

**Bronydd / Chwarel Wynne**

**Bat and Bird Survey Report**

for

**MR and Mrs Latham**

June 2020

3133/11

# R I C H A R D S

## M O O R E H E A D & L A I N G L T D

P L A N N I N G | L A N D S C A P E | E N V I R O N M E N T

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#### QUALITY ASSURANCE PROCEDURES: QP4

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## 1 INTRODUCTION

### 1.1 Scope of commission

- 1.1.1 Richards, Moorehead & Laing Ltd (RML) was commissioned by Mr and Mrs Latham to undertake a nesting bird and bat survey and assessment of a small outbuilding (known as the 'Engine House') which is located to the north of a property known as Bronydd which is set within the grounds of the former Chwarel Wynne Slate Mine, Glyn Ceiriog, Llangollen. The surveys were required to assess the likelihood of bats and nesting birds being present and to inform a planning application for refurbishment works.
- 1.1.2 This report presents the findings of the surveys, along with an assessment of the potential effects upon bats and/or nesting birds which may result from the proposed works.

### 1.2 Site description

- 1.2.1 The outbuilding is located 250 m west of Glyn Ceiriog village, Llangollen (Grid Reference: SJ 1999 3792). A site location plan is provided in **Appendix A**.
- 1.2.2 The site contains a main house (empty) and adjacent cottage which the client occupies. The commissioned surveys cover the outbuilding located to the north of these two buildings (as circled in blue, **Appendix A**, photographs are provided in **Appendix B**).
- 1.2.3 The site is surrounded by Ancient Semi-Natural Woodland, a garden area and exposed rock. The whole site forms part of the former slate mine and is part of the Glyn Ceiriog Slate Mine Wildlife Site. The site in general provides excellent habitat for nesting and foraging birds and also for bats for commuting and foraging. The former slate mine is a hibernation roost for several bat species (though this information was not available on COFNOD but was provided by the client).



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### 1.3 Aims of the survey

#### 1.3.1 The aims of this 2020 survey and report are to:

- 1 Undertake a protected species survey of the outbuilding to include bats and nesting birds
- 2 Provide an assessment of the current conservation status of bats associated with the outbuilding
- 3 Inform upon appropriate and proportional mitigation in respect of the refurbishment works
- 4 Provide a report to be submitted as part of a planning application

### 1.4 Development proposals

#### 1.4.1 The proposed development works involve the refurbishment of the outbuilding to provide accommodation comprising of two bedrooms, kitchen and living room and bathroom. Separate showers and WC and dish washing area for campers' is proposed to the west, the facilities are for a proposed retreat. Scheme proposals are provided in **Appendix C**.

#### 1.4.2 Works on site are due to commence in autumn/winter 2020, once planning permission has been received.

### 1.5 Legislation and planning policy

#### 1.5.1 All species of bat in the UK are protected under the Wildlife and Countryside Act 1981 (as amended) and as European Protected Species under the Conservation of Habitats and Species Regulations 2017 (as amended)<sup>1</sup>. This legislation also applies to bat roost locations, whether or not they are occupied at the time.

---

<sup>1</sup> The UK left the EU on 31 January 2020 and has entered a transition period until the 31 December 2020. The Regulations have been amended since 2017 for various minor reasons. In addition to these existing amendments (that are already in force), there are also drafted 2019 EU Exit amendments that will not come into effect until the end of the Implementation Period. The Regulations remain exactly as they were before EU Exit day.

- 1.5.2 The Environment (Wales) Act introduces a new, enhanced Biodiversity and Resilience of Ecosystem Duty on public bodies to ensure that biodiversity is an integral part of decision making. Public authorities will be required to report on the actions they are taking to improve biodiversity and promote ecosystem resilience. The resilience of ecosystems is the main driver for Biodiversity Net Gain (BNG) in Wales.
- 1.5.3 Section 6 of the Act places a duty on public authorities to seek to maintain and enhance biological diversity (referred to as biodiversity). All public bodies, statutory undertakers, Ministers of the Crown and other public office holders are required to apply the duty when they are carrying on any functions in Wales, or in relation to Wales.
- 1.5.4 Section 7 of the Act places a duty on the Welsh Ministers to publish, review and revise lists of living organisms and types of habitat in Wales, which they consider are of key significance to sustain and improve biodiversity in relation to Wales. The following bat species are listed on Section 7 of the Act:
- Barbastelle bat *Barbastella barbastellus*
  - Bechstein's bat *Myotis bechsteinii*
  - Noctule *Nyctalus noctula*
  - Common Pipistrelle *Pipistrellus*
  - Soprano Pipistrelle *Pipistrellus pygmaeus*
  - Brown long-eared bat *Plecotus auritus*
  - Greater horseshoe bat *Rhinolophus ferrumequinum*
  - Lesser horseshoe bat *Rhinolophus hipposideros*



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## 1.6 Personnel and quality assurance

- 1.6.1 Principal Ecologist Donna Hall is the project manager for this scheme. She is a full member of the Chartered Institute of Ecology and Environmental Management (CIEEM) with over 15 years of experience working within multi-disciplinary consultancies. Donna holds European Protected Species survey licenses for bats which cover all counties in England (Class 2) and Wales (79592a:OTH:CSAB:2018) and has held her licence for ten years, in that time Donna has conducted numerous activity surveys for bats and has held development licenses in respect of lesser horseshoes, brown long-eared and pipistrelle bats.
- 1.6.2 Ecologist Rob Jones is listed as an assistant on the above licence. He has been involved in ecology work for ten years and has been licensed to survey dormice (Wales) for five years. He has undertaken numerous surveys including for bats, badgers, reptiles and great crested newts as well as undertaking the Ecological Clerk of Works role for a number of schemes.



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## 2 SURVEY METHOD

### 2.1 Desk study

- 2.1.1 The North Wales Environmental Information Service (Cofnod) was contacted on 01/06/2020 to obtain records of any bat and roof-nesting bird species within 500 m of the site recorded within the last 10 years.

### 2.2 Field survey

#### *Preliminary Roost Assessment*

- 2.2.1 A detailed external and internal assessment of the outbuilding was undertaken on 06/05/2019 to determine the current status of the building for roosting bats. This involved checking for bats and /or direct evidence of bats (e.g. droppings, staining, etc.) as well as identifying any potential access points into the building which could be used by bats.
- 2.2.2 Any trees which may need to be removed were assessed for their potential to support bats.
- 2.2.3 The surveyor was equipped with a high-powered torch, close-focus binoculars, ladder, camera and endoscope.
- 2.2.4 The Bat Survey Good Practise Guidelines (BCT, 2016) were used as a basis to evaluate the building and surrounding habitat for its potential to support bats, as summarised in **Table 1**.
- 2.2.5 During the Preliminary Roost Assessment, the building and adjacent tree was assessed for the potential to support nesting birds, and any nests (active or inactive) were searched for.



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**Table 1. Bat Conservation Trust (BCT) assesement of Potential Roost Features (PRF)**

| Suitability | Description of roosting habitats                                                                                                                                                                                                                                                                                     | Commuting and foraging habitats                                                                                                                                                                                                                                                                                                                                                    |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Negligible  | Negligible habitat features on site likely to be used by roosting bats.                                                                                                                                                                                                                                              | Lack of vegetation and foraging habitat within vicinity of the site and no connections to semi-natural habitats. Site located in a highly urbanised environment.                                                                                                                                                                                                                   |
| Low         | <p>A structure with one or more potential roost sites that could be used by individual bats opportunistically.</p> <p>No visible features within tree structure such as crevices, holes in trunk, hazard beam splits. However, it may have ivy cladding and hidden features due to the size and age of the tree.</p> | Small amount of isolated habitat on site providing a potential foraging resource i.e. a single tree or a patch of introduced shrub. Maybe linked to small amount of adjacent semi-natural habitat surrounding site, however there are no distinct links to habitat further away.                                                                                                   |
| Moderate    | A structure or tree with one or more potential roost features that could be used by a larger number of bats but unlikely to support a roost of high conservation concern.                                                                                                                                            | Suitable continuous habitat with good connectivity to the wider landscape such as trees, scrub, hedgerow, grassland.                                                                                                                                                                                                                                                               |
| High        | A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and offers more long-term security and likely to support a roost of high conservation concern.                                                                      | Site is close and connected to known roosts. The site habitat is of high quality for foraging bats and includes features such as woodland, tree lined water courses, field margins and hedgerows. The site is well connected within the landscape to surrounding habitats and strong linear features such as hedgerows and tree lines extend from the site to the wider landscape. |
| Confirmed   | Presence of field signs indicative of a bat roost including staining and scratch marks around a potential roost entry point combined with the following; urine staining, droppings clustered beneath a potential roosting feature and the presence of live or dead bats.                                             | N/A                                                                                                                                                                                                                                                                                                                                                                                |

**Bat activity surveys**

- 2.2.6 One dusk bat emergence survey was carried out on the 21/05/2020.
- 2.2.7 A total of two surveyors were equipped with an Anabat Walkabout bat detector, and Bat Box Duet. Surveyors were positioned to view all features and aspects of the outbuilding (**Appendix E**).
- 2.2.8 Surveys commenced 15 minutes prior to sunset and continued for 1.5 hrs.

**Static bat detector**

- 2.2.9 Two Anabat Swift static bat detectors were left in the outbuilding for six nights (06/05/2020 – 11/05/2020).

**2.3 Data analysis**

- 2.3.1 Bat call data collected was analysed using Anabat Insight software, initially using the BatClassify plugin set at 60% confidence to analyse the bat calls, and then reviewed and re-assessed as required.

**2.4 Survey constraints and limitations**

- 2.4.1 No survey constraints were identified.
- 2.4.2 The details of this report will remain valid for a period of two years from the date of the surveys (21/05/2020), after which the validity of this assessment should be reviewed to determine whether further updates are necessary.



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### 3 RESULTS

#### 3.1 Desk study

##### *Statutory Designated Sites*

- 3.1.1 The Afon Dyfrdwy (River Dee) Site of Special Scientific Interest (SSSI) and River Dee and Bala Lake / Afon Dyfrdwy a Llyn Tegid (Wales) Special Area of Conservation (SAC) are located within 350 m of the scheme, to the east of Glyn Ceiriog village.

##### *Non-statutory Designated Sites*

- 3.1.2 Three Wildlife Sites (WS) are located within 500 m of the site, these are detailed in Table 2.

**Table 2. Non-statutory designated sites within 500 m**

| Site Name                        | Distance from site   | Description (from COFNOD)                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| W243: Glyn Ceiriog Slate Mine WS | On site              | <p>Disused slate mine with broad-leaved plantation dominated by sessile oak on a south facing slope. Sycamore is predominant in the shrub layer with hazel. Around the edges of the cliffs semi-natural woodland occurs with several species of ferns including hard shield fern and harts tongue. The spoil heaps are dominated by larch and birch.</p> <p>Habitats Broad-leaved plantation, Fraxinus - Sorbus - Mercurialis woodland, Mixed plantation</p>   |
| W106: Coed Nant Lafar WS         | 140 m due south      | <p>An ash/oak clough woodland along the Nant Lafar. There is a good canopy structure and a fair ground flora diversity. Species present include dog's mercury, false brome, raspberry and hart's-tongue fern. To the north of the stream is a semi-improved neutral meadow. This has a good herb content; oxeye daisy, smooth hawksbeard and yellow rattle are common.</p> <p>Habitats Semi-improved neutral grassland, Semi-natural broad-leaved woodland</p> |
| W242: Coed Hafod-gynfawr WS      | 410 m due south east | <p>A steep west facing rocky slope with dry heath, acid grassland, bracken, scrub and broad-leaved woodland. Part of the slope was burnt some years ago and this area is dominated by bell heather with bare ground. The areas of dry acid heath on this slope are dominated by heather and bracken with</p>                                                                                                                                                   |

| Site Name | Distance from site | Description (from COFNOD)                                |
|-----------|--------------------|----------------------------------------------------------|
|           |                    | frequent bryophytes and scattered birch and larch trees. |
|           |                    | Habitats Acid dry dwarf shrub heath                      |

- 3.1.3 Areas of Ancient Semi-Natural Woodland surround the site to the north and west and are included in the Glyn Ceiriog Slate Mine WS.

#### **Bats and birds**

- 3.1.4 No bat species records were returned within 500 m of the site within the last ten years.
- 3.1.5 The client highlighted that the former slate mine is a hibernation roost for several bat species (though this information was not available on COFNOD). The client stated that a local bat group has surveyed the site and noted five species of bat inside the adit.
- 3.1.6 Two bird species have been recorded within 500 m. None of which are recorded on the site itself. These were of the house sparrow *Passer domesticus* and swift *Apus apus*.
- 3.1.7 A tawny owl *Strix aluco* was heard within the woodland during the bat surveys.
- 3.1.8 The lack of records is most likely down to recorder effort rather than absence, records only occur up until 2012, so no recent data has been submitted to COFNOD, even though recent hibernation surveys for bats have been carried out to the adit. The site and surrounding habitat would support a number of bat and bird species.

### **3.2 Preliminary roost inspection**

#### **External**

- 3.2.1 Bat roost inspection surveys were carried out around the whole building (refer to **Appendix B** for photos of the structure). The building consists of a single story constructed of stone which is partly rendered. The eastern gable end consists of stonework to the bottom half with wooden weather boarding to the gable end with fascia boarding to the top. Two large windows occur within this gable end.



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- 3.2.2 The north elevation consists of stonework which has been rendered to the western end. There are three windows, a set of double doors and two single doors, all of which are kept locked. To the western end of the building there is a small recess where part of the roof overhangs.
- 3.2.3 The west gable is rendered, with fascia boarding to the top and ivy covering (some of which has been removed).
- 3.2.4 The south elevation is set back within the adjacent track and only a small section of stonework is visible. Part of the wall is damaged.
- 3.2.5 The roof consists of an asbestos cement corrugated roof material.
- 3.2.6 In terms of potential roost features identified during the daylight inspection, these include gaps within the brickwork, gaps around the doors and window frames, under fascia boarding and weather boarding, small gap in the asbestos roofing and a missing windowpane. The gaps around the doors and windows, within the roof, under the fascia boarding and weather boarding all provide access to the internal areas of the building. All potential roost features were checked but no evidence of bats was found.
- 3.2.7 **Table 3** summarises the potential bat roost features observed externally on the building.



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**Table 3. Potential external bat roost features (PRF) observed**

| Location                      | Potential roost features                                                   | Appendix B reference |
|-------------------------------|----------------------------------------------------------------------------|----------------------|
| Facia boarding east elevation | Gaps under fascia boarding, checked but no evidence found.                 | PR6                  |
| Door frame and window frame   | Gap behind door frame, checked no evidence found                           | PR5                  |
| Missing windowpane            | Provides access to internal areas                                          | No image             |
| Gap in asbestos roof          | Provides access into internal areas                                        | PR7                  |
| Gaps under ridge tiles        | Provides access into internal areas                                        | PR9                  |
| Gaps in stonework             | Some small crevices and gaps within stonework , checked no evidence noted. | PR8                  |

**Internal**

3.2.8 There are no roof voids. The internal area consists of one room, with the exception of a separated toilet block located to the western end. The building is currently used for storage. The internal areas are light and 'airy'. The roof structure consists of a wooden king post construction. The internal walls are in a good condition with the exception of those which abut the track to the south elevation, which are damp and crumbling. The separated toilet block to the west is cool and damp. (Photos are provided in **Appendix B, PR9 and PR10**).

3.2.9 No bats or evidence of bats was found within the internal areas.

3.2.10 Based on the guidance provided in **Table 1**, the structure is considered to have low potential for bats.

**3.3 Habitat**

3.3.1 The habitat surrounding the site consists of woodland and mature gardens all of which provide suitable foraging and commuting habitat for bats, as well as suitable habitat for nesting birds.

- 3.3.2 All habitat will be retained which the exception of a tree which is located in close proximity to the structure against the south elevation (refer to the photo in **Appendix B, PR11**). This was assessed as having negligible potential for bats, though it does provide suitable habitat for nesting birds.

### 3.4 Bat activity surveys

#### *Bat emergence survey*

- 3.4.1 Based on BCT guidance, buildings with low potential to support bats require one survey, though this can be increased based on evidence found, at the discretion of the ecologist.
- 3.4.2 No bats were seen to emerge from the structure during the emergence survey.
- 3.4.3 Commuting and foraging activity was recorded around the building and associated landscape. Common pipistrelle, soprano pipistrelle and Brandt's/Whiskered bat *Myotis brandtii*/*Myotis mystacinus* were all observed/recorded, with a maximum of four bats (common and soprano pipsitrelles) foraging and flying around the garden area between the properties (**Appendix D: Table 5**).
- 3.4.4 The weather variables for the survey is provided in **Table 4**.

**Table 4. Weather variables**

| Date       | Time of sunset/sunrise | Survey start and end times | Weather conditions at start/end                                    |
|------------|------------------------|----------------------------|--------------------------------------------------------------------|
| 21/05/2020 | 21:15                  | 21:00                      | 17.5 °C, beaufort 0, 8 oktas, 57% rH, no precipitation, 78.9 lux.  |
|            |                        | 22:30                      | 15.5°C, beaufort 0, 8 oktas, 65% rH, no precipitation, 0.0122 lux. |

### 3.5 Static bat detector

- 3.5.1 No bat echolocation calls were recorded within the structure on any of the detectors over the six nights.



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### 3.6 Roost classification

- 3.6.1 There is no confirmed bat roost in the outbuilding based on the results of these surveys. However, there is some potential that bats could use the structure on an adhoc basis due to the mobile nature of bats.

### 3.7 Nesting birds

- 3.7.1 No bird's nests were observed or noted during the survey.

### 3.8 License requirements

- 3.8.1 As no bat roost was noted during the survey, no licence is required, and no impacts are envisaged to the favourable conservation status of bats occurring within a local, regional, or national scale from the schemes proposals.



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## **4 PRECAUTIONARY MITIGATION MEASURES**

### **4.1 Precautionary Measures**

- 4.1.1 Although no evidence of bats and birds have been recorded during the surveys, due to the mobile nature of these species, it is advised that the following precautionary and reasonable avoidance measures should be followed.

### **4.2 Refurbishment process**

- 4.2.1 Prior to works commencing on site, a licensed bat ecologist should conduct a pre-commencement inspection of the structure to ensure that no bats are present. This would include checking any of the identified potential roost features and also conducting an internal inspection.
- 4.2.2 If the refurbishment work are due to commence during the nesting bird season (generally considered to be between March – August inclusive) then a pre-commencement inspection of the structure and adjacent tree should be conducted to ensure that no nesting birds are present.
- 4.2.3 The roofing material will be lifted and carefully disposed of due to the presence of asbestos.
- 4.2.4 The facia and weather boarding should be removed by hand.
- 4.2.5 All windows and doors should be removed by hand.
- 4.2.6 The contractor will be instructed that if a bat is discovered at any times, to cease all works immediately and for a licensed bat worker to be contacted for advice. This advice may involve leaving the bat to disperse of its own accord or waiting for the licensed handler to arrive on site to move the bat. Contractors will be instructed not to handle bats at any time.
- 4.2.7 If required, the temporary care of bats will be undertaken by a licensed bat worker with experience of caring for captive bats. The capture and handling of any bats will only be undertaken by licensed bat workers. Injured bats will immediately be taken into care (as directed by The Bat Workers Manual, s7.3, pp. 64-66, 2004).

## 4.3 Lighting

- 4.3.1 A lighting scheme was not available to view, however it is advised that any lighting proposals would need to take in to account the bat hibernation roost within the mine adit and should not illuminate any commuting pathways to this, in particular the woodland. If required, lighting should be on motion triggers, directional, directed only to where it is required i.e. pathways so as to not illuminate the night sky.



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## 5 BIODIVERSITY NET GAIN

### 5.1 Bats

- 5.1.1 It is likely that the refurbished building would provide more roosting opportunities for bats due to the replacement roof with slate tiles. The majority of the roof space would remain open with no void. However, bats could still roost underneath ridge and roof tiles, the weather boarding and fascia boarding of the refurbished property. In addition, the client has been advised to install a bat box on the apex of the gable to the east elevation. This could be the Kent Bat Box (or similar) as shown in **Appendix B, PR13**.

### 5.2 Birds

- 5.2.1 Swifts and sparrow have been recorded within 500 m of the proposed refurbishment works. The structure is unlikely to provide suitable habitat for swifts as swift boxes need to be located on sites a minimum of 5 m from the ground. However, the client should consider installing bird boxes suitable for sparrows (as well as a bat box) onto the new extension to provide nesting opportunities for sparrow, increasing biodiversity on the new structure. (Refer to **Appendix B, PR14**).



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## 6 CONCLUSIONS

### 6.1 Summary

- 6.1.1 The desk study carried out found no records of bats within 500 m, however there is a hibernation roost located within the disused mine. The preliminary roost inspection suggested that the building has low potential to support bats, and no evidence of nesting bird activity was recorded.
- 6.1.2 An adjacent tree which may need to be removed was assessed as having negligible potential to support a bat roost but does have potential for nesting birds.
- 6.1.3 No bats were seen to emerge from the structure. There is no confirmed bat roost in the building. However, bats are mobile species and the building could be used on an ad-hoc basis by a small number of bats and potentially by nesting birds.
- 6.1.4 If the refurbishment work are due to commence during the nesting bird season (generally considered to be between March – August inclusive) then a pre-commencement inspection of the structure and adjacent tree should be conducted to ensure that no nesting birds are present.
- 6.1.5 Precautionary measures should be taken due to the location of the site which is located in suitable habitat for foraging and commuting bats. These include pre-commencement site inspection, hand removal of potential roost features (i.e. fascia boarding, weather boarding, doors and windows).
- 6.1.6 In the event that a bat or nesting bird is discovered during the works, then the contractor is advised to stop works and call an ecologist and/or licensed bat worker to advise on appropriate action.
- 6.1.7 Any new lighting should be sensitive to bats; avoiding illuminating any woodland habitat and being directional to where it is required so as not to illuminate the night sky.
- 6.1.8 Recommendations for the installation of bat and bird boxes has been provided.

## 7 REFERENCES

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



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## APPENDIX A

Survey site location plan, property subject to the survey is circled in blue



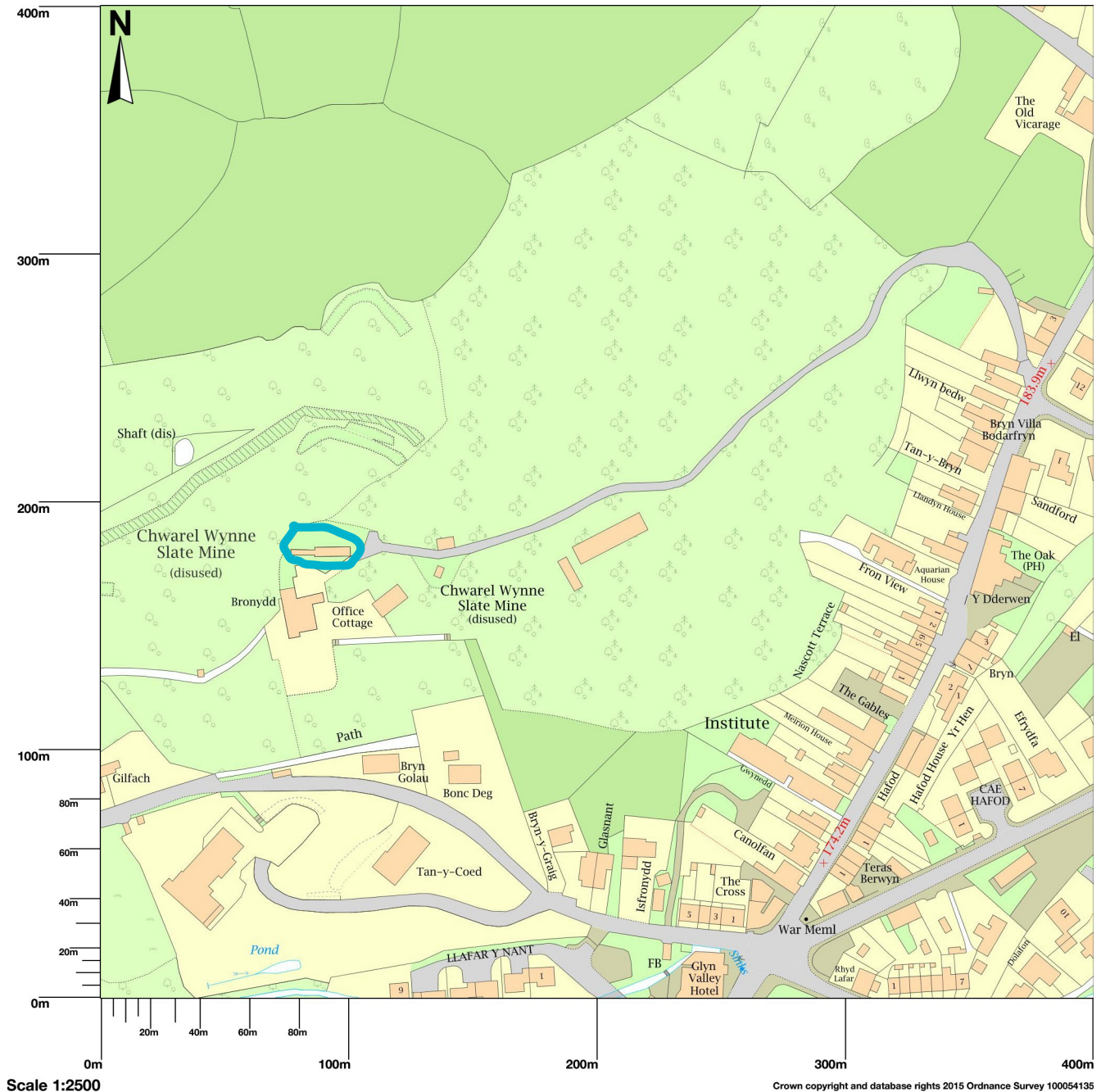
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## Bronydd/ Chwarel Wynne



Map area bounded by: 319918,337767 320318,338167. Produced on 08 March 2019 from the OS National Geographic Database. Reproduction in whole or part is prohibited without the prior permission of Ordnance Survey. © Crown copyright 2019. Supplied by UKPlanningMaps.com a licensed OS partner (100054135). Unique plan reference: p16buk/327000/444648

## APPENDIX B

### Photographs of the structure

#### External



**PR1:** East gable showing weather boarding and fascia



**PR2:** West gable end, no potential under fascia boarding here, damp and cool, fascia boarding close fitting.



**PR3:** North elevation, recess to western end



**PR4:** South elevation and asbestos roof



**PR5:** Example of gaps under window and door frames providing internal access



**PR6:** Gap under fascia boarding, the weather boarding has no backing, so no cavity



**PR7** Gap in asbestos roof – south elevation



**PR8** Gaps in stonework

## Internal



**PR9:** Internal roof structure, gaps under ridge into building



**PR10:** View of internal structure showing king post beams

## Photographs of habitat

### Tree and Habitat



**PR11** Tree which may need to be removed



**PR12** Adjacent habitat showing woodland and rock outcrop.

## Advised enhancements



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**Bat and bird enhancements****PR13** Kent Bat Box**PR14** Example sparrow terrace

## APPENDIX C

### Existing and proposed plans

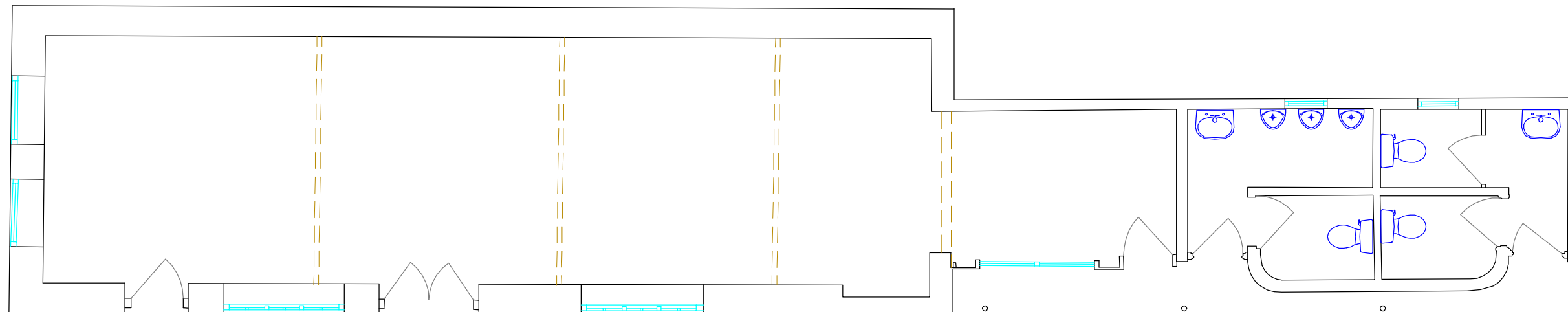


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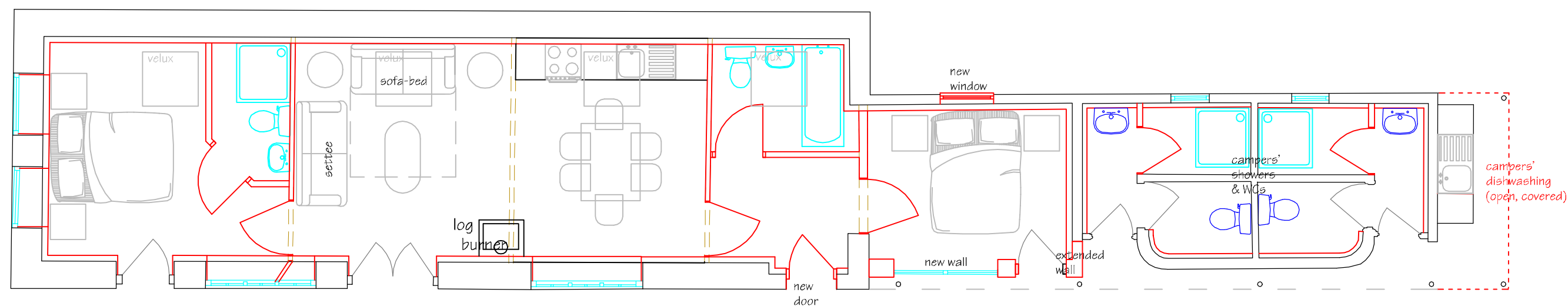
email: [rml@rmlconsult.com](mailto:rml@rmlconsult.com) web: [www.rmlconsult.com](http://www.rmlconsult.com)

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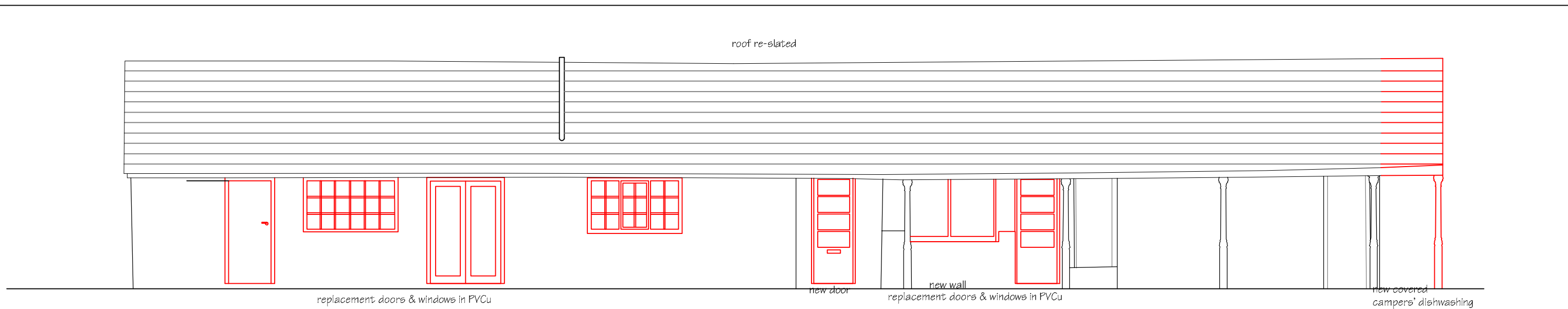


EXISTING GROUND FLOOR PLAN

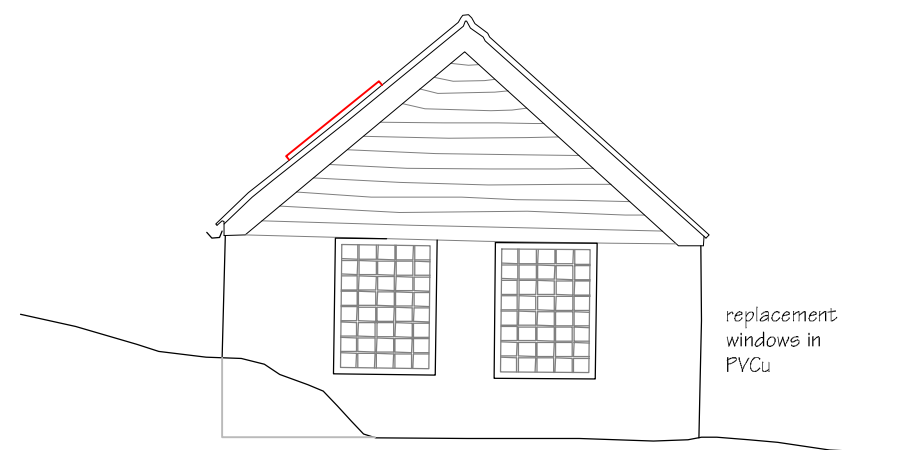
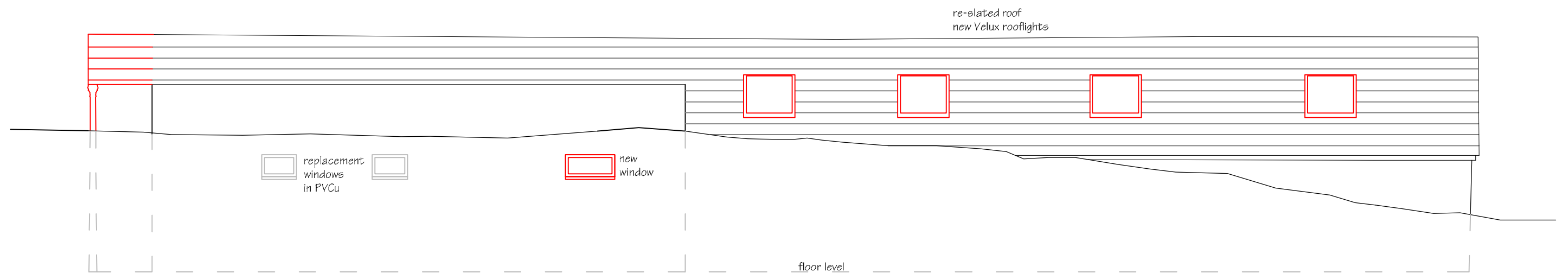


PROPOSED GROUND FLOOR PLAN

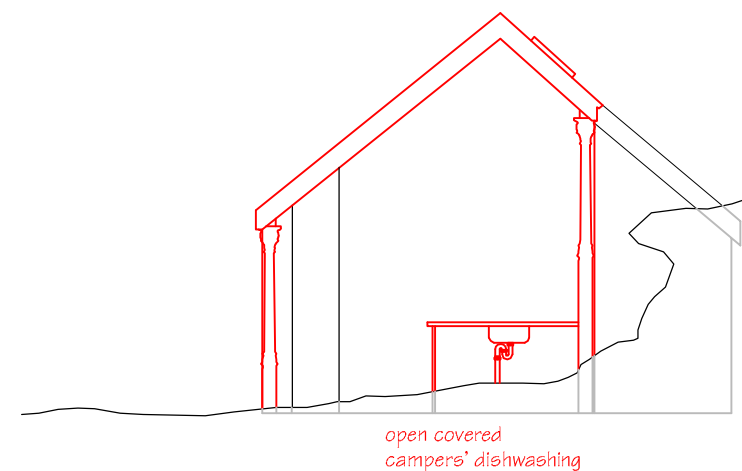
The Engine House.  
Scale : 1:75 @ A3



ELEVATION B



ELEVATION C



ELEVATION A

PROPOSED ELEVATIONS  
The Engine House.  
Scale : 1:75 @ A3

## APPENDIX D

### Bat survey results data

**Table 5. Emergence (21/05/2020) survey results, south elevation**

| Location                         | Species recorded/time/location/activity                                             |
|----------------------------------|-------------------------------------------------------------------------------------|
| (South elevation<br>Surveyor #1) | 21:08 1 <i>Pyg</i> heard not seen                                                   |
|                                  | 21:23 1 <i>Ppip</i> 1 pass, around north elevation                                  |
|                                  | 1 <i>Ppyg</i> commuting from N to S in front of house (E side of building), 1 pass. |
|                                  | 21:28 1 <i>Ppyg</i> and 1 <i>Ppip</i> seen flying E to W across garden              |
|                                  | 21:29 1 <i>Ppyg</i> heard not seen                                                  |
|                                  | 21:31 1 <i>Ppyg</i> foraging around garden area.                                    |
|                                  | 21:35 1 <i>Ppip</i> heard not seen, 1 pass                                          |
|                                  | 21:36 1 <i>Ppip</i> flying from E to W across garden, 1 pass.                       |
|                                  | 21:39 1 <i>Ppip</i> heard not seen, 1 pass.                                         |
|                                  | 21:40 1 <i>Ppyg</i> flew from N to S, foraging.                                     |
|                                  | 21:41 1 <i>Ppyg</i> , <i>Myotis</i> ( <i>Mbra</i> / <i>Mmys</i> ), heard not seen.  |
|                                  | 21:42 1 <i>Ppip</i> , <i>Ppyg</i> , <i>Myotis</i> heard not seen                    |
|                                  | 21:43 1 <i>Ppip</i> , <i>Nnoc</i> heard not seen                                    |
|                                  | 21:43 1 <i>Ppip</i> flew from E to W.                                               |
|                                  | 21:45 1 <i>Ppip</i> , <i>Ppyg</i> , flew from S to N from behind surveyor           |
|                                  | 21:47 1 <i>Ppyg</i> , foraging in between surveyors and buildings over garden area  |
|                                  | 21:51 1 <i>Ppip</i> foraging over garden from E to W and back again                 |
|                                  | 21:52 1 <i>Ppip</i> 1 pass, heard not seen                                          |
|                                  | 22:15 1 <i>Ppyg</i> heard not seen                                                  |
|                                  | 22:17 1 <i>Ppyg</i> heard not seen                                                  |
|                                  | 22:19 1 <i>Ppyg</i> , <i>Ppip</i> , heard not seen, plus social calls.              |
|                                  | 22:20 1 <i>Ppip</i> heard not seen                                                  |
|                                  | 22:21 1 <i>Ppyg</i> heard not seen                                                  |
|                                  | 22:23 1 <i>Ppyg</i> heard not seen                                                  |
|                                  | 22:24 1 <i>Ppyg</i> heard not seen, social calls                                    |
|                                  | 22:26 1 <i>Ppip</i> heard not seen                                                  |
|                                  | <b>No bats were seen emerging from the southern elevation</b>                       |

**Table 6. Emergence (21/05/2020) survey results, north and east elevation**

| Location                                | Species recorded/time/location/activity                                                  |
|-----------------------------------------|------------------------------------------------------------------------------------------|
| (East and north elevation Surveyor #2 ) | 21:19 1 <i>Ppip</i> , heard not seen, 1 pass.                                            |
|                                         | 21:23 1 <i>Ppip</i> commuting W to E just under canopy height in front of house, 1 pass. |
|                                         | 21:29 4 <i>Ppip</i> , a few passes foraging around garden area.                          |
|                                         | 21:34 1 <i>Ppyg</i> foraging E to W and continual foraging around garden                 |
|                                         | 21:36 2 <i>Ppip</i> foraging E to W and continual foraging around garden                 |
|                                         | 21:37 1 <i>Ppip</i> foraging                                                             |
|                                         | 21:41 – 1 <i>Ppip</i> constant foraging .                                                |
|                                         | 21:50                                                                                    |
|                                         | 21:50 1 <i>Ppyg</i> foraging                                                             |
|                                         | 21:51 1 <i>Ppip</i> foraging                                                             |
|                                         | 21:52 1 <i>Ppip</i> foraging over garden to the south elevation                          |
|                                         | 21:59 1 <i>Ppyg</i> heard not seen, couple of passes.                                    |
|                                         | 21:16 1 <i>Ppyg</i> foraging                                                             |
|                                         | <b>No bats were seen emerging from the north or east elevation.</b>                      |

Key: *Ppip* – Common pipistrelle *Pipistrellus pipistrellus*  
*Ppyg* – Soprano pipistrelle *Pipistrellus pygmaeus*  
*Nnoc* - Noctule *Nyctalus noctula*  
*Mbra/Mmys* - Brandt's bat *Myotis brandtii* / Whiskered bat *Myotis mystacinus*

## APPENDIX E

### Surveyor locations.

