



**Bryn-Rhedyn Farm**

**Bedlinog**

**Bat and Nesting Bird Survey Report**

**January 2021**

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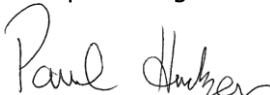
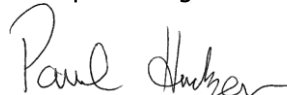
## APPENDICES

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## DOCUMENT CONTROL

| Bryn-Rhedyn Farm, Bedlinog<br>Bat and Nesting Bird Survey Report |                 |                                                                                                                                  |                                                                                                                              |                                                                                                                                    |
|------------------------------------------------------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Revision                                                         | Date            | Prepared by                                                                                                                      | Checked by                                                                                                                   | Approved by                                                                                                                        |
| 3.0                                                              | 20 January 2021 | Paul Hudson MCIEEM<br>Principal Ecologist<br> | Harri Williams<br>Graduate Ecologist<br> | Paul Hudson MCIEEM<br>Principal Ecologist<br> |

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## Summary

|                                                            |                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Brief and Site Location                                    | This report presents the findings of a bat and nesting bird survey of a barn located at Bryn-Rhedyn Farm, Bedlinog, CF46 6UF (Ordnance Survey Grid Reference: SO0903 0085).                                                                                              |
| Proposed Works                                             | The building is proposed for conversion into residential use.                                                                                                                                                                                                            |
| Survey Methodology                                         | The survey comprised the following: <ul style="list-style-type: none"><li>• A preliminary bat roost assessment which included a survey for nesting birds;</li><li>• One dusk emergence survey of the barn; and</li><li>• One dawn re-entry survey of the barn.</li></ul> |
| Survey Results                                             | No signs of bats were found during the internal and external inspection of the building.<br><br>No bats were recorded roosting within the building during the dusk emergence or dawn re-entry survey.                                                                    |
| Evidence of Nesting Birds                                  | No evidence of past or current nesting by birds was noted during the surveys either within or on the exterior of the building.                                                                                                                                           |
| Requirements for Additional Survey                         | None required.                                                                                                                                                                                                                                                           |
| Predicted Impacts of Development on Bats and Nesting Birds | Based on the conclusion that bats are unlikely to be using the building as a roost site, no negative impacts on bats are anticipated.<br><br>Based on the conclusion that birds are not currently nesting in the building, no negative impacts on birds are anticipated. |
| Licensing Requirements for Bats                            | None required.                                                                                                                                                                                                                                                           |
| Required Actions                                           | Detailed recommendations are given in Section 6 of this report. These include precautionary methods and guidance for action to take if bats are found during the works.                                                                                                  |

## 1. Introduction

### 1.1. Brief

This report presents the findings of a bat and nesting bird survey of a barn located at Bryn-Rhedyn Farm, Bedlinog, CF46 6UF (Ordnance Survey Grid Reference: SO0903 0085)<sup>1</sup>. The barn is situated within the boundary of Merthyr Tydfil Council.

### 1.2. Site Description

The barn is situated at the northern boundary of Bryn-Rhedyn Farm, which lies approximately 0.45km to the south of Cwmfelin village, the nearest settlement. Surrounding the barn in all directions are open fields and pasture, and several areas of woodland.

The location of the barn is shown on Plan 1: Location Plan.

### 1.3. Proposed Works

Plans comprise a proposed new dwelling, commercial boarding kennel and barn conversion to holiday let. A planning application has been submitted under reference P/20/0242<sup>2</sup>.

### 1.4. Legislation and Planning Policy

#### 1.4.1. Bats

All UK species of bat are designated as protected species. Their breeding sites or resting places<sup>3</sup> (roosts) are fully protected under the Wildlife and Countryside Act 1981<sup>4</sup> (as amended) and the Conservation of Habitats and Species (Amendment) (EU Exit) [‘CHSAEU’] Regulations 2019<sup>5</sup>. Works affecting bats are subject to licensing procedures by Natural Resources Wales (NRW). The legal protection and licensing procedures are summarised in Appendix 1.

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<sup>1</sup> Latitude and Longitude: 51.699053, -3.317454

<sup>2</sup> <http://publicaccess.merthyr.gov.uk/online-applications/applicationDetails.do?activeTab=externalDocuments&keyVal=QIG3DTKQ00300>

<sup>3</sup> Resting places are defined as ‘areas that are essential to sustain an animal or group of animals when they are not active’ (Anon 2007).

<sup>4</sup> <https://www.legislation.gov.uk/ukpga/1981/69>

<sup>5</sup> EU Exit – The European Union (Withdrawal) Act 2018 (the EUWA) will end the supremacy of EU law in UK law, will convert directly applicable EU legislation (in particular, EU Regulations and Decisions) as it stands at the moment of exit into domestic law, and will preserve legislation previously made in the UK to implement EU obligations. The legislation will generally have the same effect that it had before the UK left the EU, unless or until it is changed by Parliament. In some cases, there may be changes in referencing and guidance as a result of secondary legislative amendments.

## 1.4.2. Nesting Birds

All wild British birds (whilst building nests, nesting and sitting on eggs) and their nests and eggs (with certain limited exceptions<sup>6</sup>) are protected by law under Section 1 of the Wildlife and Countryside Act 1981<sup>7</sup> (as amended) and the Countryside and Rights of Way Act 2000<sup>8</sup>. Some species, such as barn owls (*Tyto alba*), are listed in Schedule 1 and have extra levels of protection including protection from disturbance whilst nest building and disturbance of dependant young.

## 1.5. Survey Scope

The survey comprised the following:

- A preliminary bat roost assessment which included a survey for nesting birds;
- One dusk emergence survey of the barn; and
- One dawn re-entry survey of the barn.

## 1.6. Reporting

This report aims to:

- Outline the survey methodology used;
- Present the results of the survey;
- Provide an interpretation of the survey results;
- Determine the need for further targeted surveys on site; and
- Provide suitable recommendations in line with planning policy and wildlife law including potential licencing requirements, mitigation, compensation and enhancement measures.

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<sup>6</sup> Details of the exceptions are available at <https://bit.ly/2KiQTFH>

<sup>7</sup> <https://www.legislation.gov.uk/ukpga/1981/69>

<sup>8</sup> <https://www.legislation.gov.uk/ukpga/2000/37>

## 2. Methods

### 2.1. Desk Study

An assessment of the site and surrounding area was carried out, including existing habitats, from maps and aerial photographs. A Geographic Information System (GIS) dataset, obtained from NRW as used to search for statutory and non-statutory conservation designated sites for bats within 10km. A 2km search was undertaken for all other statutory and non-statutory conservation designated sites.

A search of the local planning portal was undertaken to look for other sites within the same postcode area which have had bat surveys submitted as a part of their planning application.

South East Wales Biological Records Centre (SEWBRc) records within 1km of the site were obtained (Ref 0201-450).

### 2.2. Field Study

#### 2.2.1. Daytime Internal and External Inspection

A systematic search was made of the exterior and interior of the barn looking for features that bats could use for entering/exiting and roosting<sup>9</sup>. In addition, a search was made for the presence of bats or evidence of bat use, such as droppings, feeding remains, urine staining, scratch marks and the remains of dead bats. The survey was undertaken on 19th June 2020 by Paul Hudson<sup>10</sup> MCIEEM (NRW Licence Number: S086520/1).

A high-powered torch (Clulite), an endoscope (Ridgid Micro CA-300) binoculars and a ladder were available for use, as appropriate during the survey.

#### 2.2.2. Dusk Emergence and Dawn Re-entry Surveys

The evening dusk emergence survey commenced minutes prior to sunset, and continued until 90 minutes after sunset. Paul Hudson inspected the internal reaches of the barn for bat activity before the survey and at the end of the survey.

The dawn re-entry survey commenced 2 hours before sunrise and continued for 15 minutes after sunrise. Paul Hudson inspected the internal reaches of the barn for bat activity before the survey and at the end of the survey.

Surveyors were positioned at viewpoints where they had good sight of all elevations of the barn, so that all potential roosting features could be observed to detect any bat emerging from, or re-entering, the barn. Bat activity near the barn was recorded to help ascertain flight lines.

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<sup>9</sup> Bats may utilise gaps as small as 8mm by 20mm (Bat Conservation Trust, Cluster flies leaflet).

<sup>10</sup> Paul graduated with a degree in Environmental Biology from Reading University and a Postgraduate Diploma in Conservation Management from the University of East Anglia. He has worked within ecological consultancy since 2000 and has been involved in bat work since 2001. He holds licences to disturb bats in both Wales (S086520/1 valid until June 2020) and England (2018-36707-CLS-CLS valid until 2028). Further details of his qualifications and experience can be found at <http://linkd.in/19aGTf4>.

## **2.2.3. Assessment of Bat Roost Suitability**

The value of the site for bats (and any potential roost sites therein) was assessed, in accordance with Table 4.1 of the Bat Surveys for Professional Ecologists (Collins, 2016) (see Appendix 2). The assessment was based on the relative abundance and quality of potential roost sites; and the habitat features within both the site and the surrounding landscape, suitable for roosting, foraging and commuting bats.

## **2.2.4. Dusk Emergence and Dawn Re-entry Surveys**

Two surveyors undertook both the dusk emergence and dawn re-entry survey. Both surveys were undertaken by Paul Hudson and Megan Fowler<sup>11</sup>. Both surveyors were both equipped with Elekon Batlogger M bat detectors.

## **2.2.5. Survey for Nesting Birds**

A visual search was undertaken for active bird nests, as well as any signs which might indicate either past or current nesting, such as guano, singing birds, birds carrying nesting material, food items, faecal sacs and calling chicks.

## **2.2.6. Constraints**

### General Temporal Constraints

An ecological survey can only identify what was present on site at the time it was conducted. However, habitat usage by species can change over time.

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<sup>11</sup> Megan graduated with an Undergraduate Masters in Zoology with Climate Change from Bangor University in 2019. She is currently undertaking training within Acer Ecology, focusing on dusk emergence and dawn re-entry surveys. Megan has also undertaken bat field work in Mexico undertaking 40 hours of mist-netting and transect surveys.

## 3. Results

### 3.1. Desk Study

#### 3.1.1. Local Records Centre Search (SEWBRcC)

A pipistrelle roost record with three individuals was recorded in 1997 0.5km away from the site. In addition, SEWBRcC held records of including *Myotis* species, noctule bats (*Nyctalus noctula*) and bats of unknown species.

#### 3.1.2. Bat Roosts Reported in Planning Applications Within the Same Postcode

The search on the planning portal returned no records of bat roosts within the same postcode area as the proposed development.

#### 3.1.3. Protected Sites

The location of protected sites is shown in Plan 2: Protected Sites.

##### Statutory Sites Notified for Bats (Special Areas of Conservation (SACs)) or Sites of Special Scientific Interest (SSSIs) Within 10km

No SACs that have been specially designated for bats lie within 10km of the barn.

##### Other Protected Sites Within 2km

There are no statutory designated sites such as SACs, SSSIs, National Nature Reserves (NNRs) or Local Nature Reserves (LNRs) either within the proposed development site or within 2km of the barn.

##### Non-statutory Protected Sites

##### Sites of Importance for Nature Conservation (SINCs)

There are 13 SINCs within 2km of the barn, the nearest of which is Cwm Bargoed SINC, which overlaps the barn. These sites are rich in wildlife and are considered important for their local biodiversity value.

##### Ancient Woodland Sites

There are 39 areas of Ancient Semi-Natural Woodland (ASNW)<sup>12</sup>, seven Restored Ancient Woodland Sites (RAWS)<sup>13</sup>, five Plantations on Ancient Woodland Sites (PAWS)<sup>14</sup>, and two Ancient Woodland Sites of

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<sup>12</sup> Ancient Semi-Natural Woodland (ASNW) – broadleaf woodlands comprising mainly native tree and shrub species which are believed to have been in existence for over 400 years.

<sup>13</sup> Restored Ancient Woodland Sites (RAWS) – woodlands which are predominately broadleaves now and are believed to have been continually wooded for over 400 years. These woodlands will have gone through a phase when canopy cover was more than 50% non-native conifer tree species and now have a canopy cover of more than 50 percent broadleaf.

<sup>14</sup> Plantation on Ancient Woodland Sites (PAWS) – sites which are believed to have been continuously wooded for over 400 years and currently have a canopy cover of more than 50 percent non-native conifer tree species.

Unknown Category<sup>15</sup>, located within 2km of the site. The nearest area of ancient woodland is an unnamed area of ASNW located immediately to the north-east of the barn.

## Protected Sites Summary

Given the small scale of the proposed development, the localised nature of the proposed works, and the limited scope for impacts outside of the footprint of the proposed works, no adverse impacts to the protected sites are likely to occur. These sites are not mentioned any further in this report.

## **3.2. Field Study**

### **3.2.1. Ecological Context of Site**

#### Lighting

The site is assessed as being within Zone E2L Rural lighting zone (Institute of Lighting Professionals, 2012) as there the building is in an isolated location. There is external lighting on the adjacent farmhouse and on the barn itself<sup>16</sup>.

#### Site and Surrounding Habitats

The areas surrounding the barn mainly comprise open fields and areas of woodland. To the barn's north is an area of woodland, designated as Cwm Fedw SINC, which is likely to provide plentiful foraging opportunities for bats. This SINC also lies to the south of the barns, indicating that bats could forage in all directions of the barn. The fields are bordered by treelines and hedgerows which may act as ecological corridors between the barn and wider landscape, for example to areas of woodland such as the one further north of the barn, for commuting bats. The wider rural landscape is likely to be dark at night and quiet due to the barn's isolated location, which adds to the high-quality foraging and commuting habitat around the barn.

### **3.2.2. Building Description from the Perspective of Bat Habitat**

The following table summarises the key features of the building.

Table 1: Key Features of Building

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Building Type | The building is a single-storey stone farmhouse which has fallen into disuse (Photos 1-4).                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Roof          | The roof is pitched along an east-west axis. Its southern slope consists of slate tiles, most of which are in relatively good condition, however there are several slipped tiles towards the western gable end of the building (Photo 5). The northern slope consists of corrugated metal (Photo 2) which has rusted slightly towards the eastern gable end, but is generally in good condition. There is a metal ridge running the length of the pitch, which has some gaps underneath it where it has come away from the tiles (Photo 6). |

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<sup>15</sup> Ancient Woodland Site of Unknown Category (AWSU) – woodlands which may be ASNW, RAWS or PAWS. These areas are predominantly in transition and existing tree cover is described as 'shrubs', 'young trees', 'felled' or 'ground prepared for planting'.

<sup>16</sup> Lighting can impact on bats' roosting sites, commuting routes and foraging areas.

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|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Soffits, Fascias and Bargeboards | The uPVC fascia and bargeboards are largely in good condition, however there are gaps under the fascia on the northern elevation (Photo 7). There is also a gap beneath the ridge at the eastern gable end (Photo 8).                                                                                                                                                                                                                                                                |
| External Walls                   | The eastern, northern and southern elevations' walls have several small crevices and gaps between the stonework in places (Photo 9), but are in good condition relative to the western gable end, which has numerous large crevices around the open window (Photo 3). The western gable end also has exposed beams where the dilapidated wall no longer meets the roof. There are bird boxes on the eastern gable wall (Photo 1).                                                    |
| Windows and Doors                | On the building's northern elevation there is doorway blocked up by stonework with a sizeable gap at the top, and next to this is a boarded up window with another sizeable gap at the top and another sizeable gap at the top (Photo 10). There is a second door on the northern elevation with numerous gaps in the stonework around the lintel (Photo 11), and a third and fourth door on the southern elevation, both with several gaps in the stonework around them (Photo 12). |
| Interior                         | The roof void supported by King's post timber trusses which is unlined throughout. There is a large amount of light ingress into the void from the gaps under the ridge, and from the gaps above and around the windows and doors (Photo 14). The western elevation's window provides a large access point into the void (Photo 15).                                                                                                                                                 |
| Security Lighting                | There is a security light above the door on the northern elevation (Photo 11).                                                                                                                                                                                                                                                                                                                                                                                                       |

## Photos Showing the Building and its Features

Photo 1: Eastern elevation



Photo 2: Northern elevation



Photo 3: Western elevation



Photo 4: Southern elevation



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Photo 5: Slipped tiles on the southern elevation's roof



Photo 6: Gaps between metal ridge and tiles



Photo 7: Gaps under fascia on northern elevation



Photo 8: Gap under ridge at eastern gable end



Photo 9: Example of crevices in external stonework



Photo 10: Blocked up doorway and window



Photo 11: Gaps in stonework around door on northern elevation



Photo 12: Doors on the southern elevation



Photo 13: A-frame design with lining on southern slope only



Photo 14: Light ingress into roof from gaps in ridge and from windows

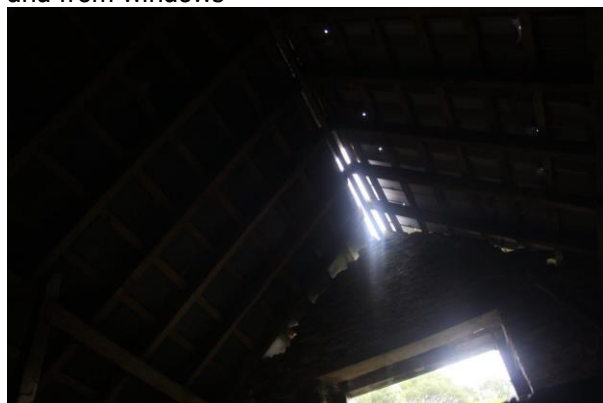


Photo 15: Access into void through western window



Photo 16: Example of the floor's condition



### 3.2.3. Potential Bat Access Points and Bat Roosting Locations

There are numerous potential access points for bats to gain entry into the interior through the gaps above the blocked up windows and doors (Photo 10), and through the gaps where the ridge has come away from the tiles on the southern elevation (Photo 6). There is also potential access at the western gable end, either through the open window or via the gaps where the stonework has eroded (Photo 3).

#### Potential Roosting Sites for Bats

The following potential roost sites were recorded:

- R1 – Within the gaps between the ridge and tiles (Photo 6);
- R2 – Within the gaps in the stonework on the western elevation (Photo 3);
- R3 – Within the gaps in the stonework around the doors on the northern elevation (Photo 10-11);
- R4 – Underneath the fascia on the northern elevation (Photo 7); and
- R5 – Within the crevices in the external stonework (Photo 10).

## 3.2.4. Dusk Emergence and Dawn Re-entry Surveys

The results of the dusk emergence and dawn re-entry surveys are summarised below.

Table 2: Summary of Conditions During Dusk Emergence and Dawn Re-entry Surveys

|                            | Survey 1                   | Survey 2                   |
|----------------------------|----------------------------|----------------------------|
| <b>Date</b>                | 26 <sup>th</sup> June 2020 | 11 <sup>th</sup> July 2020 |
| <b>Sunset/Sunrise Time</b> | 21:35                      | 03:00                      |
| <b>Start Time</b>          | 21:05                      | 05:09                      |
| <b>Finish Time</b>         | 23:20                      | 05:24                      |
| <b>Start Temperature</b>   |                            | 13°C                       |
| <b>Sunset Temperature</b>  | 17°C                       |                            |
| <b>Rain</b>                | None                       | None                       |
| <b>Wind<sup>17</sup></b>   | 1                          | 1                          |
| <b>Cloud Cover</b>         | 2/8 oktas                  | 3/8 oktas                  |

Table 3: Summary of Dusk Emergence and Dawn Re-entry Surveys Results

|                                             | Survey 1: Dusk Emergence                                                                                                                                                                                                                                                  | Survey 2: Dawn Re-entry                                                                       |
|---------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| <b>Emergences/ Re-entries</b>               | No bats emerged from the building or interacted closely with the building.                                                                                                                                                                                                | No bats returned to roost within the building or interacted closely with the building.        |
| <b>Important Commuting/ Foraging Routes</b> | No noteworthy commuting routes were identified close to the building.<br><br>The mature treeline 55m to the west of the building is an important foraging area for noctule ( <i>Nyctalus noctula</i> ) bats with up to four individuals recorded over a half hour period. | No noteworthy commuting routes were identified.                                               |
| <b>Bat Activity<sup>18</sup></b>            | Apart from the noctule bats above only low levels of bat activity was recorded with only occasional intermittent passes by common pipistrelle ( <i>Pipistrellus pipistrellus</i> ) and soprano pipistrelle ( <i>Pipistrellus pygmaeus</i> ).                              | Low levels of bat activity were recorded of just two species: common and soprano pipistrelle. |

## 3.2.5. Nesting Bird Survey

No signs of birds, including barn owl, having recently nested were found during the survey within or on the exterior of the building.

<sup>17</sup> Estimated on site using the Beaufort scale.

<sup>18</sup> Activity thresholds have been quantified using personal judgement according to past experience of surveying similar sites.

## **4. Evaluation**

### **4.1. Summary of Fieldwork**

The preliminary roost assessment, dusk emergence survey and dawn re-entry surveys found no evidence of bats roosting within the building.

### **4.2. Suitability for Summer Roosts**

The barn was assessed as having moderate bat roosting potential. There are numerous access points and roosting features which could feasibly be used by roosting bats, but due to their size, shelter, protection, conditions and surrounding habitat, were assessed as being unlikely to support a roost of high conservation status (see Appendix 2A). The building has numerous openings and has potential for use by night-roosting bats, however no evidence of such use was found during the preliminary roost assessment.

The building had potential for use by night-roosting species but the lack of evidence within the barn on the initial preliminary roost assessment and after inspections upon completion of the dusk and dawn surveys, suggest that use of the building by night-roosting species is considered unlikely.

### **4.3. Potential Winter Roosts**

As no bats were recorded roosting in the barn, it is considered highly unlikely that bats would utilise the barn during the winter months as the building is: quite bright with considerable light ingress and has few potential hibernation features.

### **4.4. Important Bat Commuting Routes and Foraging Areas**

No important bat commuting routes or foraging areas close to the barn were recorded during the survey.

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## **5. Impacts**

### **5.1. Potential Impacts of the Development on Bats**

Due to the lack of evidence of bats roosting within the barn during the preliminary roost assessment, dusk emergence and dawn re-entry surveys, no direct or indirect impacts on bats due to the development are considered likely.

### **5.2. Potential Impacts of the Development on Birds**

There are anticipated to be no potential direct impacts due to the absence of evidence of nesting birds in the building.

## 6. Required Actions

### 6.1. Licensing Requirements for Bats

No further survey work is considered necessary. A European Protected Species (EPS) Licence is not required as there is no evidence of the barn being used as a roost by bats.

### 6.2. Precautionary Measures

#### Installation of Bat Boxes for Bats Displaced During Works

The following recommendations are made to minimise risks to bats and birds:]

#### Timing of Works

- Building work to the roof, fascias, soffits and bargeboards etc. will commence either during the spring months (i.e. March to early April inclusive<sup>19</sup>) or preferably the autumn months (i.e. 15<sup>th</sup> September to 31<sup>st</sup> October inclusive), thus reducing the probability of encountering either summer roosting bats or winter hibernating bats<sup>20</sup>.

#### Site Induction and Toolbox Talk

- Prior to the start of works, a suitably qualified bat ecologist will deliver a 'tool-box talk' to all contractors undertaking works that could affect bats. All site workers will be made aware of the role of the ecologist and briefed on the legal status of bats<sup>21</sup>, the likely places to find them, the working practices required to minimise and avoid harming or disturbing bats (e.g. the procedure required for removing tiles etc.), and the action to be taken if bats are encountered during the works.. All site workers will be made aware that all works must cease immediately if any bats (or occupied birds' nests) are found, or suspected, when the ecologist is not on site, and appropriate expert advice sought from the ecologist or NRW;

#### Pre-works Inspection of Building by Ecologist

- Immediately prior to commencing work a licensed bat worker will make a careful inspection of the relevant parts of the buildings, using torches and/or an endoscope to try to ensure that there are no bats present.

#### Ecological On-site Supervision of Works/Soft Strip

- A licensed bat worker will be on site when parts of the roof and other external features are dismantled. They will supervise a 'soft strip' during which all features offering known or likely roosting opportunities will be exposed and removed. This will include (but not be limited to) the ridge tiles<sup>22</sup>, roof tiles, roofing felt, soffit, fascias and bargeboards etc. The tiles and any associated timbers must be lifted off vertically (and not rolled or sprung), and checked on their underside to

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<sup>19</sup> Works undertaken in April will be preceded by a nesting bird check by a consultant ecologist.

<sup>20</sup> Work will not commence from November to February in order to avoid disturbing hibernating bats.

<sup>21</sup> Emphasis will be given that causing harm or distress to a bat through knowing disregard for bat welfare or through recklessness is a criminal offence.

<sup>22</sup> It is generally considered best to commence the roof strip with the ridge tiles.

ensure that no bats are clinging to the underside. This will minimise the chance of bats being killed/injured.

- Any removal work will be undertaken using hand tools, (i.e. picks, crowbars, slate rippers, bow saws etc.). These features will be carefully removed by hand and contractors will check for the possible presence of bats on the undersides of these features before they are lifted off, prior to discarding or storing them. During the soft strip process, any cracks or crevices that have the potential to be used by bats will be inspected by a licensed bat worker using a high-powered torch to ensure they are not in use. Cavities will be carefully prised open using a crowbar. Wall tops will be exposed so that any wall cavities can be checked. The soft strip will be undertaken over the whole of the building. #
- The removal of such features will be observed and supervised at close quarters by a licensed bat handler from an appropriate viewing position to be provided by the demolition contractor (i.e. scaffolding).

## Bat Discovery Action Plan

- It will be clearly understood, and contractors made aware that in the event of any bats being found, the contractor must halt works (if bats are encountered, the bat will be carefully covered over again). Appropriate advice will be obtained from a suitably qualified bat consultant or Natural Resources Wales and, if necessary, a bat development licence obtained before work can resume;
- If any active bird nests are found these will be protected, along with an appropriate buffer zone of 5-10m, until the nesting is complete, and the young have fledged<sup>23</sup>;

## On-call Ecologist

- The services of an appropriately qualified and licensed ecological consultant will be available on an 'on-call' basis at all stages of the works to deal with any unexpected encounters with bats or nesting birds. Contact details of such will be held on site. Acer Ecology Ltd. could be retained to provide this support.

### **6.3. Breathable Membrane**

Non-woven roofing underlay (NWRU), or 'breathable membranes' (BRM) as they are also known tend to rip due to wear and can give rise to dislodged fibres (spun-bond polypropylene) which can entrap bats. It is assumed that breathable membrane will be used for the conversion. This will be completely sealed in with no possibility of bat access.

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<sup>23</sup> Some bird species, especially raptors and owls remain dependent upon the nesting site after fledging and so depending upon the species the nest site may need to be protected for a period of time after fledging.

## **6.4. Sensitive Lighting Strategy**

### External Lighting

The lighting design for the site will be of a 'bat-friendly' specification, comply with the Institute for Lighting Processional's and Bat Conservation Trust's guidance (2018) and kept to the minimum level which meets the needs of security and health and safety. The unnecessary lighting of habitats which could potentially be used by foraging bats such as nearby trees, hedgerows etc. will be avoided.

External lighting will be minimised and installed at low-level only (i.e. no higher than eaves level and lower than 2.4m) and directed downward (i.e. below the horizontal plane with no upward tilt). Fully shielded lights with front and side hoods/shields or cowls will be installed to prevent upwards and horizontal light spill. The lighting source will not be visible. Lighting will not be located in the vicinity of, or shine towards, the bat access points or possible/actual commuting routes and flight lines, thus maintaining a 'dark corridor' and avoiding/minimising disturbance to roosting bats. Any security lights used will operate off a passive infrared (PIR) motion sensor sensitive to large objects only, to avoid constant triggers by bat passes and with timers set on a short duration (i.e. a maximum 'on' time of one minute) to reduce the amount of 'lit time'. The lights will either have an integrated LED light source, or use LED bulbs. They will be low intensity (i.e. circa 11 watts) and have a warm white colour temperature of 3000K or less (ideally 2700K if commercially available). White, blue and green<sup>24</sup> lighting sources including mercury or metal halide, CPO and CDO (ceramic discharge metal-halide) bulbs which have a significant effect on bats will be avoided.

Examples of some suitable wall light fittings are shown within Appendix 4.

### Internal Lighting

Ideally, internal lights installed in proximity to windows will be recessed (as opposed to pendant fittings) to reduce glare and light spill. Lights should be installed above the window head height where possible and luminaires should be set back further into the room.

## **6.5. Ecological Enhancement for Bats and Nesting Birds**

### Hedgerow Planting

New species-rich hedgerow planting will be planted within the site. Detailed specifications for hedgerow planting are given in Appendix 5. The location of the planting is shown on Plan 5.

### Bat Boxes

Two Schwegler 2F bat boxes will be installed on suitable trees to the south-west of the property, where lighting will be absent (Appendix 6 and Plan 5).

### Integral Bat Boxes

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<sup>24</sup> It should be noted that birds are shown to be less affected by green lights.

One Schwegler 1FR bat tube (see Appendix 7 and Plan 5) or equivalent<sup>25</sup> will be incorporated into the exterior wall of the building. The tubes will be recessed into the walls and lying flush with the surrounding wall. They can then be rendered but with care taken to ensure that the entrance slot is left exposed or painted with breathable paint if required. The tubes will be positioned at least 0.5m below the eaves or gable apex to prevent predation by domestic cats. Ideally, the tubes will not be positioned above windows or doors but instead will be installed in unlit locations close to connective features to allow bats undisrupted dispersal to local foraging habitat.

## Bird Nest

A Schwegler 1SP Sparrow Terrace or a Habitat Terraced Sparrow box or suitable equivalent will be installed on the exterior of the building, providing house sparrow nesting opportunities (see Appendix 8 and Plan 5). This will be fitted either directly below the eaves or on a gable apex.

## **6.6. Compliance Visit**

A compliance visit must be made by the retained ecologist to verify any compensation and enhancement measures and features have been adequately undertaken and installed. This information will be provided to the LPA ecologist in an e-mail or short letter-style report.

## **6.7. Longevity of Report**

Bat Surveys for Professional Ecologists (Collins, 2016) states that the survey data should ideally be from the last survey season before a planning or licence application is submitted, although the length that survey data remains valid should be decided on a case-by-case basis and is dependent upon several factors<sup>26</sup>. It is considered that if development works do not begin within eighteen months (CIEEM, 2019) to two years of the date of this report, an update survey may be required in accordance with guidance in BS 42020:2013<sup>27</sup> and CIEEM (2019), to determine if conditions and evidence of bat use has changed since described in the current report.

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<sup>25</sup> A variety of bat boxes, tubes and bricks suitable for buildings are available from Schwegler <http://www.schwegler-nature.com>, Ibstock <http://www.ibstock.com/sustainability-ecozone.asp> or Greenwood EcoHabitats <http://www.greenwoodsecohabitats.co.uk>.

<sup>26</sup> The factors identified are as follows: Were the original surveys carried out according to good practice guidelines?; Were the original surveys constrained in any way?; Do the results of the original surveys support the original conclusions and are these still relevant?; Has the nature of the site or the surrounding area changed since the original surveys were undertaken; and are additional surveys likely to provide information that is material to a decision, the design of mitigation measures, or specific advice relating to a proposed activity.

<sup>27</sup> As set out in Section 6.2.1, Point 7 which states that ecological information should not normally be more than two/three years old, or as stipulated in good practice guidance).

## 7. References

**Anonymous (2007)** *Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC*. Final version, February 2007.

**BSI (2013)** *BS 42020:2013 Biodiversity – Code of practice for planning and development*. British Standards Institution, London.

**CIEEM (2019)** Advice Note on the Lifespan of Ecological Reports and Surveys

**CIEEM (2016)** *UK Guidelines for Accessing and Using Biodiversity Data*. Chartered Institute of Ecology and Environmental Management (CIEEM).

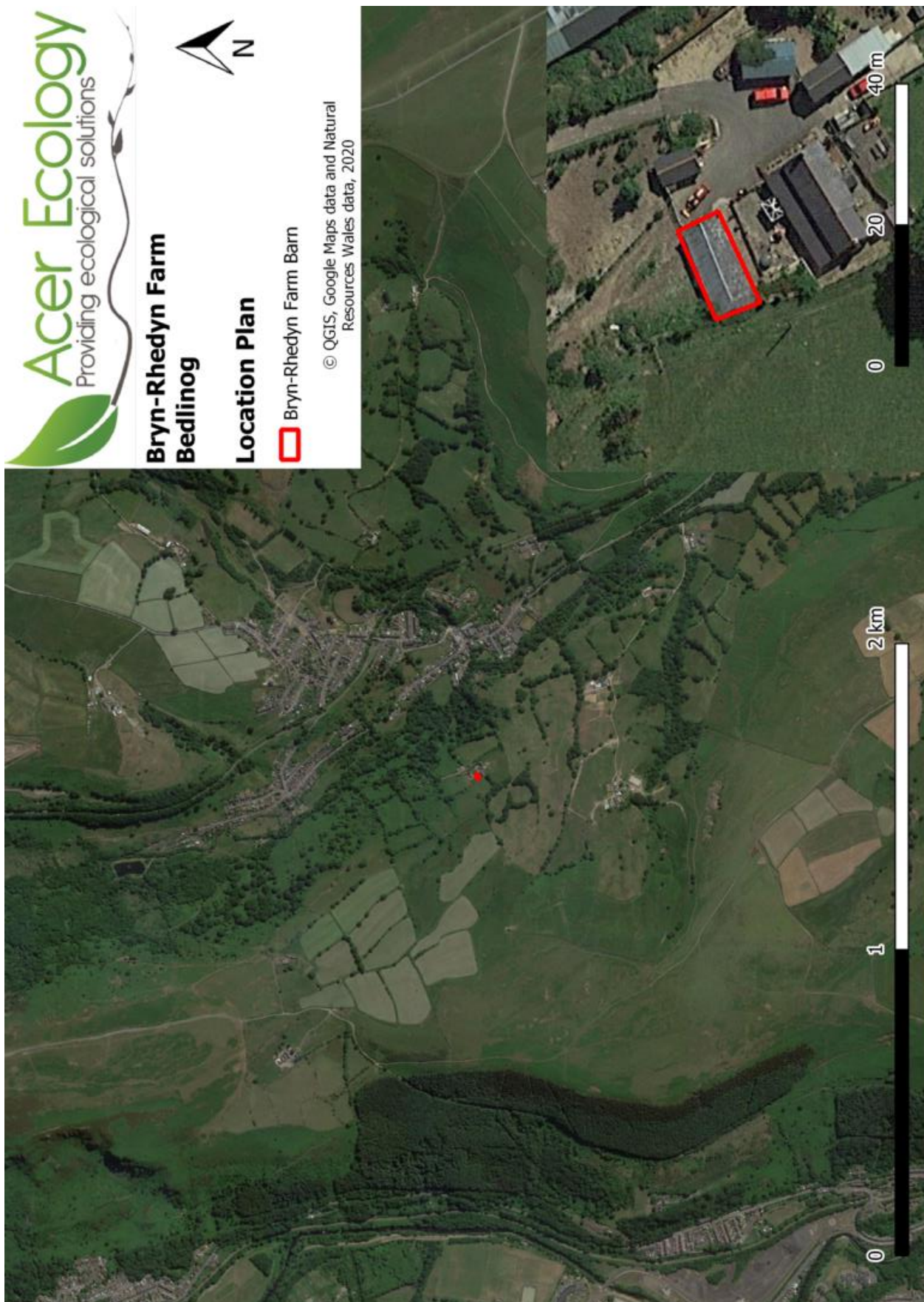
**Collins, J (ed) (2016)** *Bat Surveys for Professional Ecologists: Good Practice Guidelines (3rd edn)*. The Bat Conservation Trust, London.

**Institute of Lighting Professionals (2012)** *Guidance for The Reduction of Obtrusive Light*.

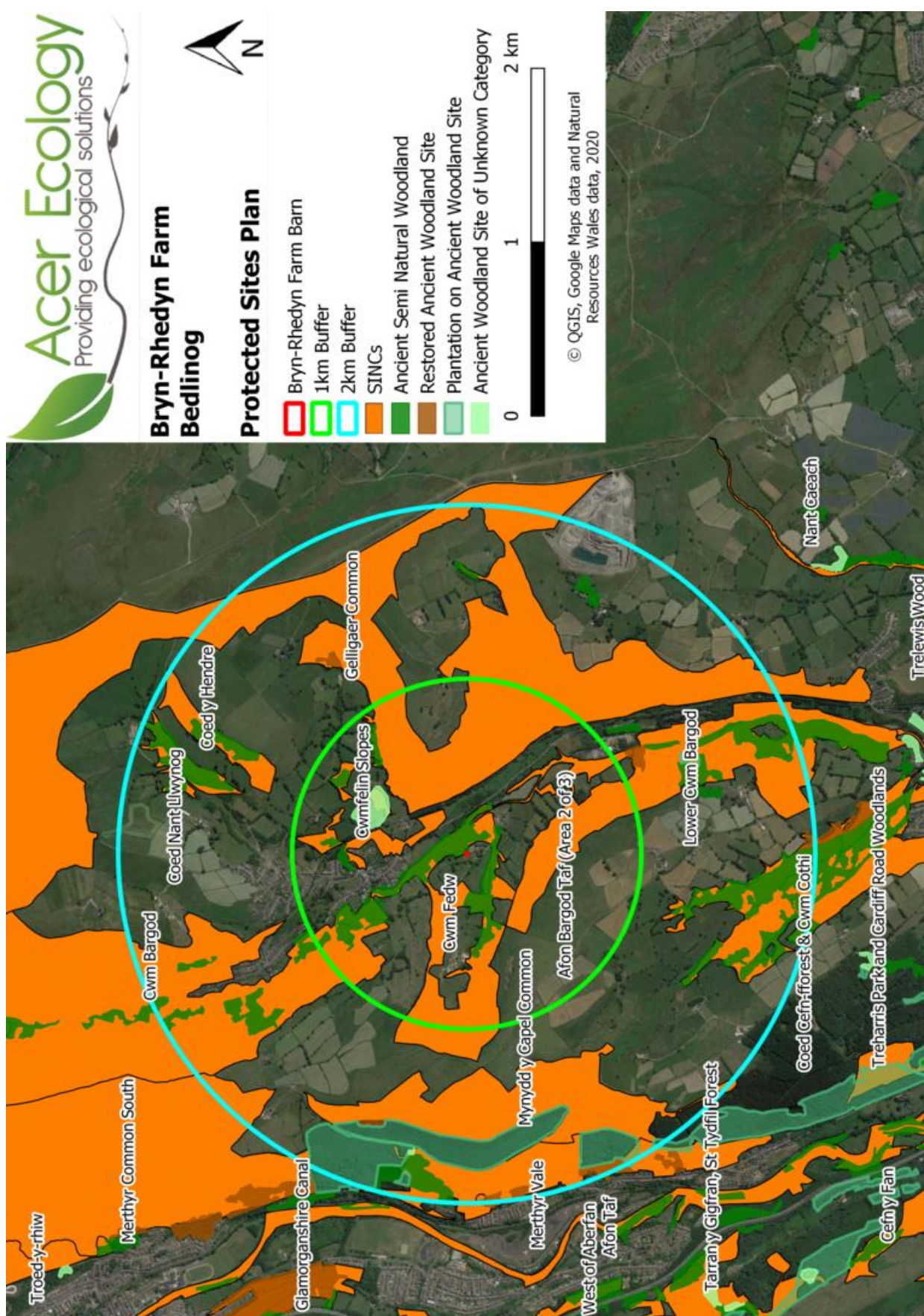
**Mitchell-Jones, A.J, & McLeish, A.P. Ed., (2004)** *Bat Workers' Manual (3rd Edition)*. Joint Nature Conservation Committee, Peterborough.

**Mitchell-Jones, A.J. (2004)** *Bat Mitigation Guidelines*. Natural England, Peterborough.

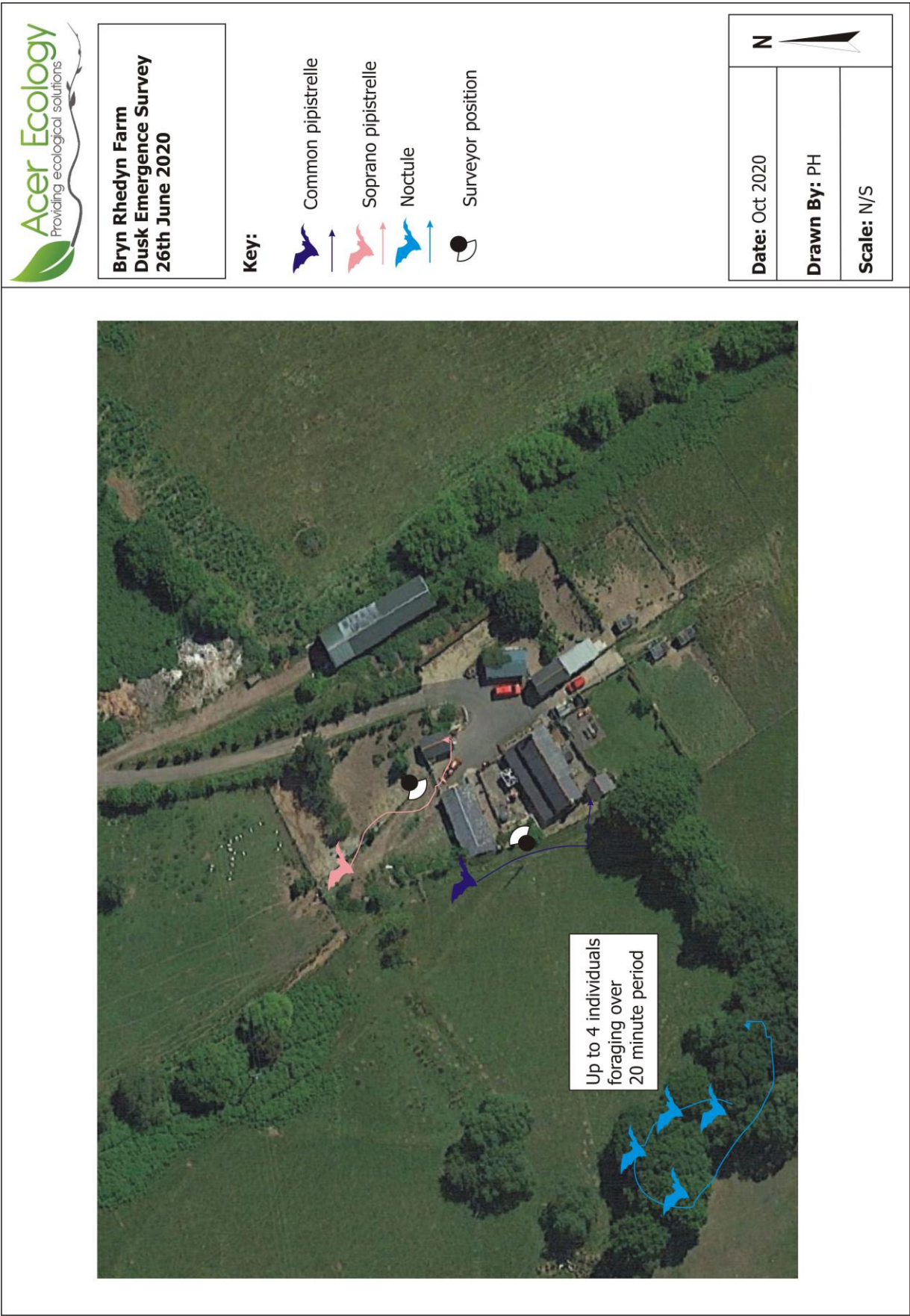
## Plan 1: Location Plan



## Plan 2: Protected Sites Within 2km



Plan 3: Dusk Emergence Survey



Plan 4: Dawn Re-entry Survey



Plan 5: Mitigation Plan



## Appendix 1: Bat Ecology and Legislation Protecting Bats and Their Roosts

### Bat Ecology

There are 17 known breeding species of bat found in the UK, with additional species recorded as migrants or vagrants. All of them are small, nocturnal, flying, insectivorous mammals that are under conservation threat and many having undergone massive population declines over the last century. Some species, such as common and soprano pipistrelle (*Pipistrellus pygmaeus*) are relatively common and widespread in the UK, while others, such as greater horseshoe (*Rhinolophus ferrumequinum*) bats, have an extremely restricted distribution.

Most bats will use a variety of roosts of different types throughout the year. The winter hibernation sites typically have cool, humid conditions with a stable microclimate and low levels of disturbance. Most British bats hibernate in caves or artificial structures that fulfil these requirements such as mines, tunnels and cellars. Bats emerge from hibernation around late March or early April and move into transition or intermediary roosts. Around early May, female bats gather in colonies to form summer or maternity roosts, and it is here where they will give birth between late May and early July. A colony may consist of many individuals (sometimes hundreds of bats) of mixed age and sex. Roosts may be in a variety of habitat types including tree-holes, caves, buildings and other secure crevices or internal spaces with appropriate stable temperatures and humidity. Bats may change roost locations many times during a year and colonies may split up and reform during this period. Males occupy solitary roosts in autumn, to which they attract females for mating.

### Legislation

All British bat species and any place used for shelter or protection, or a breeding site or resting place (their roosts) are fully protected under the amended Wildlife and Countryside Act 1981 through inclusion in Schedule 5. The roosts are protected irrespective of whether bats are present at the time. All bats are protected species and fully protected under the Wildlife and Countryside Act 1981 (as amended) and the Conservation of Habitats and Species (Amendment) (EU Exit) [‘CHSAEU’] Regulations 2019. These pieces of legislation make it illegal to deliberately or recklessly:

- kill, injure or capture bats;
- disturb bats;
- damage, destroy, or obstruct access to bat roosts (including sites that are currently unoccupied);
- possess or transport a bat or any part of a bat unless acquired legally; or
- sell, barter or exchange bats or parts of bats.

Disturbance is defined as that which is likely to impair bats ability:

- to survive, to breed or reproduce, or to rear or nurture their young;
- to hibernate or migrate; or
- to affect significantly the local distribution or abundance of the species to which they belong.

## Habitats Regulations Licensing

If a European Protected Species will be affected by a development, Natural Resources Wales (NRW) can issue licences under the Habitats Regulations to permit otherwise prohibited acts. Licences for certain activities can be granted providing “3 tests” are satisfied, that is:

1. the purposes of “preserving public health or safety, or for reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment”;
2. there must be “no satisfactory alternative”; and,
3. the derogation is “not detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range”.

Licences are issued by NRW, with NRW assessing Test 3, and the Local Planning Authority assessing tests 1 & 2 (where proposals are not subject to planning, then NRW alone will assess all three tests). Where Planning regulations apply, NRW will only issue a licence after determination of the planning application.

The licence application will require the production of a detailed method statement, which sets out the activities to be carried out under the licence to minimise the risk of bats being harmed during construction works, and to ensure that bats will be conserved during the development of the site. This will need to detail the mitigation proposed (such as the replacement or compensation roost), the timescale and schedule of works, the number, size and locations of bat access points to be provided, the type of materials to be used (roofing material, roof lining, fascias, soffits and bargeboards etc.), lighting proposals, action to be taken in the event bats are found during works and a post-development monitoring programme. The method statement will need to be accompanied by scaled plans and maps detailing the bat mitigation features. A cross-section of the access points and roost space is often required. The method statement must ensure that provision is made for new or continued roosting opportunities after the completion of development works. In some instances, a method statement is requested by the Local Planning Authority or Natural Resources Wales before the planning application is determined.

## Environment (Wales) Act 2016

The Environment (Wales) Act 2016<sup>28</sup> dictates that Local authorities have a duty to have regard to the conservation of biodiversity in exercising their functions. The duty affects all public authorities and aims to raise the profile and visibility of biodiversity, to clarify existing commitments relating to biodiversity, and to make it a natural and integral part of policy and decision making. Part 1 Section 7 of the Act provides a list of the ‘*living organisms of principal importance for maintaining and enhancing biodiversity in relation to Wales*’. This includes seven bat species (soprano pipistrelle, barbastelle (*Barbastella barbastellus*), Bechstein’s (*Myotis bechsteini*), noctule (*Nyctalus noctule*), brown long-eared (*Plecotus auritus*), lesser horseshoe and greater horseshoe bats).

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<sup>28</sup> <http://www.legislation.gov.uk/anaw/2016/3/contents>

## Appendix 2: Guidelines for Assessing Potential Bat Roosting Suitability and Determining Required Number of Dusk/Dawn Surveys

| Suitability | Description of Roosting Habitat                                                                                                                                                                                                                                                                                                                                                                                   | Minimum Number of Dusk/Dawn Surveys Required <sup>29</sup>                                                                                                                                                                                                          |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Negligible  | Negligible habitat features on site likely to be used by roosting bats.                                                                                                                                                                                                                                                                                                                                           | None.                                                                                                                                                                                                                                                               |
| Low         | A structure with one or more potential roost sites that could be used by individual bats opportunistically. However, these potential roost sites do not provide enough space, shelter, protection appropriate conditions <sup>30</sup> and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity) or hibernation <sup>31</sup> . | One survey visit. One dusk emergence or dawn re-entry survey (Survey period from May to August) (Collins 2016).                                                                                                                                                     |
| Moderate    | A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status <sup>32</sup> (with respect to roost type only) the assessments in this table are made irrespective of conservation status, which is established after presence is confirmed.                | Two separate survey visits. One dusk emergence and a separate dawn re-entry survey <sup>33</sup> . Surveys should be undertaken from May to September with at least one of the survey between May and August (Collins 2016).                                        |
| High        | A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.                                                                                                                                                   | Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third visit could be either dusk or dawn. Surveys should be undertaken from May to September with at least two of the surveys from May to August (Collins 2016). |

<sup>29</sup> Adapted from Tables 7.1 and 7.3 of the Bat Surveys for Professional Ecologists: Good Practice Guidelines (Collins, 2016).

<sup>30</sup> For example, in terms of temperature, humidity, height above ground levels, light levels or levels of disturbance.

<sup>31</sup> Evidence from the Netherlands shows mass swarming events of common pipistrelle bats in the autumn followed by mass hibernation in a diverse range of building types in urban environments (Korsten *et al.*, 2015). This phenomenon requires some research in the UK, but ecologists should be aware of the potential for large numbers of this species to be present during the autumn and winter in large buildings in highly urbanized environments.

<sup>32</sup> 'High roost status' is not defined within Collins, 2016. Acer Ecology Ltd. interpret maternity, hibernation, swarming sites, mating sites, and satellite roosts as being of 'high roost status' and exclude day roosts, night roosts, feeding roosts, transitional/occasional roosts from this definition. Pre-maternity/collecting roosts are not included within Collins, 2016 and will be assessed on an individual basis.

<sup>33</sup> Multiple surveys should be spread out to sample as much of the survey period as possible. It is recommended that surveys are spaced at least two weeks apart, preferably more. A dawn survey immediately after a dusk survey is considered only one visit.

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## Appendix 3: Guidelines for Assessing Bat Habitat Suitability

| Suitability | Commuting and Foraging Habitat                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Negligible  | Negligible habitat features on-site likely to be used by commuting and foraging bats.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Low         | <u>Commuting Habitat</u><br>Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or un-vegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat.<br><u>Foraging Habitat</u><br>Suitable but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.                                                                                                                                             |
| Moderate    | <u>Commuting Habitat</u><br>Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens.<br><u>Foraging Habitat</u><br>Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.                                                                                                                                                                                                                       |
| High        | <u>Commuting Habitat</u><br>Continuous high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge.<br><u>Foraging Habitat</u><br>High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland.<br><u>Proximity to Known Bat Roosts</u><br>Site is close to and connected to known roosts. |

## Appendix 4: Example of Suitable Wall Light Fittings

|                                                                                     | Description                                                                                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | Light fitting sourced from <a href="http://www.energylightbulbs.co.uk/products/single-outdoor-wall-with-pir-movement-sensor-stainless-steel?gclid=CLuf2c63hM4CFYVAGwod0sYPvg">http://www.energylightbulbs.co.uk/products/single-outdoor-wall-with-pir-movement-sensor-stainless-steel?gclid=CLuf2c63hM4CFYVAGwod0sYPvg</a>                                                          |
|    | Light fitting sourced from <a href="https://www.kichler.com/kichler/products/outdoor-lighting/outdoor-wall-lights/outdoor-wall-lights-no-arms/outdoor-wall-1lt-led-azt/">https://www.kichler.com/kichler/products/outdoor-lighting/outdoor-wall-lights/outdoor-wall-lights-no-arms/outdoor-wall-1lt-led-azt/</a>                                                                    |
|    | Lighting sourced from <a href="https://www.kichler.com/kichler/products/outdoor-lighting/outdoor-wall-lights/outdoor-wall-lights-no-arms/3000-k-led-outdoor-lantern-bkt/">https://www.kichler.com/kichler/products/outdoor-lighting/outdoor-wall-lights/outdoor-wall-lights-no-arms/3000-k-led-outdoor-lantern-bkt/</a>                                                             |
|   | Light fitting sourced from <a href="https://hammertonstudio.com/products/arch-sconce-24-h/">https://hammertonstudio.com/products/arch-sconce-24-h/</a>                                                                                                                                                                                                                              |
|  | Lighting sourced from <a href="https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/#!/Aged-Bronze-Bell-Shaped-Dark-Sky-Outdoor-Wall-Lantern/p/116556105/category=12541418">https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/#!/Aged-Bronze-Bell-Shaped-Dark-Sky-Outdoor-Wall-Lantern/p/116556105/category=12541418</a> |
|  | Lighting sourced from <a href="https://www.homedepot.com/p/Home-Decorators-Collection-1-Light-Champagne-Silver-Outdoor-Wall-Mount-Barn-Lantern-Sconce-22999/302006431">https://www.homedepot.com/p/Home-Decorators-Collection-1-Light-Champagne-Silver-Outdoor-Wall-Mount-Barn-Lantern-Sconce-22999/302006431</a>                                                                   |
|  | Lighting sourced from <a href="https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/#!/Bronze-Outdoor-LED-Wall-Lantern-Sconce/p/50117847/category=12541418">https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/#!/Bronze-Outdoor-LED-Wall-Lantern-Sconce/p/50117847/category=12541418</a>                                 |
|  | Lighting sourced from <a href="http://www.theopenboxshop.com/hampton-bay-lexington-collection-outdoor-rustic-bronze-led-medium-wall-lantern/">http://www.theopenboxshop.com/hampton-bay-lexington-collection-outdoor-rustic-bronze-led-medium-wall-lantern/</a>                                                                                                                     |

A tool for finding 'bat-friendly' lighting is available at <https://www.darksky.org/our-work/lighting/lighting-for-industry/fsa/fsa-products/>

## Appendix 5: Hedgerow Planting

### Staggered Planting

Hedgerows will be planted in a double staggered row tend to be better for wildlife as they are wider and provide more shelter and habitat. The rows will be spaced 0.33m intervals in two rows 0.3m apart. Planting will be staggered so that a plant in the second row is mid-way between plants in the first row. This would give about approximately 6 plants per running metre of (double) hedge-line. Planting will be staggered so that a plant in the second row is mid-way between plants in the first row.

### Ground Preparation

The ground should be prepared thoroughly in advance with planting undertaken into bare soil. Planted trees will be fitted with shrub guards.

### Shrub and Tree Guards

If rabbits occur in the area all plants should be protected. If individual protection is considered the most appropriate option 400mm high plastic spiral rabbit guards should be used for the hedge plants and 600mm tree shelters for the individual trees. These will be supported by a 750mm stake or cane. Stock proof fencing should be erected to protect hedging from grazing as required.

### Planting Season

Hedging plants are usually supplied bare-rooted. This restricts the planting season to the winter months when the roots are dormant. The best time to plant a new hedge is therefore from November to March.

### Provenance of Species to be Planted

Only native species of local provenance (i.e sourced from South Wales) will be used within the hedgerow planting.

### Proposed Species

The following woody species will be plant using the frequency and number of plants specified. Hedging plants will be 45-60cm high, bare rooted plants.

| Species                                       | % Frequency | Size                    |
|-----------------------------------------------|-------------|-------------------------|
| Common hawthorn ( <i>Crataegus monogyna</i> ) | 40%         | 45-60cm, 1+1, bare root |
| Hazel ( <i>Corylus avellana</i> )             | 20%         | 45-60cm, 1+1, bare root |
| Blackthorn ( <i>Prunus spinosa</i> )          | 10%         | 45-60cm, 1+1, bare root |
| Holly ( <i>Ilex aquifolium</i> )              | 10%         | 45-60cm, 1+1, bare root |
| Field Maple ( <i>Acer campestre</i> )         | 10%         | 45-60cm, 1+1, bare root |
| Dogwood ( <i>Cornus sanguineus</i> )          | 5%          | 45-60cm, 1+1, bare root |
| Guelder rose ( <i>Viburnum opulus</i> )       | 3%          | 45-60cm, 1+1, bare root |
| Silver birch ( <i>Betula pendula</i> )        | 2%          | 45-60cm, 1+1, bare root |

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## **Proposed Species – Climbing Plants**

Additional climbers/shrubs will be planted in the hedgerow at a ratio of 1 plant per 10 metres: Species to be included are honeysuckle (*Lonicera periclymenum*), guelder rose (*Viburnum opulus*) and dog-rose (*Rosa canina* agg).

## **Maintenance**

Light regular trimming of the hedgerows is recommended in the early years to encourage dense, bushy growth which is favourable to wildlife.

Some weed control may be needed in the first two to three years. The most common ways of controlling weeds are mulches, herbicides and cutting. A mulch is a layer of material laid over the surface of the ground to suppress weed growth and retain moisture.

Once established the hedgerow will be cut every 2-3 years. Cutting should be undertaken during October to March and outside of the bird nesting season.

Additional watering is considered unlikely to be required but may be necessary if the first two summers after planting if there are sustained dry conditions.

Any plants which die in the first few years should be replaced to prevent gaps developing and to maintain the continuity of the hedge line.

At year seven, consideration could be given to hedge-laying to encourage thick future growth.

## Appendix 6: Schwegler 2F Bat Box

### Schwegler 2F General Bat Box



The Schwegler 2F General Bat Box is the standard and most popular bat box. Ideal for summer roosts and is constructed of woodcrete, providing a breathable, stable temperature within and is suitable for long-term mitigation projects.

**Position:** Ideal for trees, should be mounted on tree trunks at a height of 3m – 6m. Can be positioned in clusters of three, with each box facing west through a south-eastern aspect to provide a variety of micro habitats.

**Height:** 33cm.

**Diameter:** 16cm.

**Weight:** 4kg.

### Selection of Trees

Selected trees should ideally be a minimum of 500mm diameter at the height of fixing. Trees should not be obviously unstable or badly rotted. The timber and bark at the point of fixing should be sound.

### Position of Boxes on Trees

Boxes should be mounted on tree trunks, rather than on boughs or branches. The mounting location should not be heavily shaded. Boxes should be mounted vertically on the tree.

Bat boxes should be mounted a minimum of 3m from the ground, and ideally placed in clusters of three.

The entrance to the box should be clear of obstructions and obstacles in the flight-path towards it. An 'open airspace' of about 3m square should be preserved in front of and below the entrance, and elsewhere any overhanging branches should be at least 1m away.

The mounting location should be readily and safely accessible by ladder, but not accessible by someone climbing up the trunk or onto an adjacent tree or wall etc.

Some lower branches may need to be trimmed below the box to remove ready handholds or footholds for would-be tree-climbers (as well as any small branches crowding the entrance).

As far as possible, boxes should be placed in locations which are not conspicuous from the ground, so as not to attract unwanted attention from passers-by. This objective is assisted by selecting locations which are not visible/accessible from public footpaths, byways etc.

### Double Roost Panel

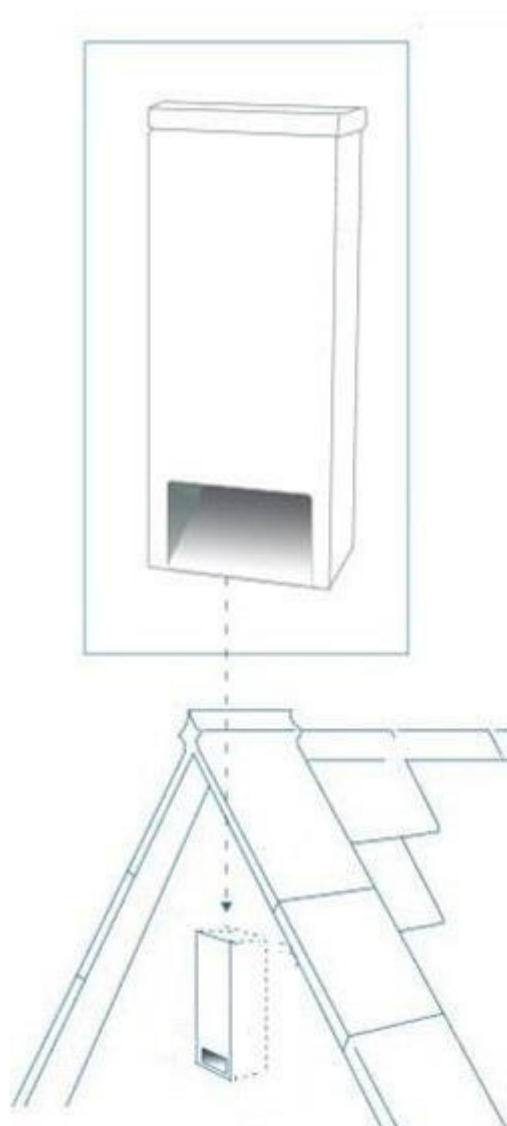
An internal double front panel creates roosting opportunities for crevice-inhabiting bats such as common and soprano pipistrelles.



### Bat Box Availability

The 2F bat box is available from a number of suppliers including Jacobi Jayne ([www.jacobijayne.com](http://www.jacobijayne.com)), NHBS ([www.nhbs.com](http://www.nhbs.com)) where it retails at approximately £35.95+VAT.

## Appendix 7: Schwegler 1FR Bat Tube



Tube not rendered



Tube rendered over

### Woodcrete Bat Tubes

These are a well-known brand that have a low visual impact on the development because they can be built into the exterior wall and then rendered or painted.

### How Many to Install

Typically, one tube is recommended on sites where there are low numbers of bats and multiple groups of tubes are recommended on sites of high ecological significance.

### Installation

The tubes should be built into the exterior wall of the building, typically at the gable apex. The tubes should be installed flush with the surrounding wall and can then be rendered or painted with breathable paint if required.

### Schwegler 1FR and 2FR

These are two similar designs. The 1FR is designed to be used singularly (shown here) whereas the 2FR has transverse connecting holes that allow tubes to be collected together or lead into the cavity wall.

### Specifications

|               |               |
|---------------|---------------|
| <b>Height</b> | <b>47.5cm</b> |
| <b>Width</b>  | <b>20cm</b>   |
| <b>Depth</b>  | <b>12.5cm</b> |
| <b>Weight</b> | <b>9.8kg</b>  |

### Location

The tubes should be positioned at least 0.5m below the eave or gable apex to prevent predation by domestic cats. It is also recommended that where practical, the tubes are not positioned above windows or doors.

## Appendix 8: House Sparrow Nest Box

### Schwegler 1SP Sparrow Terrace

Sparrows are gregarious and prefer to nest close to each other, so this triple-nest box provides room for three families under one roof. It's made from long-lasting, breathable woodcrete to provide the optimum environment for sparrows to nest and rear their chicks.



**Positioning:** On buildings of all kinds in typical habitats including industrial buildings and barns at a height of at least 2m (e.g. under eaves).

**Suitable for:** House and tree sparrows and individual redstarts

**Material:** Woodcrete PLUS

**Height:** 240mm

**Width:** 430mm

**Depth:** 220mm

**Weight:** 15kg

Brood chamber dimensions: Height: 16cm, Width: 10.5cm, Depth: 15cm,

External dimensions: Height: 24.5cm, Width: 43cm, Depth: 20cm, Weight: 15kg

### Habibat Terraced Sparrow Box

Colour: Unfaced or rendered

Dimensions: 440mm x 215mm x 150mm

The Habibat Terraced Sparrow Box is a solid box made of insulating concrete which provides an internal roost space, and can be seamlessly integrated into the fabric of a building as it is built or renovated. The access hole in specifically design to accommodate sparrows.



The Habibat Terraced Sparrow Box can be faced with a number of products to suit the design build. This includes, brick, block, stone, wood or a rendered finish, ensuring the box is unobtrusive and aesthetically pleasing.