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PHASE 2 BAT ACTIVITY SURVEY

PIGEON HOUSE, PIGEON LANE

Project name: Pigeon House, Pigeon Lane, Hanmer, Whitchurch, SY13 3DS

Grid Reference: SJ43664013

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1 INTRODUCTION

1.1 BACKGROUND TO DEVELOPMENT

Planning consent will be sought for the conversion of a barn at Pigeon House, near Hanmer. Proposals will include internal re-modelling and repairs, including brickwork and the roof.

A preliminary assessment of the barn concluded that it held 'high' potential as a bat roost and further activity surveys would be necessary.

1.2 SCOPE OF SURVEY

Arbor Vitae were commissioned to undertake three bat activity surveys to determine if the barn at Pigeon House is in use by roosting bats.

The survey was also designed to assess the presence of any breeding birds using the buildings.

1.3 KEY PRINCIPLES

All ecological surveys conducted by Arbor Vitae Environment Ltd are underpinned by the following key principles, as outlined by CIEEM (2018):

Avoidance - Seek options that avoid harm to ecological features (for example, by locating on an alternative site).

Mitigation - Adverse effects should be avoided or minimized through mitigation measures, either through the design of the project or subsequent measures that can be guaranteed – for example, through a condition or planning obligation.

Compensation - Where there are significant residual adverse ecological effects despite the mitigation proposed, these should be offset by appropriate compensatory measures.

Enhancements - Seek to provide net benefits for biodiversity over and above requirements for avoidance, mitigation or compensation.



2 SITE DESCRIPTION

2.1 LOCATION, LANDSCAPE, AND BACKGROUND

Pigeon House is located on Pigeon Lane, near Hanmer, Whitchurch (Figure 1). The property is set amongst extensive countryside, including pasture and arable land with other properties throughout (Figure 2).

The conversion plans chiefly affect the west wing of the barn, this area being mainly redundant other than for use as casual storage space. The conversion is designed to create a residential property. Access to the property exists from Pigeon Lane.

2.2 BUILDING DESCRIPTION

The west wing of an L-shaped barn at Pigeon House will be converted. The building as a whole is two storey with enclosed loft spaces present. The barn is traditional red brick with a slate roof and clay ridge tiles. The north wing of the barn has a quadruple open bay on the ground floor with an enclosed loft above and a large hay store/loft at the west end.

The west wing has an open fronted two bay cart shed on the ground floor and a former stable. The first floor is a former hay loft with original timbers in place. The roof throughout the barn is mostly lined beneath the slates with bitumen felt and there are three separate loft spaces in total. There are several first floor windows present with no coverings.

There is a single storey brick lean-to structure at the south elevation of the west wing which is open at the front and has a corrugated asbestos roof.

There is lead flashing present in the valleys of the roof and around joins and the gutters and downpipes are UPVC. The courtyard to the south of the building is stone cobbles.

3 SURVEY METHODOLOGY

3.1 VISUAL INSPECTION

One visit was made to carry out a preliminary visual assessment of the property in August 2020.

The objective of the survey was to find and record any signs of use by bats, for example:

- Droppings, sometimes in concentrations below roost sites,
- Feeding signs such as butterfly and moth wings,
- Staining of timber, brickwork around access points.

The general structure of the building was assessed for its potential to provide bats with roosting opportunities.

3.2 ACTIVITY SURVEYS

Three full activity surveys were carried out as per the details below. Bat activity was registered and recorded using Anabat Express and Anabat II detectors with Echometer 2 Pro with iPad Air and Android device.

DATE	SURVEY TIME	SUNSET	WEATHER	SURVEYORS	STATIC RECORDERS
18.08.2020	20:17-22:02	20:32	Cloud: 10% Rain: 0 Wind: 0 (BFT) Temp: 18°C	Will Prestwood Phillipa Stirling Joy Williams Hannah Williams	Anabat Express x2 Anabat II x1 inside barn lofts.
03.09.2020	19:40-21:24	19:54	Cloud: 50% Rain: 0 Wind: 2 (BFT) Temp: 15°C	Will Prestwood Phillipa Stirling Joy Williams Hannah Williams	Anabat Express x2 Anabat II x1 inside barn lofts.
18.09.2020	05:15-07:05	06:50	Cloud: 0% Rain: 0 Wind: 0 (BFT) Temp: 10°C	Will Prestwood Phillipa Stirling Joy Williams Hannah Williams	Anabat Express x2 Anabat II x1 inside barn lofts.



3.3 DNA ANALYSIS

Bat droppings were collected from beneath a suspected roosting site within the loft space above the west wing. Samples were collected and placed into an Eppendorf tube, a duplicate sample also being taken. Samples were then sent to ADAS for analysis. The analysis method used by ADAS is as follows: DNA extraction from a single dropping followed by PCR amplification of a short fragment of the COI gene, DNA sequencing and comparison to a database of known DNA sequences for species identification.

3.4 BREEDING BIRDS

The building was assessed for its potential to provide birds with nest sites, and to record any existing evidence of previous nesting.

3.5 PERSONNEL

Four surveyors were used: William Prestwood BSc 2017-31632-CLS-CLS, Phillippa Stirling MSc GradCIEEM, Joy Williams PhD and Hannah Williams, trainee bat surveyor.

3.6 CONSTRAINTS

There were no constraints to the survey being carried out in line with the Bat Conservation Trust good practice guidance.

4 SURVEY RESULTS

4.1 VISUAL INSPECTION

The enclosed loft spaces within the barn provide suitable opportunities for a range of roosting bat species. The original timbers provide small crevices which could be exploited by crevice dwelling species and several accumulations of droppings were found beneath such crevices.

Other internal roosting features exist such as gaps between the lintels and the brickwork above, joins between large roof timbers and gaps between brickwork where mortar has crumbled away. There are also aeration gaps in the brickwork which could be used as entrance points into the building and a gap between the top of the wall plate and the roof structure also provides ample access opportunities.

Feeding signs and bat droppings were found within the loft above the west wing of the barn along with a large number of potential roosting features. The section of barn to be converted has 'high' potential as a bat roost and therefore three bat activity surveys were carried out.

4.2 ACTIVITY SURVEYS

Dusk emergence survey 18/08/2020

At 20:52 a soprano pipistrelle was observed emerging from the lean-to structure at the south elevation of the barn. The bat returned to the lean-to and was observed emerging onto the roadside at 21:00. At 20:58 two soprano pipistrelles were observed emerging from a first floor window in the east elevation of the barn.

At 21:13 two common pipistrelles were observed emerging from the ground floor door of the barn at the north elevation, beneath the large hay loft. At 21:25 one common pipistrelle was observed emerging from an open door at the west elevation of the barn.

Upon internal inspection of the hayloft at the west end of the north wing of the barn it became apparent that there were bats flying around within. These were recognized as Brandt's bats and a total of 2 bats were seen at any one time.

At 21:48 a brown long-eared bat was recorded and observed emerging from the north facing elevation, through an open door, of the north wing.

Noctule was recorded flying overhead several times during the survey.

Internal detectors confirmed the presence of common and soprano pipistrelles within the loft above the west wing and Brandt's bat within the hayloft above the north wing.

A total of three soprano pipistrelle, three common pipistrelle, two Brandt's and one brown long-eared bats were observed emerging from/flying within the barn.

Dusk emergence survey 03/09/2020

At 20:17 a common pipistrelle emerged from the west facing elevation of the west wing, at the top of the wall plate in the middle of the elevation. At 20:18 another common pipistrelle was observed emerging from beneath a door at the west

elevation and at 20:33 a soprano pipistrelle emerged from the south facing gable end of the west wing.

At 20:33 a brown long-eared bat was recorded and seen flying around the ground floor of the hay loft of the north wing.

Two Brandt's bats were observed and recorded flying around within the hayloft of the north wing from 20:49 until the end of the survey.

Noctule was recorded flying overhead several times during the survey.

The internal detectors confirmed the presence of common and soprano pipistrelle within the loft above the west wing of the barn and Brandt's bats were recorded by the internal detector within the north wing of the barn.

A total of two common pipistrelle, one soprano pipistrelle, two Brandt's and one brown long-eared bats were observed emerging from/flying within the barn.

Dawn re-entry survey 18/09/2020

At 05:15 a Brandt's bat was recorded and observed flying around within the hay loft of the north wing and was not seen emerging, therefore presumed to be roosting within.

At 05:41 a brown long-eared bat was observed flying around the courtyard and then entering a first floor window on the east facing elevation of the west wing.

At 06:13 a soprano pipistrelle was observed flying around the ridge of the barn's roof and eventually disappeared and was observed entering the barn at the top of the wall plate on the west facing elevation. At 06:14 a soprano pipistrelle was observed re-entering the barn beneath a gap in the ridge tiles at the south facing gable end. At 06:33 a soprano pipistrelle was observed re-entering the barn through an aeration brick on the west facing elevation of the barn.

Noctule was recorded flying overhead several times during the survey.

The internal detectors confirmed the presence of soprano pipistrelle and Brandt's bats within the barn.

A total of one Brandt's bat, one brown long-eared and three soprano pipistrelle bats were observed re-entering the barn to roost.

4.3 DNA ANALYSIS

The DNA analysis of droppings from within the west wing loft space confirmed that *Myotis brandtii* were roosting within a small hole in the timber structure of the roof. Other dropping samples were not sent for analysis as the echolocation analysis could be used to determine the species emerging from the buildings reasonably confidently.

4.4 BREEDING BIRDS

There are several swallow's nests within the west and north wing of the barn which were active during the surveys.

5 EVALUATION OF RESULTS AND IMPACT

5.1 BATS

Five bat species were recorded at the site during the surveys: Common pipistrelle, soprano pipistrelle, brown long-eared, Brandt's and noctule.

A maximum of three common pipistrelles are using the loft above the west wing as a night time roost.

A maximum of three soprano pipistrelles are using the loft above the west wing as a day time roost.

A maximum of one brown long-eared is using the west end of the north wing as a day time roost.

A maximum of two Brandt's bats are using the hay loft of the north wing as a day and night time roost.

The conversion of the west wing and part of the north wing of the barn into a residential property will result in the loss of day and night time roosting sites for four bat species. A European Protected Species Mitigation Licence will be required for the work to proceed. This can be applied for once planning consent has been granted.

A wildlife sensitive lighting plan will be adopted to minimise the effect of any additional external lighting as a result of the development.

5.2 BREEDING BIRDS

The north and west wing of the barn on site are in use by nesting swallows. Approximately 5 active nests were observed within the buildings during the surveys and the potential for more to exist is very likely. The conversion of part of the barn will result in the loss of suitable nesting sites in the west wing but the majority of the north wing will remain free from development.

Building works have the potential to disturb breeding birds on site if carried out during the nesting season.

6 MITIGATION

6.1 BATS

A European Protected Species Mitigation Licence will be applied for should planning consent be granted. The licence method statement will contain, but will not be limited to, the following mitigation measures:

- A purpose built bat loft will be constructed within the north wing of the barn in order to provide roosting features being lost by the conversion. The bat loft will contain several features to make it suitable for use by a range of bat species, specifically those found within the barn. This will include: an enclosed loft space with a minimum height of 2.5m, crevice roosting features either internally or externally e.g. beneath ridge tiles and suitable access points into the bat loft. The final design of the bat loft will be agreed with Natural Resources Wales.
- An Ecological Clerk of Works will be available to visit the site and be present during any roof removal or modification of known roosting features.
- Building work affecting the loft spaces and roof should begin between 1st November and 1st May in any given year and measures should be put in place to discourage the return of roosting bats i.e. sealing the building's known or obvious access points during this period.
- The use of breathable roofing membranes within any part of the building designed for bats is prohibited.
- A Wildlife Sensitive Lighting Plan will be implemented.

6.2 BREEDING BIRDS

The west wing of the barn should be sealed between September and February in any given year to deter returning swallows. Swallows generally arrive back in the UK in April and May so the building should be sealed before then.

Six Woodcrete swallow cups should be installed into appropriate positions within the north wing of the barn to encourage returning swallows to use this area.

Before works begin, a thorough internal inspection should be carried out to search for signs of breeding birds or nest building. If any active nests are found, a 5-meter buffer zone should be implemented around the nest until the young have fledged.

7 ENHANCEMENT

In order to provide additional opportunities for bats and breeding birds on site, post-development, the following is recommended:

- 2 x general purpose woodstone bat boxes should be installed into a nearby tree to provide roosting opportunities for bat species. The box should be at least 3m from the ground.
- 2 x general purpose woodstone bird boxes with a 28mm aperture should be installed into a nearby tree, at least 2m from the ground. The entrance should face away from the prevailing wind.

8 SUMMARY

Planning consent will be sought for the conversion of a barn at Pigeon House, near Hanmer. Proposals will include internal re-modelling and repairs, including brickwork and the roof. Feeding signs and bat droppings were found within the loft above the west wing of the barn along with a large number of potential roosting features. Arbor Vitae were commissioned to undertake three bat activity surveys to determine if the barn at Pigeon House is in use by roosting bats. The survey was also designed to assess the presence of any breeding birds using the buildings.

The building as a whole is two storey with enclosed loft spaces present. The barn is traditional red brick with a slate roof and clay ridge tiles. The north wing of the barn has a quadruple open bay on the ground floor with an enclosed loft above and a large hay store/loft at the west end. The west wing has an open fronted two bay cart shed on the ground floor and a former stable. The first floor is a former hay loft with original timbers in place. The roof throughout the barn is mostly lined beneath the slates with bitumen felt and there are three separate loft spaces in total. There is a single storey brick lean-to structure at the south elevation of the west wing which is open at the front and has a corrugated asbestos roof.

Bat droppings were collected from beneath a suspected roosting site within the loft space above the west wing. Samples were then sent to ADAS for DNA extraction and analysis. The DNA analysis of droppings from within the west wing loft space confirmed that *Myotis brandtii* were roosting within a small hole in the timber structure of the roof.

Five bat species were recorded at the site during the surveys: Common pipistrelle, soprano pipistrelle, brown long-eared, Brandt's and noctule. A maximum of three common pipistrelles and three soprano pipistrelles are using the loft above the west wing as a night time roost.

A minimum of one brown long-eared is using the west end of the north wing as a day time roost. A maximum of two Brandt's bats are using the hay loft of the north wing as a day and night time roost.

The conversion of the west wing and part of the north wing of the barn into a residential property will result in the total destruction of day and night time roosting sites for four bat species. A European Protected Species Mitigation Licence will be required for the work to proceed. This can be applied for once planning consent has been granted.

Mitigation will include the construction of a purpose-built bat loft in the remaining section of barn to remain free from development.

The north and west wing of the barn on site are in use by nesting swallows. Approximately 5 active nests were observed within the buildings during the surveys and the potential for more to exist is very likely. The conversion of part of the barn will result in the loss of suitable nesting sites in the west wing but the majority of the north wing will remain free from development. The west wing of the barn should be sealed between September and February in any given year to deter returning swallows. Six Woodcrete swallow cups should be installed into appropriate positions within the north wing of the barn to encourage returning swallows to use this area.

Nesting and roosting opportunities will be provided for bats and birds on site through the installation of boxes, specific to each group.

9 REFERENCES

Bat Conservation Trust (2018) Bats and artificial lighting in the UK. *Bats and the Built Environment series*, Guidance Note 08/18. Institution of Lighting Professionals.

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

Hundt L (2012) Bat Surveys: Good Practice Guidelines, 2nd edition, Bat Conservation Trust.

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

FIGURE 1 LOCATION. 1:50,000

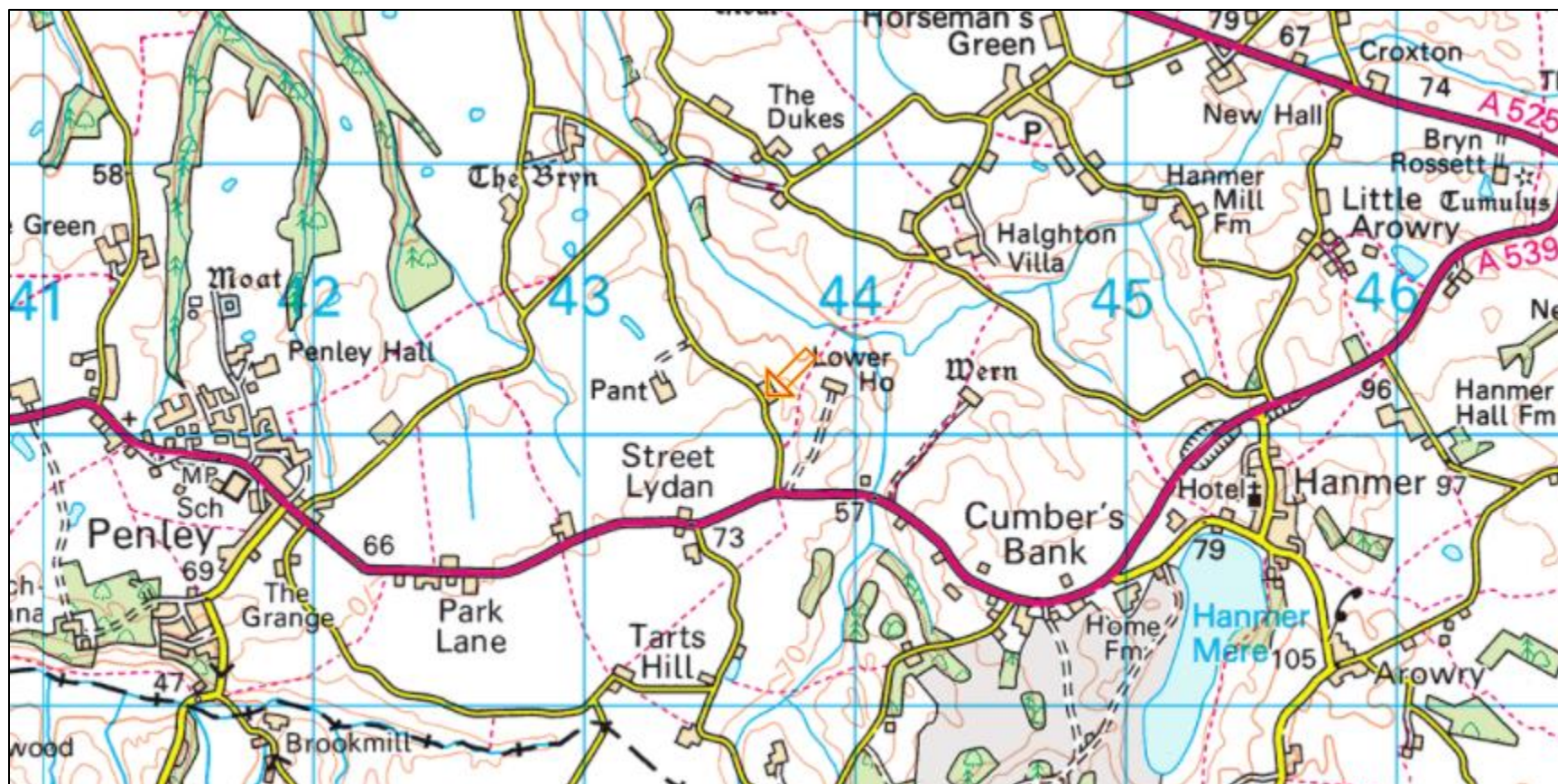
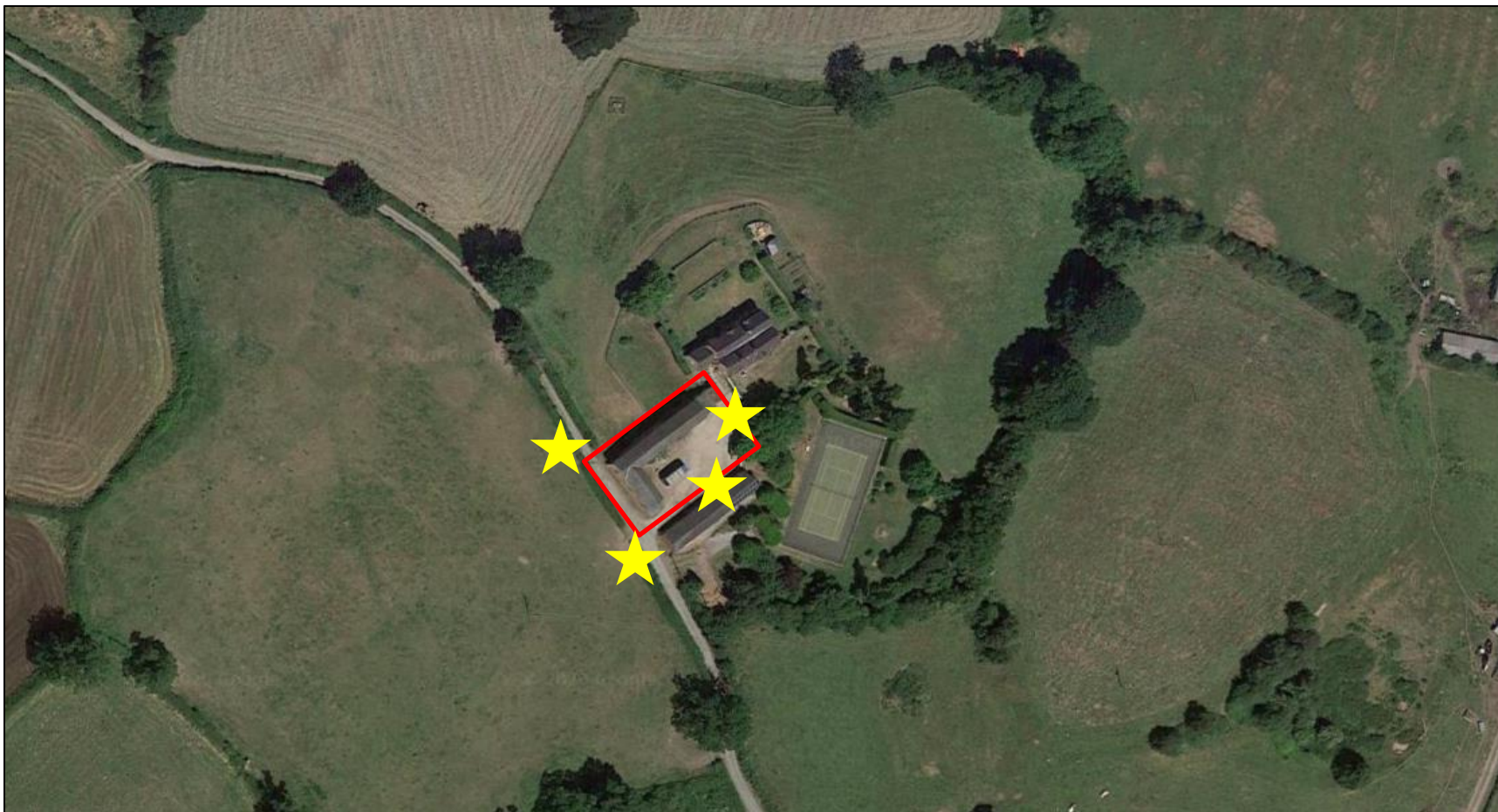


FIGURE 2 AERIAL PHOTOGRAPH AND SURVEYOR LOCATION.



APPENDIX 1 PHOTOGRAPHS



West wing of the barn to be converted



Part of the hay loft at the west end of the north wing of the barn will be included within the conversion



North facing elevation of the barn





South facing gable of west wing



Aeration brick in use as an entry point into the loft



Internal loft space above west wing



Potential roost site in timber joint with droppings beneath. Brandt's bat confirmed roosting within.



Hay loft at the west end of the north wing