BOW111 Crow Trees Farm, Whiston Eaves, Staffordshire

Bat Inspection and Emergence Survey Report

June 2014

Control sheet

Project No. & Title: **BOW111 Crow Trees Farm, Whiston Eaves, Staffordshire**
Bat Inspection and Emergence Survey Report

Client: **Laver Leisure**

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1. Introduction

1.1 Bowland Ecology Ltd was commissioned by Laver Leisure to undertake a bat inspection survey and evening emergence survey of a barn at Crow Trees Farm. The site is located between the villages of Whiston and Oakamoor in Staffordshire (SK049 459).

1.2 The building is an agricultural barn and is currently being used as storage. The building is subject to re-development as an equestrian centre.

1.3 The aim of the bat survey was to identify any present or past use of the buildings by bats, including an assessment of the potential of the buildings to support a bat roost. This survey comprises detailed external inspections of the buildings to search for bat signs; this was followed by one evening emergence and activity survey, carried out at the optimal time of year for bat surveys. Information from the surveys is used to identify any developmental constraints and mitigation requirements.

1.4 This report includes a description of survey methods; a summary description of the buildings and their potential to support bats; an impact assessment and outlines recommendations

1.5 Note the survey also included a search for signs of barn owl (feeding remains, pellets, splashes, owls) – no evidence was found during the survey and this species is not given further consideration with this report.

2. Methodology

Desk Study

2.1 Records were gathered during 2010 in relation to Leisure proposals for the Moneystone Quarry site. At this time data was received from Staffordshire Ecological Record. Further data was obtained from a review of online data and extensive field surveys. This information provides a comprehensive background to the potential range of species found in this locality.

Internal and External Building Inspection *(see Appendix A for Photographs)*

2.2 The bat internal and external inspection was undertaken by Jeremy James MSc, BSc (Hons), MCIEEM, CEnv and Emma Kilduff BSc (Hons), AIEEM on the 3rd June 2014.

2.3 A search of the buildings was undertaken, checking for bats and the field signs of bats such as bat droppings, urine stains, bat feeding remains (moth wings, insect cases), bat staining, distinctive smell of bats, bats themselves or bat corpses, scratch marks and smoothing of surfaces which would indicate a roost site. An assessment of the potential of the building to support a bat roost was also made during the survey i.e. searching for suitable roosting crevices. All roof spaces were accessed and searched for evidence of bats.

2.4 High power torches (Cluson Clu-lite 500,000 candlepower) and close focus binoculars were used to aid the survey. Ladders and an endoscope were also available should they have been required.

2.5 The survey was undertaken in accordance with the methodology for building surveys outlined in The Bat Conservation Trust, Good Practice Guidelines, 2nd Edition, 2012. The timing was within the optimal period for such a survey. All areas of the building were accessible for survey.

2.6 Natural England's Bat Mitigation Guidelines (2004) state that a significant bat roost can normally be determined on a single visit at any time of the year, provided that the entire structure is accessible and that signs of bats have not been removed by others.

Dusk Emergence Surveys

2.7 A single emergence survey was undertaken of the building on the 3rd June 2014 by Jeremy James and Emma Kilduff BSc (Hons), AIEEM. The two surveyors were positioned to give the best coverage of the area of building to be affected and to cover all possible emergence locations as informed by the day-time inspection. Surveyor locations are shown on Appendix B, provided within this report.

2.8 The surveys were undertaken with the aid of dual heterodyne and frequency division detectors (Bat Box Duet) and an Anabat Express. The latter was placed in the barn to undertake static recording overnight. The recordings were then analysed using sound analysis software (Analook). Species identification was confirmed with a combination of the use of detectors, sound analysis and the experience of the surveyors.

3. Results

Desk Study

3.1 Staffordshire Ecological Record provided data in 2010 of bats within 2km radius Moneystone Quarry. Table below outlines the results:

Scientific Name	Common Name	NGR	Date	Record Type	Abundance
Pipistrellus pipistrellus	Common pipistrelle	SK040471	13/01/1992	Trapped	1 Count of Adult
Pipistrellus pipistrellus	Common pipistrelle	SK052446	21/06/2006	Aural bat detector	Present Count of Adult
Pipistrellus pipistrellus	Common pipistrelle	SK052447	21/06/2006	Field Observation	21 Count of Adult
Pipistrellus pipistrellus	Common pipistrelle	SK0544	07/06/1985	Field Observation	1 Count of in flight
Pipistrellus pipistrellus	Common pipistrelle	SK0545	Jul-84	Field Observation	1 Count of dead; 10 Count of Adult; Present Count of Juvenile
Pipistrellus pipistrellus	Common pipistrelle	SK065463	31/08/1989	Field Observation	1 Count of immature female; 1 Count of dead
Pipistrellus pipistrellus	Common pipistrelle	SK0545	15/07/1998	Field Observation	4 Count
Pipistrellus pipistrellus	Common pipistrelle	SK0545	04/08/1998	Field Observation	10 Count
Pipistrellus pipistrellus	Common pipistrelle	SK0545	11/07/2000	Field Observation	4 Count
Pipistrellus pipistrellus	Common pipistrelle	SK0545	25/07/2000	Field Observation	3 Count
Pipistrellus pipistrellus	Common pipistrelle	SK0545	03/07/2002	Field Observation	25 Count
Pipistrellus pipistrellus	Common pipistrelle	SK0545	07/07/2003	Field Observation	5 Count
Plecotus auritus	Brown long eared bat	SK053443	06/02/1999	Field Observation	7 Count of nursery colony

3.2 Surveys carried out in 2010, 2011 and 2014 at Moneystone Quarry and in the surrounding habitats informed that pipistrelle spp, brown long eared bat and myotid bat species are all present. Noctule bats have also been recorded commuting over the area.

Building Assessment - External

3.3 The building is situated within the grounds of Crow Trees Farm adjacent to the access lane at the northern end of the site. The building is constructed in several sections. Outer walls in small places have sections of a single course of breeze block. Elsewhere the walls of the barn are a single skin of timber/metal sheeting. Numerous gaps were observed between the timber slats allowing light through into the internal of the building. The roof consists of steel corrugated sheeting which extends to overlap the edge of the roof. Perspex roof lights are present along the roof. The gap between the sheet walls and overlapping steel roof provide potential roosting opportunities for bats – however these gaps are quite wide and potentially draughty. No evidence of bats was found during the external inspection. The external inspection considers that roosting potential is **negligible / low**.

Building descriptions - Internal

3.4 Internally the building is timber framed and open to the roof. The roof is supported by timber struts. The floor of the structure is constructed of concrete slab and divided into stalls by timber partitions. The timber framework is of relatively modern construction and no obvious gaps / mortice joints were present. A ridge beam is present along the full length of the barn. The building is currently being used for storage and a considerable amount of debris was present upon the floor. No evidence of bats was found during the internal inspection. Roosting potential is limited internally due to the structure of the building and ingress of light (through roof, doors on both end and gaps in walls). Limited roosting potentially is provided by the roof beam (supporting the single skin of sheeted steel roof) in the darkest areas of the barn (centre of the barn). Roosting potential is considered to be **low**.

Emergence survey

3.5 No bats were seen to emerge from the barn by either surveyor. The table below provides details of activity recorded during the survey. Occasional pipistrelle passes (single bat) were recorded throughout the survey. A single brown long eared bat was also recorded foraging in an adjacent tree line.

Date:03/06/14 Start: 21:00 (sunset 21.40) Weather: Overcast, still, mostly dry with light drizzle at times, 13oC.		
Surveyor	Time	Notes
A	21.30	Distant common pipistrelle
	21.35	Common pistrelle commuting/foraging south to north to an area of trees/woodland
	21.45	Distant common pipistrelle
	21.45	Common pipistrelle commuting/foraging south to tree-lined access road
	21.50	Distant common pipistrelle
	22.08	Distant common pipistrelle
	22.13	Common pipistrelle foraging around trees on access lane
	22.18	Common pistrelle foraging, heard not seen
	22.20	Common pipistrelle commuting/foraging south to tree-lined access road
	22.22	Common pistrelle foraging, heard not seen
	22.13, 22.15	Common pipstrelles foraging around trees/woodland edges to the north
	22.20, 22.33	Brown long-eared foraging along tree lined access road
B	21.42	Distant common pipistrelle heard, distant in the tree line
	21.55	Distant common pipistrelle heard, distant in the tree line
	22.01	Common pipistrelle hear and observed to be commuting and foraging between tree line and farmhouse.
	22.08	Common pipistrelle hear and observed to be commuting and foraging between tree line and farmhouse.
	22.14	Distant Common pipstrelle heard
	22.30 – 22.35	Brown long-eared foraging along tree lined access road

Static Recorder Results

3.6 Recordings of a myotid bat (Figure 1) were triggered at 21.42 hours. Considering that brown long eared bat was recorded foraging in an adjacent tree line during the emergence surveys, it is highly likely that this recording is of the same bat emerging from the barn. A further recording of myotid was triggered at approximately 23.30, and this is considered to be a recording of this bat returning to the roost (note that heavy rain commenced at

approximately 2 am and this is likely to have restricted the feeding period of this bat).

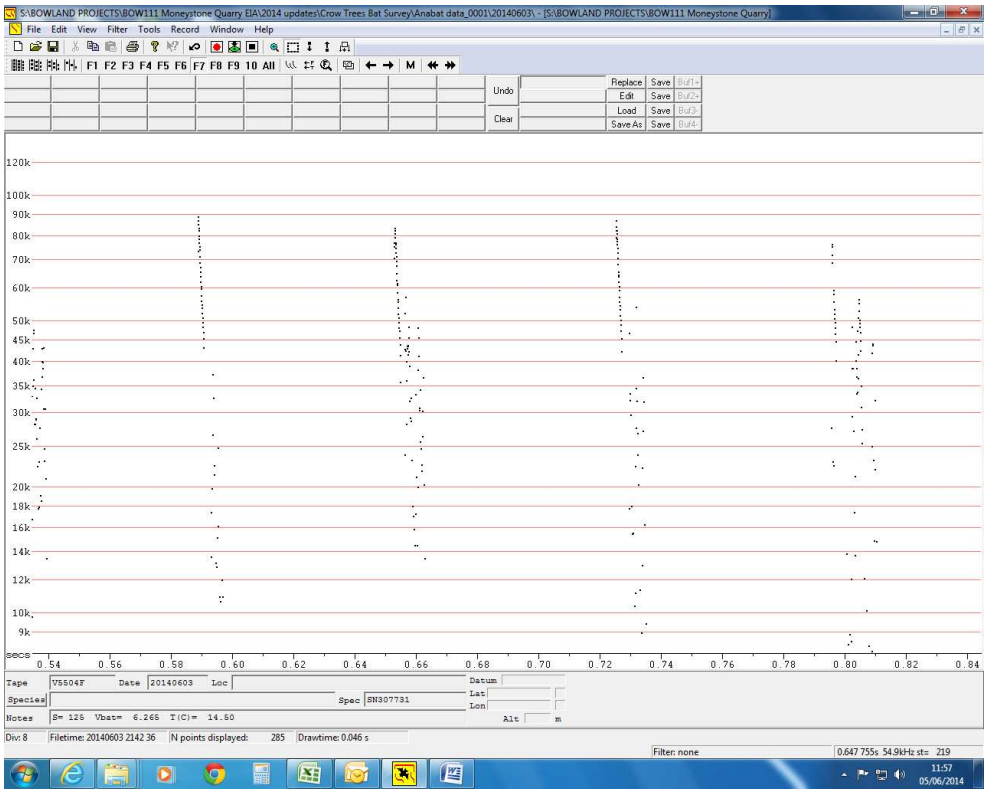


Figure 1 Brown long eared bat sonogram

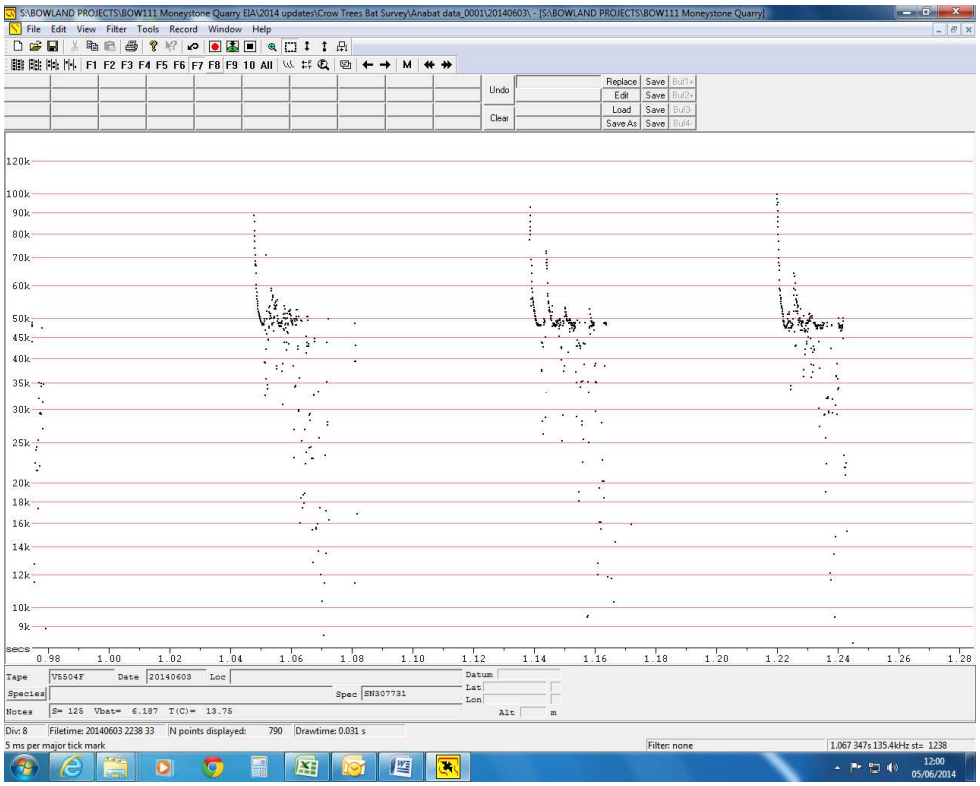


Figure 2 Pipistrelle bat sonogram

3.7 Pipistrelle recordings (Figure 2) were made from approximately 22.38 which indicate use of the barn as a sheltered feeding site.

4. Evaluation, Impact Assessment and Mitigation Measures

Evaluation

4.1 The barn is in a poor state of repair and is considered to have limited potential for use as a significant bat roost site (e.g. nursery roost). The internal and external assessment indicated that roost potential was considered to be **negligible / low.** However, evidence from the static recorder and emergence survey confirm that the barn is used as a brown long eared summer roost site (single bat).

4.2 Despite the construction type of the barn, it is considered that the size of this structure makes it difficult to discount the potential presence of individual pipistrelle bats making occasional use of the building as a roost site between spring and autumn.

4.3 The site is considered to be of negligible value as a hibernation site due to construction type (absence of timber barge boards, single skin building and steel clad roof giving wide fluctuations in temperatures).

4.4 The presence of a single brown long eared roost and possible occasional use by small numbers of pipistrelle confirm that the site is considered to be of **low conservation significance** and mitigation/compensation requirements are (source Bat Mitigation Guidelines 2004, Natural England):

- Provision of new roost facilities (where possible)
- Minimal timing constraints or monitoring requirements

4.5 Given the nature of the building, which is considered to be unsuitable as a potential site for a nursery roost, and the optimal timing of the survey it is considered that sufficient survey information has been gathered to assess the status of bat roosting within this building.

Impact Assessment

4.6 The impacts of the development works will be typical of building/conversion projects. This will be physical disturbance e.g. removal of roof, noise, dust, vibrations and access obstructions. There will be an increase in human presence at the site whilst the works take place.

4.7 There could be incidental killing, injury or disturbance of bats if undertaken at an inappropriate time of year, without due care and attention and suitable mitigation.

4.8 The property is to be developed as an equestrian centre. The conversion will result in the property being occupied and will therefore be warmer and drier which may be a positive impact of the scheme, making the property more suitable for bats. There will be changes to ventilation and airflow.

4.9 Complete roost loss is unlikely as a building will remain present and will still be accessible to bats

4.10 The site is surrounded by pasture, tree lines and woodland which will not be affected by the development. There will be no impacts to commuting routes or foraging habitats.

4.11 There may be a higher level of lighting on site than is currently the case, due to light spillage from internal lighting and if security lighting is installed.

Mitigation Measures

4.12 Given the survey information collected, the project would be likely to result in an offence according to the above legislation, as it would lead to the loss of a resting place for bats. A licence from Natural England is therefore likely to be required for the project to proceed, as this will provide a derogation from the legal protection afforded by the Conservation of Habitats and Species Regulations 2010. A licence application can only be made once full planning permission has been granted.

4.13 The mitigation strategy for the scheme will involve:

- Measures to make reasonable effort to avoid accidental killing, injury or disturbance to bats during works – such as timing restrictions.
- A procedure in place should bats be found during supervised or unsupervised works.
- Provision of alternative roosting habitat prior to and following development – installation of bat boxes, which will remain on site permanently.
- chemical treatments and paint products suitable for use in bat roosts.
- Monitoring – to check on the success of the implemented mitigation measures and make changes if required.

4.14 Mitigation requirements for works which affect the roost within the barn and the possible presence of transient roost sites for pipistrelle bats will include:

<u>Measures to make reasonable effort to avoid accidental killing, injury or disturbance to bats during works</u>

- Any re-roofing / internal timber roof framework work to be preferably undertaken during early spring (March-May) or autumn (October – November) to avoid the main period during summer when bats are likely to be present. Whilst it is considered that hibernation potential is negligible, it is preferable to avoid this period of highest vulnerability for works which may affect bats. If winter is unavoidable, a period (minimum of 7 days) of static detector monitoring should be undertaken, in addition to further pre-works internal checks, to assess the presence of roosting bats within the barn. Works should not progress if it is considered (by an experienced ecologist) that bats may be present during this period.

- All contractors should be made aware of the presence of bats before works commence. Should bats be encountered or suspected during the works all works should cease and a licensed ecologist contacted (see Appendix C for the Protocol to follow should bats be encountered during the works).

<u>Alternative Roost Provision</u>

- Provision of alternative roosting habitat prior to works commencing will consist of the installation of 6 bat boxes on suitable trees the tree line along the access track running to the west of the barn.
- The landowner will purchase and arrange for the installation of bat boxes, overseen by the advising ecologist.
- The Bat Mitigation Guidelines state that common pipistrelle bats will use crevice type boxes for summer/maternity roost, crevice or hollow

boxes for summer non breeding roosts and crevice boxes for hibernation. Whiskered/Brandt's bats will use hollow type boxes for summer maternity and summer non maternity roosts. Brown long-eared bats tend to favour hollow type boxes. Therefore a mix of boxes will be installed, with a greater number of hollow type boxes.

- 2 Schwegler 2F hollow boxes, 2 Schwegler 2F (Double Front Panel) and 2 hollow timber type boxes will be installed and will remain on site permanently. The bat boxes will be:

    - Installed in groups of three on mature trees.
    - Installed at least 3 m above ground, higher if practical.
    - Installed at different orientations to provide a range of climatic conditions, but with at least once facing south-west to south-east.
    - Un-treated (specifically referring to the timber boxes).
    - Fixed with aluminium nails, using hangers where appropriate.
    - Situated in areas with no light spillage.
    - Numbered (for monitoring purposes).
    - Re-located after two years, if no evidence of bat use is found.

- If the works are to occur over the winter period, a bat box suitable for hibernation will also be installed prior to works commencing..

Monitoring

- A check of bat boxes, (avoiding the period June to August when young may be present) in year two following installation is planned.
- Following the monitoring visit, if no evidence of the bat boxes is found, consideration will be given to moving bat boxes to a new orientation.

Enhancements in new build

4.15 There are many opportunities to provide bat roosting habitat within new or converted developments. Incorporation of roosting spaces within the proposed development should be achievable, and can be designed to meet with planning requirements and building regulations.

4.16 Provision of roosting opportunities within the building should include;

- Access gaps between soffits and wall (15-20mm)
- Timber cladding mounted on 20-30mm counter battens with access at bottoms or sides
- Access to the roof void via bat tiles, bat tubes built into gaps in masonry or into wall surfaces, soffit gaps or purpose built entrances
- Access points over top of cavity walls by specifically constructed gaps
- External bat boxes erected or bat bricks installed, providing cavities within walls for different species.

4.17 The integration of bat roosting habitat will not cause disturbance to users of the development, nor create aesthetic problems. Bats will not nibble or gnaw at wood, wires or insulation. Bat droppings do not smell strongly, there are no known health risks associated with them. The droppings are dry and do not putrify, but crumble away to dust, or are washed away by rain.

4.18 If bats are encountered during the works then, as a legal requirement, work in that area must cease immediately until further advice has been sought from Natural England and/or a suitably qualified ecologist. Natural England or the scheme ecologist will be able to locate a licensed bat worker to remove any

bats present which might be harmed during the works. If bats are exposed during the works and are vulnerable to harm, gloves or a container should be used to move them to a dark and quiet area, until a bat worker has been contacted.

Legal Informatives

4.19 Bats are protected under the Conservation of Habitats and Species Regulations 2010. They are listed on Schedule 2 of the Act as European Protected Species (all bats). Part 3, Section 41 of the Act states that it is an offence to:

1a) Deliberately capture, injure or kill any wild animal of a European Protected Species.
1b) Deliberately disturb wild animals of any such species.
1c) Deliberately take or destroy the eggs of such an animal.
1d) Damage or destroy a breeding site or resting place of such an animal.

For the purposes of 1b) disturbance of animals includes in particular to impair their ability to:

2a) i) Survive, breed or reproduce, or to rear of nurture their young.
ii) In the case of animals of a hibernating or migratory species, to hibernate or migrate.

2b) Significantly affect the local distribution or abundance of the species to which they belong.

4.20 Bats are also protected under the Wildlife and Countryside Act, 1981, as amended.

References

Bat Conservation Trust. Bat Surveys – Good Practice Guidelines, 2nd Edition. 2012.

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

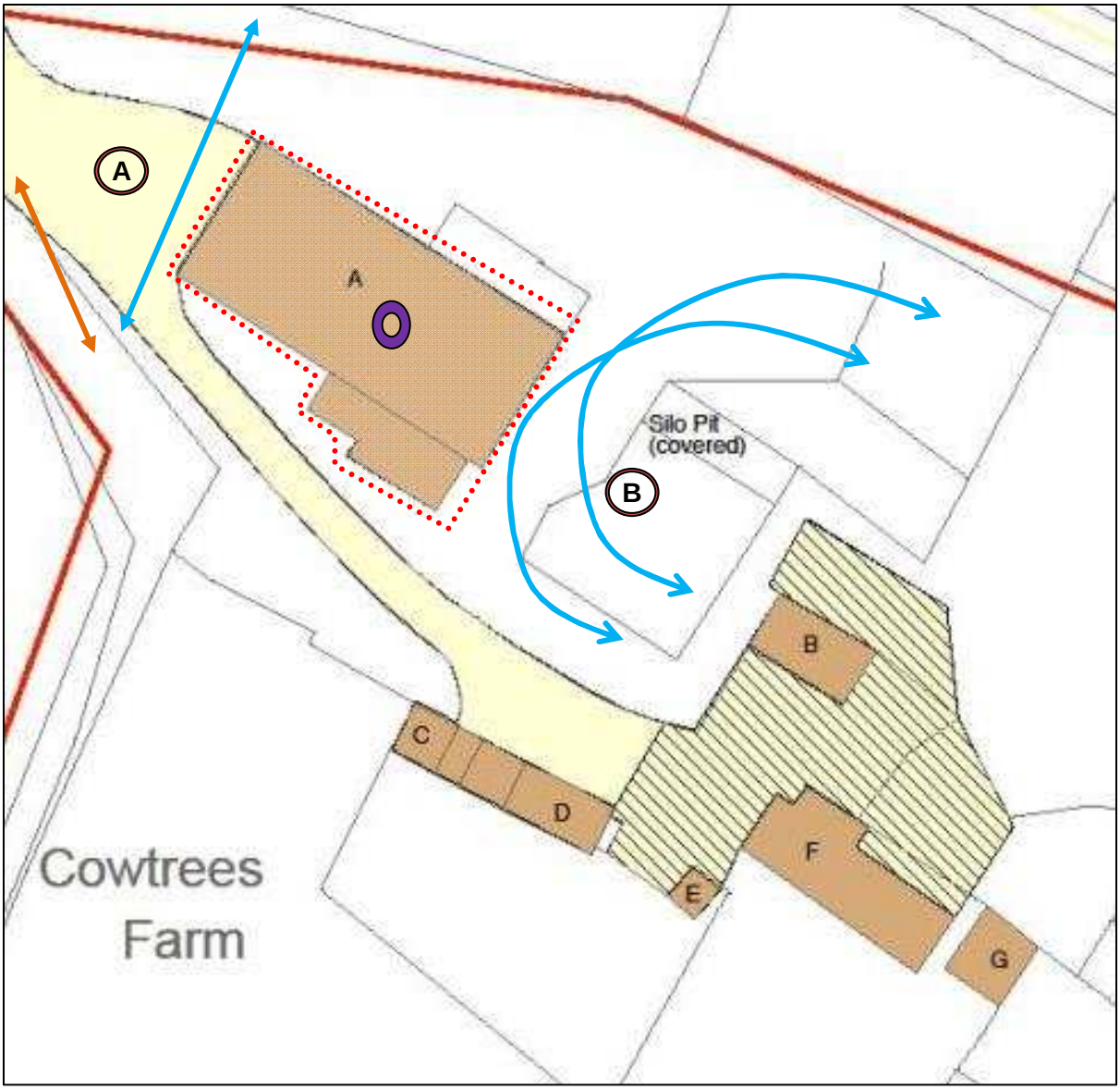
Appendix A – Photographs

North West Elevation

Internal View Showing Roof Detail

South East Elevation

Appendix B – Summary Emergence Survey Plan



Key:

Location of surveyor A **Location of static detector**

Brown long ear foraging **Pipistrelle foraging**

Survey site:

Appendix C – Protocol should bats be encountered during works

Bat encounter	**Scenario**		
	Bat active	**Bat in torpor**	**Bat injured**
By ecologist during supervised works	*Bat handled by:* Ecologist wearing gloves, with experience of bat handling and fully immunised against rabies. *Bat transported by:* Cloth bag and or/small secure box/ tub with air holes and piece of fabric. *Further action:* Bat released into bat box at the site by experienced bat handler, after checking for condition and injury.	*Bat handled by*: Ecologist wearing gloves, with experience of bat handling and fully immunised against rabies. *Bat transported by:* Cloth bag and or/small secure box/ tub with air holes and piece of fabric. *Further action:* Relocated into the hibernation box by experienced bat handler (only if uninjured and in good condition).	*Bat handled by:* Ecologist wearing gloves, with experience of bat handling and fully immunised against rabies. *Bat transported by:* Cloth bag and or/small secure box tub with air holes and piece of fabric. Water will be provided on all journeys. *Further action:* Bat handed to experienced bat carer (if different from supervising ecologist) who will assess injury, rehabilitate if possible and release back to site when appropriate (i.e. good body weight, good condition and able to fly for sustained period).
By contractor at other times	*Bat handled by:* If bats exposed to harm, a container should be used to scoop them up. Bats should not be handled by contractors unless bat in imminent danger and only then with gloved hands. *Bat transported by:* Kept in a secure container with air holes in a dark, quiet place until experienced bat worker arrives at site. *Further action:* Bat released into bat box at the site by experienced bat handler, after checking for condition and injury.	*Bat handled by:* If bats exposed to harm, a container should be used to scoop them up. Bats should not be handled by contractors unless in imminent danger and only then with gloved hands. *Bat transported by:* Kept in a secure container with air holes in a dark, quiet place until experienced bat worker arrives at site. *Further action:* Relocated into the hibernation box by experienced bat handler (only if uninjured and in good condition).	*Bat handled by:* If bats in exposed to harm, a container should be used to scoop them up. Bats should not be handled by contractors unless in imminent danger and only then with gloved hands. *Bat transported by:* Cloth bag and or/small secure box tub with air holes and piece of fabric. Water will be provided on all journeys. *Further action:* Bat handed to experienced bat carer (if different from supervising ecologist) who will assess injury, rehabilitate if possible and release back to site when appropriate (i.e. good body weight, good condition and able to fly for sustained period).