Bat Survey Report

Site: Valhalla, Tresco, Isles of Scilly, TR24 0QQ

Grid Reference: SV 89306 14159

30th November 2020

Plan for Ecology Ltd
Tremough Innovation Centre
Tremough Campus, Penryn, Cornwall, TR10 9TA
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Document Control:

Site Name:	Valhalla, Tresco, Isles of Scilly, TR24 0QQ
OS Grid Reference:	SV 89306 14159
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Client:	Tresco Estate
Report Reference Number:	P4E2099
Version:	01
Date:	30th November 2020

Declaration:

"The information, evidence and advice, which we have prepared and provided is true, and has been prepared and provided in accordance with the Chartered Institute of Ecology & Environmental Management's (CIEEM) Code of Professional Conduct. We confirm that the opinions expressed are our true and professional bon

Chloe Balmer	[redacted]	
Katherine Biggs		
Kim Jelbert		

Report Lifespan:

Ecological features can change over time, particularly if site management/ use changes. Typically, bat surveys are valid for 12 – 24 months (until September 2021/ 2022).

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1.0 Contents

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2.0 Summary

Bat evidence?	Valhalla was visually inspected for evidence of roosting bats on 4th August 2020. Within the roof voids evidence of bats was noted in the form of a light scattering of mixed-age bat droppings on the floors of all three roof voids, plus two accumulations of bat droppings within the roof void over the flat (all characteristic of a long-eared bat spp.). In addition, old bat droppings were found within the detached outbuilding and there are a number of external features on the buildings with potential to be used by roosting bats, and which could enable potential access for bats into the building interiors. No evidence of the use of the attached outbuilding or Valhalla Museum by roosting bats was found. Valhalla and associated outbuildings were, therefore, assessed as being of 'moderate suitability' for roosting bats. Two bat emergence surveys of Valhalla, DNA analysis of bat droppings and a static monitoring survey of one of the voids were undertaken, in accordance with the 'Bat Surveys for Professional Ecologists: Good Practice Guidelines' (2016). The further surveys confirmed that Valhalla supports a day roost for at least one individual brown long-eared bat and a day roost for at least three individual common pipistrelles.
Proposed works?	Construction of rear extension and internal renovation works.
Bat specific mitigation recommendations?	It is possible to retain/modify the confirmed bat roosts within the fabric of the building and/or mitigate for their loss by enhancing the new extension for use by bats. Works will be carried out under an appropriate licence from Natural England. This report should be updated with the agreed mitigation plan. Works with potential to impact bats will be carried out under an ecological watching brief and scheduled for a time of year when bats are least likely to be negatively impacted. Two bat boxes (temporary 2F Schwegler bat boxes) will be installed within nearby trees to accommodate any common pipistrelle bats and brown long-eared bats uncovered during works. As far as we are aware, the roost features shown to be used by the common pipistrelle bats on the southern gable end and by the brown long-eared bat on the northern gable end will be retained. These must be protected during the construction and operational phases to ensure bats can continue to roost within the building post-development. If, however, it is not possible to retain these roost features and they are to be lost, loss will need to be compensated by providing alternative provision, comprising two bat slates over Bitumen 1F felt onto the roof, with access into the roof void below for brown long-eared bats. The northern roof void over the apartment will be modified when the new extension is tied into the existing roof. Existing access at the northern gable end should be either retained or recreated through installation of a bat slate or raised ridge tiles onto the roof with access created into the roof void below. The roof must be lined with type 1F bitumen felt. Further roosting opportunities for common pipistrelle bats and brown long-eared bats should be incorporated into the new extension; by

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	spacing off fascia boards by 15-25mm to create a gap behind; or installing a single Schwegler 1FE bat access panel with back plate at least 4 m above the ground on a southern elevation of the building. The bat access panel should be set in mortar to create an integral bat roost feature. No exterior lighting will be installed close to the temporary and permanent bat roost features. Mitigation is not required for the outbuildings. Precautionary recommendations are provided.

3.0 Introduction

3.1 Background

Diana Mompoloki, on behalf of the Tresco Estate, commissioned Plan for Ecology Ltd to undertake a Preliminary Bat and Bird Assessment (sometimes referred to as a Bat and Barn Owl Assessment) of Valhalla, Tresco, Isles of Scilly (OS Grid Ref: SV 89306 14159) in July 2020. The client proposes to undertake internal renovation works and construct an extension at the rear of the property. Evidence of bats roosting was seen in Valhalla in the form of a light scattering of mixed-age bat droppings on the floors of all three roof voids, plus two accumulations of bat droppings within the roof void over the apartment (all characteristic of a long-eared bat spp.). In addition, old bat droppings were found within the detached outbuilding (characteristic of a pipistrelle bat spp. and/ or a long-eared bat spp.) and there are a number of external features on the buildings with potential to be used by roosting bats, and which could enable potential access for bats into the building interiors. No evidence of the use of the attached outbuilding or Valhalla Museum by roosting bats was found (Plan for Ecology Ltd, 2020). Valhalla and the detached outbuilding were, therefore, assessed as being of 'moderate suitability' for roosting bats.

In accordance with the 'Bat Surveys for Professional Ecologists: Good Practice Guidelines' (Collins, 2016), the recommended further survey work comprised a minimum of two bat emergence or re-entry surveys of the dwelling and detached outbuilding during the bat active season (May to September inclusive), DNA analysis of collected bat droppings and a static detector survey. It was also recommended that the first emergence survey should cover the attached outbuilding, with the second emergence survey of the Valhalla dwelling to cover this building if a bat(s) was seen to emerge during the first survey. The client commissioned Plan for Ecology Ltd to undertake the further survey work in July 2020.

This report describes and evaluates the use of the building by bats, and details mitigation recommendations to minimize impacts upon bats in accordance the 'Bat Surveys for Professional Ecologists - Good Practice Guidelines' produced by the Bat Conservation Trust (Collins, 2016).

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3.2 Project Administration

Property Address:	Valhalla, Tresco, Isles of Scilly, TR24 0QQ
OS Grid Reference:	SV 89306 14159
Client:	Tresco Estate
Planning Authority:	Council of the Isles of Scilly
Planning Reference Number:	-
Report Reference Number:	P4E2099
Proposed work:	Construction of rear extension and internal renovation works
Visual Assessment Date:	4th August 2020
Emergence Survey Dates:	27th August and 23rd September 2020
Static Detector Survey Dates:	Nights of 5th to 20th August 2020
Ecologist & Licence Number:	Katherine Biggs BSc (Hons) MSc ACIEEM; Bat licence No. 2016-22188-CLS-CLS; Barn owl licence no. CL29/00552 Chloe Balmer MSci (Hons) Qualifying CIEEM member: Bat licence No. 2020-47040-CLS-CLS Dr Lucy Wright BSc (Hons) MSc PhD MCIEEM

3.3 Legislation & Planning Policy

Planning: The local planning authority has a statutory obligation to consider impacts upon protected species resulting from development. Planning permission will not be granted with outstanding ecological surveys, and if applicable an appropriate mitigation plan.

Bats: In the UK all bat species are listed on Annex IV(a) of the European Communities Habitats Directive and as such are European Protected Species (EPS). In Britain protection of bats is achieved through their inclusion on Schedule 2 of the Conservation and Habitats Regulations 2010, Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) and Schedule 12 of the Countryside and Rights of Way Act 2000 (HM Government, 1981, 2000 & 2010).

As a result of this statutory legislation it is an offence to:

- Deliberately capture, injure or kill a bat;
- Intentionally or recklessly disturb a bat/s in its roost;
- Intentionally or recklessly damage, destroy or obstruct access to a bat roost (even if bats are not occupying the roost at the time);
- Possess or sell or exchange a bat (dead or alive) or part of a bat.

Works with potential to cause significant disturbance to roosting bats may require a European Protected Species (EPSL) licence or Bat Mitigation Class Licence (CL21) from Natural England before works can legally commence. Works likely to result in less significant disturbance may be

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carried out under a Bat Mitigation Method Statement. The magnitude of disturbance and therefore the requirement for an EPSL, Bat Mitigation Class Licence or method statement is assessed on a case by case basis by the bat ecologist. The Bat Mitigation Method Statement or EPSL must be prepared and/or applied for by a suitably experienced and licenced bat ecologist. Where planning permission is required, the appropriate licence cannot be obtained until planning permission has been granted.

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4.0 Methodology

4.1 Summary Visual Assessment

A detailed visual assessment of Valhalla and the outbuildings was undertaken on 4th August 2020. The ecologists (Katherine Biggs and Chloe Balmer) assessed the suitability of the buildings and surrounding habitat to support bats. A high-power torch was used to illuminate all accessible areas of the buildings with potential to support roosting bats and roosting/nesting birds. The ecologists searched for signs of bats and birds including droppings, staining, feeding remains, bird nests, barn owl pellets and liming.

The assessment was carried out in accordance with the 'Bat Surveys for Professional Ecologists - Good Practice Guidelines' produced by the Bat Conservation Trust (Collins, 2016). Potential bat roosts identified during the visual inspections of the buildings were categorised as to their suitability in accordance with the Bat Conservation Trust's (BCT) Good Practice Guidelines (Collins, 2016) as described below:

Negligible: negligible features with potential to support roosting bats.

Low: one or more features with potential to support individual bats on an occasional basis. Unlikely to support large numbers of bats.

Moderate: one or more features with potential to support roosting bats but unlikely to be of high conservation status.

High: one or more features with potential to support large numbers of bats on a regular basis.

4.2 Emergence Surveys

Emergence surveys of the buildings were undertaken on 27th August and 23rd September 2020. Three ecologists were required to cover all elevations of the buildings. Surveyor locations are shown in Fig 1 (below). On both survey occasions surveyors 1 & 2 (Lucy Wright and Chloe Balmer) used an Echo Meter Touch (EMT) 2 and surveyor 3 (Katherine Biggs) used an EMT 2 and an Elekon Batscanner Stereo. Each detector type uses a different method of detecting. The EMT 2 and Elekon Batscanner Stereo detectors use heterodyne and real-time expansion. Each method of detection is described below:

- Frequency division: this method automatically and continuously records bat calls at all frequencies, and makes them audible to the human ear by dividing the call frequency by 10. Calls are played in real time and can be readily identified with sound analysis.

- Heterodyne: this method identifies bat calls echolocating at the frequency set by the operator but will fail to/ or only partially record bat calls outside this frequency.

- A real-time expansion bat detector digitally records ultrasonic bat calls and then plays them back at a slower rate and frequency to give an audible output.

- Pitch shifting compresses the ultrasonic spectrum into an audible band by shifting the pitch of the sound, allowing calls to be heard in real time. Harmonic components and amplitude of bat calls are kept in the process. Files are recorded for subsequent sound analysis.

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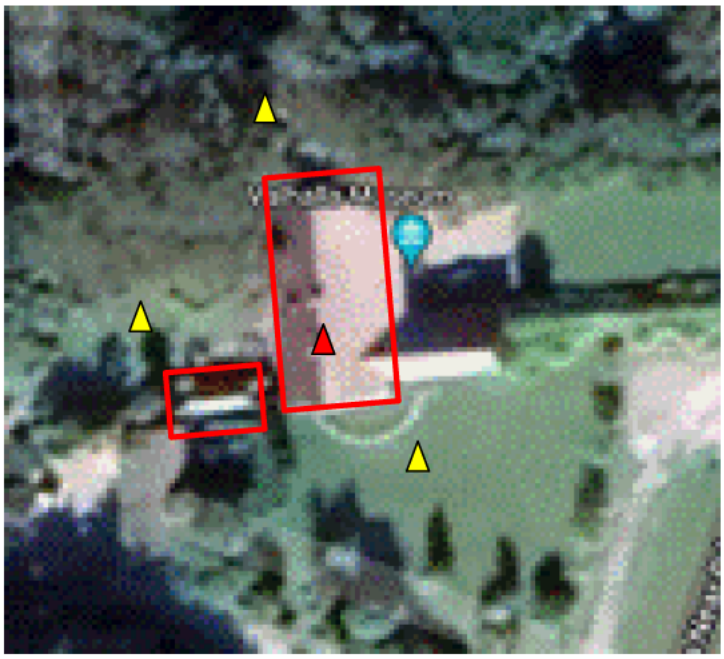

Figure 1: Emergence surveys – surveyor locations. Valhalla and the outbuildings are outlined in red. Yellow triangles show surveyor locations on both emergence surveys and the red triangle shows the location of the static detector.

4.3 Static Detector Survey

To provide more detailed information about bat activity, a static detector survey was carried out of the southern void of Valhalla between the nights of 5th to 20th August 2020. A single static bat detector (Anabat Express) was installed in the interior of Valhalla (Fig. 1; red triangle). The detector was set to record continuously overnight (30 minutes prior to sunset until 30 minutes after sunrise) for a total of 15 nights. The Anabat Express uses the frequency division method of detecting as described in Section 3.2 above.

4.4 DNA analysis

A sample of bat droppings was collected from an accumulation of droppings found within the northern void over the apartment in Valhalla and a within the southern voids. The samples were sent for DNA analysis to provide further information on the bat species present. DNA analysis was carried out by SureScreen Scientifics Ltd, Derby, U.K.

4.5 Ecological Evaluation

The value of buildings/ other structures for roosting bats is determined following the framework provided by Wray *et al.* (2010). This framework determines the appropriate value of a roost on a geographic scale, based on the relative rarity of the bat species using the site (based on the known distribution and population size in the U.K.), as well as the type of roost (based on the results of the emergence/ re-entry and static detector surveys). Where more than one bat species is present within the site, each species is valued individually, and the highest value obtained is assigned to the site.

Table 1 (below) categorizes bat species by their distribution and rarity in England. Table 2 (below) assigns a value for each roost type for the different rarity categories (Tables 1 and 2 are adapted from Wray *et al*. 2010).

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Table 1: Relative rarity of bat species in England (adapted from Wray *et al.* 2010)

Rarity (within range)	**Region** **England**
Common	Common pipistrelle (*Pipistrellus pipistrellus*) Soprano pipistrelle (*Pipistrellus pygmaeus)* Brown long-eared (*Plecotus auritus*)
Rarer	Lesser horseshoe (*Rhinolophus hipposideros)* Whiskered (*Myotis mystacinus)* Brandt's (*Myotis brandtii)* Daubenton's (*Myotis daubentonii)* Natterer's (*Myotis nattereri)* Leisler's (*Nyctalus leisleri)* Noctule (*Nyctalus noctula)* Nathusius' pipistrelle (*Pipistrellus nathusii)* Serotine (*Eptesicus serotinus)*
Rarest	Greater horseshoe (*Rhinolophus ferrumequinum)* Bechstein's (*Myotis bechsteinii)* Alcathoe (*Myotis alcathoe)* Greater mouse-eared (*Myotis myotis)* Barbastelle (*Barbastella barbastellus)* Grey long-eared (*Plecotus austriacus)*

Table 2: Value of bat roosts (adapted from Wray *et al.* 2010)

Value	**Roost types**
District, local or parish	Feeding perches (common species) Individual bats (common species) Small numbers of non-breeding bats (common species) Mating sites (common species)
County	Maternity sites (common species) Small numbers of hibernating bats (common and rarer species) Feeding perches (rarer/rarest species) Individual bats (rarer/rarest species) Small numbers of non-breeding bats (rarer/rarest species)
Regional	Mating sites (rarer/rarest species) including well-used swarming sites Maternity sites (rarer species) Hibernation sites (rarest species) Significant hibernation sites for rarer/rarest species or all species assemblages
National	Maternity sites (rarest species) Sites meeting SSSI guidelines
International	SAC sites

4.6 Weather Conditions

The weather during the initial visual assessment was in line with seasonal norms. The emergence surveys were undertaken during suitable weather conditions, as described below:

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- 27th August 2020: Drizzle with part cloud cover and a temperature of 16°C at the beginning of the survey; and 15°C, dry with full cloud cover at the end of the survey; in accordance with the Beaufort Scale, wind was no greater than 'moderate breeze'.

- 23rd September 2020: Dry with part cloud and a temperature of 12°C at the beginning of the survey; and 12°C, clear and dry at the end of the survey; in accordance with the Beaufort Scale, wind was no greater than 'light breeze'.

4.7 Limitations

There are a number of visible features on the exterior of Valhalla and the outbuilding with potential to support roosting bats, which could not be fully inspected for evidence of bats. These limitations were addressed by undertaking two bat emergence surveys. There are no limitations associated with weather conditions.

The bat surveys were undertaken in accordance with best practice guidance; however, the results of these surveys represent only a snapshot of use at the time of survey.

The calls of four bat species are notoriously difficult to record: the long-eared bats (*Plecotus spp.)* and the barbastelle bat (*Barbastella barbastellus*) have a quiet echolocation call, and the horseshoe bats (*Rhinolophus hipposideros* & *R. ferrumequinum*) have highly directional calls. The long-eared, barbastelle and horseshoe species can be easily missed during bat detector surveys. We presume all *Plecotus spp.* recordings are those of brown long-eared bat (*Plecotus auritus*) because Cornwall is outside the known range of the grey long-eared bat (*Plecotus austriacus*).

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5.0 Bat Survey Results

5.1 Site Description and Habitat Assessment

The property 'Valhalla' is located on the southern end of the island of Tresco, Isles of Scilly, on the southern edge of Tresco Abbey Garden, *c*. 0.1 km north of Tresco Heliport *c.* 0.3 km north east of Apple Tree Bay and *c*. 3.6 km north-west of Hugh Town on St Marys, Isles of Scilly.

The location is rural in character, with mature mixed woodland and well-managed ornamental gardens to the north and west within Tresco Abbey Garden, open well-manicured grassland within the heliport to the south and open heathland and dunes further to the south beyond the heliport. Abbey Pool is present *c*. 0.15 km to the east of the property. An area of Reedbed is present c. 0.6 km to the north of the site, a Section 41 NERC Act (2006) / UK BAP Priority Habitat. Great Pool (Tresco) Site of Special Scientific Interest (SSSI) is present *c*. 0.4 km to the north of the site and Pentle Bay, Merrick and Round Islands SSSI is present *c*. 0.17 km to the south of the site. Buildings in the wider area comprise a mixture of period and modern properties, outbuildings and barns. In combination these features provide potential high-quality foraging and roosting habitat for bats.

5.2 Visual Assessment Summary

The assessment was undertaken on 4th August 2020.

Valhalla consists of a large two-storey L-shaped stone building, the eastern part of which contains the Valhalla Museum and the northern and western parts contain residential accommodation. The roof over the property is pitched with overhanging eaves on the northern and southern gable ends. The roof is covered with interlocking concrete and clay roof tiles with clay ridge tiles. On the western elevation the roof extends in a lean-to projection down to ground floor level, with a further concrete block single-storey lean-to projection in the centre at ground floor level. There is a single-storey attached outbuilding on the northern elevation, with a pitched slate roof and clay ridge tiles, and to the west of the property within the garden, is a detached single-storey outbuilding with a pitched roof covered with interlocking clay roof tiles (Figs 2 to 6).

Figure 2: Southern elevation of Valhalla

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Figure 3: Western elevation of Valhalla and northern elevation of detached outbuilding

Figure 4: Northern and eastern elevations of Valhalla (showing Valhalla Museum)

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Figure 5: Northern elevation of attached outbuilding

Figure 6: Northern elevation of detached outbuilding

Residential house and apartment

The western section of the property consists of a two-storey residential house on the ground floor and part of the first floor, with a self-contained apartment on the first floor at the northern end accessed via an external timber staircase. There are roof lights and a dormer window with a pitched roof in the western elevation of the roof. The building features plastic guttering, timber fascias, timber barge boards on the northern and southern ends, timber framed glazed windows and timber doors, slate and timber windowsills and two stone chimneys on the main part of the roof. There are notable gaps at the wall tops under the overhanging eaves, behind the fascia boards and at the ends of the interlocking roof tiles which provide potential opportunities for roosting bats and potential access into the roof voids. On the southern gable end there is also a large gap under the eaves which provides potential access for bats to the underside of the roof and potentially also the roof void above (Figs 7 to 9).

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Figure 7: Gaps underneath the interlocking roof tiles on western elevation

Figure 8: Gap under eaves on southern gable end

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Figure 9: Gap on wall top behind fascia board on western elevation

Internally, the roof over the house is partially vaulted with two separate roof voids above the first floor. A third separate roof void is present over the apartment in the north of the property. The two voids over the house are separated by an internal stairwell with a roof light above. The three voids are of similar composition internally; open from the floors, which are covered with rolled insulation, to the underside of the roof, which is lined with a bitumen-based roofing felt covered with chicken wire. The internal walls are bare stone and there are no crossing timbers. The roof void over the apartment is larger than the other two roof voids as the ceiling in this part of the property is lower. This void contains a water tank and some stored materials (Fig 10).

Figure 10: Interior of roof void over apartment (viewed towards the south)

Within the two smaller roof voids over the house a light scattering of mixed-age bat droppings was noted on top of the loft insulation (approximately 1 to 5 droppings per m^2). Within the roof void over the flat, a light scattering of mixed-age bat droppings likely from the same species were also

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noted, with a small accumulation of droppings noted under the ridge in the centre (approximately 10 – 20 droppings) and a larger accumulation at the northern gable end below the ridge (50+ droppings). The droppings were characteristic of a long-eared bat spp., likely to be brown long-eared bat as the site is outside the known range of grey long-eared bat (Fig 11).

Figure 11: Accumulation of bat droppings at the northern gable end within roof void over the apartment.

Valhalla Museum

The Valhalla Museum is contained partly within a single storey extension, which projects eastwards from the main building creating an 'L-shape', and partly within the eastern side of the main building. This part of the building is open fronted along its northern and eastern sides, with stone pillars and ship figureheads present from the stone floor to the underside of the ceiling. The ceiling consists of timber battens over bitumen felt and the walls are either bare stone or they have been rendered and painted (Fig 12). The southern elevation of the eastern extension is a bare stone wall with a timber door leading through into the museum area. There is a loft hatch above this door, although it was not possible to inspect the roof void above due to the ceiling height being beyond the length of the ladder.

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Figure 12: Interior of Valhalla Museum (viewed towards the west).

No evidence of use of this part of the building by roosting bats was noted. As it was not possible to inspect the interior of the roof void over the eastern extension the likely presence or absence of bats roosting within this area could not be determined. However, as far as we are aware, this section of the building will not be directly impacted by the proposed works.

Outbuildings

The attached outbuilding has a timber door and a timber vent on the northern gable end. It also features a timber barge board on this end of the building, but there are no windows. There are notable gaps behind the barge board, in the timber door and vent which provide potential access for bats into the interior (Fig 5). Internally, the building consists of one room, which is very dark and is open from the stone floor to the underside of the roof, which has been partially vaulted and lined with timber sarking boards (Fig 13).

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Figure 13: Interior of attached outbuilding (viewed towards the north).

No evidence of the use of the attached outbuilding by roosting bats was found. However, a small number of external features were noted on this part of the building which could provide potential access into the interior.

The detached outbuilding has two small timber framed glazed windows and a timber door on the northern elevation. It features timber fascias and there is timber cladding on the eastern gable end. There are notable gaps underneath the fascia which provide potential roosting opportunities for bats and also provide potential access into the interior. The timber cladding is well-sealed (Fig 6).

Internally this building consists of two rooms separated by a stone wall and timber stable door. The eastern room is open from the stone floor to the underside of the roof, which is unlined, and the walls are either whitewashed stone or timber boards. There are notable gaps under the ridge and at the wall tops on the gable ends which provide potential access for bats into the interior (Fig 14). The western room has carpet on the floor and a partially vaulted ceiling and the internal walls have been rendered and painted.

Within the eastern room approximately *c*.10 old bat droppings were noted on the windowsill and on the stonework in this room. It was not possible to determine the likely species of bat as the majority of droppings were degraded, although a single dropping characteristic of a pipistrelle bat spp. was noted.

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Figure 14: Interior of eastern room within detached outbuilding (viewed towards the east).

Overall, the results indicate that the roof voids over Valhalla likely support a brown long-eared bat roost. NB: species present must be confirmed with DNA analysis of bat droppings. In addition, old bat droppings were found within the detached outbuilding and there are a number of external features on the buildings with potential to be used by roosting bats including gaps behind the fascias, barge board, under the overhanging eaves and under roof tiles which also provide potential access into the interior of the roof voids and outbuildings.

No evidence of the use of the attached outbuilding or Valhalla Museum by roosting bats was found. However, as it was not possible to inspect the interior of the roof void over the eastern extension (Valhalla Museum), the likely presence or absence of bats roosting within this area could not be determined.

Valhalla and associated outbuildings were, therefore, assessed as being of **'moderate suitability'** for roosting bats.

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5.3 Emergence Surveys

During the first emergence survey on 27th August 2020, three common pipistrelles were seen to emerge at 20:23, 20:35 and 20:37 from a gap behind the wooden fascia board on the south elevation of Valhalla (Fig 15). No bats were seen to emerge from the attached outbuilding or detached outbuilding during this survey.

During the second emergence survey on 23rd September 2020, one brown long-eared bat was seen to emerge at 20:09 from under the wooden fascia board near the apex of the northern elevation of Valhalla (Fig 16). No bats were seen to emerge from the attached outbuilding or detached outbuilding during this survey.

Figure 15: Location of three common pipistrelles seen to emerge during first emergence survey (red arrow) from under the fascia board on the southern elevation of Valhalla.

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Figure 16: Location of a brown long-eared bat seen to emerge during the second emergence survey (red arrow) under wooden fascia near the apex on the northern elevation of Valhalla.

5.4 Bat Static Detector Survey

A static detector survey of the southern void within Valhalla where bat droppings were found was undertaken between 5th and 20th August 2020. There were no bat calls recorded during this survey.

5.5 DNA Analysis

DNA analysis of bat droppings, collected from a scattering of droppings within the southern roof voids of Valhalla and from an accumulation at the northern gable end within the roof void over the flat, came back as inconclusive; likely due to the age of the droppings or contamination by a lesser white-toothed shrew/ Scilly shrew (*Crocidura suaveolens*). The lack of bat calls recorded during the static detector survey, indicates that a likely brown long-eared bat and/ or common pipistrelle bat(s) have historically used these voids for roosting (at least one individual) but that they are not currently (at the time of the survey) roosting within this part of the building.

5.6 Bat Species Evaluation

The combined survey results have shown that Valhalla supports an occasional day roost for at least three individual common pipistrelles and a for at least one brown long-eared bat. Both species were also seen commuting and foraging over the buildings during both emergence surveys.

No evidence of the use of the attached or detached outbuildings by roosting bats was found, apart from old likely pipistrelle bat/ long-eared bat droppings noted within the detached outbuilding during the visual survey (Plan for Ecology Ltd, 2020).

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Brown long-eared bat:

The results indicate that the northern gable end of Valhalla, near the apex, is used as an occasional day roost by a small number of non-breeding brown long-eared bats (at least 1 individual). The brown long-eared bat roost is located underneath the wooden fascia/ barge board (Fig 16). The brown long-eared bat(s) access this part of the building via small gaps between the fascia board and the wooden panelling on the northern elevation. It is also possible that the brown long-eared bat roosts within the roof void over the apartment, gaining access via these gaps in the external wooden panels. NB. We presume all *Plecotus spp.* recordings are those of brown long-eared bat because Cornwall and the Isles of Scilly are outside the known range of the grey long-eared bat.

The brown long-eared bat is widespread throughout the UK and its population is considered to have been stable since 1999 (BCT, 2020). The brown long-eared bat is also a UK Biodiversity Action Plan (BAP) priority species for conservation (JNCC, 2013) and is listed as vulnerable in the Red Book for Cornwall and the Isles of Scilly (Williams, 2009).

The day roost within the northern elevation supports a small number of non-breeding brown long-eared bats (at least one individual). This roost is considered to be of **low conservation significance** for this bat species.

The common pipistrelle:

The results indicate that at least three common pipistrelles use gaps between the wooden fascia board and stone wall on the southern elevation of Valhalla as day roosts. The common pipistrelle is a crevice dwelling bat species that typically roosts between slates/ tiles and the roofing felt, or beneath fascia boards/ soffits. This species is common and widespread throughout the UK. The population is considered to have increased since 1999 (BCT, 2020). Common pipistrelle is also considered common and widespread in Cornwall.

Valhalla supports one common pipistrelle day roost, each comprising a small number of non-breeding common pipistrelle bats (at least three individuals in total). This roost is considered to be of **low conservation significance** for this bat species.

The likely pipistrelle bat dropping noted within the detached outbuilding during the visual survey is likely to be from an individual exploring the building on one occasion, as this building was not shown to be used by roosting bats during the further survey work. The other droppings were old and degraded and so it was not possible to determine the likely species of bat.

Following the framework described by Wray *et al* (2010), as outlined in Section 3.4 above (Tables 1-2), the rarity of the bat species recorded on-site is 'common' for brown long-eared bat and common pipistrelle bat. The corresponding value for a day roost of a small number of a common bat species is 'District, local or parish' level. Overall, Valhalla is considered to be of **Local** importance for roosting bats.

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6.0 Impacts and Mitigation Recommendations

6.1 Evaluation of Development Proposals and Impacts

The further survey work has shown that Valhalla supports a likely day roost for at least one individual brown long-eared bat and a likely day roost for at least three individual common pipistrelles. No evidence of use of the outbuildings by roosting bats was found during the further survey work. The client proposes to construct a rear extension onto Valhalla and renovate the building internally. It is not known if the detached outbuilding will also be impacted as part of the works.

In the absence of mitigation, the proposals have the potential to disturb, injure or kill roosting bats and will result in the loss of all of the identified roosts.

6.2 Mitigation

Valhalla

To avoid, mitigate and compensate for potential impacts as outlined above, it is recommended that provision for day roosting common pipistrelle bats and brown long-eared bats is retained/ recreated within the fabric of the existing building and new extension to enable bats to continue to roost here post-development. An outline of the recommended mitigation is provided below (to be agreed with the client).

To proceed lawfully, an appropriate licence must be obtained from Natural England to protect bats during the construction process. The appropriate licence will set out the mitigation required to maintain the favourable conservation status (FCS) of the bat species using Valhalla.

Outline of recommended mitigation:

- Works will not commence until an appropriate licence has been obtained from Natural England. The licence application should, ideally, be informed with a 3rd emergence or re-entry survey of the building. Emergence and re-entry surveys can only be undertaken between May and September. It is not possible to submit/obtain a bat mitigation licence from Natural England until planning consent is granted.

- Works will be scheduled for a time of year when bats are least likely to be impacted.

- Works with potential to impact bats will be carried out under an ecological watching brief. A licensed bat ecologist will oversee works to the roof / fascia etc; any common pipistrelle bats or brown long-eared bats uncovered will be relocated to one of two bat boxes installed within nearby trees (one per species). NB: the bat boxes (2 x Schwegler 2F) will be installed within adjacent trees in advance of removal of the roof. See https://www.nhbs.com for product specification.

- As far as we are aware, the existing common pipistrelle day roost on the southern gable end of the building is not being directly impacted and will be retained. This feature must be protected during the construction and operational phases and the access point retained to ensure common pipistrelle bats can continue to roost within the building post-development. If, however, it is not possible to retain this roost feature and it is to be lost, its loss will need to be compensated by providing alternative provision, comprising a bat slate over Bitumen 1F felt. The bat slate, located on the western elevation of the roof, will be positioned three slates down from the ridge and will permit bats to roost between the roof tiles and bitumen membrane. Synthetic breathable roof membranes are not appropriate for use in bat roosts as they have been proven to cause harm to bats.

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- As far as we are aware, the existing roost feature shown to be used by the brown long-eared bat i.e. a cavity underneath the fascia/ barge board on the northern elevation is not being directly impacted by the proposed works and is being retained. This feature must be protected during the construction and operational phases and the access point retained to ensure brown long-eared bats can continue to roost within the building post-development. If, however, it is not possible to retain this roost feature and it is to be lost, its loss will need to be compensated by providing alternative provision, comprising a bat slate or raised ridge tile over Bitumen 1F felt (as above for common pipistrelle), with access into the roof void below.

- Although the roof void over the apartment is being retained post-development, it will be modified when the new extension is tied into the existing roof. Provision for day roosting brown long-eared bats will be made in the modified building by retaining the northern roof void over the apartment measuring *c.* 5m (length) x 5m (width) x 1.5m (height). Existing likely access into the roof void will be maintained by retaining the gap between the fascia board and barge board at the northern elevation, or by installation of a bat slate onto the western aspect of the roof with a corresponding slit created in the felt underneath to enable brown long-eared bats to access the roof void below. Alternatively, two raised ridge tiles with a gap underneath 15-25mm wide with corresponding slit in the roof membrane can be used to provide access to the roof void. The roof must be lined with type 1F bitumen as opposed to a synthetic breathable membrane.

- In addition, further roosting opportunities for common pipistrelle bats and brown long-eared bats should be incorporated into the new extension. This could either take the form of spacing off of fascia boards by 15-25mm to create a gap behind for bats to roost within, or installation of a single Schwegler 1FE bat access panel with back plate within the fabric of the building, to be located at least 4 metres above ground level, on a southern elevation of the existing building or new extension post-development. The bat access panel should be set within mortar to provide an integral roost feature.

- No exterior lighting will be installed close to the temporary and permanent bat roost features, including any access points.

- Building contractors will be briefed prior to commencement of site works. Contractors will be notified about the potential presence of bats and informed that if a bat/s is/are uncovered during works, then work must stop immediately (as soon as it is safe to do so) and advice sought from the licensed bat ecologist/s (Plan for Ecology Ltd, 01326 218839).

<u>Outbuildings</u>

As far as we are aware the outbuildings are not being directly impacted by the proposed development and are being retained. However, if any works are proposed to these buildings, a precautionary approach should be adopted.

Although bats are not currently, at the time of the survey, using the outbuildings, external features with potential to support bats were identified and old bat droppings were noted within the detached outbuilding during the visual assessment. The building contractors should be made aware that bats can roost unseen within the building structure. If, during works, a bat(s) is uncovered, the bat must not be handled and works must stop immediately (as soon as it is safe to do so). Advice must be sought from an experienced bat ecologist (Plan for Ecology Ltd: 01326 218839) or Bat Conservation Trust (Tel: 0345 1300 228). See Section 2.3 for relevant legislation.

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