary and/or permanent nesting opportunity and, if they are breeding at a site, timing constraints.

3.3 Small Breeding Bird

Under the Wildlife and Countryside Act 1981, all birds are protected while breeding.

It is an offence, with certain exceptions to:

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

3.4 European Protected Species Licensing

European Protected Species (EPS) Licences derogating from the protection afforded to bats can be granted for a number of specified reasons or purposes as set out in Regulation 55(1)(e-g) and 55(9)(a-b) of the Conservation of Habitats and Species Regulations 2017.

There are three purposes that EPS Licences may be granted.

The first purpose ('test') must be one of either:

- Preserving public health or public safety or other imperative reasons of overriding public interest including those of a social and economic nature and beneficial consequences of primary importance for the environment;
- Preventing the spread of disease;
- Preventing serious damage to livestock, foodstuffs for livestock, crops, vegetables, fruit, growing timber or any other forms of property or to fisheries; to allow people to carry out activities which would otherwise be illegal.

The following two criteria ('tests') must also be met:

- there is no satisfactory alternative; and
- the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range.

EPS Licence applications need to provide sufficient evidence to demonstrate that the 'three tests' are met before a licence can be issued.

Each application is assessed by Natural England on its own merits.

4. DESK STUDY

A formal search of historical records of bat within the vicinity of Buildings was not commissioned. Considering the nature, scale and location of Buildings; the constraint of not carrying out an historical biodiversity record search is considered negligible.

The owners of Buildings 1 – 3, Mr. J. & Mrs. R. Godrich, are aware of bats roosting within Building 2 and - during the summer months - leave (a) window(s) within the southwest elevation of Building 2 open to facilitate bats flying into and out of the Building 2 interior.

5. Buildings Descriptions

Appendix 1 contains a photographic record of Buildings 1 – 3.

A brief description, only, of the Buildings is provided here.

Buildings 1 – 3 form the north-end of the Church House Farm yard and building complex and are situated within the south area of the village of Clee St Margaret.

Domestic properties are situated to the north, east and west of the Buildings.
A series of redundant steel portal-frame (former) agricultural buildings are situated to the south.

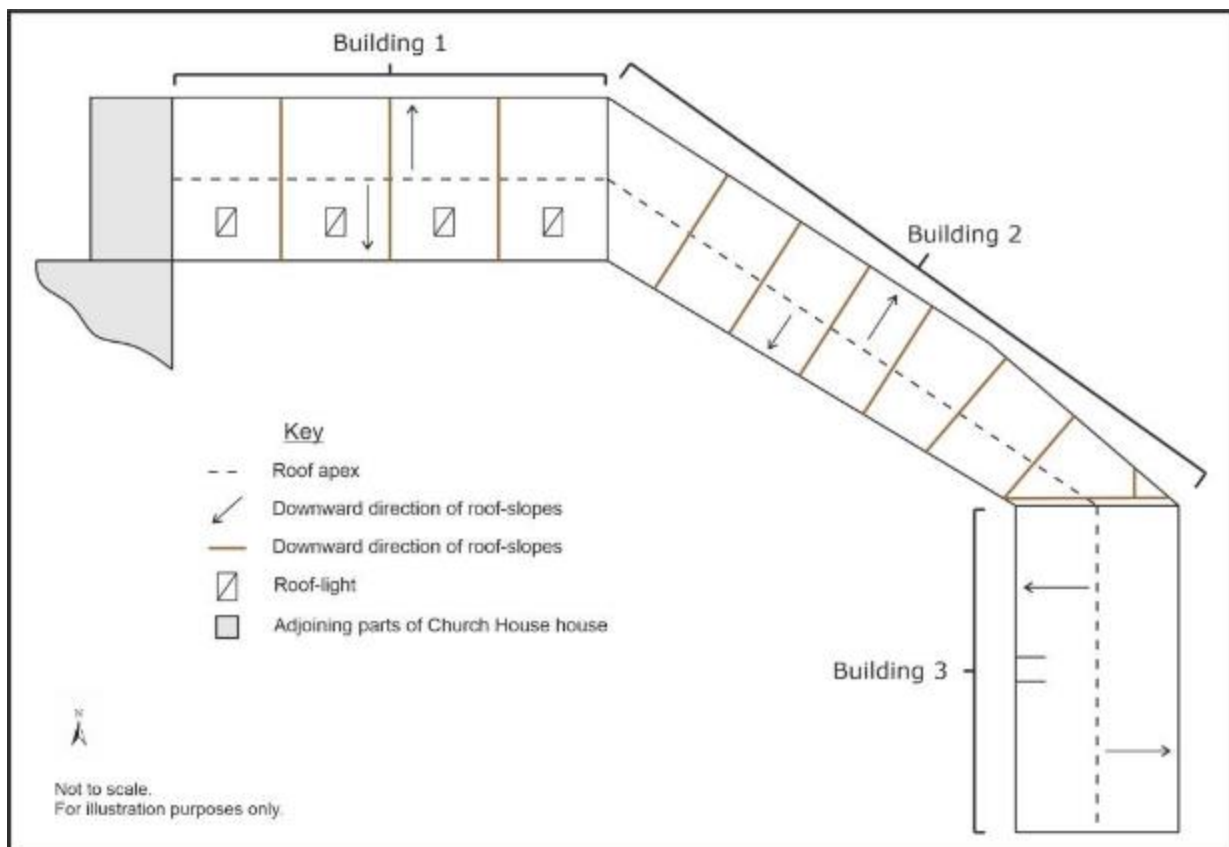
Clee St Margaret Church is situated approximately 30m west of (the west elevation of) Building 1.

The Church House house is situated between the Buildings and Clee St Margaret Church and part of the house adjoins Building 1.

Clee St Margaret is situated in a rural landscape that is well connected by mature hedgerows (many of which contain mature trees), woodlands/copses and minor watercourses. Optimal bat commuting and foraging habitat provides habitat linkage in the vicinity of the Buildings.

A diagram of Buildings 1 – 3 is contained in Plan 1.

Plan 1. Buildings Plan.



5.1 Building 1

Two-storey, four-bay, stone structure with a clay peg tile covered apex roof. The roof apex is covered with inter-locking ridge tiles bedded on mortar. Roof-slopes are underlined with modern breathable roof membrane. The roof structure is supported by gable walls, an interior stone wall and two King-post roof trusses (with double raking-struts). Four roof lights, with purpose-made flashings/surrounds, are present within the south elevation roof-slope. The roof structure overhangs gables and is supported by exterior common rafters that abut gable walls. Mortared roof tile verges oversail the exterior common rafters. Eaves overhang and are open/unenclosed, though rafter-to-rafter gaps are closed above the (eave) wall-plates. All external wall openings are enclosed with doors or windows. Ground-floor rooms are used for the storage of domestic and gardening items. First-floor rooms appear to be used for the (long-term) storage of household items. First-floor rooms have sloping ceilings directly beneath roof-slopes. No roof-space(s) is/are present.

5.2 Building 2

Single-storey, seven-bay, stone and timber-frame structure with a clay peg tile covered apex roof. The roof apex is covered with abutting ridge tiles bedded on mortar. Roof-slopes are underlined with modern breathable roof membrane. The roof structure is supported by the Building 1 east elevation wall, the Building 3 north elevation wall and seven King-post roof trusses (with double raking-struts). Lead soakers and flashings are present between the Building 2 roof structure and the adjoining Building 1 and Building 3 walls. The northeast elevation is constructed of stone. The eave overhangs the northeast elevation wall, is open/unenclosed and some rafter-to-rafter gaps are present above the wall-plate. The lower part of the southwest elevation is constructed of stone; the upper parts are constructed of timber-framing with square-edge horizontal over-lapping timber-board cladding. A paper/bitumen underlining is present between the timber-board cladding and timber-framing. The eave overhangs the southwest elevation eave, is open/unenclosed, and rafter-to-rafter gaps are present above the (eave) wall-plate. No roof-space(s) is/are present. Building 2 is used for the storage of firewood, house-hold sundries and gardening equipment.

5.3 Building 3

Two-storey, stone and timber-frame structure with brick in-filled panels. Apex roof covered with clay peg tiles. The roof apex is covered with abutting ridge tiles bedded on mortar. Roof-slopes are underlined with modern breathable roof membrane. The roof structure has been formed in an open/cut style and is supported by gable walls. The north elevation gable is formed of timber-framing with square-edge horizontal over-lapping timber-board cladding. The roof structure overhangs gables and is supported by exterior common rafters. The north gable exterior common rafters abut timber-board cladding. The south

elevation exterior common rafters are positioned approximately 150mm away from the gable wall exterior surface.

Mortared roof tile verges oversail the exterior common rafters.

Eaves overhangs and are open/unenclosed. Rafter-to-rafter gaps above the (eave) wall-plate are closed.

Two roof-lights, with purpose-made flashings/surrounds, are present within the west elevation roof-slope.

A dormer roof structure is present within the lower part of the south elevation roof-slope. The dormer has a clay peg tile covered mono-pitch (cat-slide) roof and lead (sheet) covered cheeks.

A roof-space is present beneath the roof apex. The roof-space is approximately 2m wide and 1m high (below the ridge board). The floor of the roof-space is lined with insulation boards.

The ground-floor room is used as a (domestic) vehicle garage.

The first-floor room is used for the storage of household items.

6. METHOD

6.1 Bat Survey

An Initial Bat Survey (a visual inspection for bat roost potential and physical evidence of bats) of the Buildings was carried out on 24th August 2020 (Visit 1).

Four nocturnal bat surveys were carried out:

- Visit 1, 24th August 2020: Dusk Bat Emergence and Activity Survey focusing on Building 1 and Building 2
- Visit 2, 28th August 2020: Dusk Bat Emergence and Activity Survey focusing on Building 2 and Building 3
- Visit 3, 28th September 2020: Dusk Bat Emergence and Activity Survey focusing on Building 1 and Building 2
- Visit 4, 30th September 2020: Dusk Bat Emergence and Activity Survey focusing on Building 2 and Building 3

As deemed necessary; immediately prior to and immediately after the Nocturnal Surveys, (parts of) the exteriors and interiors of Building 1, Building 2 and Building 3 were inspected for (fresh) physical evidence of bat.

6.1.1 Initial Bat Survey

6.1.1.1 Assessment of Bat Roost Potential

The Buildings were assessed for their potential to support bats and the type and number of bat roosts.

This involves consideration of a number of abiotic factors including:

- Access to the interior of the Buildings or to other suitable roosts
- Age
- Construction fabric
- Habitat context
- Light levels
- Previous use of, and activity within, the Buildings
- Temperature regime and protection from weather

6.1.1.2 Physical Evidence of Bat Occupation

The exteriors and interiors of the Buildings were surveyed for the presence of bats and their roosts.

Search methods included the use of torches (including a Fenix RC40 3800 lumen torch and a DeWalt DCL043 1000 lumen torch), binoculars (Zeiss 10x42), borescope (Visual Optics VO18 5.8mm Fibre Optic), fibrescope (Provision PV2636-21 5.8mm), video-scope (Draper 05163 Recording Flexi Inspection Camera), 'crawl boards', a 3.8m Telescopic ladder, a 4.1m Telescopic ladder, 8.15m Combination ladder, 3.6m Double Extending Roof Ladder; and combinations of these.

A search was also made for notable signs of past and/or present bat roost activity, including bat urine stains, fur oil stains, scratch marks and faeces. These may be found around a bat roost entrance within a roost and within flight/foraging areas.

6.1.1.3 Limitations of Initial Bat Survey

Physical evidence of bats that may have been created within the previous bat-active season may have deteriorated or have been removed (for example by wind and/or rain) prior to the Initial Bat Survey being carried out.

Considering the structural fabric of the Buildings and the results of the Bat Survey; the constraints of the above limitations are considered to be negligible.

6.1.1.3.1 Bat dropping descriptions

Bat droppings have been identified to species level, on the basis that they are consistent in size and appearance with those deposited by that species; i.e. they are of that 'type'.

It is never possible to unequivocally state the species origin of bat droppings based on their presence alone.

The size and appearance of bat droppings produced may alter due to the age, diet and possibly sex of bats.

In some environments - for example a high humidity - bat droppings, particularly old ones, may resemble those of other species.

6.1.1.3.2 Long-eared bats

Two species of long-eared bat occur in the United Kingdom, Brown Long-eared (*Plecotus auritus*) and Grey Long-eared (*Plecotus austriacus*).

Whilst it is not possible to distinguish the species by their immediate visual appearance, droppings, or echolocation calls, Grey long-eared bats are confined to distinct areas in southern counties of England.

Statements of the presence of Brown Long-eared bats are a reasonable assumption, and not necessarily fact, unless DNA analysis of droppings has been carried out (see Section 6.1.3).

6.1.2 Nocturnal Surveys

Each Dusk Bat Emergence and Activity Survey covered the mean roost emergence times of all United Kingdom bat species.

For each respective survey:

- each surveyor used a Magenta Bat5 heterodyne bat detector, an Elekon Batscanner automatic tuning heterodyne bat detector and an Anabat Walkabout bat detector.
- as appropriate and deemed necessary, four Anabat SD1 bat detectors were positioned to record bat activity within and in the vicinity of the surveyed Building(s).
- Buildings were carefully and continuously observed, and surveyors kept in contact via private mobile radios.
- as appropriate and deemed necessary, the interior(s) of the surveyed Building(s) was/were regularly inspected for bat activity.
- where necessary, low-intensity red-filtered lighting was used to aid the viewing of Buildings, or parts of them.

- air temperature (°C), relative air humidity (%), wind speed (Beaufort Force scale) and cloud cover (Oktas) was recorded at the start and at the end of each survey.
- where necessary, general comments on weather conditions (particularly if adverse for bat activity) were made.

The Anabat bat detectors record and interpret bat echolocation calls. Data is stored on computer memory cards with both date and time signatures. Full computer exploration of the data and sonogram analysis is performed.

6.1.2.1 Physical Evidence of Bat Activity

As deemed necessary, immediately prior to and immediately after the Nocturnal Surveys, (parts of) the exteriors and interiors of the Buildings were inspected for (fresh) physical evidence of bats.

Search methods included the use of torches (including a Fenix RC40 3800 lumen torch and a DeWalt DCL043 1000 lumen torch), binoculars (Zeiss 10x42), a 3.8m Telescopic ladder, 4.1m Telescopic ladder, 8.15m Combination ladder; and combinations of these.

A search was also made for notable signs of past and/or present bat roost activity, including bat urine stains, fur oil stains, scratch marks and faeces. These may be found around a bat roost entrance, within a roost, and within flight/foraging areas.

6.1.2.2 Limitations of the Nocturnal Surveys

No Nocturnal Surveys were carried out in May, June or July 2020.

However, considering the results of the:

- Initial Bat Survey carried out on 24th August 2020;
- Nocturnal Surveys carried out on 24th August 2020, 28th August 2020, 28th September 2020 and 30th September 2020;

it is not considered that there are significant limitations to the surveys or that the results of the (current) Bat Survey would have been materially different had Nocturnal Surveys been carried out earlier in the year 2020 bat-active season.

6.1.3 Bat Dropping DNA Analysis

If deemed appropriate and necessary; samples of bat droppings were sent to EcoWarwicker ecological Forensics for (deoxyribonucleic acid) DNA Analysis.

6.2 Barn Owl

During each survey visit, searches were made for signs of Barn Owl presence, including droppings and pellets.

6.3 Small Breeding Bird

During each survey visit, the presence of bird nests, active (in current use) and inactive (not in current use), were noted.

7. RESULTS

A summary of the surveys carried out on Buildings 1 – 3 is provided in Table 1.

Table 1. Summary of surveys carried out.

Visit	Date	Building 1	Building 2	Building 3
1	24 th August 2020	<ul style="list-style-type: none"> Initial Bat Survey Dusk Bat Emergence and Activity Survey 	<ul style="list-style-type: none"> Initial Bat Survey Dusk Bat Emergence and Activity Survey 	<ul style="list-style-type: none"> Initial Bat Survey
2	28 th August 2020	<ul style="list-style-type: none"> Search for physical evidence of bat occupation 	<ul style="list-style-type: none"> Searches for physical evidence of bat occupation Dusk Bat Emergence and Activity Survey 	<ul style="list-style-type: none"> Searches for physical evidence of bat occupation Dusk Bat Emergence and Activity Survey
3	28 th September 2020	<ul style="list-style-type: none"> Searches for physical evidence of bat occupation Dusk Bat Emergence and Activity Survey 	<ul style="list-style-type: none"> Searches for physical evidence of bat occupation Dusk Bat Emergence and Activity Survey 	<ul style="list-style-type: none"> Searches for physical evidence of bat occupation
4	30 th September 2020	<ul style="list-style-type: none"> Searches for physical evidence of bat occupation 	<ul style="list-style-type: none"> Searches for physical evidence of bat occupation Dusk Bat Emergence and Activity Survey 	<ul style="list-style-type: none"> Searches for physical evidence of bat occupation Dusk Bat Emergence and Activity Survey

A record of start and end times and the weather conditions for each Dusk Bat Emergence and Activity Survey is provided in Table 2.

Please note:

- all stated quantities are approximate
- all stated times are approximate

Table 2. Survey times and conditions.

		Visit 1	Visit 2	Visit 3	Visit 4
Date		24/08/2020	28/08/2020	28/09/2020	30/09/2020
Sunset time		20:15	20:06	18:53	18:48
Survey time	Start	20:00	19:55	18:40	18:35
	End	21:30	21:30	20:20	20:20
Air temperature (°c)	Start	17	16	15	13
	End	15	14	16	11
Relative air humidity (%)	Start	74	72	67	76
	End	84	86	86	89
Wind speed (Force)	Start	0-1	0-2	0	1-3
	End	0	0-1	0	0-1
Wind direction	Start	n/a	n/a	n/a	n/a
	End	n/a	n/a	n/a	n/a
Cloud cover (Oktas)	Start	8	6	8	8
Weather change		No significant change	No significant change	Intermittent light drizzle at the start turning to persistent rain at 20:00	No significant change

7.1 Initial Bat Survey – Visit 1

7.1.1 Assessment of Bat Roost Potential

7.1.1.1 Building 1

Building 1 is in good structural condition.
Building 1 does not provide bat roost habitat.
There is no potential bat access to the Building 1 roof structure or to the interior of Building 1.

7.1.1.2 Building 2

Building 2 provides a moderate summer bat roosting potential.
The exterior of the roof structure is in good condition and it is not thought likely that bats would gain access to the roof structure from the exterior of Building 2.

However, bats may use the following features for roosting and/or to gain access to (internal) roosting features:

- eave rafter-to-rafter gaps above the southwest elevation wall-plate.
- gaps and crevices within timber-board cladding.
- crevices between timber-boards and window and door frames.
- gaps between exterior doors and their frames.
- open windows (within the southwest elevation).
- open mortise-and-tenon joints.
- gaps between rafters and interior walls/structures.

Considering its structural fabric and location; it is not considered likely that bat would use Building 2 for hibernation purposes.

Building 2 provides an uncluttered environment which bats may use for flying within.

A Schwegler 1FF bat box is installed on the southwest elevation wall of Building 2.

7.1.1.3 Building 3

Building 3 has a low-moderate summer bat roosting opportunity.

Building 3 is in good structural condition and it is not thought likely that bats would gain access to the roof structure from the exterior of Building 2.

Bats may use crevices between north elevation gable exterior timber-board cladding for roosting and/or to gain access to the Building 3 roof-space.

Considering its structural fabric and location; it is not considered likely that bat would use Building 3 for hibernation purposes.

7.1.2 Physical Evidence of Bat Occupation

7.1.2.1 Building 1

No physical evidence of bat was found on or within Building 1.

7.1.2.2 Building 2

- Finding 1: approximately 20 (year 2020) bat droppings, consistent in size and appearance with those deposited by Brown Long-eared bats, and several (areas of) probable bat urine droplets, were found scattered on various surfaces throughout the interior.
- Finding 2: a cluster of 40 (year 2020) bat droppings was found on storage items at the west-end of Building 2. The bat droppings were immediately beneath the ridge board. A sample of the droppings was collected and sent to EcoWarwicker ecological Forensics for DNA Analysis. The bat species identified as depositing the droppings is Brown Long-eared. A copy of the result sheet from EcoWarwicker ecological Forensics is contained in Appendix 2, sample labelled 'S9'.
- Finding 3: six (year 2020) bat droppings, consistent in size and appearance with those deposited by Pipistrelle (*Pipistrellus* sp.) bats, were found within and beneath exterior timber-board cladding at the west-end of the southwest elevation wall.
- Finding 4: a group of 15 bat droppings, consistent in size and appearance with those deposited by Brown Long-eared bats, was found at the junction between a roof-truss King-post and raking-strut within the middle area. The bat droppings were immediately beneath an open mortise-and-tenon joint between the roof truss King-post and primary rafter. Five of the bat droppings were considered to have been deposited in year 2020 with the remainder having been deposited in year 2019 and/or previous.
- Finding 5: five adult Brown Long-eared bats were found roosting between southwest elevation timber-board cladding and paper/bitumen underlining paper.
- Finding 6: three bat droppings, consistent in size and appearance with those deposited by Brown Long-eared bats, were found within a roof-truss open mortise-and-tenon joint within the southeast area. The bat droppings were thought to have been deposited in year 2019 and/or previous.
- Finding 7: four bat droppings, consistent in size and appearance with those deposited by Brown Long-eared bats, were found within a roof-truss open mortise-and-tenon joint within the southeast area. The bat droppings were thought to have been deposited in year 2019 and/or previous.
- Finding 8: a cluster of 200 bat droppings was found on the floor surface within the southeast area. The bat droppings were immediately beneath the ridge board. A sample of the droppings was collected and sent to ecoWarwicker ecological Forensics for DNA Analysis. The bat species identified as depositing the droppings is Brown Long-eared. A copy of the result sheet from EcoWarwicker ecological Forensics is contained in

7.1.2.3 Building 3

Finding 9: a group of 15 (year 2020) bat droppings, consistent in size and appearance with those deposited by Brown Long-eared bats, was found on the floor-surface within the north area of the roof-space.

Finding 10: A group of 15 (year 2020) bat droppings was found on the floor-surface within the south area of the roof-space. A sample of the droppings was collected and sent to ecoWarwicker ecological Forensics for DNA Analysis. The bat species identified as depositing the droppings is Brown Long-eared. A copy of the result sheet from EcoWarwicker ecological Forensics is contained in Appendix 2, sample labelled 'U9'.

7.2 Dusk Bat Emergence and Activity Survey – Visit 1

- 20:30: two Common pipistrelle (*Pipistrellus pipistrellus*) emerged from timber-board crevices within the southwest elevation of Building 2. Upon emerging, the bats flew immediately southwest, away from the Buildings.
- 20:45: eight adult Brown Long-eared bats were found preening and/or flying within the Building 2 interior.
- 20:50 – 21:15: five adult Brown Long-eared bats emerged from Building 2 via southwest elevation eave rafter-to-rafter gaps. Upon emerging, the bats flew immediately south, along the west elevation of Building 3.
- Survey end: seven adult Brown Long-eared bats were found preening and/or flying within Building 2.

Between 20:28 and 21:15, foraging by Brown Long-eared, Common pipistrelle, Soprano pipistrelle and Natterer's bat was observed and recorded along the stretch of highway at the north and west of the Buildings.

Between 20:28 and 21:05, foraging by Common pipistrelle and Soprano pipistrelle bat was observed and recorded at the south of the Buildings.

7.3 Visit 2

7.3.1 Physical Evidence of Bat Occupation

No notable fresh (since Visit 1) physical evidence of bat was found.

7.3.2 Dusk Bat Emergence and Activity Survey

- 20:20: two Common pipistrelle emerged from timber-board crevices within the southwest elevation of Building 2. Upon emerging, the bats flew immediately southwest, away from the Buildings.
- 20:30: two adult Brown Long-eared bats were found preening on the ridge board within the southeast area of Building 2.
- 20:40 six adult Brown Long-eared bats and two Brown Long-eared pups were found preening and/or flying within Building 2.
- 20:40 – 20:50: three Brown Long-eared bats emerged from Building 2 via southwest elevation eave rafter-to-rafter gaps. Upon emerging, the bats flew immediately south, along the west elevation of Building 3.

- Survey end: four adult Brown Long-eared bats and four Brown Long-eared pups were found preening and/or flying within Building 2.

Between 20:25 and 21:00, foraging by Brown Long-eared and Common pipistrelle bat was observed and recorded within the vicinity of the surveyed buildings, particularly along the stretch of highway at the north and west of the Buildings.

7.4 Visit 3

7.4.1 Physical Evidence of Bat Occupation

Finding 11: eight Brown Long-eared bats were found roosting within a crevice between a rafter and the west elevation wall within Building 2.

7.4.2 Dusk Bat Emergence and Activity Survey

- 19:05: one Common pipistrelle emerged from timber-board crevices within the southwest elevation of Building 2. Upon emerging, the bat flew immediately south, away from the Buildings.
- 19:30: seven adult Brown Long-eared bats and three Brown Long-eared pups were found preening and/or flying within Building 2.
- 19:35-20:19:50: six Brown Long-eared bats emerged from Building 2 via southwest elevation eave rafter-to-rafter gaps. Upon emerging, the bats flew immediately south, along the west elevation of Building 3.
- Survey end: two adult Brown Long-eared bats and four Brown Long-eared pups were found preening and/or flying within Building 2.

Between 19:08 and 20:05, foraging by Brown Long-eared, Common pipistrelle, Soprano pipistrelle and Natterer's bat was observed and recorded in the vicinity of the Buildings.

7.5 Visit 4

7.5.1 Physical Evidence of Bat Occupation

No notable (since Visit 3) evidence was found.

7.5.2 Dusk Bat Emergence and Activity Survey

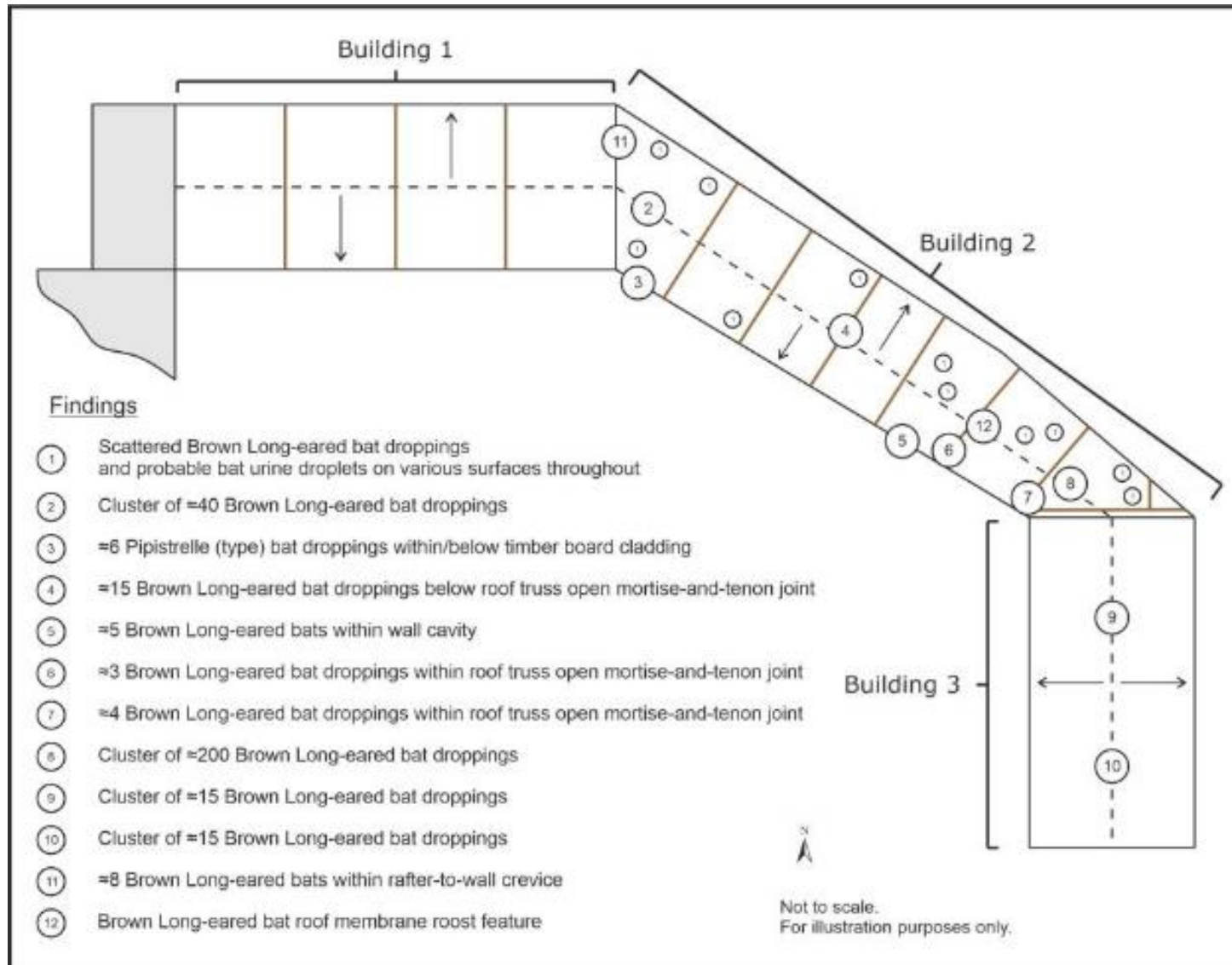
- 19:00 – 19:20: six adult Brown Long-eared and four Brown Long-eared pups were observed entering the interior of Building 2 via crevice/join within roof underling membrane near to the roof apex. Upon emerging, the bats flew and/or preened within Building 2. See Finding 12, Section 7.6/Plan 2.
- 19:30: 12 Brown Long-eared bats (eight adult and four pups) were found flying and/or preening within Building 2.
- 19:30 – 19:55: eight Brown Long-eared bats emerged from Building 2 via southwest elevation eave rafter-to-rafter gaps. Upon emerging, the bats flew immediately south, along the west elevation of Building 3.
- 20:05 – 20:10: three Brown Long-eared bat entered Building 2 via features within the southwest elevation wall.
- Survey end: seven adult Brown Long-eared bats and three Brown Long-eared pups were found preening and/or flying within Building 2.

Between 19:05 and 19:40, foraging by Common pipistrelle bat was observed and recorded in the vicinity of the Buildings.

7.6 Results Plan

A site plan indicating the locations of the identified bat roost findings is contained in Plan 2.

Plan 2. Results plan.



7.7 Barn Owl

No evidence of Barn Owl was found.

7.8 Small Breeding Bird

The following evidence of bird nesting was recorded:

- various used and old and unused House martin (*Delichon urbicum*) nests on the south elevation of Building 1.
- a Blue tit (*Cyanistes caeruleus*) roost within a Schwegler 1FF bat roost box installed on the southwest elevation of Building 2.
- remnant Swallow (*Hirundo rustica*) nests within Building 2.

8. CONCLUSION

8.1 Bat

8.1.1 Building 1

Building 1 does not provide bat roost habitat.

No evidence of bat roost was found on or within Building 1.

No further bat survey of Building 1 is necessary to inform the possible conversion of Building 1.

The possible conversion of Building 1 would not require a EPS Licence to be issued by Natural England.

However, due to the presence of bat roosts in Building 2; should Building 1 be converted, building work should be carried out in a manner sensitive to bats.

In the event that Building 1 is converted, it is recommended bat mitigation measures, as contained in Section 9.1, are adhered to.

8.1.2 Building 2

Building 2 provides bat summer roosting habitat, and it is not thought likely that bats would be present within Building 2 during the winter.

The results of the Bat Survey indicate that Building 2 contains:

- a Brown Long-eared maternity roost.
- a Common pipistrelle day roost.

8.1.2.1 Species Conservation Importance

8.1.2.1.1 Brown Long-eared

Brown Long-eared are frequently encountered in Shropshire and surrounding counties and nationally are regarded as being "common" (UK Mammals, 2005, Matthews *et al.*, 2018).

In accordance with the Bat Mitigation Guidelines (Natural England, 2004) the Brown Long-eared bat maternity roost within Building 2 is of high conservation significance.

The Brown Long-eared bat roost found within Building 2 is of site importance and may be of low/moderate regional importance.

The Brown Long-eared bat roosts found within Building 2 is not considered to be of national importance.

8.1.2.1.2 Common pipistrelle

Common pipistrelle are frequently encountered in Shropshire and surrounding counties and nationally are regarded as being "common" (UK Mammals, 2005, Matthews *et al.*, 2018).

In accordance with the Bat Mitigation Guidelines (Natural England, 2004) the Common pipistrelle day roost within Building 2 is of high conservation significance.

The Common pipistrelle bat roost found within Building 2 is of site importance. However; the Common pipistrelle bat roost found within Building 2 is not considered to be of regional importance or national importance.

8.1.2.2 Development Impact

In the event that Building 2 is converted:

- in the absence of mitigation, the proposed development may lead to the killing and/or injury of, Brown Long-eared, and/or Common pipistrelle bats and the destruction of the recorded roost features.
- at the least; it is likely that the proposed development will mean the modification of the existing Brown Long-eared and/or Common pipistrelle bat roosts. Depending on their exact nature, modifications may mean the improvement or worsening of habitat for Brown Long-eared and/or Common pipistrelle bats.

Should the proposed development not result in the killing or injury of bats or the loss of identified bat roosts; depending on its nature, the proposed development may cause temporary and/or long-term disturbance to Brown Long-eared and/or Common pipistrelle bats, affecting the ability of the identified bat species to survive, breed, reproduce, rear or nurture their young or hibernate.

At the worst; it is likely the proposed development will mean the destruction of the identified Brown Long-eared and/or Common pipistrelle bat roosts.

In this eventuality; it is unlikely that Brown Long-eared and/or Common pipistrelle bats will continue to have suitable roosting habitat within the structural fabric of Building 2.

8.1.2.3 Recommendations

Should Building 2 be converted; the proposed development will require a EPS Licence for bats to be issued by Natural England prior to development work commencing. Development work will need to be carried out under the terms of the EPS Licence.

Development work will need to be timed to commence when it is least likely that bats present within Building 2 will be at their most vulnerable life-stages (i.e. nursing young).

8.1.3 Building 3

Building 3 provides bat summer roosting habitat, and it is not thought likely that bats would be present within Building 3 during the winter.

The results of the Bat Survey indicate that the Building 3 roof-space is used by Brown Long-eared bat as a day roost. It is likely that the Brown Long-eared bats that roost within the Building 3 roof-space are part of the same colony of Brown Long-eared bats that roost within Building 2.

No definite bat ingress/egress features to/from the Building 3 roof-space have been identified. However, it is likely that bats use crevices between the north elevation gable timber-board cladding to gain access to/from the Building 3 roof-space and the

building exterior. There is no direct way for bats to move between the Building 3 roof-space and the interior of Building 2.

8.1.3.1 Species Conservation Importance

Brown Long-eared are frequently encountered in Shropshire and surrounding counties and nationally are regarded as being "common" (UK Mammals, 2005, Matthews *et al.*, 2018).

In accordance with the Bat Mitigation Guidelines (Natural England, 2004) the Brown Long-eared bat day roost within Building 3 is of low conservation significance.

The Brown Long-eared bat roost found within Building 3 is of site importance. However; the Brown Long-eared bat roost found within Building 3 is not considered to be of regional importance or national importance.

8.1.3.2 Development Impact

In the event that Building 3 is converted:

- in the absence of mitigation, the proposed development may lead to the killing and/or injury of Brown Long-eared bats and the destruction of the recorded roost features.
- at the least; it is likely that the proposed development will mean the modification of the existing Brown Long-eared bat roost. Depending on their exact nature, modifications may mean the improvement or worsening of habitat for Brown Long-eared bats.

Should the proposed development not result in the killing or injury of bats or the loss of identified bat roosts; depending on its nature, the proposed development may cause temporary and/or long-term disturbance to Brown Long-eared bats, affecting the ability of the identified bat species to survive, breed, reproduce, rear or nurture their young or hibernate.

At the worst; it is likely the proposed development will mean the destruction of the identified Brown Long-eared bat roost.

In this eventuality; it is unlikely that Brown Long-eared bats will continue to have suitable roosting habitat within the structural fabric of Building 3.

8.1.3.3 Recommendations

Should Building 3 be converted: ideally, the existing roof-space should remain as existing and continue to be accessible to Brown Long-eared bats.

Should the conversion of Building 3 require the modification or removal of the existing roof-space; a EPS Licence for bats to be issued by Natural England prior to development work commencing. Development work will need to be carried out under the terms of the EPS Licence.

8.1.4 Buildings 1 – 3 and their environs

Depending on the exact nature of the proposed development plans, compensation and enhancement for bats will need to be provided to ensure the long-term survival of bats at Church House Farm.

Bat mitigation, compensation and enhancement for the proposed development is contained in Section 9.2 and Section 9.3.

External lighting:

The Church House Farm yard and building complex is used by bats for commuting and foraging.

In order to negate the potential impact of the development on commuting and foraging bats; external lighting to be installed should be done so in a sympathetic manner.

See Section 9.4.

8.2 Barn Owl

No evidence of Barn Owl was found.

It is not considered likely that Barn Owl will be affected by the proposed development plans, or reasonable for future Barn Owl roosting opportunity to be incorporated in to proposed development plans.

8.3 Small Breeding Bird

Evidence of Small Breeding Birds was found.

It is possible that birds may nest on and/or within the Buildings in the future.

Proposed development work will need to be carried out when there are no Small Breeding Birds present.

Bird nesting habitat may be created on-site, post-development, to encourage birds to nest within the Church House Farm property in the future.

Recommended mitigation, compensation and enhancement for Small Breeding Birds is contained in Section 9.5.

9. RECOMMENDATIONS

9.1 Bat Mitigation Measures – Building 1

Should Building 1 be converted; the proposed development would not lead to the destruction of the recorded Brown Long-eared and Common pipistrelle roosts within Building 2 or the Brown Long-eared bat roost within Building 3.

However, should bats be present within Building 2 during the conversion of Building 1; noise and vibration resulting from building work may cause the disturbance of the bats.

Depending on the duration and severity of the disturbance; Brown Long-eared bats may abandon Building 2, potentially leaving new-born bats to die.

To avoid the conversion of Building 1 having a negative impact on bats within Building 2 or Building 3; any structural building work required within Building 1 and within its vicinity should *only* be carried out between 1st October and 15th April.

Work activities that may *only* be carried out between 1st October and 15th April includes all demolition and dismantling work and the use of power tools and machinery within 5m, or-so, of Building 2.

9.2 Bat Mitigation Measures – Building 2

9.2.1 European Protected Species Licence

Should the proposed development require the conversion of Building 2; development work may only be carried out on receipt of a European Protected Species (EPS) Licence for bats from Natural England.

9.2.2 Timing of Work

As Building 2 contains a Brown Long-eared bat maternity roost; the conversion of Building 2 may only commence between 1st October and 15th April.

Work should be timed so that Brown Long-eared bats are not left without maternity roosting habitat on their return to Church House Farm in the spring/summer.

Proposed development plans should include the creation of a purpose-made roof-space for bats (a 'Bat Loft') within Building 2 or within its vicinity. The Bat Loft should be created and available for use by bats prior to 15th April. See Section 9.4.1.

9.2.3 Work Methods

A specification of work methods may only be determined when the exact nature of the proposed development has been confirmed.

However, it is likely that the work methods will include the following, or similar:

- the provision of (temporary or permanent) alternative bat roost habitat in the vicinity (<50m) of Building 2.
- prior to the commencement of development work, the inspection of Building 2 by a Natural England licensed bat ecologist, for the presence of bats.
- the installation of one-way bat excluders (to allow bats to leave roost locations, but not return).

- (if required) the removal of roof coverings by hand under the supervision of a Natural England licensed bat ecologist.
- the dismantling and/or repair of internal structures under the supervision of a Natural England licensed bat ecologist.

9.3 Bat Mitigation Measures – Building 3

9.3.1 European Protected Species Licence

Should Building 3 be converted: ideally, the existing roof-space should remain as existing and continue to be accessible to Brown Long-eared bats.

If the Building 3 roof-space is retained and the roof-space may continue to be available to bats; the conversion of Building 3 will not require a EPS Licence.

However; should the conversion of Building 3 require the modification or removal of the existing roof-space; a EPS Licence for bats will need to be issued by Natural England prior to development work commencing. Development work will need to be carried out under the terms of the EPS Licence.

9.3.2 Timing of Work

As the Brown Long-eared bat roost within the Building 3 roof-space is probably associated with the Brown Long-eared maternity roost within Building 2; the conversion of Building 3 may only commence between 1st October and 15th April.

9.3.3 Work Methods

A specification of work methods may only be determined when the exact nature of the proposed development has been confirmed.

However, it is likely that the work methods will include the following, or similar:

- the provision of (temporary or permanent) alternative bat roost habitat in the vicinity (<50m) of Building 3.
- prior to the commencement of development work, the inspection of Building 3 by a Natural England licensed bat ecologist, for the presence of bats.
- the installation of one-way bat excluders (to allow bats to leave roost locations, but not return).
- (if required) the removal of roof coverings by hand under the supervision of a Natural England licensed bat ecologist.
- the dismantling and/or repair of internal structures under the supervision of a Natural England licensed bat ecologist.

9.4 Bat Compensation and Enhancement Measures

Recommendations for the provision of proportionate and effective compensation and enhancement measures for bats may only be made following the finalisation of proposed development plans.

Ideally, at the least, proposed development plans should include the retention of:

- the Building 2 Brown Long-eared and Common pipistrelle bat roosts; and,
- the Brown Long-eared bat roost within the Building 3 roof-space.

In addition, existing bat ingress/egress features to the identified roosts should be retained.

Should proposed development plans require the modification and/or loss of bat roosts; compensation roosting features will be required.

Should proposed development plans include the retention of identified bat roosts:

- provisions will need to be made to minimise and possible future disturbance to bats in occupation from noise and vibration disturbance.
- new potential bat roosting features should be installed to provide enhancement for bats.

Depending on the nature of proposed development plans; new potential bat roosts may be incorporated into the structure of the proposed converted Buildings.

For example, a Bat Loft, an Eaves Box, a Loft Box, a Rafter Box, a series of purpose-made Bat Boxes or Raised Ridge Tiles could be installed in the structures of the proposed converted Building.

Each of these bat roosting features is described in Sections 9.4.1 – 9.4.8.

Examples of bat compensation and enhancement measures are contained in Appendix 3.

9.4.1 Bat Loft

Should proposed development plans include the loss of the Brown Long-eared bat roost in Building 2, a purpose-made roof-space for the exclusive use by bats, should be created within Building 2 or within its vicinity.

The minimum internal dimensions of the Bat Loft must be:

- a) 5m in length;
- b) 4m in width (at the base, eave-to-eave) (or the existing width of the building); and,
- c) 2m in height (from the top of floor/ceiling joists to the underside of the ridge-beam).

Details on the design of a 'Bat Loft' can be provided on request.

9.4.2 Eaves Box

The dimensions of each Eaves Box should be a minimum of 300mm high (at the vertical 'back' inside the building roof) and a minimum of 400mm wide. The length of Eaves Boxes will be determined by the spacing of rafters forming the roof and therefore cannot be known until rafter installation has taken place. However, each Eaves Box should have a minimum length of 800mm.

One opening for bats should be provided to each Eaves Box, at the top of the external walls. Each opening should be a maximum of 150mm long and between 20-25mm wide at the eaves.

The roof area over each Eaves Box should be lined with traditional type bitumastic/hessian felt to provide suitable purchase for bats.

The upper surface of Eaves Box floors should be covered with heavy duty (500 micron/2000 gauge) plastic sheeting, such as damp-proof membrane. The plastic sheeting should be securely fixed in place.

In order to aid monitoring of each Eaves Box bat roost, an inspection hatch of no more than 300 x 300mm should be constructed in the inside vertical wall of each Eaves Box.

A sign should be attached to each inspection hatch to indicate the presence of a bat roost, that only licensed bat workers should access it, and to provide the telephone number of the Bat Conservation Trust.

The design of Eaves Boxes follows that in the book "The Design and Construction of Bat Boxes in Houses" (Scottish Natural Heritage, 1996), reproduced in the Bat Mitigation Guidelines (S.9.4.2, pp. 61; 2004).

9.4.3 Loft Box

Loft Boxes should be a minimum of 500mm high (from ridge to floor), 600mm wide (at the base) and 500mm long.

Ideally, Loft Boxes should only be installed at building ends and not within middle-sections.

Access for bats may be provided by crevices on top of or within gable walls, gaps in outer weatherboarding, the creation of a 'letter box' style opening approximately 150mm long and 25mm high (the bottom edge of which should be a minimum of 40mm above the floor of the Loft Box) or by the use of purpose made bat access panels/bricks.

The roof area over each Loft Box should be lined with traditional type bitumastic/hessian felt to provide suitable purchase for bats.

The upper surface of Loft Box floors should be covered with heavy duty (500 micron/2000 gauge) plastic sheeting, such as damp-proof membrane. The plastic sheeting should be securely fixed in place.

In order to aid monitoring of each Loft Box, an inspection hatch of no more than 300 x 300mm should be constructed in a inside vertical wall of each Loft Box.

A sign should be attached to each inspection hatch to indicate the presence of a bat roost, that only licensed bat workers should access it, and to provide the telephone number of the Bat Conservation Trust.

No insulation materials should be installed within Loft Boxes.

The design of Loft Boxes follows that in the book "The Design and Construction of Bat Boxes in Houses" (Scottish Natural Heritage, 1996).

9.4.4 Rafter Box

Potential bat roost space may be created under the roof by providing exclusive areas between rafters for use by bats. Rafter Boxes may be created at the bottom of a roof slope, near to the eaves, at the apex, anywhere suitable in-between, or along the whole slope of the roof. Boxes formed at the base of the roof may provide an extension to potential bat roosting areas that may be created at the eaves.

By placing boarding on the underside of two or more rafters and closing off the bottom and top as required, potential roosting space is created. Dependent upon design plans, perceived occupation by a high number of bats, and the position of the Rafter Box on the roof slope, an access door or panel may be provided. A small door at the bottom of the Box or on its underside will allow the Box to be inspected by a licensed bat worker and cleaned-out as necessary.

Ideally the Box should be lined with bitumastic/hessian roofing felt on its base to provide suitable purchase for bats.

Access to Rafter Box bat roosts may be provided by purpose made Lead Bat 'Slates', purpose-made Bat Access Slates/Tiles or modified slate-/tile- vents.

Lead Bat 'Slates' can be formed by a competent roofing contractor on-site. Lead Bat 'Slates' must be formed from a minimum of Code 6 lead to the design recommended by Natural England (formerly English Nature) in their leaflet "Bat access 'slate' Detail 1B (with access to roof void)", reproduced in Appendix 4.

Using a minimum of Code 6 lead, a rectangle piece of lead, (approximately twice as wide of the slates/tiles covering the roof and slightly longer), can be double-folded and shaped to form a crevice approximately 20mm high suitable for bats to crawl through into the roost space.

A plan of a Lead Bat 'Tile' design and a photograph of a Lead Bat 'Tile' are contained in Appendix 5.

Alternatively, readily available tile-vents can be adapted – by removing internal mesh/filters – and installed to provide bat access.

Should the top of the Rafter Box touch the roof apex, access for bats may be provided by adapted ridge tiles: modified ridge ventilator tiles (those with their internal mesh or plastic mouldings removed) or raised ridge tiles. Raised ridge tiles can be achieved either by narrowing the gap between ridge tiles and resting the middle tiles on their neighbours, or by packing the ends of ridge tiles with an excess amount of mortar (or similar). (See Section 8.4.8).

9.4.5 Exterior Common Rafter Bat Crevices

During roofing work, crevices ('Exterior Common Rafter Bat Crevices') approximately 15mm – 25mm wide and the depth of the rafter, may be created between the top of exterior walls and the near-side edge of exterior common rafters. Crevices should not be less than 150mm in length.

If possible, crevices between exterior common rafters and exterior walls should extend to a small (approximately 100mm diameter) roosting cavity on the top of gable walls.

9.4.6 Bat Boxes

New potential Bat Box-type roosts can easily be incorporated into the design fabric of the post-development Building.

"Bat bricks" may be built into building walls. These bricks can provide roosting opportunities for bats on their own, or could be used to provide an access point to internal roost spaces, such as a Loft Box (Section 8.4.3).

Specially designed Bat Boxes are available that may be built into walls or encased by exterior weather boarding.

Recommended designs are the Schwegler 1FR and 2FR Bat Tubes which provide maintenance-free roosting opportunities, Ibstock Enclosed Bat Boxes and Wienerberger Habibat Bat Boxes.

These Bat Tubes and Boxes may be aesthetically unobtrusive if sympathetically integrated into the finished design of the proposed development.

Bat Boxes should be installed where design plans allows, in the under-eave region, at gable apexes or along barge-boards.

On mature trees in the surrounding area potential bat roosting opportunity may also be provided by the installation of Bat Boxes/Tubes.

Although longer-lasting woodcrete varieties are preferred, traditional wooden Bat Boxes may be appropriate for this task.

Recommended commercially available woodcrete Bat Tubes that are suitable for use on trees and on fence boundaries include Schwegler 1FF Bat Tubes and Schwegler 2F Bat Tubes.

Bat Boxes/Tubes should be sited at a minimum height of approximately 4m from the ground and in an area suitable for a clear bat flight path.

9.4.7 Wall Cavity Bat Roosts

Cavity-wall bat roost space may be provided where the proposed construction design allows. By forming an area of minimum 200-300mm high and 150-200mm wide, adequate roost space for bats can be created. Access should be created at the bottom of the roost space by providing a gap of 150mm long (minimum) and 20-25mm high.

These spaces are suitable for buildings to be covered with wooden boarding, as access can easily be created by raising and leaving open a section of board. This method may also be used to provide access to Loft Boxes (Section 8.4.3).

9.4.8 Raised Ridge Tiles

Ridge tiles on the apex or and/or hips of (the) roof(s) may be permanently raised to potentially allow bats to roost on the underside of them.

Purposely raised ridge tiles

The raising of ridge tiles may be achieved by securing them on the roof with mortar placed on the inner lower half of the ends of ridge tiles only. The height of bat openings should be between 18mm and 22mm. Raised ridge tiles can be installed by a competent roofing contractor to the design recommended by Natural England (formerly English Nature) in their leaflet "Ridge Tile Access Detail 4B (with access to roof void)", reproduced in Appendix 6.

Reclaimed and/or misshaped ridge tiles

Should re-claimed and/or misshaped ridge tiles be used during roofing work, it is possible that not all of the ridge tile will fit closely with roof slates/tiles underneath them. Should these gaps be between approximately 12mm and 22mm in height – there is potential that crevice dwelling bats may use them to gain access to the undersides of ridge tiles. The 'natural' gap of misshaped ridge tiles may be exaggerated by packing with mortar and the undersides of the ridge tile should not be completely filled with mortar to provide a potential roosting space for bats.

Purpose-made ridge tile bat roosts

Purpose-made ridge tiles with bat-access openings are available commercially. For example, the handmade 'bat access ridge tile' produced Tudor Roof Tile Co. Limited, Dengemarsh Road, Lydd, Kent, TN29 9JH.

9.5 External Lighting for Bats

In order to avoid any unnecessary disturbance to bats in the future, any external lighting to be installed within the Church House Farm yard and building complex should:

- use Light emitting diodes (LED) luminaries
- have a warm white spectrum <2700° Kelvin (degrees colour temperature)
- have peak wavelengths higher than 550nm
- be set on motion-sensors
- use short duration (e.g. one minute) timers
- not be in the vicinity of, or shine towards, bat roost openings
- not shine towards (the) roof structure(s)
- not be in the vicinity of, or shine towards, boundary vegetation

9.6 Small Breeding Bird

9.6.1 Mitigation in General

Ideally, development work on the Buildings should not be started between 1st March and 1st October (inclusive).

Should it be required that development works commence between March and September, the Buildings should be inspected by a suitably qualified ecologist for evidence of nesting birds.

No works may commence if birds have started to build, or if they already occupy, nests within the areas of the Buildings to be affected by the proposed development. If birds gain access to the Buildings and start nesting - prior to or during the construction phase - delays will be inevitable up to the moment when the young birds leave the nest.

9.6.2 Mitigation – Bat Box

A Schwegler 1FF Bat Box is installed on the southwest elevation of Building 2. The box is used by Blue tit.

Should it be required; the removal of the box should be carried out when no nesting birds are present, i.e. between 1st October and 1st March.

Should it be required that the removal of box takes place within the bird breeding season, a survey should be carried out by a suitably qualified ecologist to ascertain whether breeding birds are present within the box or not; should no breeding birds be present, it may be possible for the removal of box to commence.

If it is anticipated that the box is to be removed within the bird breeding season (and there are no birds nesting within it) the entrance to the box may be closed/blocked-off, ideally in the February preceding the removal of the box.

9.6.3 Small Breeding Bird Compensation and Enhancement

In order to encourage the long-term survival of nesting birds at Church House Farm property and within its immediate vicinity it is recommended that woodcrete nest boxes (or similar) be installed where possible. Ideally, these should be positioned in areas of low future disturbance.

Ideally nest box placement and construction of nesting features should be undertaken outside the bird breeding season (March-September inclusive). Nest boxes should be placed under the eaves of the Buildings, or under gable-ends.

A minimum of ten Schwegler woodcrete (or similar alternative) bird nest boxes should be installed on and/or within the vicinity of the Buildings. It is recommended that this number be divided as follows:

- two Swift nest boxes (e.g. Schwegler No. 16 Swift box)
- two House Martin nest boxes (e.g. Schwegler Buildings martin Nest 9A)
- two Sparrow nest boxes (e.g. Schwegler 1SP Sparrow Terrace)
- two Wren nest boxes (e.g. Schwegler Number 1ZA woodcrete nest)
- one Tit nest box (e.g. Schwegler 2M woodcrete bird box)
- one generic bird species nest box (e.g. Schwegler 1B bird nest box)

If any protected species is found at any stage of the property development, work should immediately cease and Natural England should be consulted (Telephone 0845 600 3078).

Another survey will need to be conducted if no development work is carried out on the Buildings at Church House Farm within two years from the date of the most recent survey.

10. RELEVANT PUBLICATIONS

Bat Conservation Trust (2006). *A review of the success of bat boxes in Buildings*. Scottish Natural Heritage Commissioned Report No. 160 (ROAME No. F01AC310).

Bat Conservation Trust and Institution of Lighting Professionals (2018). *Guidance Note 8 Bats and Artificial Lighting*.

Collins, J. (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines*, 3rd ed., Bat Conservation Trust.

Greenaway, F. and Hutson, A.M. (1990). *A Field Guide to British Bats*. Bruce Coleman Books, London.

Gunnell, K., Murphy, B. and Williams, C. (2013). *Designing for Biodiversity: A Technical Guide for New and Existing Buildings*, 2nd ed., RIBA Publishing.

Mathews F., Kubasiewicz L.M., Gurnell J., Harrower C.A., McDonald R.A., Shore R.F. (2018). *A Review of the Population and Conservation Status of British Mammals*. A report by the Mammal Society under contract to Natural England, Natural Resources Wales and Scottish Natural Heritage. Natural England, Peterborough. Natural England Access to Evidence Catalogue Code JP025.

Multi-Agency Geographic Information Centre (MAGIC) (<http://magic.gov.uk>).

Natural England (2004). *Bat Mitigation Guidelines*. English Nature, Peterborough, England.

Russ, J. (2012). *British Bat Calls A Guide to Species Identification*. Pelagic Publishing.

Schofield, H.W. and Mitchell-Jones, A.J. (2004). *The bats of Britain and Ireland*. The Vincent Wildlife Trust, Ledbury, England.

UK Mammals: Species Status and Population Trends. JNCC/Tracking Mammals Partnership. 2005.

APPENDIX 1 – Survey Photographs



Photograph 1. Buildings at Church House Farm. Exterior.

Left and centre: Building 1 South elevation.
Upper right: part of the Building 1 East elevation (gable).
Lower right: part of the Building 2 Southwest elevation.



Photograph 2. Buildings at Church House Farm. Exterior.

Left: parts of the Building 1 East and South elevations.
Centre: Building 2 Southwest elevation.
Right: part of the Building 3 West elevation.



Photograph 3. Buildings at Church House Farm. Exterior.

Left: part of the Building 2 Southwest elevation.

Centre: Building 3 West elevation.

Right: Building 3 South elevation.



Photograph 4. Buildings at Church House Farm. Exterior.

Left and centre: Building 1 North elevation.

Upper right: part of the Building 1 West elevation (gable).

Lower right: part of the Church House house.



Photograph 5. Buildings at Church House Farm. Exterior.
Left: part of the Building 3 East elevation.
Centre and right: Building 2 Northeast elevation.



Photograph 6. Buildings at Church House Farm. Exterior.
Left and centre: Building 3 South elevation.
Right: Building 3 East elevation.



Photograph 7. Buildings at Church House Farm. Interior.
View of the main (central and east-end) first-floor room of Building 1.
Looking east from west.



Photograph 8. Buildings at Church House Farm. Interior.
View within the west part of Building 2.
Looking west from east.



Photograph 9. Buildings at Church House Farm. Interior.
View of part of the Building 3 roof-space.
Looking south from north.

APPENDIX 2 – EcoWarwicker ecological Forensics



21 September 20

Re: Identification Results for Ross Jones, Star Ecology

Job number 15817, received 07 September 2020

Sample labelled: S9

PCR amplification successful. DNA sequence:

AACAGTAGAAAGTCCCACCCTCTCATAAAAATTATCAATGATTCATTGACTTACC
TGCTCCCTCAAATATTTTCATCATGGTGAACTTTGGGTCTTTCTACGGTATTTGCCT
AGCACTACTAAAT

Phylogenetic analysis identification: *Plecotus auritus*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

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Fax: 02476574500
Email: r.g.allaby@warwick.ac.uk

21 September 20

Re: Identification Results for Ross Jones, Star Ecology

Job number 15818, received 07 September 2020

Sample labelled: T9

PCR amplification successful. DNA sequence:

ATGACCAACATTTCGAAAGTCCCACCCTCTCATAAAAATTATCAATGATTCATTCATTGA
CTTACCTGCTCCCTCAAATATTTTCATCATGGTGAAACTTTGGGT

Phylogenetic analysis identification: *Plecotus auritus*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

Professor Robin Allaby

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EoWarwick
Ecological Forensics

28 September 20

Re: Identification Results for Ross Jones, Star Ecology

Job number 15819, received 07 September 2020

Sample labelled: U9

PCR amplification successful. DNA sequence:

ATGATCAACATTTCGAAAGTCCCACCCTCTCATAAAAATTATCAATGATTCATTGGA
CTTACCTGCTCCCTCAAATATTTTCATCATGGTGAAACTTTGGGTCTCTTCTAGGTATT
GCCTAGCACTAC

Phylogenetic analysis identification: *Plecotus auritus*

Confirmed by maximum likelihood, maximum parsimony, bootstrap 100%.

Best regards,

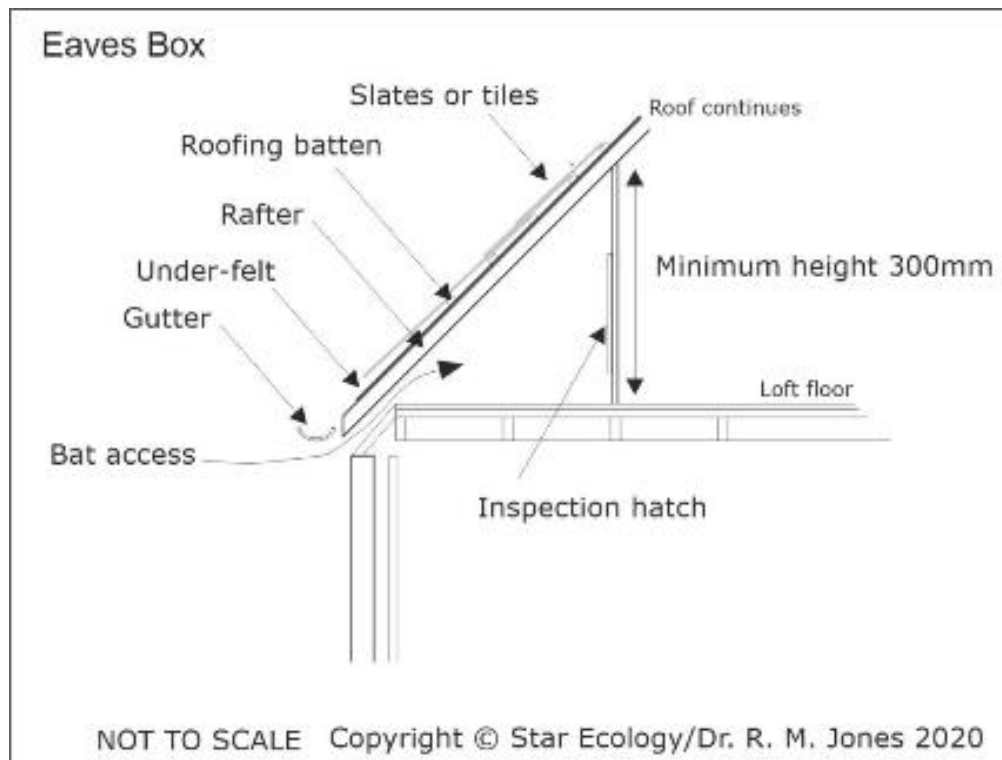
Professor Robin Allaby

The results and conclusions in this report are based on an investigation of mtDNA sequence analysis. The results obtained have been reported with accuracy. The interpretation represents the most probable conclusion for the DNA sequence obtained rather than the sample provided given current levels of species data. It should be borne in mind that different circumstances might produce different results. Therefore, care must be taken with interpretation of the results especially if they are used as the basis for commercial recommendations.

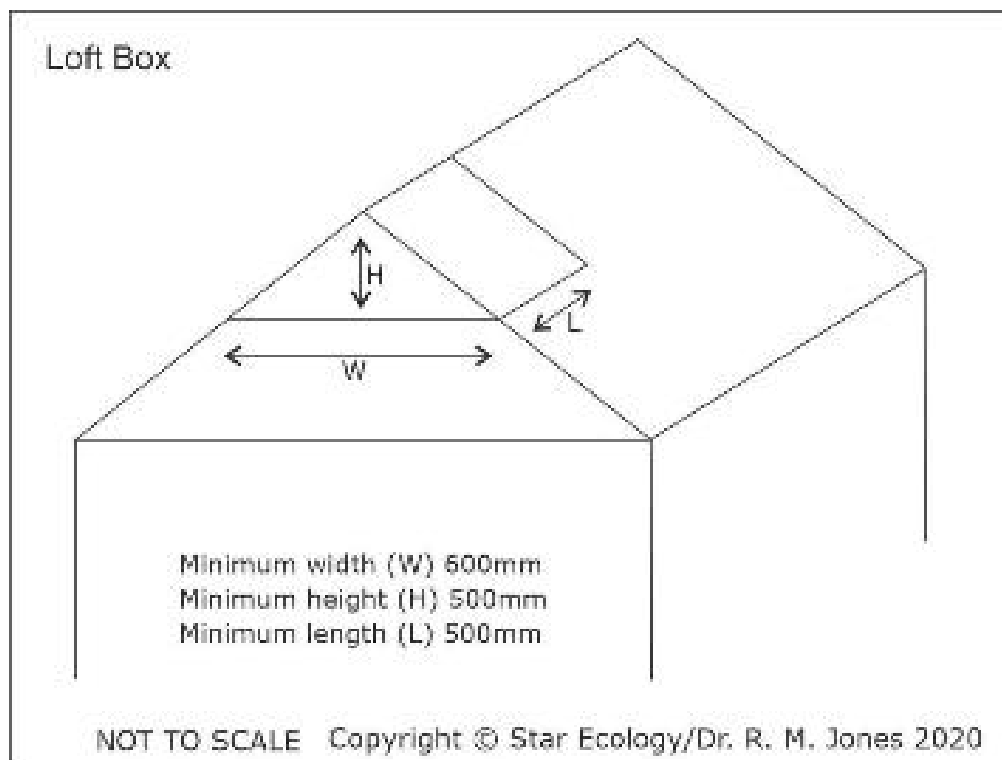
Professor Robin Allaby

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APPENDIX 2 – Example Bat Compensation Designs



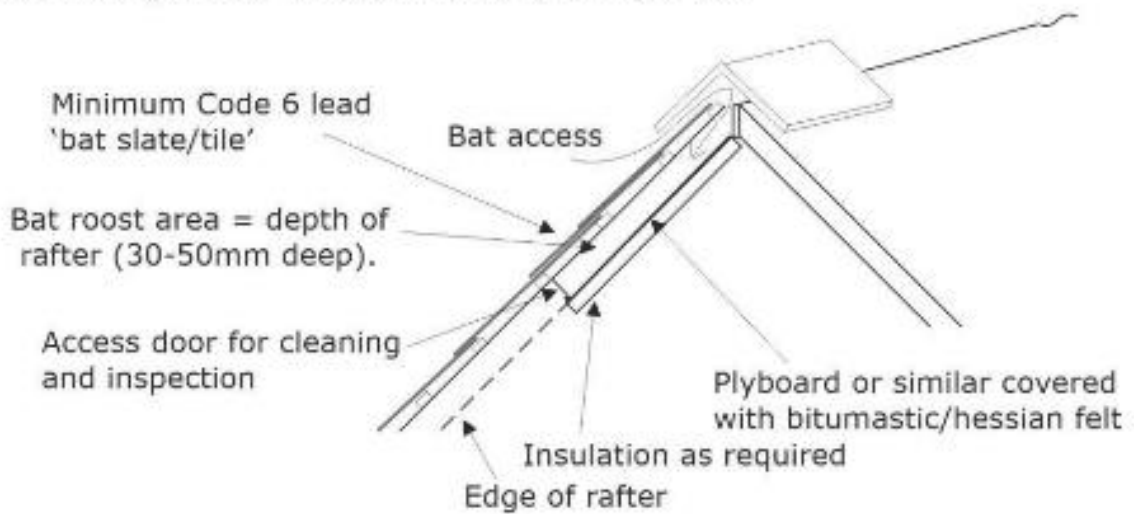
Cross section of **Eaves Box**.



Loft Box.

Rafter Box.

Bat roost between two roof rafters.
Access via unpointed, raised or mis-shaped ridge tile.



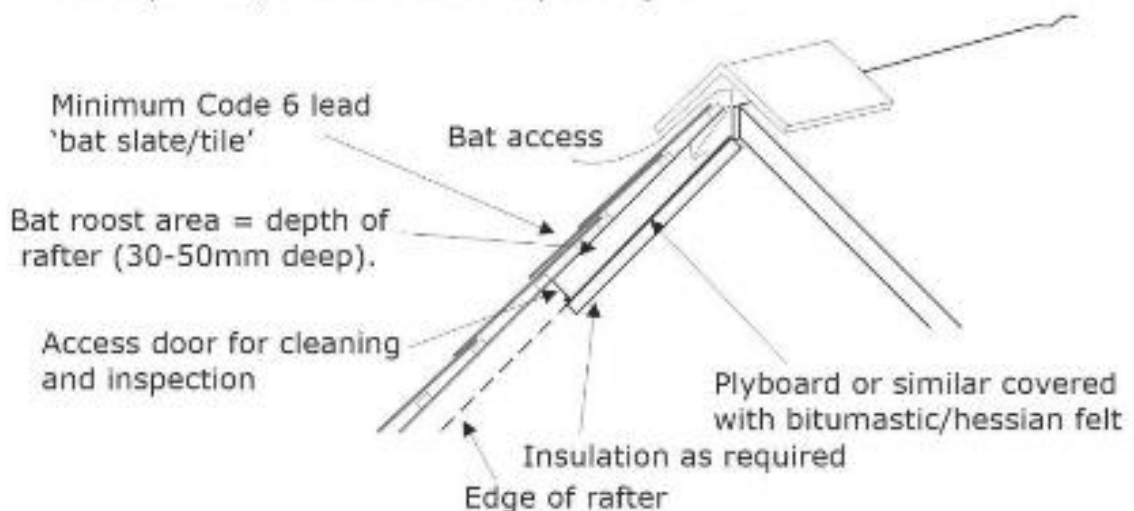
NOT TO SCALE Copyright © Star Ecology/Dr. R. M. Jones 2020

Rafter Box.

Midway on roof slope.
Access via lead 'bat slate' or 'slate'.

Rafter Box.

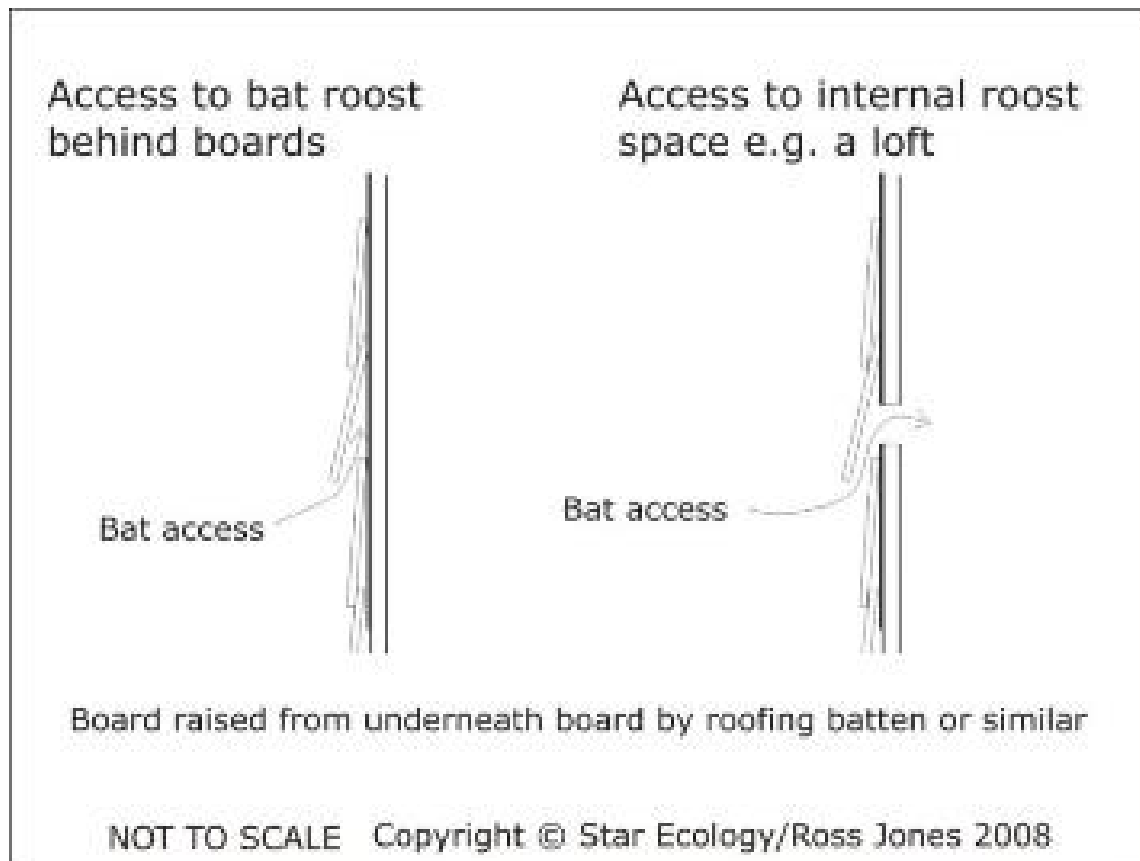
Bat roost between two roof rafters.
Access via unpointed, raised or mis-shaped ridge tile.



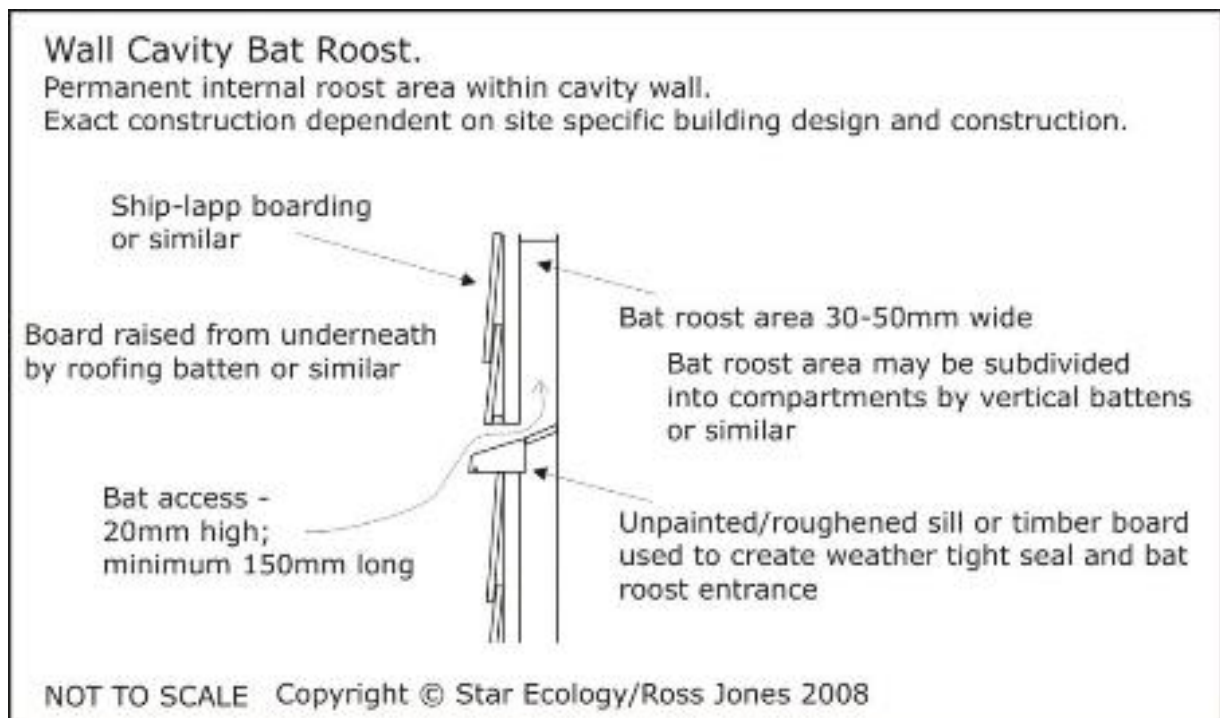
NOT TO SCALE Copyright © Star Ecology/Dr. R. M. Jones 2020

Rafter Box.

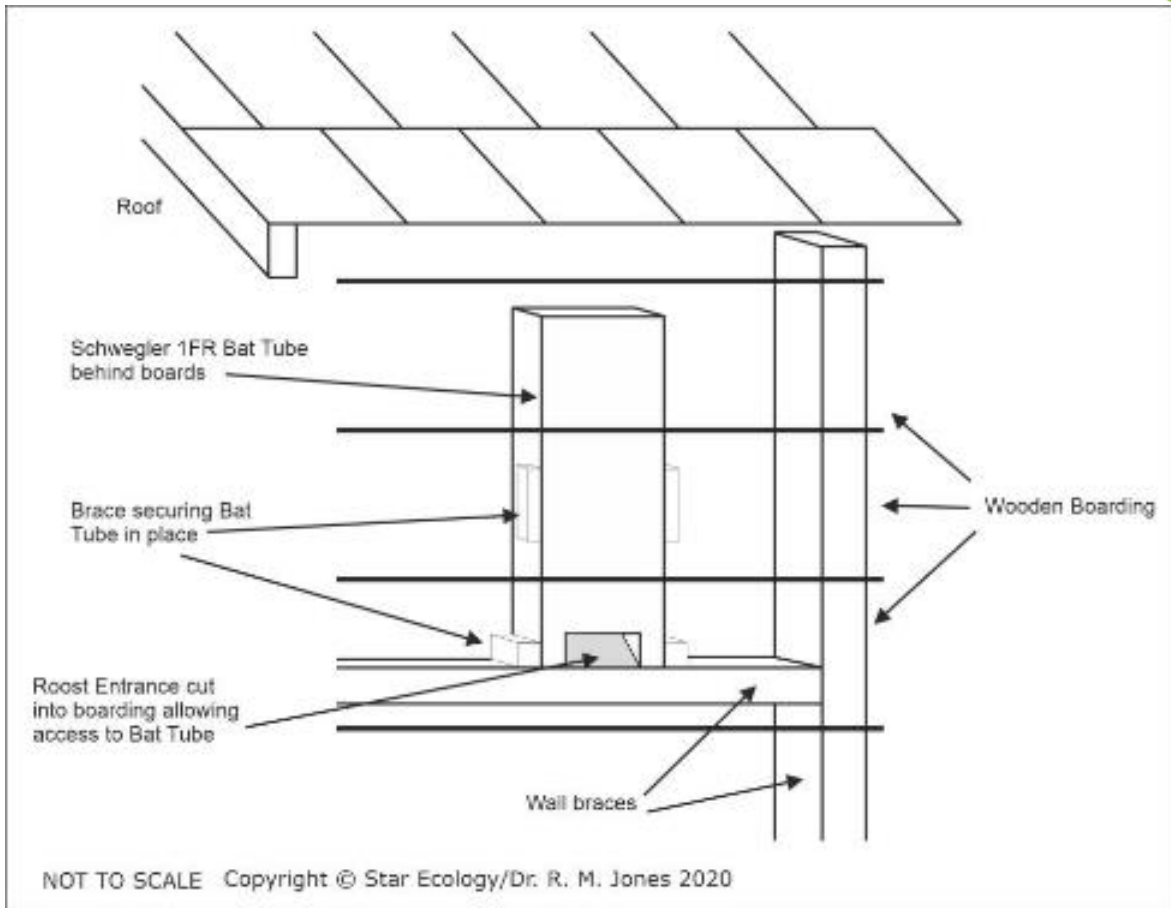
At roof apex.
Access via ridge tile.



Bat roost access via external timber weatherboarding.



Cavity Wall Bat Roost.



Schwegler 1FR Bat Tube incorporated into building structure of timber framed building, behind external wooden boarding.



The **Wienerberger Habitat** Bat Box.

Boxes may be purchased with brick fascias to match those of existing walls or those of proposed new walls.

(<http://www.wienerberger.co.uk/>)

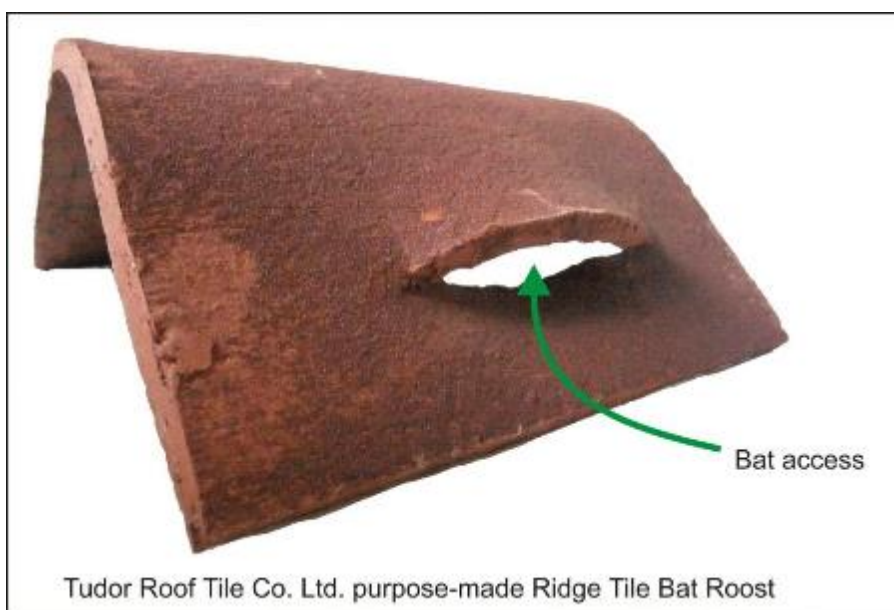
Other similar Bat Boxes are commercially available.



Schwegler 1FR Bat Tube built into stone gable wall.
Hay loft ventilation pipes have been retained for potential use by small birds for nesting.

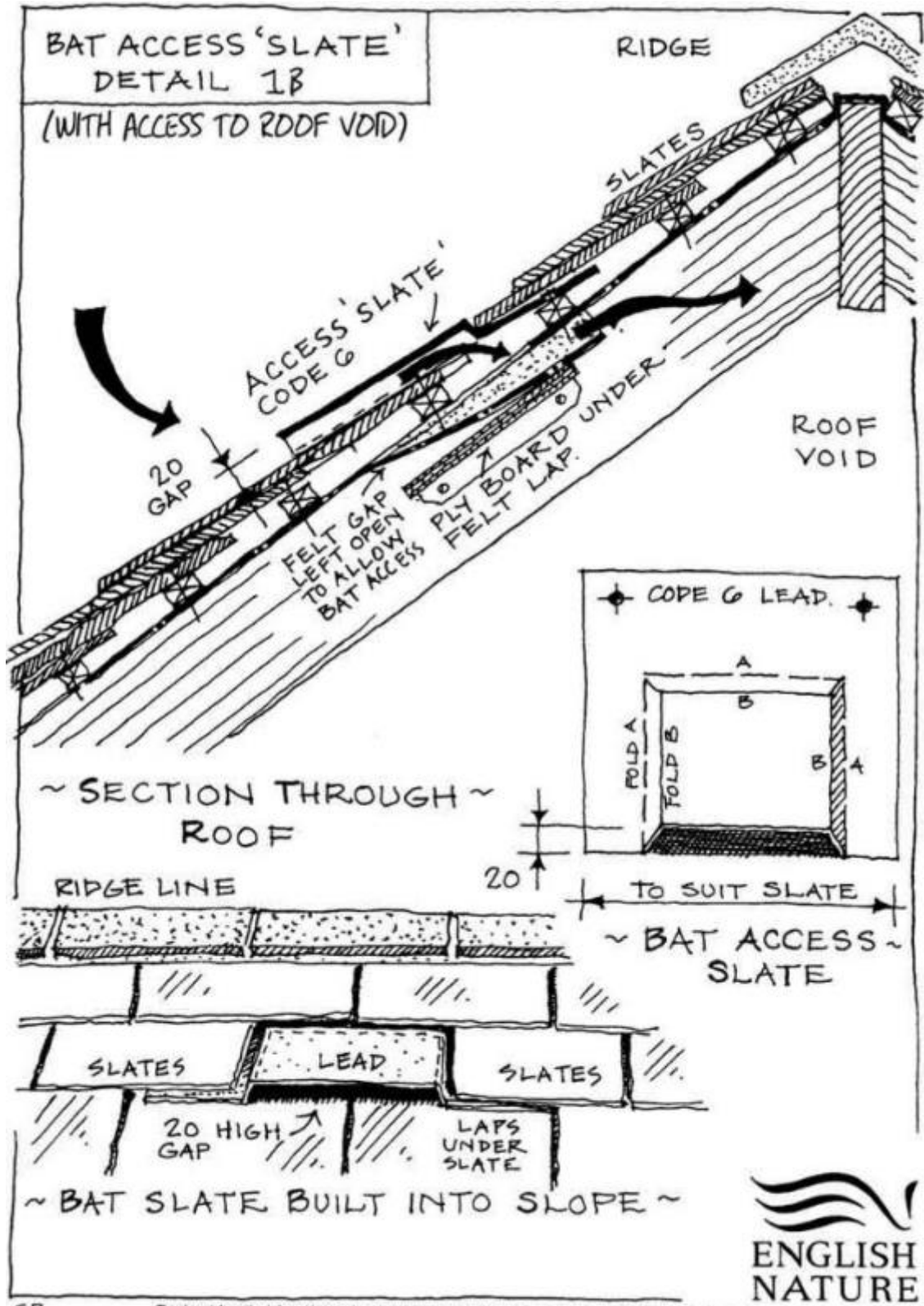


Schwegler 1FR Bat Tube built into thermalite® building block wall.
Weatherboarding will cover the Bat Tube, leaving access permanently open for bats.



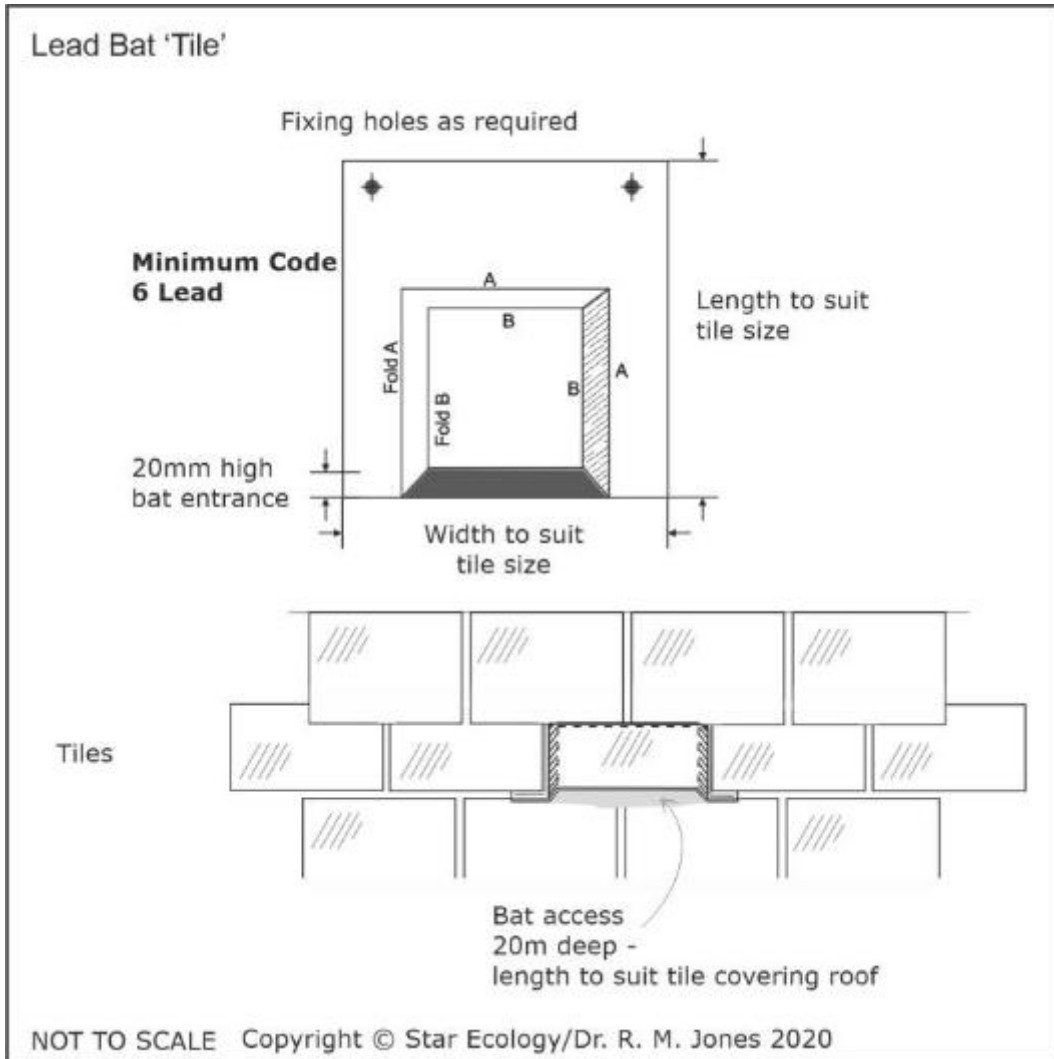
Tudor Roof Tile Co. Limited purpose-made ridge tile bat roost

APPENDIX 3 – Natural England Lead Bat 'Slate' Leaflet (b)

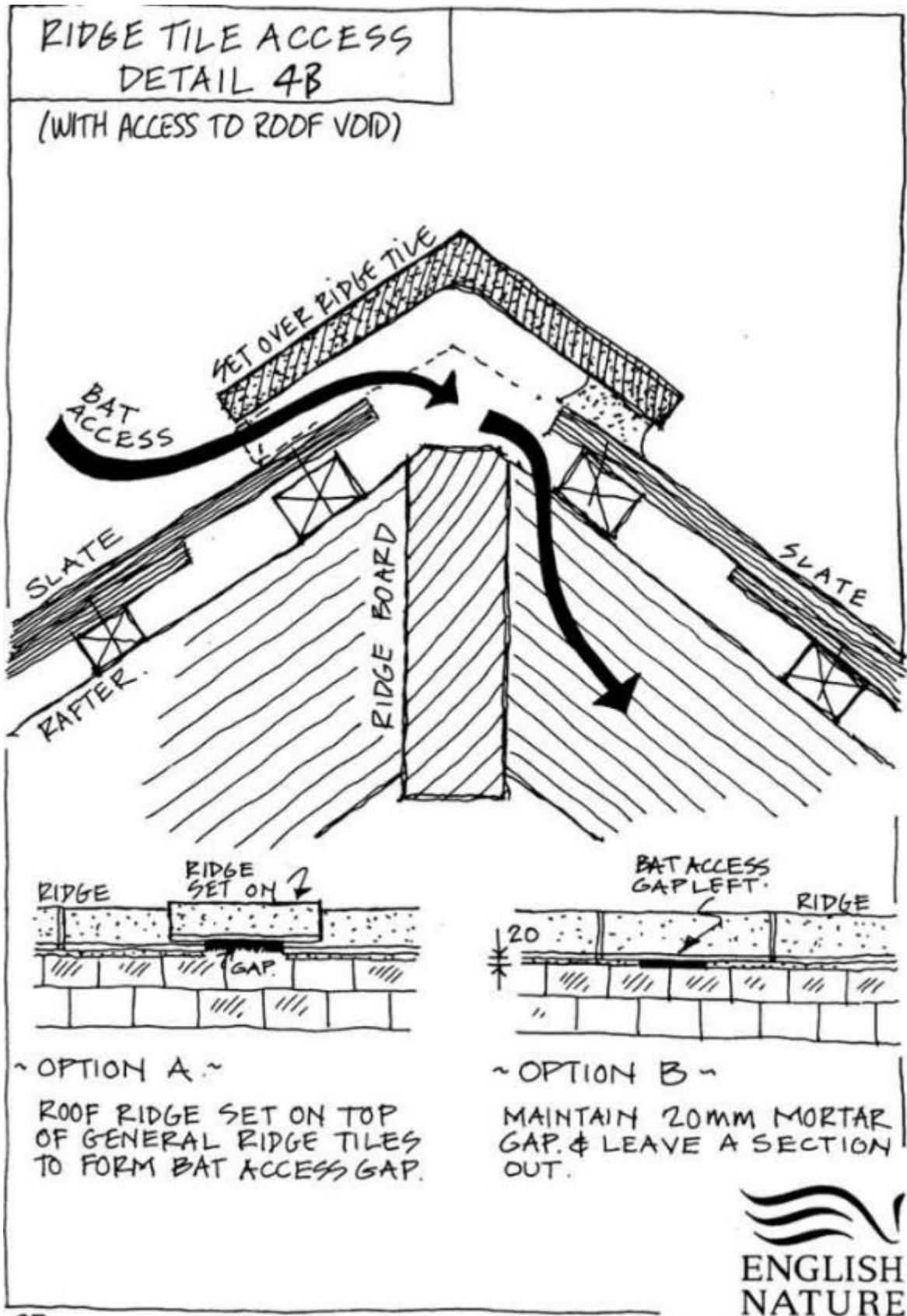


SP The above information is for guidance only and may not be appropriate in all circumstances. If in doubt seek professional advice.
English Nature Cumbria Team, Juniper House, Murley Moss, Oxenholme Road, Kendal LA9 7RL. Tel: 01539 792800 Fax: 01539 792830 Email: cumbria@english-nature.org.uk

APPENDIX 4 – Lead Bat 'Tile' Plan and Photograph



APPENDIX 5 – Natural England Ridge Tile Access (b)



SP

The above information is for guidance only and may not be appropriate in all circumstances, if in doubt seek professional advice.
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