



ARBOR VITAE

ECOLOGY • FORESTRY • LAND USE



PHASE 2 BAT ACTIVITY SURVEY

ALLT FAWR

Lower Betton Farm, Cross Houses, Shrewsbury, Shropshire, SY5 6JD

Project name: Allt Fawr, Meifod, Powys, SY22 6DT

Grid Reference: SJ13901378

Date: 15/09/2023

Prepared by: Fay Mundy MEnvSc
Phillipa Stirling MSc ACIEEM

Reviewed by: Phillipa Stirling MSc ACIEEM
Will Prestwood BSc Director

Requested by: David Bondi

Contents

1	INTRODUCTION	3
1.1	BACKGROUND TO DEVELOPMENT	3
1.2	SCOPE OF SURVEY	3
1.3	KEY PRINCIPLES.....	3
2	SITE DESCRIPTION	4
2.1	LOCATION, LANDSCAPE, AND BACKGROUND.....	4
2.2	BUILDING DESCRIPTION.....	4
3	SURVEY METHODOLOGY.....	5
3.1	VISUAL INSPECTION.....	5
3.2	ACTIVITY SURVEYS	5
3.3	HIBERNATION SURVEYS.....	6
3.4	BREEDING BIRDS.....	6
3.5	PERSONNEL.....	6
3.6	CONSTRAINTS.....	6
4	SURVEY RESULTS	6
4.1	VISUAL INSPECTION.....	6
4.2	ACTIVITY SURVEYS	6
4.4	HIBERNATION SURVEY.....	9
4.5	BREEDING BIRDS.....	9
5	EVALUATION OF RESULTS AND IMPACT	10
5.1	BATS.....	10
5.2	BREEDING BIRDS.....	11
6	MITIGATION & ENHANCEMENT	11
6.1	BATS.....	11
6.2	BREEDING BIRDS.....	13
6.3	ENHANCEMENT	13
7	SUMMARY	14
8	REFERENCES.....	15
	FIGURE 1 LOCATION. 1:50,000	16
	FIGURE 2 AERIAL PHOTOGRAPH AND SURVEYOR LOCATION.....	17
	FIGURE 3 EXISTING PLANS.....	18
	FIGURE 4 PROPOSED PLANS.....	19
	APPENDIX 1 PHOTOGRAPHS.....	20

1 INTRODUCTION

1.1 BACKGROUND TO DEVELOPMENT

Planning consent will be sought for the renovation of an empty farmhouse at Allt Fawr near Meifod. The most urgent action required is the re-roofing of the house but other plans include the addition of a garage at the north gable and single storey conservatory and covered porch at the west elevation.

Preliminary examination of the building confirmed that it has ‘high’ potential as a bat roost. A minimum of 15 Lesser horseshoe bats were counted and droppings were found within the attic space in September 2022. However, no evidence of bats was found in the cellar or within the main living accommodation.

1.2 SCOPE OF SURVEY

Arbor Vitae were commissioned to undertake three bat activity surveys to determine the extent of the usage of the farmhouse at Allt Fawr by roosting bats.

- Bats and their roosting sites are legally protected under The Conservation of Habitats and Species Regulations 2017 and The Wildlife and Countryside Act 1981.

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

- All wild nesting birds, their nests and eggs are legally protected under The Wildlife and Countryside Act 1981.

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

Allt Fawr is located approximately 1.2km north west of Meifod, Powys. The property is surrounded by agricultural grassland with Allt Fawr Wood located 50m north of the property. Mature native hedgerows mark the boundaries of nearby fields and a tree lined brook runs from north to south through the land holding.

The overall aim will be to sympathetically renovate the farmhouse, raising the accommodation to current living standards. Initial proposals will include a single storey extension and construction of a new garage.

2.2 BUILDING DESCRIPTION

The farmhouse has four levels: cellar, ground floor, 1st floor and attic. The house is brick under slate construction and forms a 'T' shape in plan. The house is immediately surrounded by concrete and paving slabs. The house sits below the level of the ground at the north elevation.

The northern wing of the house is set over two storey and does not have a loft space. The ceiling is boarded up to the roof pitch. This section adjoins the main house with a small section of the roof knitted in but with no access through.

The cellar is a small single room beneath the house. There are no obvious external entrance points into the cellar apart from the interior stair case. The room is brick walls and floor with exposed beams from the above ceiling.

The ground floor is made up of several rooms with large open fireplaces. The first floor has several bedrooms and bathroom facilities with an enclosed staircase leading up to the attic.

The attic consists of three main areas and a small enclosed space in the eaves where a stud wall has intersected the room. There is a central space where the staircase lands and two rooms either side. Doors separate the rooms but are all open. The room to the east of the attic space is dark with purlins and beams exposed with torching beneath slates. The room to the west is much lighter with an open, uncovered window in the west facing wall.



Timber soffit and fascia boards are fixed around the house and are in varying condition, with some boards loose or missing. The majority of the slate on the roof is intact with only a small amount slipped or damaged. A total of three double chimney stacks rise from the house. A small pitched roof porch is in place at the south elevation and amenity lawn and planted shrubs make up the garden areas around the property.

There is a small single storey shelter to the west of the house which consists of a timber frame and tin roof. The structure is in poor condition. A newer section has been added which consists of a lean-to structure, covered with tin.

3 SURVEY METHODOLOGY

3.1 VISUAL INSPECTION

One visit was made to carry out a preliminary visual assessment of the property in September 2022.

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

DATE	SURVEY TIME	SUNSET SUNRISE	WEATHER	OBSERVERS	STATIC RECORDERS
09/05/2023	20:30-23:00	20:53	Cloud: <5% Rain: No Wind: 2 (BFT) Temp:7-10°C	Will Prestwood Phillipa Stirling Molly Isherwood	Anabat Express internally x2
30/05/2023	03:15-05:15	05:00	Cloud: 100% Rain: No Wind: 0(BFT) Temp: 9°C	Phillipa Stirling Molly Isherwood Simon Cope	Anabat Express internally x2

21/06/2023	21:15-11:15	21:38	Cloud: 10% Rain: No Wind: 2 (BFT) Temp: 18°C	Phillipa Stirling Charlotte Skinner Fay Mundy	Anabat Express internally x2
Bat activity was registered and recorded externally using Echometer 2 Pro microphone with iPad Air.					

3.3 HIBERNATION SURVEYS

Two visits were made to Allt Fawr in January and February 2023. The loft spaces were inspected using torchlight and two surveyors: Phillipa Stirling (S091037-1) and Simon Cope (S086636-1).

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

The activity surveys were carried out by Phillipa Stirling MSc ACIEEM Natural Resources Wales bat licence number: S091037-1: Ecologist, and Assistants Will Prestwood BSc, Molly Isherwood BSc Hons, Simon Cope MSc MCIEEM, and Fay Mundy MEnvSc.

3.6 CONSTRAINTS

There were no constraints to the survey according to the Bat Conservation Trust good practice guidance.

4 SURVEY RESULTS

4.1 VISUAL INSPECTION

The farmhouse at Allt Fawr was closely searched for evidence of bats. Lesser horseshoe bats were found within the loft during the visit in September 2022.

No droppings were found and there was no evidence of feeding signs in the cellar or main living space. Overall, the structure was assessed as providing 'high' suitability as a bat roost.

4.2 ACTIVITY SURVEYS

Dusk emergence survey 9th May 2023

Throughout the survey seven bat species were recorded including: common and soprano pipistrelle, Daubentons and Natterers myotis, noctule, brown long-eared, and lesser horseshoe. Upon arrival three brown long-eared bats were observed within the attic area of the farmhouse. From 20:59 to 21:15, five common pipistrelle were recorded and seen by surveyors; two emerging from the north facing ridge of the main house (A) and three from the NE corners of the extension (B) and all using similar flight paths, heading to the adjacent woodland area. At 21:16 a soprano pipistrelle was seen emerging from the north ridge, and noctules were observed foraging overhead.

Starting from 21:20, consistent recordings and observations were made of lesser horseshoe bats emerging from the open window on the west side of the farmhouse (I), a total of 14 were recorded throughout the survey with several continuing to forage within the yard. At 21:27 a brown long-eared bat was observed foraging along the lane and hedge south of the building.

Several bats (Natterers myotis (21:41), common pipistrelle (21:53), Daubentons myotis and brown long-eared (21:59), alongside a lesser horseshoe and common pipistrelle (22:04)) were recorded but not seen by the surveyors. Furthermore, at 21:45 and 22:20 a soprano and a common pipistrelle were observed both foraging along the lane adjacent. At 22:11 a re-entry observation was made at point I through the open window but the species was not identified.

Summary of bat emergence: brown long eared (3), common pipistrelle (5), soprano pipistrelle (1) and Lesser horseshoe (14).

Dawn re-entry survey 30th May 2023

During the dawn survey, six species of bat were recorded on site: brown long-eared, common and soprano pipistrelles, lesser horseshoe, Daubentons and noctule; all but the last were seen to re-enter the farmhouse at Allt Fawr. Two brown long-eared and two lesser horseshoe bats were found within the loft upon arrival for the survey. Common pipistrelle was strongly associated with the area to the southwest, with the northeast gable end a focus for lesser horseshoe bats.

The first visual observation of the survey was at 03:23 of a brown long-eared bat with subsequent observations at 03:56. The later record saw two emerge from the house and head towards the woods behind. Five individuals were seen to enter the loft through the window (I) after some pre-roost circling. At 04:17, 04:22 and

04:49 brief noctule calls were recorded by the external devices but no observation was made by the surveyors.

Two Daubentons bats were observed and recorded by surveyors entering the building, one through point I and the other into the woodwork at J.

There was re-entry of at least five common pipistrelles around 04:20 at the north elevation crevices, eaves, and verges (E). Subsequent observations of re-entry at 04:26 with two at H and one at G. Soprano pipistrelles recorded 04:30-04:44 with re-entry at the verge at 04:37 (F) and 04:41 (E).

Lesser horseshoe bats were recorded and observed to the southwest of the building, two seen within the loft and many others flying around the elevation. A total of 19 individuals were found to re-enter the loft through the window on the southeast elevation (I). These were mostly towards the latter end of the survey timescale with the majority following the eaves before entering. The final surveyor observation was a soprano pipistrelle at 04:41 which entered the house at the north facing verge (E)

Internal Anabat detectors recorded consistent lesser horseshoe, common and soprano pipistrelles calls, alongside brown long-eared (03:12, 03:36, 04:11 and 04:22), and Daubentons bat (04:21 and 04:28). The last call recorded by the internal devices was at 04:58 and was identified as a lesser horseshoe.

Summary of bat re-entry: brown long eared (5), Daubentons (2), common pipistrelle (8), soprano pipistrelle (2) and Lesser horseshoe (19).

Dusk emergence survey 21st June 2023

Six species of bat were recorded throughout the survey including: common and soprano pipistrelle, brown long-eared, Daubentons myotis, lesser horseshoe, and noctule bat. The first observation of the survey was at 21:42 with an unidentified bat emerging from point F on the east gable end (common pipistrelle suspected). Starting from 21:50 and continuing throughout the survey, twelve common pipistrelles were observed emerging from point F; all continuing towards the woodland behind.

Possible emergence from ridge tiles (A) of a common pipistrelle at 21:58 and again at 22:09. A soprano pipistrelle was recorded emerging from the west side of the house at 21:56 from point J. Subsequent emergences of soprano pipistrelles were

recorded from this area at 22:06, 22:19 and 22:51. Furthermore, a common pipistrelle was seen to emerge from these eaves at 22:54. At 21:57 a noctule was observed flying over the building towards the eastern woodland.

From 22:00 onwards, lesser horseshoe bats were observed flying within the loft space from window I. The first emergence from this window was at 22:13 with a total of 20 lesser horseshoe individuals emerging from this point. Once emerging, these bats would forage around the neighboring hedge close to the ground, head over the wall to a young *Acer sp.* then continue on to the woodland. The timber shed and surrounding courtyard was utilised briefly as a foraging area.

A Daubentons myotis was recorded at 22:49 but no emergence was found and no call detected on the internal devices. At 22:51, a brown long-eared bat was observed by the surveyor to emerge from the window I, briefly forage then return and re-enter through the same point. The last recording of the survey was at 23:02 with an observation of a common pipistrelle foraging in the northern field.

Internal detectors recorded lesser horseshoe bats throughout the survey from 21:22. Common and soprano pipistrelles were logged from 21:44 and 21:55 respectively. Brown long-eared bat echolocation calls were detected intermittently at 21:52 and again at 22:20. The last recording from the devices were a lesser horseshoe at 23:12 and 23:13.

Summary of bat emergence: brown long eared (1), Daubentons (1), common pipistrelle (15), soprano pipistrelle (3) and Lesser horseshoe (20).

4.4 HIBERNATION SURVEY

Hibernation survey 16.01.2023

No bats were observed within either loft during this visit.

Hibernation survey 15.02.2023

During this survey two lesser horseshoe bats was observed hibernating within the loft of the house. One was observed hanging from ceiling boarding and the other was hanging from a timber rafter (Appendix 1).

4.5 BREEDING BIRDS

Swallows are nesting within the loft space above the house. A minimum of 3 pairs are using the space.

5 EVALUATION OF RESULTS AND IMPACT

5.1 BATS

The attic space above the main house at Allt Fawr is in use as a roost for several species. A summary of the roosting can be seen in the following table:

Species	Max. count	Maternity	Summer	Breeding	Hibernation
Lesser horseshoe	20	✓	✓	✓	✓ Minor
Common pipistrelle	15	✓	✓	✓	
Soprano pipistrelle	3		✓		
Brown long-eared	5		✓		
Daubentons	2		✓		

The main roosting feature of the house is the attic space but additional features, such as timber soffit and fascia, are also in use by crevice dwelling species. Smaller segments of the loft exist over the eaves of the house, used regularly by Lesser horseshoe.

The LH and BLE entrance point is the open window (I) at the south west facing gable with pipistrelles and myotis sp. occasionally using the window but tending to use gaps in the woodwork and verges at the gable ends. Pipistrelle are also using ridge tiles on the roof occasionally.

Re-roofing the property and subsequent renovation has the potential to cause significant disturbance, injury or death to bat species. The roost is particularly sensitive during spring and summer due to the presence of a maternity site for at least LH and common pipistrelle.

All bat species roosting in the attic were found to be using areas around the house and farm yard, with consistent commuting to the extensive woodland to the north of the house. The limited vegetation found to the immediate west of the house

has high value, especially for LH, as an initial foraging area with eventual guidance to the adjacent woodland.

Additional linear landscape features will be created to link the roost to the adjacent woodland.

Artificial lighting at the west elevation of the property will require careful consideration to ensure the roost access point is not compromised. No external lighting will be installed at the west or north elevation and the single storey extension will not emit any vertical light spill.

The roost will be retained in-situ but work to replace the roof will be required due to its poor condition, compromising the living accommodation below.

A European Protected Species Development Licence will be required in order to replace the roof and for any subsequent renovation work. The replacement of the roof is the most urgent element of the project and will therefore be the first activity on site.

Mitigation measures to be included in any future EPSDL application can be found in section 6.1.

5.2 BREEDING BIRDS

The survey showed that the attic space is in use during the nesting season by at least 3 pairs of swallows. Re-roofing the house has the potential to disturb nesting activity.

6 MITIGATION & ENHANCEMENT

6.1 BATS

Replacing the roof of the property will need to be carried out in a sensitive manner, whilst re-instating roost features and retaining the roost in-situ. Further renovation and extension of the property will also require specific working methods which will be covered in any subsequent EPSDL. The following measures will be required, as a minimum:

1. Timing of works. The roofing work will be planned for mid-end September, finishing before the middle of November 2023. External building work will take place during winter months to include external insulation of the walls.



2. Supervised roof removal. The Named Ecologist will be present whilst the roof is being dismantled. A pre-commencement inspection will be carried out by the ecologist and any bats found will be re-located to an appropriate emergency refuge.
3. Soft demolition of the roof. All contractors will be briefed on how to remove the slates/features of the roof in a way which reduces the risk of injury to bats, should they be present.
4. Installation of new access points. Bat access tiles and ridge access points will be installed into the new roof to ensure that crevice dwelling species have several access points by which to enter the loft/cavities in use.
5. Retention of existing 'fly-in' window access point for LH. The broken window at the south west elevation will be repaired or replaced but the same size entrance point will be retained in any replacement window casement.
6. A new access point in the small window on the opposite (east) elevation will also be created as an alternative for bats to use. The access will be suitable for Lesser horseshoe.
7. Use of Type 1F felt. The loft space will only be lined with Bituminous Type 1F felt, as approved by NRW.
8. Creation of roosting areas within the new roof. Small sub-divisions of the main loft space will be made to mimic the current conditions. Various roosting features will be installed into the loft to include rough sawn timber fixed to the underside of rafters to create areas for crevice dwellers and also opportunities for LH.
9. A lighting scheme will be designed for the site which ensures 'dark movement corridors' are maintained and all access points/roosting sites remain unlit. The following lighting is planned:
 - a. *Two coach lamp style lights either side of the entrance hall doors at the west elevation, with a PIR switch and short timer. These lights will be under the covered porch so will not project any light upward. Low wattage and warm white spectrum.*
 - b. *A single PIR activated light to illuminate the ground immediately outside the garage at the west elevation, also on a short timer. Warm white and low wattage.*
 - c. *No lights outside the conservatory and no other external lights planned on site.*

10. A native species orchard planting scheme will be created in order to provide linear landscape connectivity to the adjacent woodland from the house.
11. All work to construct the single storey lean-to extension will take place below the height of the first floor. This will include any necessary scaffold structures.
12. Dust and noise suppression will be adopted on site. Works along the west elevation of the property will be carried out beneath a canopy to remove any risk of dust travelling up to the higher levels of the house.
13. Work will take place during daylight hours only and working time will not be extended by the use of artificial lighting.
14. No mesh or netting will be erected above ground floor level on site.

6.2 BREEDING BIRDS

Given that works will be carried out after swallows have finished nesting, the work will have no direct impact upon breeding birds.

In order to encourage returning swallows to continue nesting, three Woodcrete swallow cups will be installed into the loft during the winter.

The existing entrance window will be retained and so access will be possible upon their return to the UK.

6.3 ENHANCEMENT

In order to improve linear landscape features to the nearby Allt Fawr Wood, a line of native shrub and tree species will be planted from the northern edge of the property, through the field and join into the existing canopy cover. Species will likely be native orchard variety.

Additional external roosting boxes will be installed on site following completion of building work. A minimum of 2x Woodcrete roost boxes will be installed, a minimum of 3m from ground level.

7 SUMMARY

Planning consent will be sought for the renovation of an empty farmhouse near Meifod. The most urgent action required is the re-roofing of the house.

Preliminary examination of the building indicated that it has 'high' potential as a bat roost. A minimum of 15 Lesser horseshoe bats were counted and droppings were found within the attic space in September 2022

Arbor Vitae were commissioned to undertake three bat activity surveys to determine the extent of the usage of the farmhouse at Allt Fawr by roosting bats. The survey was also designed to assess the presence of any breeding birds using the building.

Maximum roost counts are as follows: Lesser horseshoe (20), common pipistrelle (15), soprano pipistrelle (3), brown long-eared (5) and Daubentons (2).

The main roosting feature of the house is the attic space but additional features, such as timber soffit and fascia, are also in use by crevice dwelling species.

The roost will be retained in-situ but work to replace the roof will be required due to its poor condition, compromising the living accommodation below.

A European Protected Species Development Licence will be required in order to replace the roof and for any subsequent renovation work. The replacement of the roof is the most urgent element of the project and will therefore be the first activity on site.

A comprehensive set of mitigation measures will be required, as detailed in Section 6.1.

The survey showed that the attic space is in use during the nesting season by at least 3 pairs of swallows. Re-roofing the house has the potential to disturb nesting activity.

Given that works will be carried out after swallows have finished nesting, the work will have no direct impact upon breeding birds. In order to encourage returning swallows to continue nesting, three Woodcrete swallow cups will be installed into the loft during the winter.

In order to improve linear landscape features to the nearby Allt Fawr Wood, a line of native shrub and tree species will be planted from the northern edge of the property, through the field and join into the existing canopy cover. Additional roosting features will be installed externally following completion of building work on site.

8 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

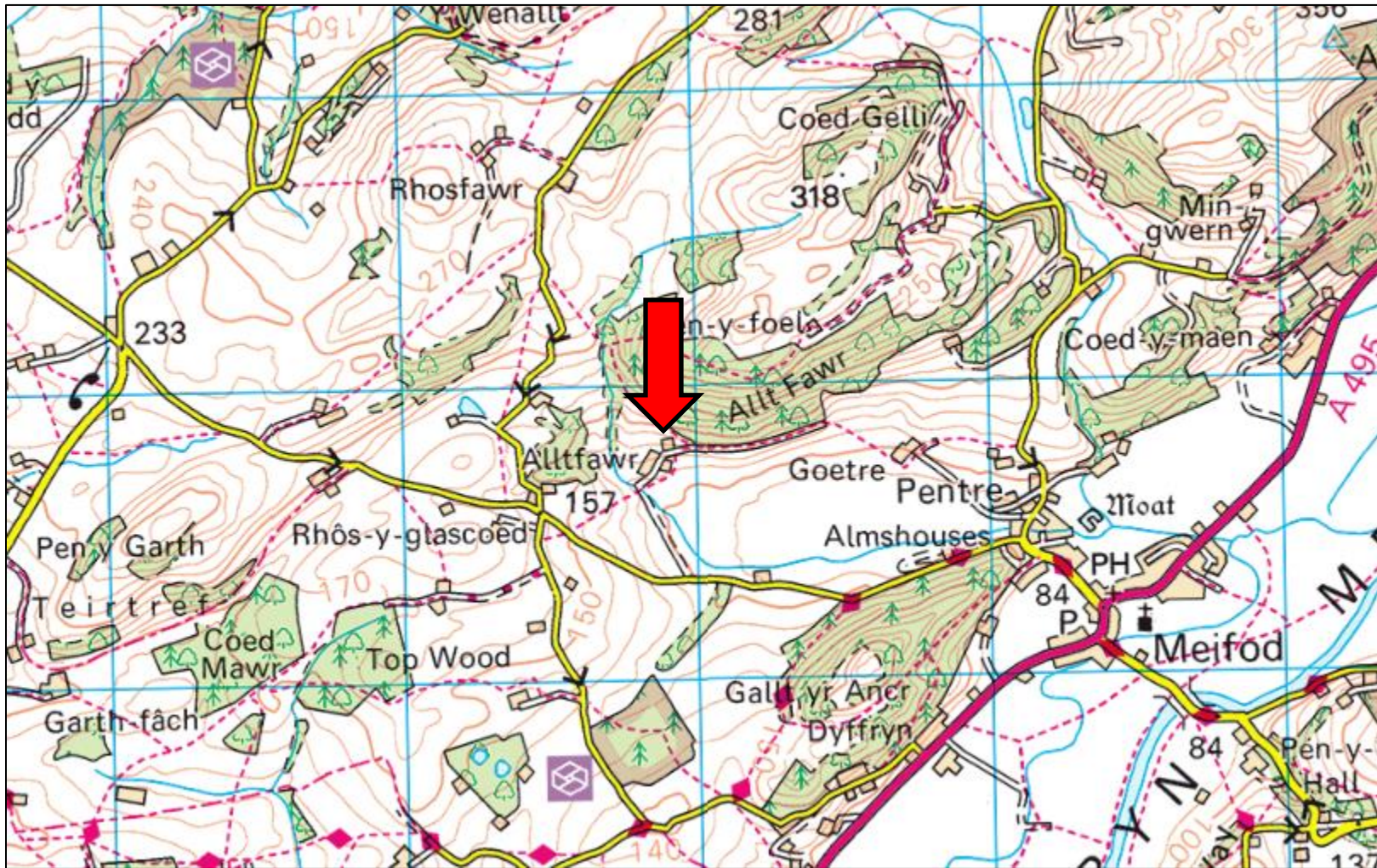


FIGURE 2 AERIAL PHOTOGRAPH AND SURVEYOR LOCATION



FIGURE 3 EXISTING PLANS

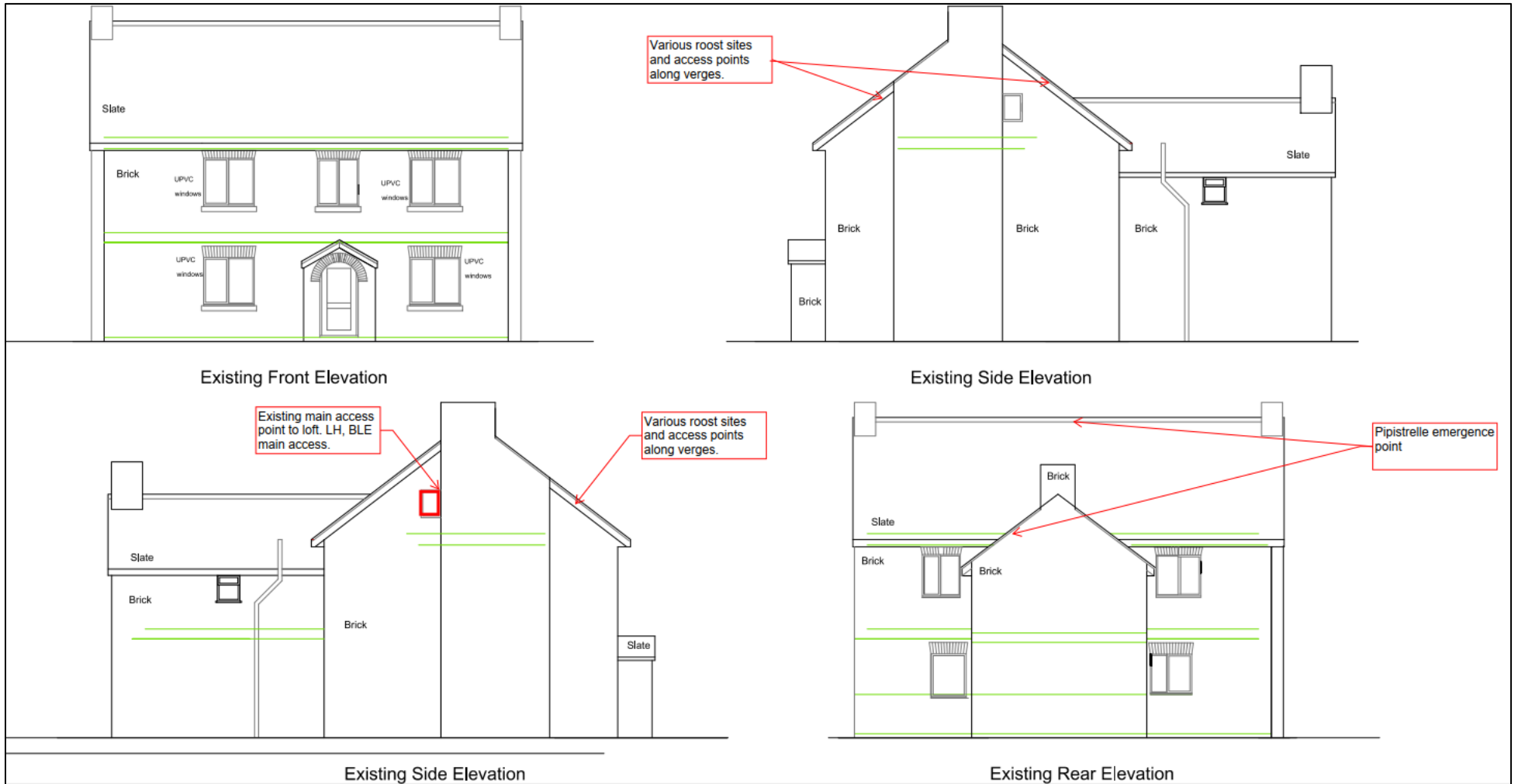
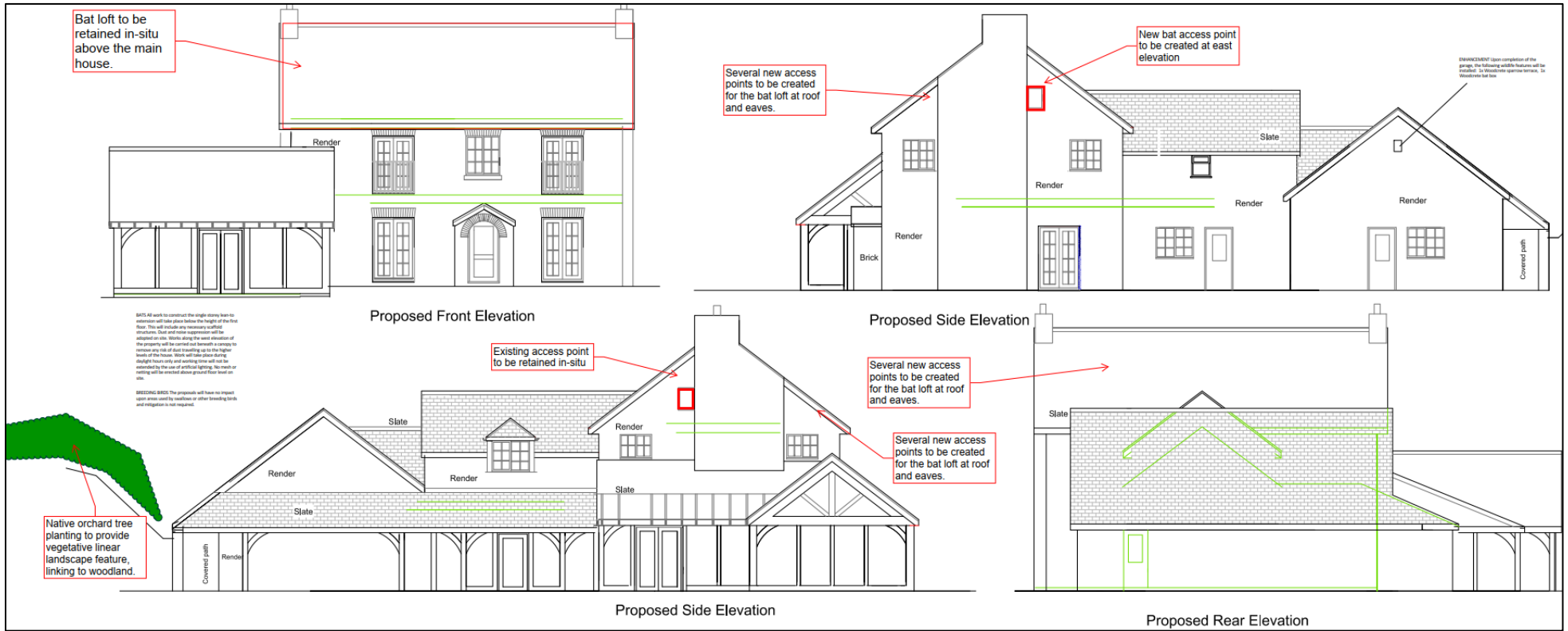


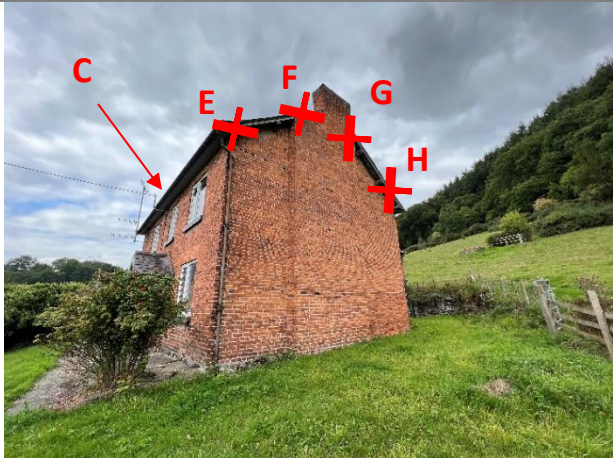
FIGURE 4 PROPOSED PLANS



APPENDIX 1 PHOTOGRAPHS



North elevation. Emergence points A and B



East gable and east elevation



East elevation.



West elevation. Emergence point F



Scope of adjacent land use, including consisten flight path to woodland.



Internal loft above eaves.



Main loft.



Main loft.



Lesser horseshoe bat found during 15/02/23



Lesser horseshoe bat found during 15/02/2023