



ecosupport

Mill Ball

I & II Ecological Survey

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CONTENTS

1.0 INTRODUCTION.....	4
1.1 BRIEF	4
1.2 AIM	4
1.3 SITE DESCRIPTION	5
1.4 PROPOSED DEVELOPMENT	5
2.0 RELEVANT LEGISLATION & POLICY.....	6
2.1 LEGISLATION	6
2.1.1 <i>The Conservation of Habitats and Species Regulations (2017)</i>	6
2.1.2 <i>The Wildlife and Countryside Act (1981) (as amended)</i>	6
2.1.3 <i>The Countryside and Rights of Way Act (2000)</i>	6
2.1.4 <i>Natural Environment and Rural Communities Act (2006)</i>	6
2.2 POLICY	7
2.2.1 <i>National Planning Policy Framework (2019)</i>	7
2.2.2 <i>Arun Local Plan 2011-2031 Adopted July 2018</i>	7
3.0 METHODS	10
3.1 PHASE I SURVEY.....	10
3.2 ASSESSMENT OF BUILDINGS TO SUPPORT ROOSTING BATS	10
3.3 ASSESSMENT OF POND	10
3.4 PHASE II BAT SURVEYS	11
4.0 RESULTS	13
4.1 PHASE I SURVEY.....	13
4.2 ASSESSMENT OF BUILDING TO SUPPORT ROOSTING BATS.....	15
4.3 ASSESSMENT OF POND	15
4.4 PHASE II BAT SURVEYS	15
4.5 LIMITATIONS	17
5.0 EVALUATION	18
5.1 PHASE I SURVEY.....	18
5.2 ASSESSMENT OF BUILDINGS TO SUPPORT ROOSTING BATS	18
5.3 ASSESSMENT OF POND	18
5.4 PHASE II SURVEYS	19
5.5 SITE STATUS ASSESSMENT	19
5.6 IMPLICATIONS	19
6.0 POTENTIAL IMPACTS TO BATS IN THE ABSENCE OF MITIGATION	20
6.1 INITIAL IMPACTS	20
6.1.1 <i>Death and Injury</i>	20
6.1.2 <i>Disturbance</i>	20
6.2 ROOST LOSS	20
6.3 LONG-TERM IMPACTS	20

7.0 MITIGATION AND COMPENSATION	21
7.1 INTRODUCTION.....	21
7.2 MITIGATION	21
7.2.1 Natural England License	21
7.2.2 Timing	21
7.2.3 Mitigation Bat Boxes	21
7.2.4 Supervision	22
7.2.5 Sensitive Working Methods	22
7.2.6 Capture (if required)	22
7.2.7 Lighting	22
7.2.8 Underlining Materials.....	22
7.3 COMPENSATION	22
8.0 CONCLUSION.....	24
9.0 REFERENCES	25

1.0 INTRODUCTION

1.1 Brief

Ecosupport Ltd. was commissioned to conduct a Phase I Ecological survey of the Mill Ball property. This was required to identify if any ecological impacts would arise from the proposed demolition of the existing property to make way for a new build.

Should the proposed development not be underway within 18 months of the date of survey, an updated walkover should be undertaken by a suitably experienced Ecologist to determine if any significant changes have occurred to the ecological value of the site, as per CIEEM (2019) guidance. Changes to the ecological baseline may require additional or updating ecological surveys and/or alterations to the mitigation and compensation strategy.

This survey does not constitute a full site assessment for invasive species such as Japanese Knotweed. A search for the presence of Tree Preservation Orders (TPOs) on site has not been undertaken.

This survey takes no account of seasonal variation or fluctuations in the presence of any species that might take up residence following this report. Lack of signs of a particular species does not confirm its absence, merely that there was no indication of its presence at the time of survey.

1.2 Aim

A Phase I Habitat Survey is the first step in assessing the potential ecological effects (or lack of) of a proposed development, and determines whether or not (and which) Phase II Protected Species Surveys are required. The objectives of this survey were as follows:

- Identify current land use and distribution of broad habitat types including plant communities of ecological importance,
- Identify and classify any priority habitats,
- Assess the ecological value of the site,
- Identify any signs of protected species and potential features that may support them,
- Identify all relevant legislation and policy,
- Make recommendations for further survey work as appropriate,
- Make recommendations for appropriate enhancements.

This survey paid particular attention towards the potential for roosting bats on site. The objectives of the Phase I Survey were as follows:

- Inspect the building internally and externally for evidence of bats or bats themselves,

- Identify any external features that may be utilised by bats,
- Classify the building's roost potential.

As the property was considered to have high potential to support roosting bats Phase II Surveys were recommended and subsequently undertaken. The aim of these surveys was to determine presence / likely absence.

1.3 Site Description

The site is located along Binsted Lane, Arundel (BN18 0LJ) (approximate central Ordnance Survey Grid Reference SU 98699 05719) (**Figure 1**). The site is bound by operational agricultural land with woodland to the east. The wider landscape is of a rural nature consisting of farmland, patches of woodland and low-density housing.

Figure 1. Location of site (Google Maps, 2019).



1.4 Proposed Development

The proposed development consists of the construction of a single new dwelling following the demolition of the existing house.

2.0 RELEVANT LEGISLATION & POLICY

2.1 Legislation

2.1.1 *The Conservation of Habitats and Species Regulations (2017)*

This transposes the EU Habitats Directive (Council Directive 92/43/EEC) into UK domestic law. It provides protection for sites and species deemed to be of conservation importance across Europe. It is an offence to deliberately capture, kill or injure species listed in Schedule 2 or to damage or destroy their breeding sites or shelter. It is also illegal to deliberately disturb these species in such a way that is likely to significantly impact on the local distribution or abundance or affect their ability to survive, breed and rear or nurture their young.

2.1.2 *The Wildlife and Countryside Act (1981) (as amended)*

This is the primary piece of legislation by which biodiversity is protected within the UK. Protected fauna and flora are listed under Schedules 1, 5 and 8 of the Act. They include all species of bats, making it an offence to intentionally or recklessly disturb any bat whilst it is occupying a roost or to intentionally or recklessly obstruct access to a bat roost. Similarly this Act makes it an offence to kill or injure any species of British reptiles and also makes it an offence to intentionally kill, injure or take any wild bird or to take, damage or destroy their eggs and nests (whilst in use or being built). Further, the Act requires the identification and subsequent protection of Sites of Special Scientific Interest (SSSIs).

The Wildlife & Countryside Act (1981) states that it is an offence to 'plant or otherwise cause to grow in the wild' any plant listed in Schedule 9 art II of the Act. This list over 30 plants including Japanese Knotweed (*Fallopia japonica*), Giant Hogweed (*Heracleum mantegazzianum*) and Parrots Feather (*Myriophyllum aquaticum*).

2.1.3 *The Countryside and Rights of Way Act (2000)*

This Act strengthens the Wildlife & Countryside Act by the addition of "reckless" offences in certain circumstances, such as where there is the likelihood of protected species being present. The Act places a duty on Government Ministers and Departments to conserve biological diversity and provides police with stronger powers relating to wildlife crimes.

2.1.4 *Natural Environment and Rural Communities Act (2006)*

This places a duty on Local Authorities to consider the conservation of biodiversity in their policy and decision making procedures and 'in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity'.

2.2 Policy

The development would seek to comply with relevant Planning Policy at a local and national level.

2.2.1 National Planning Policy Framework (2019)

The development seeks to comply with relevant Planning Policy. The National Planning Policy Framework (NPPF) 2019 supersedes the previous national policy and sets out the Government's vision for biodiversity in England in line with the country's 25 Year Environment Plan. Chapter 15 of this policy outlines key principles related to the natural environment and states that plans should take a strategic approach to maintaining and enhancing networks of habitats and green infrastructure and should provide net gains for biodiversity. Plans should promote the conservation, restoration and enhancement of priority habitats and ecological networks and the protection and recovery of priority species.

2.2.2 Arun Local Plan 2011-2031 Adopted July 2018

Arun District Council will encourage and promote the preservation, restoration and enhancement of biodiversity and the natural environment through the development process and particularly through policies for the protection of both designated and non-designated sites. Where possible it shall also promote the creation of new areas for habitats and species. In relation to designated sites, development will be permitted where it protects these sites and the species and habitats contained within them.

Proposed development likely to have an adverse effect on land with the designated features of any Site of Biodiversity or Geological Importance as designated in the Arun Local Plan or any subsequently designated sites (either individually or in combination with other developments), will not normally be permitted. Development on wildlife sites with the highest value will only be permitted exceptionally where the following can be demonstrated:

- There is no alternative solution (which shall be adequately demonstrated by the developer).
- There are reasons of public health or public safety or
- There are benefits of primary importance to the environment or iv. There are imperative reasons of overriding public interest.

Aside from the above however, the presumption in favour of sustainable development does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined. In determining any planning application affecting Sites of Biodiversity or Geological Importance the Council will ensure that the intrinsic natural features of particular interest are safeguarded or enhanced having regard to;

- The European, National or Local status and designation of the site;
- The nature and quality of the site's features, including its rarity value;
- The extent of any adverse impacts on the notified features of interest;
- The need for compensatory measures in order to re-create remaining features of habitats on or off the site.

Where appropriate the Council will ensure the effective management of designated sites through the imposition of planning conditions or Section 106 agreements as appropriate.

Policy ENV DM2 states the varying level of protection afforded to Pagham Harbour when considering development;

- Within Zone A (0-400m from the boundary) as identified on the Policies Maps, development will only be permitted in exceptional circumstances where the developer is able to demonstrate there will be no detrimental effects on Pagham Harbour, including non-native species and the water environment. Regard shall also be had to tests 1-4 as set out in Policy DM1 (Designated Sites of Biodiversity or Geological Importance).
- Within Zone B (0-5km) for all new residential development and development which is likely to have an impact on Pagham Harbour will be required to:
 - Make developer contributions towards the agreed strategic approach to access management at Pagham Harbour.
 - create easily accessible new green spaces for recreation within or adjacent to the development site. These shall be capable of accommodating the predicted increases in demand for local walking, including dog walking. Good pedestrian links shall be provided between housing areas and new and existing green space in order to discourage car use.
- Major developments (as defined in the GDPO 1995 as amended) taking place outside Zone B and close to its boundary will be considered on a case by case basis to determine any potential effects on Pagham Harbour, and the need for any avoidance or mitigation measures.

Policy ENV DM3 states that any development will retain and incorporate important ecological habitats, wildlife corridors and stepping stones as well as be designed to minimise any disturbance to these habitats. Developments that fail to do so will have their proposal rejected. Where a development scheme would result in a habitat loss, mitigation measures will be proposed as part of the proposed scheme and such measures agreed with the Local Planning Authority prior to the determination of any planning application. Within Biodiversity Opportunity Areas (BOAs) identified within the local plan or where likely to have an impact on species or habitats within the BOAs,

any application for planning permission shall include a properly conducted survey of the presence of that species and habitat and impact(s) that development may have on the BOA.

Development and biodiversity Development schemes shall, in the first instance, seek to achieve a net gain in biodiversity and protect existing habitats on site. They shall also however incorporate elements of biodiversity including green walls, roofs, bat and bird boxes as well as landscape features minimising adverse impacts on existing habitats (whether designated or not). Development schemes shall also be appropriately designed to facilitate the emergence of new habitats through the creation of links between habitat areas and open spaces. Together, these provide a network of green spaces which serve to reconnect isolated sites and facilitate species movement. Where there is evidence of a protected species on a proposed development site, planning applications shall include a detailed survey of the subject species, with details of measures to be incorporated into the development scheme to avoid loss of the species. This, involves consideration of any impacts that will affect the species directly or indirectly, whether within the application site or in an area outside of the site, which may be indirectly affected by the proposals. All surveys shall be carried out at an appropriate time of year and shall be undertaken by a qualified and, where appropriate, suitably licensed person. All developments shall have regard to Natural England's standing advice for protected species.

3.0 METHODS

3.1 Phase I Survey

The initial Phase I survey was carried out by Tristanna Boxall BSc (*Hons*) (Natural England Class Level 1 Great Crested Newt and Class Level 2 Bat License Holder) of ecosupport Ltd. on the 1st August 2019.

A general site walkover was also undertaken. This incorporated a visual assessment of the site and the surrounding landscape, loosely following the methodology outlined within the Joint Nature Conservation Committees (JNCC) *Phase I habitat survey handbook* (2003). The habitats present were described, paying particular attention to their potential to support protected species.

3.2 Assessment of Buildings to Support Roosting Bats

An assessment of the building on site was undertaken to determine the likelihood of roosting bats being present. The externals were examined, using 8 x 42 Avian Trekker binoculars and a high-powered torch, for any suitable features, which bats may use to enter the internals or an external roost and also to search for signs of (i.e. droppings, feeding remains) and/or bats themselves. Access was gained into the property to search for evidence of bats and to assess the likelihood of bats roosting internally.

The survey was carried out in accordance with *Bat Surveys for Professional Ecologists; Good Practice Guidelines* 3rd edition published by the Bat Conservation Trust (Collins, 2016).

3.3 Assessment of Pond

Great Crested Newts can utilise terrestrial habitat up to 250m from a pond (Langton et al., 2001). Therefore, guidelines state that ponds likely to be impacted by proposals must be surveyed if they hold potential to support newts (Natural England, 2013). To adhere to such guidelines, a Habitat Suitability Index (HSI) was carried out on the small ornamental pond on site. This takes into account the following factors when calculating the ponds suitability to support GCN:

- Location of Pond,
- Surface Area,
- Desiccation Rate,
- Water Quality,
- Shade,
- Presence of Waterfowl and Fish,
- Number of Ponds within 1km,
- Quality of Terrestrial Habitat,
- Macrophyte Cover.

These criteria are used to calculate a score according to ARG guidelines (ARG, 2010) using the Oldham (2000) calculation formulae.

This gives a score between 0 and 1 of the suitability of the pond for GCN with

0.40 – 0.50: Poor suitability for GCN

0.51 – 0.59: Below average suitability for GCN

0.60 – 0.69: Average suitability for GCN

0.70 – 0.79: Good suitability for GCN

0.80 – 1.00: Excellent suitability for GCN

For ponds of average or above, further surveys are often recommended.

3.4 Phase II Bat Surveys

The Phase II surveys were carried out by staff from Ecosupport Ltd led by Senior Ecologist Tristanna Boxall BSc (Hons) MSc (Natural England Class Level 2 License Holder with seven years surveying experience). The position of the surveyors is demonstrated in **Figure 2** below. Frequency division (Anabat SD1/2) and Bat Scanner detectors were used during the survey. Dusk surveys began approximately 15 minutes prior to sunset and continued until approximately an hour and 30 minutes after sunset. Dawn surveys started an hour and a half before sunrise and then continued for 15 minutes after sunrise. Survey sheets were used to record the following information:

- Time of call registration
- Species (if possible to identify using heterodyne detector)
- Location / activity
- Direction of flight (if seen)

Figure 2. Position of surveyors during the emergence surveys.



The surveys were carried out in accordance with *Bat Surveys for Professional Ecologists; Good Practice Guidelines* 3rd edition published by the Bat Conservation Trust (Collins, 2016).

4.0 RESULTS

4.1 Phase I Survey

The following dominant habitats were present within the area of impact:

Built Structure: The key feature on site is the Mill Ball property (**Figure 3** and **4**). It is of brick construction with render. Machine cut concrete tiles are used on the roof. A PVC conservatory is present on the rear elevation. The dormer window is covered in clay hanging tiles.

Figure 3. Front elevation of dwelling.



Figure 4. Rear elevation of dwelling.



Improved Grassland: The garden area consists of improved grassland (**Figure 5**). This was dominated by common grass species with frequent Dandelion (*Taraxacum agg.*), Cat's ear (*Hypochaeris radicata*), Ribwort Plantain (*Plantago lanceolata*), occasional Daisy (*Bellis perennis*). This area has been subject to continual management.

Figure 5. Grassland associated with



Hardstanding: Concrete paving surrounds the property (evident in **Figure 3**).

Ponds: A small ornamental pond (**Figure 6**) is present within the garden.

Figure 6. Pond within the garden of Mill Ball.



4.2 Assessment of Building to Support Roosting Bats

It was not possible to gain full access into the loft given the restricted height of the void. A search for evidence around the hatch took place but access further was not possible. Internally the tiles were found to be underlined with bitumen roofing felt which appeared to be intact (**Figure 7**). No daylight was seen entering the internals. The void was found to be heavily cobwebbed.

Figure 7. Loftspace of the property.



Although the property was considered to be in a relatively good state of repair, however a low number of gaps were recorded due to lifted tiles, lifted flashing around the chimney and also the presence of hanging tiles on the dormer window.

4.3 Assessment of Pond

A score of 0.43 results in a 'poor' suitability classification therefore it is considered unlikely the pond supports GCN on site.

In addition, a pond was recorded within the woodland however as proposals will take place on the existing footprint it is considered highly unlikely any amphibians will be negatively impacted.

4.4 Phase II Bat Surveys

Common (6) and Soprano Pipistrelles (1) (*Pipistrellus pipistrellus* and *pygmaeus*) were

both recorded roosting on site. In addition, three bats, considered likely to be Long-eared (*Plecotus Sp.*) were also noted emerging. The location of the access points are illustrated on **Figure 8** below. Relatively high levels of activity was recorded during all surveys with Serotine (*Eptesicus serotinus*) and Nathusius Pipistrelle (*Pipistrellus nathusii*) recorded in addition to the roosting species. The dates and information on survey conditions are provided in **Table 1**. Full results are provided in **Appendix I**.

Figure 8. Location of bat access points.



-  Long-eared Bat
-  Soprano Pipistrelle
-  Common Pipistrelle

Table 1. Survey Information.

Survey	Date	Conditions	Sunset/Sunrise Time	Survey Start Time	Survey End Time
1	14/08/19	17°C, 100% cloud cover, intermittent light drizzle, calm breeze	20:25	20:05	21:55
2	04/09/19	18°C, 17% cloud cover, calm and dry	19:41	19:26	21:01
3	11/09/19	18°C, 100% cloud cover, light breeze, dry	19:26	19:11	20:50

4.5 Limitations

It was not possible to gain full access into the loft space, given the limited height of the void however this is not considered a significant limitation as the maximum Phase II survey effort will be expended (**Section 5.3**). The survey was considered to provide an accurate representation of the site at the time of visiting.

The species list provided is not considered to be exhaustive, instead a record of those identified during the Phase I survey. This survey does not constitute a full site assessment for invasive species, such as Japanese Knotweed (*Fallopia japonica*), but no such species were found during the time on site.

5.0 EVALUATION

5.1 Phase I Survey

Built Structure: The house supports day roosts used three more common species of bat (see below).

Improved Grassland: Reptiles require open habitats with a deep and diverse vegetation structure. Scrub and grass tussocks are also preferable (Edgar et al., 2010). Due to continual management, and resulting lack of sward structure, it is considered the areas surrounding the property do not provide habitat suitable to support reptiles. Similarly, it is considered unlikely the ornamental areas surrounding the property would support amphibians.

It was considered likely the wider site was suitable for foraging bats given the surrounding high-quality foraging resources (confirmed during Phase II surveys) and also potentially species such as Hedgehog (*Erinaceus europaeus*).

Hardstanding: This element of the site is considered to be of negligible ecological value.

Pond: The presence of water on site is considered likely to increase the overall ecological value of the site. For example, encouraging invertebrates for foraging mammals and potentially supporting common amphibian species however it is considered unlikely Great Crested Newts will be present.

5.2 Assessment of Buildings to Support Roosting Bats

Owing to the numerous gaps between the tiles and the high-quality surrounding habitat, the dwelling was classified as having high potential to support roosting bats. As a result, three Phase II Surveys were required in line with guidelines (**Table 2**).

Table 2. Recommended minimum number of survey visits (from Table 7.3 (BCT, 2016).

Low Roost Suitability	Moderate Roost Suitability	High Roost Suitability / Confirmed roost
One survey visit. One dusk emergence or dawn re-entry survey.	Two separate survey visits. One dusk emergence and a separate dawn re-entry survey*.	Three separate survey visits. At least one dusk emergence and a separate dawn re-entry survey. The third could be either dusk or dawn*.

5.3 Assessment of Pond

The pond has poor suitability support Great Crested Newts and therefore unlikely they will be negatively impacted by proposals. As a result, no further survey effort is recommended.

5.4 Phase II Surveys

The Phase II Surveys confirmed that the Mill Ball property is being utilised by three species of bat; Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared. It is considered likely the Long-eared bats noted were Brown Long-eared given the lack of nearby Grey Long-eared records.

Due to the inconsistent use of the identified roosts it is considered they are examples of day roosts. "A place where individual bats, or small groups of males, rest or shelter in the day" (BCT, 2016).

5.5 Site Status Assessment

Brown Long-eared and Common and Soprano Pipistrelle bats are considered to be amongst the most common and widespread bat species in the UK (BCT, 2016). Therefore the roosts are considered to be of **local value** and of **low conservation significance**.

5.6 Implications

Due to the presence of a bat roost any works to the building that will result in damage or disturbance to the roost could constitute an offence under the Conservation of Habitats & Species Regulations (2017). In order for works that may result in such an offence (including the demolition of the property) to legally take place, a License from Natural England will be required.

6.0 POTENTIAL IMPACTS TO BATS IN THE ABSENCE OF MITIGATION

6.1 Initial Impacts

6.1.1 Death and Injury

Unsupervised contractors carrying out works associated with the proposals could result in direct harm to bats with the risk of them being crushed or injured should they be present at the time of works.

This would result in significant negative impacts at a site level for Brown Long-eared and Common and Soprano Pipistrelle bats however due to the relatively common occurrence of the species it is considered highly unlikely it would have a significant impact on the populations at a regional or national level.

6.1.2 Disturbance

Unsupervised contractors carrying out works associated with the proposals could result in the disturbance of individual bats if present at the time of works. For example, increased levels of noise, vibration and light. This may cause bat(s) to take flight putting it/them at risk of predation. Due to the relatively common occurrence of the species it is considered highly unlikely it would have a significant impact on the populations at a regional or national level.

6.2 Roost Loss

The proposed demolition of the property will result in the loss of day roosts (**Figure 4**). This will result in significant negative impacts at a site level however due to the relatively common occurrence of Common Pipistrelle bats and the roost type it would be considered highly unlikely to have a significant impact on the populations at a regional or national level.

6.3 Long-term Impacts

Unmitigated, materials may be utilised that have the potential to negatively impact upon bats (i.e. Breathable membrane). There is considerable evidence woven fibres pose a threat to bats occupying a structure due to entanglement in the fibres (Natural England, 2015).

7.0 MITIGATION AND COMPENSATION

7.1 Introduction

In order to fully comply with applicable legislation and planning policy, it is necessary to mitigate or compensate for any significant ecological impacts. The NPPF and Section 41 of the NERC (2006) places an onus on development to provide ecological enhancements. This chapter recommends appropriate measures that can be undertaken to ensure compliance with legislation and policy and provide ecological enhancements.

The chapter is divided into three sections, dealing with mitigation, compensation and enhancement. Mitigation refers to measures that can be undertaken to avoid or reduce ecological impacts, for example by timing works to avoid periods when bats are roosting. Compensation refers to measures taken in order to offset potential significant impacts, for example by providing alternative roost sites to replace roost sites lost as a result of the works. Finally, enhancements result in a net gain for bats compared to the baseline.

7.2 Mitigation

7.2.1 Natural England Licence

The demolition will take place under a Natural England licence and under the supervision of a suitably qualified and licensed Ecologist. Failure to do so will result in offences being committed under wildlife legislation.

An application can be made to Natural England as soon as Planning Permission is granted. All mitigation and compensation works will be fully detailed within a Method Statement required as part of the licence application.

7.2.2 Timing

As the property supports low level day roosts, works can take place at any time providing weather conditions are suitable (i.e. when temperatures have not dropped below 5°C over four consecutive days and nights).

7.2.3 Mitigation Bat Boxes

Prior to any works commencing a Schwegler 1FD bat box will be erected on site. The domed roof of these boxes results in an increased interior height for Long-eared Bats whilst the two grooved internal wooden front panels provide a crevice for species. Both the cooler woodcrete surface and the warmer wooden panel means bats have a choice of different temperatures in different parts of the box, which has been highlighted as a key requirement of Brown Long-eared Bats (Entwistle *et al.*, 1997). In addition, a Schwegler 1FF bat box will be introduced on site. This is spacious enough

for bats to use as a summer roost or nursery site. The inner dimensions of the 1FF have a reducing width making it ideal for bat species which inhabit crevices.

Both boxes are painted black to absorb warmth. The use of long-lasting Woodcrete, which will not rot, leak, crack or warp, and will last for at least 20 - 25 years, makes these suitable for long-term mitigation.

English Nature (2004) states that '...bat boxes provide an appropriate form of mitigation, either alone or, preferably, in combination with the provision of roosts in buildings'.

7.2.4 Supervision

The licenced Ecologist will give a Tool Box Talk to all necessary contractors. This will detail best practice methods of sensitive stripping/removal of roofing materials identifying signs of bats. Personnel will be educated on signs of bats and that in the unlikely event a bat is found whilst the licensed ecologist is not on site, that all works should stop immediately until the licensee returns to site.

7.2.5 Sensitive Working Methods

The licenced Ecologist will supervise the stripping of all required roof materials.

7.2.6 Capture (if required)

If bats are discovered the supervising Ecologist will capture them and place them into a holding bag (a soft cloth bag with closure-strings and with seams on the outside (Mitchell-Jones & McLeish, 2004) to ensure the bat remains calm and will not take flight during daylight hours. The Ecologist will then immediately transport the bat to the mitigation bat box where the bat will be released and left undisturbed. During this time, the licenced bat worker will be wearing appropriate bat handling gloves to ensure the bat does not come to any harm. The licenced bat worker will have ample experience in handling bats and be confident in doing so.

7.2.7 Lighting

Any lighting associated with the construction or operational phases of the works will be sensitive to biodiversity as per English Nature (Mitchell-Jones, 2004) guidelines, for example by including low-level downward-facing/hooded lights that are sensor-operated to reduce disturbance to bats wherever possible.

7.2.8 Underlining Materials

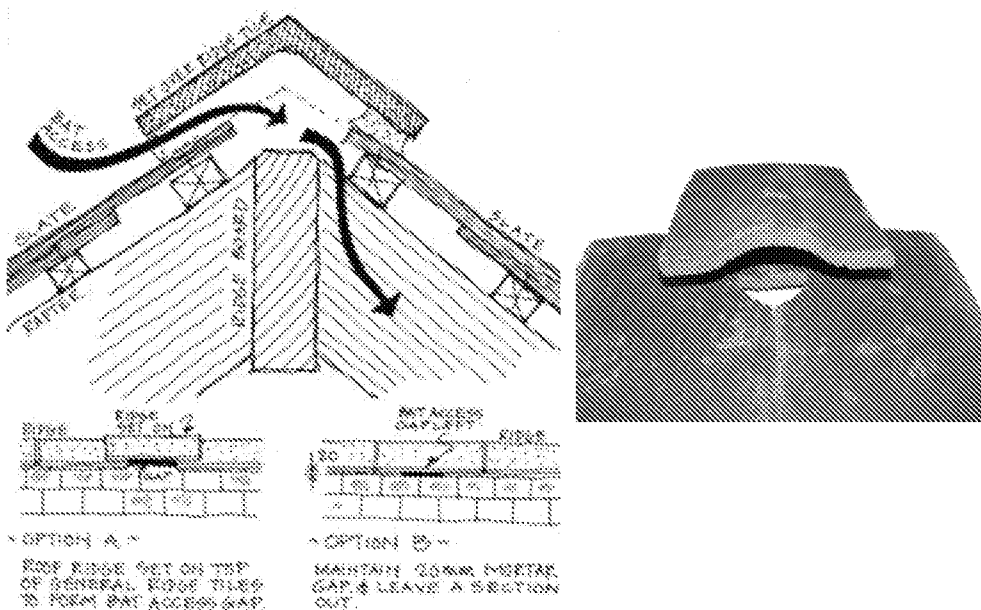
In-line with Natural England (2015) guidance bitumen roofing felt will be utilised as opposed to materials with a woven structure for **all roofing works** on site.

7.3 Compensation

Potential access points will be created on the new roof (**Figure 9**). These will include bat access tiles (four in total). The top 'tunnel' tile offers the bat an 18mm high x 165mm long tunnel to an entrance hole in the under tiles. This allows the bat to crawl

into the roost area. The two tiles beneath the 'tunnel' tile have small cutaway sections to facilitate access for the bat. In addition, lifted ridge features will be incorporated along the new ridge lines to facilitate access into the new void (two in total). Cuts in the felt will be made.

Figure 9. Compensation.



8.0 CONCLUSION

Mill Ball supports day roosts utilised by Common Pipistrelle, Soprano Pipistrelle and Brown Long-eared bats. Therefore, in order for works to take place legally a license from Natural England will be required. This license, along with the information detailed within this report, will ensure that there are no residual negative impacts towards bats and that works keep in line with associated legislation and policy. It is considered highly unlikely other notable and/or legally protected species will be negatively impacted as proposals incorporate the existing footprint.

9.0 REFERENCES

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APPENDIX I – Full Survey Results.

Survey 1		
Time	Species	Activity
20:27	Common Pipistrelle	Emerged from a tile on the eastern aspect of the building, closer to the northern aspect of the building than the southern aspect
20:31	Seen not heard likely Long-eared	Emerged from a tile on the southern side of the most southern window on the roof on the western aspect
20:33	Common Pipistrelle	Commuted from the northeast to the northwest along the northern aspect of the building then commuted south along the western aspect
20:36	Common Pipistrelle	Heard not seen on the south-western aspect of the building
20:37	Seen not heard Likely Brown Long-eared	Emerged from a tile on the roof under the most northern window on the western aspect of the building
20:38	Common Pipistrelle	Commuted from the west to the east along the driveway on the northern aspect of the building
20:41	Seen not heard x2	Commuted from the garden on the northern aspect of the building to the east
20:42	Common Pipistrelle	Heard not seen and foraged on the south-western aspect of the building
20:44	Soprano Pipistrelle	Commuted from the north to the south along the western aspect of the building
20:44	Common Pipistrelle	Foraged behind the surveyor on the southwest of the building by the shrubs then commuted east across the garden
20:46	Common Pipistrelle	Emerged from the gable end of the southern aspect of the building then commuted southeast across the garden
20:48	Common Pipistrelle	Commuted from the southeast to the southwest in front of the building and foraged
20:51	Common Pipistrelle	Heard not seen and foraged on the south-western aspect of the building
20:51	Common Pipistrelle	Heard not seen on the northern aspect of the building
20:53	Common Pipistrelle	Heard not seen on the south-eastern aspect of the building
20:56	Common Pipistrelle	Commuted from the east to the west along the southern aspect of the building across the garden and foraged
20:59	Seen not heard likely Long-eared	Emerged from the gable end of the southern aspect of the building then commuted southwest across the garden
21:00	Seen not heard	Circled once in front of the surveyor on the south-western aspect of the building
21:01	Common Pipistrelle	Commuted from the west to the east along the track to the northern aspect of the building
21:03	Seen not heard	Commuted from the east towards the southwest along the northern aspect of the building
21:05	Common Pipistrelle	Heard not seen and foraged on the south-western aspect of the building
21:06	Common Pipistrelle	Commuted from the northeast to the southwest across the garden on the southern aspect of the building
21:07	Common Pipistrelle	Heard not seen and foraged on the south-western aspect of the building
21:09	Soprano Pipistrelle	Heard not seen on the south-eastern aspect of the building
21:14	Common Pipistrelle	Heard not seen and foraged on the southern aspect of the building

21:17	Common Pipistrelle	Commuted from the northeast to the southwest across the garden on the southern aspect of the building
21:19	Common Pipistrelle	Heard not seen on the northern aspect of the building
21:22	Soprano Pipistrelle	Heard not seen on the south-eastern aspect of the building
21:23	Common Pipistrelle	Heard not seen and foraged on the south-western aspect of the building
21:23	Common Pipistrelle	Heard not seen on the northern aspect of the building
21:26	Nathusius Pipistrelle	Heard not seen on the northern aspect of the building
21:27	Nathusius Pipistrelle	Circled the garden and foraged along the southern aspect of the building for approximately one minute
21:28	Serotine	Heard not seen and foraged on the south-eastern aspect of the building
21:30	Common Pipistrelle	Commuted from the northwest to the south along the western aspect of the building
Survey 2		
19:57	Soprano Pipistrelle	Emerged from one of the lower hanging tiles on the south-eastern aspect of the roof over the front door, and then commuted around the house, across the garden to the southwest
20:04	Common Pipistrelle	Emerged from one of the hanging tiles of the southwestern aspect of the building and then commuted around the house into the garden to the east
20:05	Common Pipistrelle	Emerged from a tile on the roof to the south of the most northern window on the western aspect of the building
20:05	Common Pipistrelle	Emerged from the gable end of the southern aspect of the building
20:09	Common Pipistrelle	Emerged from one of the central hanging tiles on the south-eastern aspect of the roof over the front door, and then commuted around the house, across the garden to the southwest
20:09	Common Pipistrelle	Circled around the surveyor and surrounding shrubs on the south-western aspect of the building, almost continuously, for approximately 8 minutes
20:14	Common Pipistrelle	Heard not on the north-western aspect of the building
20:15	Common Pipistrelle	Heard not seen on the south-eastern aspect of the building
20:23	Common Pipistrelle	Commuted from the west to the northeast around the southern aspect of the building
20:25	Soprano Pipistrelle	Commuted from the east to the west, in front of the building along the southern aspect
20:25	Common Pipistrelle	Re-entry to hanging tiles to the east of the dormer window on the eastern aspect of the building
20:28	Common Pipistrelle	Commuted from the west to the east around the southern aspect of the building
20:30	Common Pipistrelle	Emerged from a hanging tile on the eastern aspect, facing south, then commuted west along the southern aspect of the building, circled and foraged before commuting back east
20:33	Soprano Pipistrelle	Heard not seen on the south-western aspect of the building
20:36	Common Pipistrelle	Commuted from the west to the to the southeast along the western and southern aspect of the building, circled and foraged
20:40	Serotine	Heard not seen on the south-western aspect of the building
Survey 3		
19:43	Common Pipistrelle	Emerged from a loose tile on the eastern aspect of the building, on the section of roof facing south

19:44	Common Pipistrelle	Emerged from the gable end of the southern aspect of the building then commuted southeast across the garden
19:51	Common Pipistrelle	Heard not seen and foraged on the south-western aspect of the building
19:52	Common Pipistrelle	Heard not seen on the north-western aspect of the building
19:52	Common Pipistrelle	Committed from the west to the east, in front of the building on the southern aspect, circled by the shrubs and foraged
19:54	Common Pipistrelle	Committed from the southwest to the east, circled and foraged in front of the building on the southern aspect
19:55	Common Pipistrelle	Emerged from the ridge of the roof on the section of roof facing south, on the eastern aspect of the building, then commuted south across the garden
19:58	Common Pipistrelle	Heard not seen on the north-western aspect of the building
19:58	Common Pipistrelle	Heard not seen and foraged on the south-western aspect of the building
20:02	Soprano Pipistrelle	Committed from the east to the southwest along the eastern then southern aspect of the building, where it circled three times and foraged
20:03	Common Pipistrelle	Heard not seen on the north-western aspect of the building
20:03	Soprano Pipistrelle	Heard not seen on the south-western aspect of the building
20:10	Common Pipistrelle	Heard not seen on the southern aspect of the building and foraged
20:13	Common Pipistrelle	Committed from the east to the west in front of the building along the southern aspect, circled back and forth and foraged
20:14	Common Pipistrelle	Heard not seen on the south-western aspect of the building
20:15	Common Pipistrelle	Committed from the north to the east, in front of the building along the eastern aspect and foraged
20:16	Serotine	Heard not seen on the north-western aspect of the building