Bat Survey Report

Gwarackewenbyghan, Boskennal, St Buryan, TR19 6DF

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1. INTRODUCTION

1.1 Background

Mark Tunmore was instructed by Christopher Morris in April 2023 to carry out a bat and nesting bird survey at a property known as Gwarackewenbyghan, located at Boskennal, St Buryan, Cornwall, TR19 6DF. The survey was requested in preparation for a planning application to carry out internal and external improvements on the granary building, to demolish the polytunnel and piggery and to construct living accommodation within the current footprint of a collapsed barn. This followed a visual assessment carried out on 11 February 2023, which identified the granary and collapsed barn as holding moderate potential for roosting bats and the piggery as holding low potential using the national survey guidelines (Collins, 2016). Under this guidance two emergence surveys of the granary and collapsed barn were recommended and a period of remote monitoring in the piggery. As no external features were present that could host roosting bats it was not necessary to carry out an emergence survey at the piggery. No further surveys were carried out on the polytunnel as it held negligible potential for roosting bats and is excluded from this report. This report summarises the results of the surveys and provides advice on mitigation and licensing.

1.2 Site description

The survey site (SW41242500) consisted of a complex of buildings located at the end of a short track leading from a minor road, approximately 650m south-east of the village of St Buryan in west Cornwall. For the purposes of this report the buildings are referred to as the granary, collapsed barn and piggery.

Figure 1. Eastern aspect of the granary.

Granary

This two-storey stone-built structure (Figure 1) was joined on to a dwelling on the west side of the building, which was not part of the landholding. The building is a Grade II listed building. The walls were tightly pointed and on the east side of the building two rows of square holes were present in two rows (Figure 2), totalling 14 in number. These were examined from a ladder and did not extend far enough down to support roosting bats due to sealing with cement (Figure 2); they did, however, have potential for nesting birds and the remains of a nest was found in one of them.

A flight of stone steps led up to the upper level on the north end of the building (Figure 3), which allowed close inspection of the wooden fascia there. Suitable gaps for roosting bats were present in places (Figure 4). At the front of the building the fascia was capped at the top and the gap was too large to allow use by bats; on the southern gable a large gap at the eaves led into the roof void of the building, offering potential for bats (Figure 5).

Figure 2. Close-up of one of the square holes in the eastern aspect of the building.

Figure 3. Flight of stone steps on the north side of the granary.

Figure 4. Gap behind fascia on north side of the granary, suitable for roosting bats.

Figure 5. Open gap on the southern gable, leading into the roof void.

The hipped roof of the building was constructed of slate; occasional slates were missing, leaving suitable gaps; gaps were also present beneath ridge tiles in places. A single Velux window was present on the east side. Inside the building a boxed void was present on the upper floor but there was no access to this (Figure 6). On the ground floor a blocked fireplace was present.

Figure 6. Boxed void on the upper floor of the granary.

Figure 7. Ivy-covered lean-to on the south side of the granary.

Built on to the south side of the building there was a small lean-to, which was covered with a dense growth of ivy (Figure 7). The building was stone-built and cement rendered inside and out. No roof was present and the room was accessed from the west side via an open entrance (Figure 8); a recess was present above the entrance, on each side, which led to spaces within the wall (Figure 9).

Figure 8. Entrance to the lean-to on the west side.

Figure 9. Recess leading into the stonework at the edge of the lean-to entrance.

Where the granary joined on to the adjacent dwelling there was a gable of vertical slates on the adjacent building, which held potential for roosting bats; although not part of the property being surveyed, it could be ecologically impacted by any roof work taking place on the granary.

Collapsed barn

The remains of this single storey structure were located immediately to the east of the granary (Figures 10 & 11). It was stone built and the roof was missing with some stacked slates being the only evidence of this. The walls were largely intact but heavily covered with a growth of dense ivy, as well as some bramble and Buddleia; some gaps in the masonry were present in places, which held potential for roosting bats. The interior walls were covered with a lime render, which was in a poor state of repair. The remains of a tin roof were present at the back of the building, which provided a sheltered recess potentially attractive to nesting birds.

Figure 10. Eastern aspect of the collapsed barn, looking towards the granary.

Figure 11. Interior of collapsed barn.

Piggery

To the south of the collapsed barn was a domed structure known as the piggery, which was being used as a plant propagation area (Figures 12–14). The end walls and the lower part of the long sides were constructed

of concrete block with the domed roof and some of the sides made of plastic sheeting (Corex). It was accessed by two wooden doors at the northern end, which are kept closed. Soil and debris was present on the floor which may have made evidence of bats more difficult to see. Some gaps were present between the plastic sheets which made access by bats possible.

Figure 12. Southern and western aspect of the piggery.

Figure 13. Northern and eastern aspect of the piggery.

Figure 14. Interior of the piggery.

The buildings were located within wooded grounds and surrounded by an agricultural landscape with arable and pasture fields with an extensive network of hedgerows. A narrow wooded valley is present approximately 400m to the south-west, which extends to the coastline, approximately 2km away. The landscape thus offers a high degree of habitat connectivity and quality foraging habitat for bats with relatively low levels of light pollution.

1.3 Proposed works

Internal and external refurbishment of the granary will take place, which will include replacing the current slate with new slate, fitting four skylights, repointing of the external walls and internal rearrangement.

The collapsed barn will be strengthened by removing vegetation and repointing; living accommodation will be constructed within the footprint.

The piggery will be demolished and a studio built in the footprint.

1.4 Aims of the survey

The aim of the surveys was to establish if roosting bats were present and if so, what species and numbers, as well as the location of any roosts and means of access.

1.5 Survey limitations

Due to the structure of the ceiling in the granary there was no access to the enclosed roof void and it is not known if evidence of bats was present there. In the piggery, presence of soil and debris on the ground made searching for bat evidence difficult and the presence of just a few droppings could have been overlooked.

It was not possible to view the western side of the building as there was no means of seeing this within the land holding and it would have required access via another property.

1.6 Evaluation

The potential of the site for roosting bats is categorized using the terms specified in *Bat Surveys for Professional Ecologists* (Collins, 2016), assigning suitability to one of four categories specified below:

- Negligible. Negligible habitat features on site likely to be used by roosting bats.

- Low. A structure with one or more potential roost sites that may be used by individual bats opportunistically but which does not provide appropriate conditions to be used regularly or by large numbers of bats.

- Moderate. A structure with one or more potential roost sites that could be used by bats but is unlikely to support a roost of high conservation value.

- High. A structure with one or more potential roost sites with obvious suitability for use by large numbers of bats on a more regular basis.

2. METHODS

2.1 Visual assessment

A visual survey was carried out on 11 February 2023 during favourable weather conditions, searching for evidence of bat use, including droppings, feeding remains and staining from urine or grease from fur. A high-powered torch was used to examine all parts of the buildings, including behind fascia boards and lintels.

2.2 Emergence surveys

Two dusk emergence surveys were carried out at the site in 2023. The first was conducted on 11 May starting at 20.40 (15 minutes before sunset) and finishing at 22.25; sunset was at 20.55 B.S.T. The second emergence survey was conducted on 29 June commencing at 21.21 (15 minutes before sunset) and finishing at 23.06; sunset was at 21.36 B.S.T.

Three surveyors, some supported with ‘night vision aids’ (NVA), were present on each survey. Surveyor 1 was positioned to the south of the granary observing the southern aspect and part of the eastern aspect, with surveyor 2 watching the northern and eastern aspects of the granary and the northern and western aspects of the collapsed barn. Surveyor 3 was located at the south of the collapsed barn observing the southern and eastern aspects. This strategy enabled all aspects of the two buildings containing potential bat roosting features to be viewed. Table 1 summarises the personnel and equipment used, Figure 15 shows the surveyor locations and Figure 16 shows the night vision aid infrared illumination.

Date (2023)	Surveyor number	Surveyor name	Equipment used	Method of detection
11 May	1	Mark Tunmore	Anabat Walkabout	Pitch shifting & infrared
11 May	2	Andrew Nelson	Echo Meter Touch 2 Pro, Bat Scanner Stereo & 2 x NVA	Time expansion, heterodyne & infrared
11 May	3	Scott Barron	Anabat Scout	Frequency division &. Heterodyne

11 May	IR	Infrared	Canon XA15 & 2 x Nightfox XB5 infrared torch	Infrared
29 June	1	Mark Tunmore	Anabat Walkabout	Pitch shifting
29 June	2	Andrew Nelson	Echo Meter Touch 2 Pro, Bat Scanner Stereo & 2 x NVA	Time expansion, heterodyne & infrared
29 June	3	Scott Barron	Anabat Scout	Frequency division & heterodyne
29 June	IR	Infrared	Canon XA15 & 2 x Nightfox XB5 infrared torch	Infrared

Table 1. Surveyor and equipment information.

Methods of detection are described below:-

- Full spectrum records at very high sample rates, enabling high frequency sounds to be recorded in real time. Files are recorded for subsequent sound analysis.

- Heterodyne plays back sound in real time, operating at a narrow bandwidth of frequencies, dependent upon the frequency the observer is tuned into.

- 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.

- Frequency division divides the frequency of ultrasound by a pre-set ratio (typically 16) so that ultrasonic noises can be heard. Calls are recorded for subsequent sound analysis.

- Time Expansion plays back recorded sound at a slower than normal speed (typically $1/10^{th}$), which has the effect of lowering the frequency of sound so that it is audible to the human ear. Calls are played in real time and recorded for subsequent sound analysis.

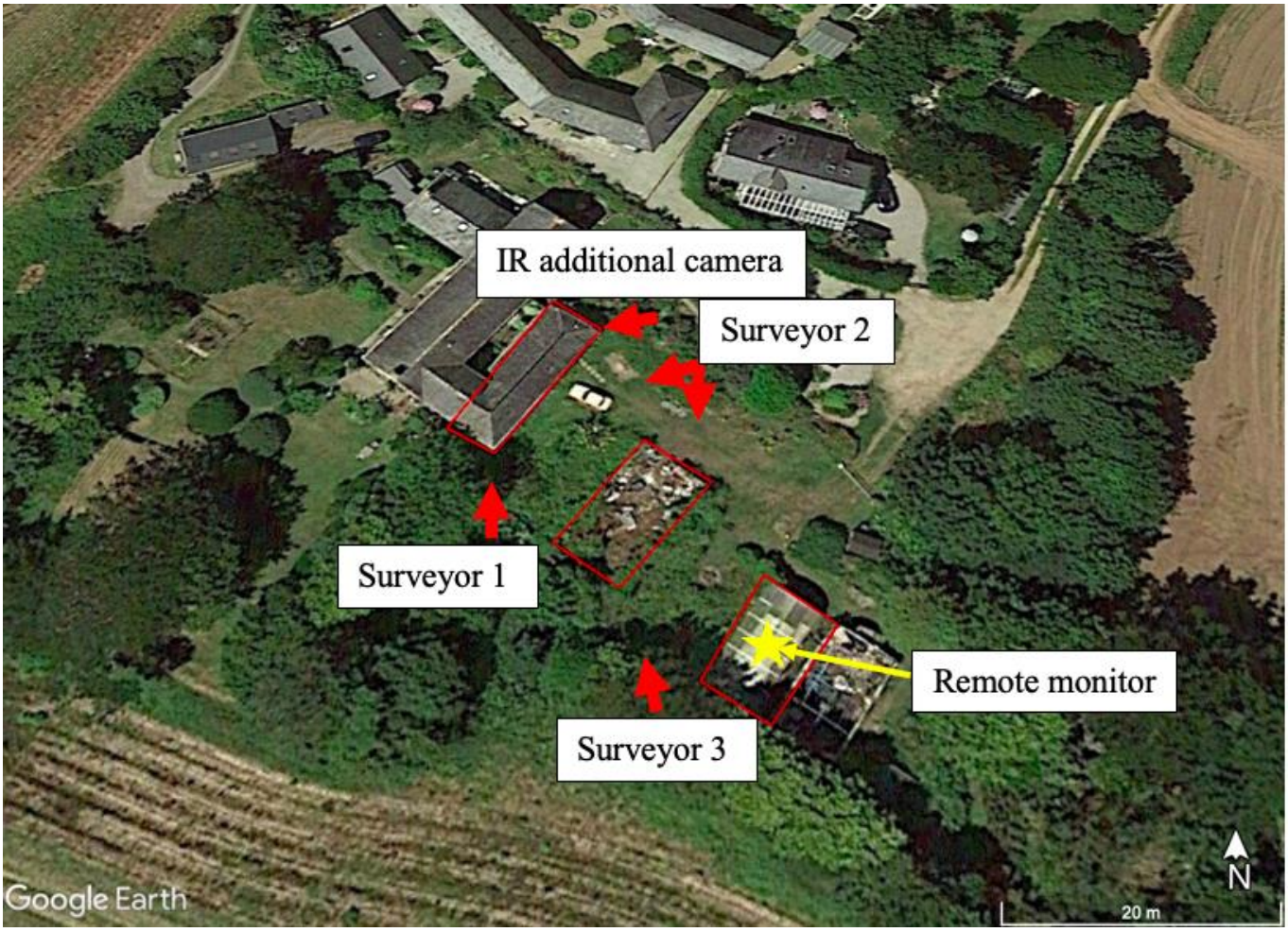

Figure 15. Surveyor and equipment locations.

Figure 3. Infrared illumination. **Top left**: IR Surveyor, Granary northern aspect, 11 May 2023. **Top right**: Surveyor 2, Collapsed barn, 29 June 2023. **Bottom left**: IR Surveyor, Granary northern aspect, 29 June 2023. **Bottom right**: Surveyor 2, Granary eastern aspect, 29 June 2023.

2.3 Surveyor information

Mark Tunmore (Natural England license number 2015-14995-CLS-CLS), Scott Barron and Andrew Nelson are all experienced bat surveyors with a wide range of experience on similar development projects.

2.4 Weather Conditions

During the dusk emergence survey on 11 May conditions were dry with full cloud cover and a north-westerly breeze of Beaufort Force 1. Temperatures started at 12.3°C, falling to 11.2°C by the end of the survey.

During the dusk emergence survey on 29 June weather conditions were dry with 4/8 cloud cover and a westerly wind of Beaufort Force 2. Temperatures started at 13.4°C with this temperature maintained throughout the survey.

2.5 Remote monitoring

An Anabat Express bat detector was left recording bat activity in the piggery between the nights of 11 May and 17 May inclusive.

3. RESULTS

3.1 Visual assessment

No evidence of bats was found but it was not possible to access the roof void of the granary to check there. On the second emergence survey on 29 June bats were seen to emerge from one of the square alcoves in the wall on the eastern aspect of the granary. This was examined from a ladder the next day and a large quantity of bat droppings were evident at the back of the alcove, where a slit approximately 2cm high led into a space behind it (Figure 17). A sample of droppings was taken for DNA analysis.

Figure 17. Bat droppings at the back of the alcove.

3.2 Emergence surveys

During the first dusk emergence survey on 11 May no bats were seen to emerge from the granary or the collapsed barn. Common Pipistrelle *Pipistrellus pipistrellus* activity was recorded regularly throughout the survey in the grounds from 21.10 B.S.T. onwards, Noctule *Nyctalus noctula* was observed high overhead on two occasions at 21.13 and 21.39; occasional Brown Long-eared Bat *Plecotus auritus* activity was recorded between 21.35 and 22.13 B.S.T. Two unidentified *Myotis* bat calls were recorded in the garden to the east of the granary at 21.49 and 21.50 B.S.T.

During the second emergence survey on 29 June, 21 **Natterer's Bat** *Myotis nattereri* emerged from one of the square alcoves in the wall on the eastern aspect of the granary between 22.10 and 22.50 B.S.T. (see Figure 18). The Natterer's bats were seen to be using a flight route that took them south along the front of the granary to a darkened corner of the garden; several individuals were also spotted returning to roost during the survey. This behaviour and the apparent absence of bats on the previous survey is indicative of a maternity (breeding) roost being present.

No bats emerged from the collapsed barn. Common Pipistrelle activity was noted in the grounds throughout the survey from 22.00 B..S.T. and occasional Brown Long-eared Bat and Noctule calls were also recorded.

3.3 Remote monitoring

The remote detector in the piggery did not record any bat activity between the nights of 11 May and 17 May inclusive.

Figure 18. Natterer's Bat emergence location at the granary.

4. LEGISLATION AND POLICY

4.1 Bats

As a result of the substantial declines in bat populations that have taken place over the last century bats are legally protected by domestic and European legislation. All British bats are European Protected Species

(EPS), listed under Annex IV (a) of the EC Habitats Directive. They receive legal protection under the Conservation of Habitats and Species (amendment) (EU Exit) Regulations 2019. Additional legal protection is afforded under Section 9 of the Wildlife and Countryside Act (as amended by the Countryside and Rights of Way Act 2000), all British Bats being listed under Schedule 5 of the Act. In combination this makes it an offence to:

- Intentionally kill, injure or take a wild bat
- Intentionally or recklessly damage, destroy or obstruct access to a wild bat roost (regardless of whether bats are present at the time or not)
- Intentionally or recklessly disturb a wild bat while it is occupying a structure or place it uses for shelter or protection

Since 2007 it is no longer a valid defence to show that the killing, capture or disturbance of a species covered by the Conservation Regulations or the destruction or damage of their breeding sites or resting places was the incidental or unavoidable result of an otherwise lawful activity.

4.2 Nesting birds

All nests and eggs of wild birds are protected under Part 1 of the Wildlife and Countryside Act 1981 (and amendments).

4.3 Planning policy

The National Planning Policy Framework (NPPF) 2018 sets out government policy with regard to the consideration of biodiversity in planning decisions. The presence of a protected species is a material consideration when a planning authority is considering a development proposal that would be likely to cause harm to the species or its habitat. The NPPF states that if significant harm from a development cannot be avoided (through locating on an alternative site with less harmful impacts), adequately mitigated or, as a last resort, compensated for, then planning permission should be refused.

Under Section 40 of the Natural Environment and Rural Communities (NERC) Act 2006 local authorities have a duty to have regard to the conservation of biodiversity in England when carrying out their normal functions, which includes consideration of planning applications. The England Biodiversity List was published in compliance with section 41 of the Act and includes 941 species which make up the UK Biodiversity Action Plan Priority Species list. This includes seven of the UK's bat species (listed below).

The UK Biodiversity Action Plan (UK BAP) is the national strategy developed in response to the Convention on Biological Diversity signed in Rio in 1992. It identified the species requiring priority action to address their causes of decline and take action to maintain and conserve their biodiversity. Listed bats are:

- Barbastelle *Barbastella barbastellus*
- Bechstein's Bat *Myotis bechsteinii*
- Noctule *Nyctalus noctula*
- Soprano Pipistrelle *Pipistrellus pygmaeus*
- Brown Long-eared Bat *Plecotus auritus*
- Greater Horseshoe Bat *Rhinolophus ferrumequinum*
- Lesser Horseshoe Bat *Rhinolophus hipposideros*

5. EVALUATION

The surveys have demonstrated the presence of a maternity roost of Natterer's Bat within a space behind the southern wall of the granary, which is being accessed by a narrow slit at the back of a square alcove.

Natterer's Bat is found throughout the British Isles but is a scarce and poorly known species. Relatively few summer roosts are known and most are in old stone buildings, where bats may sometimes crawl through torturous routes in walls to get to their roost locations (BCT, 2010). The population has increased during the monitoring period 1999–2022 (BCT, 2023). The species is listed as vulnerable within the Red Data Book for Cornwall and the Isles of Scilly (CISFBR, 2009).

Roost types are valued using the system proposed by Wray *et al.* (2010), in which bat species are categorized by distribution and rarity (Table 2) and roosts assigned to a geographic frame of reference based on the rarity of the species (Table 3). Using these criteria, the property has **regional importance** for Natterer's Bat.

Table 2. Categorising bats by rarity in England (adapted from Wray *et al.*, 2010).

Rarity in England	**Species**
Common	Common Pipistrelle *Pipistrellus pipistrellus*, Soprano Pipistrelle *P. pygmaeus*, Brown Long-eared Bat *Plecotus auritus*
Rarer	Lesser Horseshoe *Rhinolophus hipposideros*, Whiskered Bat *Myotis mystacinus*, Brandt's Bat *M. brandtii*, Daubenton's Bat *M. daubentonii*, Natterer's Bat *M. nattereri*, Leisler's Bat *Nyctalus leisleri*, Noctule *N. noctula*, Nathusius' Pipistrelle *Pipistrellus nathusii*, Serotine *Eptesicus serotinus*
Rarest	Greater Horseshoe *Rhinolophus ferrumequinum*, Bechstein's Bat *Myotis bechsteinii*, Alcathoe Bat *M. alcathoe*, Greater Mouse-eared Bat *Myotis myotis*, Barbastelle *Barbastella barbastellus*, Grey Long-eared Bat *Plecotus austriacus*

Table 3. Valuing bat roosts (taken from Wray *et al.*, 2010).

Geographic Frame of Reference	**Roost Type**
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) 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/UK	Maternity sites (rarest species) Sites meeting SSSI guidelines
International	SAC sites

6. RECOMMENDATIONS

In the absence of mitigation the development proposals will result in the loss of a maternity roost of Natterer's Bat. **Before work can lawfully proceed a European Protected Species (EPS) license must be obtained** and an appropriate mitigation strategy will need to be proposed as part of the licence application in order to maintain the favourable conservation status of the species roosting there. Until the licence is granted no work must take place upon the granary. The findings of this report are valid for one year and if works do not commence within that time an update survey will be required.

The following recommendations are made:

- Work must take place on the granary only during the period October to March and be completed before May, in order to avoid disruption to the maternity roost.
- Prior to work commencing two Schwegler 2F woodcrete bat boxes will be appropriately fitted to nearby trees, under the supervision of the bat ecologist. These boxes must be kept away from any forms of artificial lighting. Any bats uncovered during works will be relocated by the ecologist to these boxes.
- A pre-works inspection will be carried out by a bat ecologist before work to the granary takes place.
- Contractors will be given a toolbox talk by the bat ecologist prior to commencing works.
- The granary roof will be soft stripped by hand in the presence of a licensed bat ecologist with roof tiles and fascias removed with care and checked for bats underneath. Any other features identified by the ecologist as holding potential for roosting bats will also be removed under a watching brief. This would include the stud walls and ceiling within the granary as it is possible that the bat roost is located in this area.
- **The exact location of the current roost will be further investigated and it will be retained in situ with the final architectural plans to include retention of the roost area and access point.** No artificial lighting will be included in the plans which will impact upon the roost area or the bats' flight line to the access point.
- Before a licence application can take place a further emergence survey will take place before the end of September. It will also be necessary to confirm the identity of the bat species by DNA analysis of the droppings as *Myotis* bats are notoriously difficult to identify from call parameters. However, Natterer's Bat is one of the more distinctive species and the call parameters are a close match for the species so there is reasonable confidence in the identification.

- A cautious approach to nesting birds must be adopted during building work. Birds may nest between March and September inclusive and if any nests are found within 5m of the works then work must cease until nesting has finished. All wild birds, their nests and eggs are protected by law.
- The collapsed barn and the piggery were not shown to be used by roosting bats so would not form part of the licence application and it is possible to work on these structures at other times of the year. Both buildings, and especially the collapsed barn, have high potential for nesting birds, however, and the dense ivy must be removed from the collapsed barn in October to February to reduce the risk of nesting birds being present when work begins. The piggery should also be demolished within that period.
- In the unlikely event that a bat is found during work on the collapsed barn and the piggery, work should stop immediately and contact made with the ecologist for further advice.

Under the Environment Act recently passed into law (HM Government, 2021) there is a legal requirement for all development requiring planning permission to deliver at least a 10% Biodiversity Net Gain (BNG). Provision is made for this in terms of planning policy under NPPF (2021) in the Cornwall Local Plan (Cornwall Council 2016). Best practice guidance for developers is provided in the Cornwall Planning for Biodiversity Guide (Cornwall Council, 2018). Cornwall Council require a minimum of one bird box (or bat box if more appropriate) to be erected at a rate of one per new dwelling. See https://www.cornwall.gov.uk/media/v1roqk0x/planning-for-biodiversity-v14.pdf for more information. Although this development is not for a new dwelling **it is recommended that a Schwegler 1SP Sparrow terrace (or equivalent) and a Swift box be fitted to the granary and a Sparrow Terrace be fitted to the new building at the site of the collapsed barn.**

7. REFERENCES

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