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**BRONYDD
QUARRY ROAD
GLYN CEIRIOG
LLANGOLLEN
WREXHAM
LL20 7DA**

BAT CONSERVATION PLAN



Bronydd, Glyn Ceiriog

Client	Tim Latham
Planning Authority	Wrexham County Borough Council
Grid Reference	SJ1999437910
Date of Report	16 November 2021
Reference	112021/BCP/TL



PRO3755



UK/I 0343A

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1.0 INTRODUCTION

1.1 Brief

Stephen Cutmore, a licensed bat worker (NRW[S087991/1], NE[2015-16936-CLS-CLS]), was commissioned by Tim Latham, to prepare a Bat Conservation Plan regarding the derelict building at Bronydd, Quarry Road, Glyn Ceiriog, Llangollen, Wrexham, LL20 7DA.

1.2 Relevant background information

Planning permission has been granted (LGC P/2020/0732) for the demolition of existing building and outline application for 1 No. dwelling.

1.3 Qualifications

Stephen Cutmore has over twenty years' experience as an arboricultural and ecological consultant. Stephen holds a BSc (Hons) in Arboriculture & Urban Forestry and is a Chartered Arboriculturist. Stephen is a member of the Bat Conservation Trust (102994) and a member of Clwyd Bat Group. Stephen has been a Licenced Bat Worker since May 2007 and a Licenced Amphibian Worker since March 2011 and currently holds bat licences with NRW and NE (NRW[S087991/1], NE[2015-16936-CLS-CLS]) and GCN licences with NRW and NE (NRW[78772a:OTH:SA:2018], NE[2016-19908-CLS-CLS]).

1.4 Copyright

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2.0 DATA COLLECTION

2.1 Site Description

The building at Bronydd, Quarry Road, Glyn Ceiriog, Llangollen, LL20 7DA, is located at Grid Reference SJ1999437910. The building is on the disused Chwarel Wynne Slate Mine and Museum site, located within woodland approx. 200m to the West of the village of Glyn Ceiriog.

Nant Lfar stream is approx. 150m to the South and the River Ceiriog is some 300m to the Southeast. The surrounding landscape has pasture fields, trees and hedgerows. There are several other woodlands in the vicinity, including Ceiriog Forest to the Northwest. All these landscape features provide good habitat for foraging bats.

The Cofnod (Local Ecological Records Centre) website was accessed (www.cofnod.org.uk) and a Cofnod Data Request [E08228] was made for a data search for bats and roof-nesting birds within a 500m radius of the site. Due to the sensitivity of the data, specific records for protected species cannot be disclosed, but there are records of Common Pipistrelle, Lesser Horseshoe, Noctule, Soprano Pipistrelle, unknown bat and Whiskered/Brandt's bats within 500m radius of the site. Records of bird species include Blue Tit, Great Tit, House Sparrow and Wren. Designated site within 500m radius include the River Dee (SSSI), River Dee and Bala Lake (SAC), Cefn Uchaf (Wildlife Site), Coed Hafod-gynfawr (Wildlife Site), Coed Nant Lfar (Wildlife Site), Coed Pistyll-y-garth (Wildlife Site), Glyn Ceiriog Slate Mine (Wildlife Site), Nant Lfar (RIGS) and several Ancient Semi Natural Woodland sites.

Sites of nature conservation interest within 10km radius of the site are:

Berwyn [SPA, SSSI], Berwyn and South Clwyd Mountains [SAC], Caeau Pen y Coed [SSSI], Chirk Castle and Parkland [SSSI], Chwarel Pant Glas [SSSI], Clogau Quarry [SSSI], Clwydian Range & Dee Valley [AONB], Cynwyd Forest Quarry [SSSI], Dinas Bran [SSSI], Nant y Belan and Prynella Woods [SSSI], Pandry Quarries [SSSI], Penarth Quarry [SSSI], Pontcysyllte Aqueduct and Canal [WHS], River Dee [SSSI], River Dee and Bala Lake (Wales) [SAC].

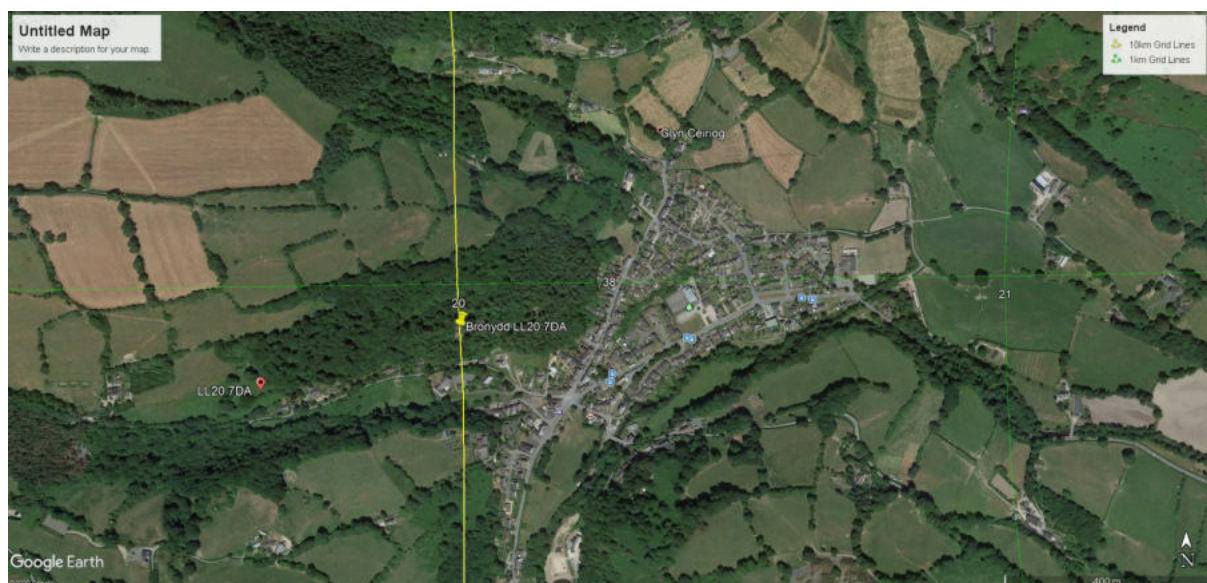


Figure 1: Aerial photograph of Bronydd, Glyn Ceiriog, showing good connectivity in the surrounding landscape.

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2.0 DATA COLLECTION (continued)

2.2 Methodology and Results

2.2.1 Scoping survey

An initial day-time building survey of the derelict building was carried out on 22 July 2020, by licensed bat worker, Stephen Cutmore.

Bat droppings and feeding remains were observed in some of the first floor rooms and 2 x Lesser Horseshoe bats were observed roosting in the large loft void during the scoping surveys. A few gaps were observed under slates and ridge tiles of the roofs and between the stone walls and the eaves. A hole was observed in the roof near the Northwest of the building. Due to the deteriorating conditions, the derelict building was assessed as having a moderate potential for bats. The surrounding habitat was assessed as having a high suitability for foraging/commuting bats.

2.2.2 Nesting birds

The only evidence of nesting birds was the old remains of a Crow nest in the loft void, adjacent to the small access hatch, near the Northwest corner. No nests were observed under the eaves on the external walls.

2.2.3 Emergence surveys

The initial emergence surveys of the building carried out on 23 July and 6 August 2020, by Stephen Cutmore and three assistant surveyors.

Following consultation with Natural Resources Wales, a second series of monitoring surveys were carried out in 2021. Temperature data loggers were installed in the bathroom/toilet near the Northeast corner of the first floor and in the large loft void from 5 May 2021 until 17 June 2021 [42 days]. Due to the wettest May ever recorded in Wales, emergence surveys at the beginning of the season were not able to be carried out. Emergence surveys of the building were carried out on 14 June and 1 July 2021. Visual surveys of the building were carried out on 1 July and 8 September 2021.

During both the 2020 and 2021 emergence surveys, 1 x Soprano Pipistrelle and 2 x Lesser Horseshoe bats were observed emerging from the building. Common Pipistrelle and Noctule bats were also observed foraging in the vicinity.

During the two visual surveys of 2021, no bats were encountered in the loft voids. During the first survey on 1 July 2021, 2 x Lesser Horseshoe bats were encountered in the first floor rooms and on the second survey on 8 September 2021, 2 x Lesser Horseshoe bats were encountered in the ground floor rooms.



3.0 IMPACT ASSESSMENT

3.1 Short-term impact

Disturbance through increased human presence, noise and changes in site layout may have a detrimental effect on bats. Bats could be killed or abandon roost if works start when present between spring and summer. If works started in winter and not completed by spring, bats would have no roost to return to. Timing of operation will minimise disturbance.

3.2 Long-term impact – roost losses

Small day-roost roosts for 1 x Soprano Pipistrelle bat and 2 x Lesser Horseshoe bats would be destroyed during the proposed development, which could have a low impact on the locally recorded population.

A dedicated bat loft will be provided in an outbuilding/storage shed, to be located between the building and the caves located to the North, as compensation, to provide an alternative roost, close to the existing roost, in the same orientation and with access to existing flightlines. An additional long-term roost will also be provided as wildlife enhancement, in a large loft void in the proposed replacement dwelling to be erected on virtually the same footprint as the existing building.

3.3 Long-term impact – fragmentation and isolation

Any loss of linear features (hedges, treelines), which provide important flightlines would be negative. A small number of small trees and shrub vegetation adjacent to the West elevation are likely to require removing to facilitate the proposed development. There will be minimal loss of vegetation and there is no predicted impact from fragmentation and isolation. A post-construction landscape scheme will include new tree/shrub/hedge planting, which will provide additional foraging habitat and help improve biodiversity on the site for bats and other wildlife.

3.4 Post-development interference impacts

Any bright, Artificial Lighting at Night (ALAN) which illuminated roost entrances and flightlines could have a detrimental effect on bats. Any external lighting should be low level, with illumination directed downwards to minimise impact (see 4.6 Lighting). External lighting will be motion sensor triggered and on a short timer and positioned so that roost access points and flight-lines are not directly illuminated, to minimise impact. New tree/hedge planting will be used to baffle light spillage, in order to keep flight-lines dark.

3.5 Predicted scale of impact

The impact on individual bats of all species concerned would be high and the impact on the favourable conservation status of locally recorded bats would be low. It is essential that appropriate compensation and mitigation measures are implemented and that Reasonable Avoidance Measures are followed, in order to minimise the impact on locally recorded bats.



4.0 MITIGATION AND RECOMMENDATIONS

4.1 NRW Licence

As confirmed bat roosts will be impacted by the proposed work, a derogation licence must be obtained from Natural Resources Wales to avoid an offence being committed and any work that has potential to harm bats should be directly supervised by a licenced ecologist.

4.2 Compensation

Bats

A dedicated bat loft for void-dwelling species will be provided (5m length x 3m width x 2.6m floor to ridge height) in an outbuilding/storage shed to be erected between the existing Engine Room building and the mines to the North of the existing derelict building. This location has direct sun throughout the day, so would benefit from solar radiation on the South pitch of the roof.

1F bitumastic felt will be used beneath the natural slates on the pitched roof. A 'fly-in' access will be provided for the Lesser Horseshoe bats, in the form of a small lead covered or slated open dormer in the South pitch of the bat loft roof (external entrance 300mm wide x 200mm high and the dormer cover 300mm deep), with the entrance sloping upwards with a smooth metal sheet lining on all interior sides to prevent predator entry. The dormer should be set low on the roof so the interior entrance of the tunnel is no more than 500mm above the level of the bat loft floor. Alternatively a 'letterbox' opening (300mm x 200mm) will be provided in the West gable-end wall, no more than 500mm above the level of the bat loft floor.

Compensation in the form of an alternative bat roost must be provided for crevice-dwelling bats before any proposed work commences. This could be in the form of bat boxes [suggest either a Schwegler (1FQ) wall-mounted bat box (75) or a Schwegler 1WQ summer & winter bat roost] [available from www.wildcareshop.com], fixed to the South elevation or West gable-end of the Engine Room building, adjacent to the Northeast of the derelict building, high enough (>2-3m) to avoid predation by cats. Alternatively a bat box could be installed in a suitable mature tree. Given the on-going problem of obtaining Schwegler products, a similar style woodcrete bat box by a different manufacturer would be a satisfactory alternative. It is recommended that additional bat access for crevice-dwelling species are provided in the proposed outbuilding/storage shed/car port structure, in the form bat slates, gaps under slates/ridge tiles/eaves etc.

Two simple crevice boxes could be constructed from untreated rough sawn boards (1.5m long x 15cm deep, with a gap of 22mm between the boards as the roosting space) and hung from the underside of the roof, as near to the apex/ridge board of the bat loft as possible. The 22mm battens should be fixed between the boards at either end and along the top edge, to leave the underside open for bat access.



4.0 MITIGATION AND RECOMMENDATIONS (continued)

4.3 Bat Roosting Opportunities

It is recommended that bat friendly features be incorporated into the proposed development, in order to keep in line with the Local Biodiversity Action Plans. To provide suitable conditions for bats, the use of warm roofs should be avoided. Traditional cold roofs with air circulation should be used. Whichever roof construction is to be used (closed eaves with a fascia; eaves with a soffit; barge board with or without soffit; closed verge pointed with undercloak), gaps (10-20mm) should be left by the fascia/soffit/undercloak for bats to gain access to the inner gable walls.

Suitable roosting opportunities for bats are to be provided in the roof structure of the new dedicated bat loft and the proposed new dwelling. Traditional hessian backed 1F bitumastic underfelt **must** be used on the roofs. Results of recent research commissioned by The Bat Conservation Trust (http://www.bats.org.uk/pages/breathable_roof_membranes.html) has concluded that Breathable Roofing Membrane (BRM) poses a serious threat to bats, due to loose spun-bond filaments becoming entangled around bats feet and wings, resulting in bats becoming immobilised and eventually dying. The functionality and longevity of BRM can also be affected in those parts altered by the presence of bats.

Approximately three ridge tiles on the roof of the dedicated bat loft and the proposed new dwelling will have 20mm x 100mm gaps cut in one of the lower edges, to allow access for bats (see *Appendix 2 – Mitigation Details*).

Another option is to install a Schwegler (1FQ) wall-mounted bat box (75) or a Schwegler 1WQ summer & winter bat roost [available from www.wildcareshop.com], which should be fixed to a south or west facing elevation wall, high enough (2 - 3m) to avoid predation by cats.

If the new outbuilding with the dedicated bat loft were to have shiplap boarding installed on the exterior walls, bat access could be provided by fitting small spacers to provide suitable 10-20mm gaps between the boards. If shiplap boarding is to be used, it is recommended that a durable timber is used (e.g. Oak, Douglas Fir, Larch) [see *Timber Treatment* below]. No membrane should be used between the concrete block walls and the timber cladding, to avoid the risk of bat entanglement.

Any bat-friendly features to be incorporated in the new development should be detailed on the development plans/drawings.

4.4 Roof Insulation

As bat-friendly features are to be installed in the roof of the proposed development, any new insulation (e.g. Kingspan sheets), should be fixed to a counter batten, attached to the underside of the rafters. Care must be taken to ensure that a 50mm airspace between the insulation and the slates/tiles is maintained for bat access.



4.0 MITIGATION AND RECOMMENDATIONS (continued)

4.5 Timber Treatment

Any timber treatment to protect against insects, fungal growth or weathering in areas with potential to be accessed by bats, should only be carried out utilising chemicals from the Natural Resources Wales approved list. A list of Approved Products is available at <https://www.gov.uk/guidance/bat-roosts-use-of-chemical-pest-control-products-and-timber-treatments-in-or-near-them>, which provides links to Timber Treatment Table 1. If the product is not listed, check the active ingredients listed in Timber Treatment Tables 2-7.

You can't use chemical products in or near a known bat roost if there are bats present. The best time to apply treatments is usually between autumn and spring.

Pre-treated timber products

Pre-treated timber products are not included in the tables mentioned above. You can use timber that's been pre-treated off-site, because the chemicals are injected deep into the timber leaving lower concentrations on the surface which isn't harmful to bats. However you shouldn't apply products used to pre-treat timber on-site, because the active ingredients will be more concentrated on the timber surface and may be harmful to bats.

Stains and preservatives

Decorative wood finishes, like stains or wood preservative, can be used around bat roosts as long as you only use them on external timber.

4.6 Lighting

Any lighting in the vicinity of the proposed extension will conform to the BCT/ILP 'Bats and Lighting in the UK' Guide Note 08/2018 (www.theilp.org.uk/documents/guidance-note-8-bats-and-artificial-lighting/). Subdued lighting will be used and the illumination will be directed downwards (upward light ratio 0%). LED luminaires will be used where possible, with a warm white spectrum (<2700Kelvin) to minimise blue light component. Luminaires will have peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats. The use of motion sensor-triggered security lighting with short (1 min) timers, will be used. It is essential that roost access points and flightlines used for foraging/commuting (e.g. hedgerows, lines of trees) are not illuminated. Screening/fencing or strategically positioned trees/shrubs/hedges will be used to baffle any light spillage, in order to keep flightlines dark. The owner will install curtains/blinds across the windows of the holiday accommodation in the engine house, which will be closed when lights are turned on in the evenings, to minimise light spillage towards the new dedicated bat loft building.



5.0 BIODIVERSITY ENHANCEMENT

5.1 Bats

In addition to provision of compensation (dedicated bat roost and other bat-friendly features to be provided in a new outbuilding), further enhancements for roosting bats will be provided in the proposed new dwelling.

Bat access will be provided in the roof of the proposed new dwelling, in the form of gaps under ridge tiles and between the eaves and walls.

A bat loft will be provided, with open 'fly-in' access suitable for Lesser Horseshoe bats

5.2 Birds

Consideration should be given to providing some simple measures that would have a positive conservation benefit on local bird populations. Bird boxes could be installed in existing trees to benefit local bird populations. New shrubs and trees have recently been planted between the engine house and the proposed new outbuilding with dedicated bat loft, which will provide suitable habitat and food sources for birds. Further shrubs/trees will be planted in the garden areas as further enhancement.

5.3 New hedge and tree planting

New shrubs and trees have recently been planted between the engine house and the proposed new outbuilding with dedicated bat loft. Further shrubs/trees will be planted in the garden areas as further enhancement.

As well as providing additional foraging habitat for bats, the trees and shrubs will act as baffles against any bright, Artificial Lighting at Night (ALAN) emitted from the glazing in the engine house, to maintain dark conditions near the new dedicated bat loft building.

The new shrubs and trees will provide habitat for nesting birds. The new vegetation will support populations of invertebrates, which will provide a food-source for foraging bats and birds. The shrubs and trees will also help increase connectivity with the surrounding landscape and provide wildlife corridors for numerous species.

6.0 HABITAT/SITE MANAGEMENT AND MAINTENANCE

The present landowner Tim Latham, will be responsible for implementing the mitigation works and will remain responsible for the property and ongoing land management and maintenance. If ownership changes (e.g. new owners purchase the property), it is likely that a clause will be incorporated into the contract, to ensure habitat management and maintenance is continued for perpetuity.



7.0 AUDIT REPORT AND MONITORING

7.1 Proposed timetable of works

As there are a number of factors that could impact on the proposed timetable of works (e.g. time taken to approve and discharge pre-commencement conditions, Covid-19, availability of building contractors and availability of building materials, weather etc.), the following timings are only an estimation.

- Erect new outbuilding with dedicated bat loft Dec 2021 – April 2022.
- Strip roof and demolish existing building Dec 2021 – April 2022.
- Erect new dwelling Spring 2024 – Spring 2025.

7.2 Supervision and audit process

Any works that could impact on bats will be directly supervised by the licenced ecologist.

- Prior to commencement of works, bat boxes will be installed to provide an alternative roost for crevice-dwelling bat species.
- NRW will be notified of the start date prior to works commencing.
- Prior to commencement of work a Toolbox talk will be given to the roofers/builders.
- Prior to work commencing to strip the roofs and demolish buildings, an inspection of the building(s) will be carried out by the licenced ecologist to check for bats.
- The licenced ecologist will directly supervise the work to strip the roofs, to ensure no bats are injured.
- As bat access is to be provided in the roof of the new dedicated bat loft and the proposed new dwelling. 1F bitumastic felt will be used on the roofs, to avoid the risk of bats becoming entangled. Similarly, *if* timber cladding is to be used on the new outbuilding, no membrane will be used between the concrete block wall and the timber cladding. Bat boxes will be installed on external walls at 2-3m height, to avoid predation by cats. These measures will help prevent incidental capture or killing of bats post construction.
- The ecologist will carry out an Ecological Compliance Audit process to check the appropriate mitigation has been implemented in the timescales specified, and that the correct materials have been used. A site visit will be made when the roofs have been felted and battened, to check 1F bitumastic felt has been used and a second visit will be made after the roofs have been covered with slates, to check gaps under eaves and ridge tiles have been correctly incorporated. A third visit will be made when the bat loft has been completed, to ensure all mitigation and enhancements in the form of additional bat-friendly features have been provided as specified.
- After completion of the proposed development, a post-construction monitoring and surveillance scheme will be implemented for a minimum 2 years (emergence surveys between May-Aug/Sept), to assess the success of the mitigation strategy.

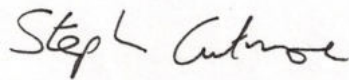


7.0 AUDIT REPORT AND MONITORING (continued)

7.2 Supervision and audit process

- Dusk emergence surveys will start 15 minutes before sunset and continue for 1.5-2 hours after sunset. Dawn re-entry surveys will start 1.5-2 hours before sunrise and continue for 15 minutes after sunrise. The surveys should be carried out with at least 2 weeks between surveys, in order to obtain sufficient information over the bat active season.
- It is anticipated that up to 5 surveyors will be required per survey, in order to see all aspects of buildings. The surveyors will visually monitor the buildings for emerging (or re-entering) bats, whilst recording bat calls on a digital bat detector (Anabat Walkabout/Scout).
- If the initial series of monitoring surveys only detect a low number of bats (due to possible disturbance by the on-going construction work), further monitoring will be carried out during the following seasons, to assess if the mitigation has been successful.
- An *EPS licences: Bats compliance audit report, Licence return form* and a final audit/monitoring report will be submitted on completion of the development and monitoring, as a condition of the NRW Derogation licence.
- Records of the monitoring surveys will be submitted to Cofnod.

Plan written and compiled by

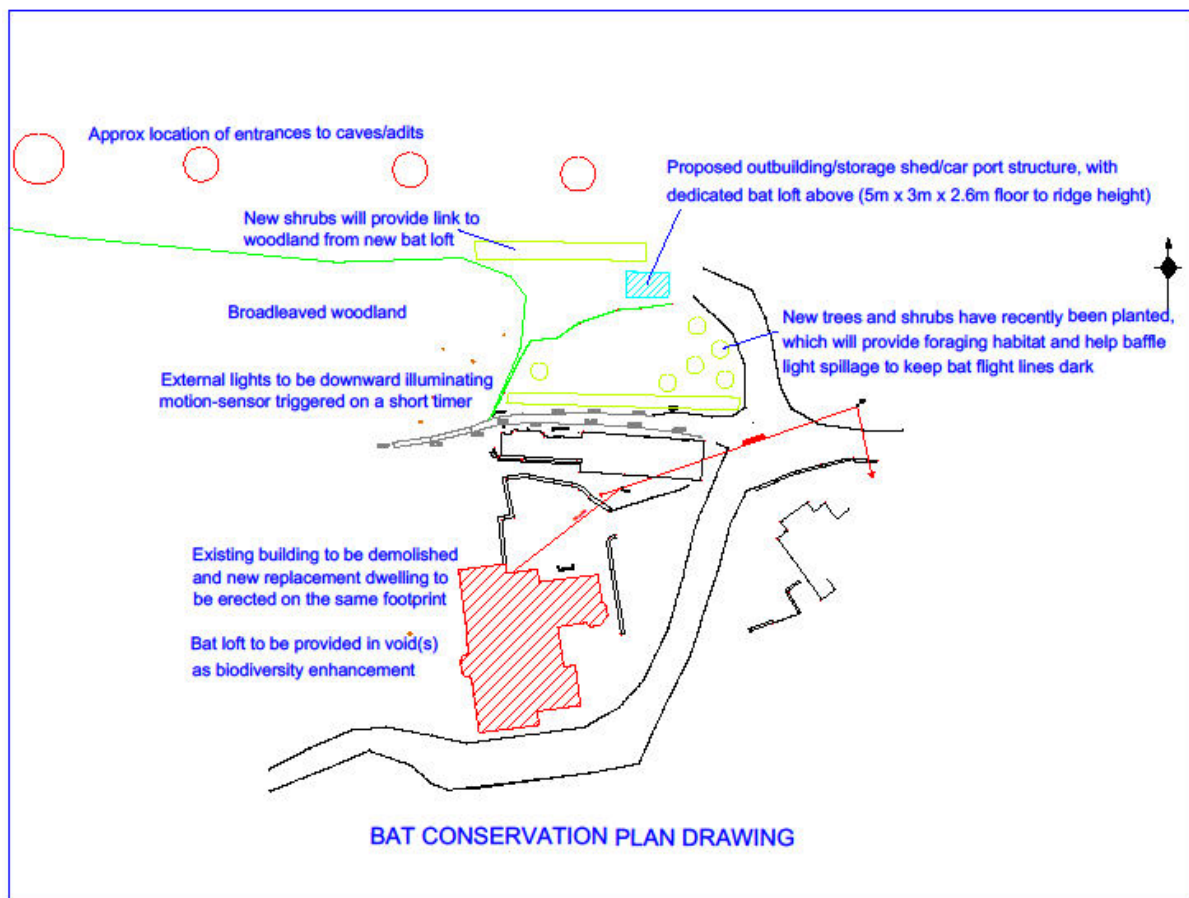


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APPENDIX 1 – Site plan



APPENDIX 2 – Mitigation details

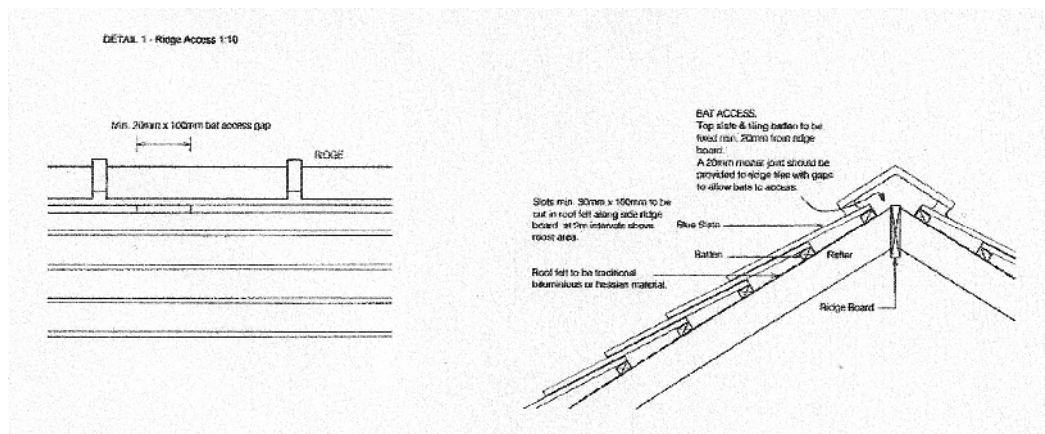


Figure 1: Ridge tile detail.

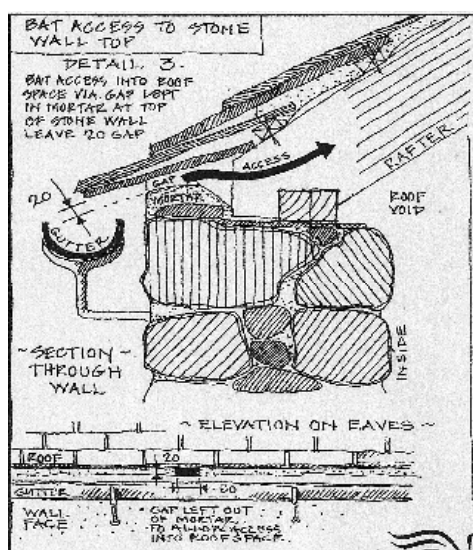


Figure 2: Gaps in eaves detail.

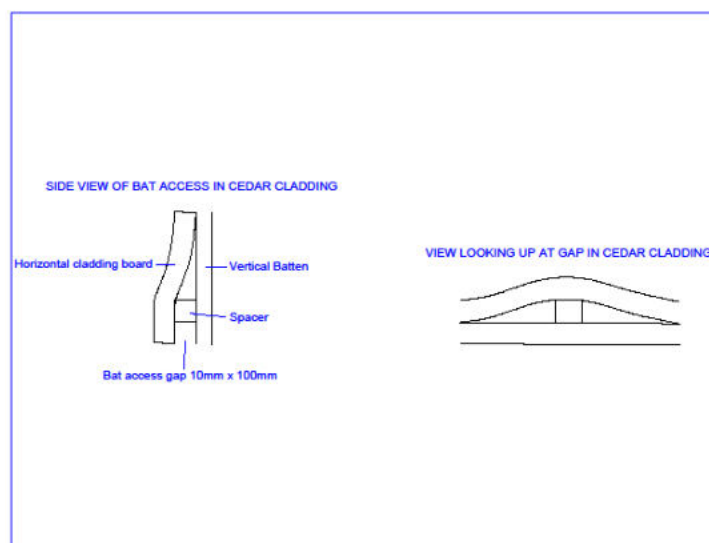


Figure 3: Gaps in cladding detail.

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APPENDIX 3: Bibliography

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