

Preliminary Bat Roost Assessment and Bat Emergence/Re-Entry Survey Report

Harborough Farm
Clintons Lane
Bough Beech
Kent
TN8 7PP

13th September 2021

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This report has been prepared by

PJC Consultancy Ltd

on behalf of

Bridget Reading

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EXECUTIVE SUMMARY

PJC Consultancy Ltd was commissioned by Bridget Reading to undertake a Preliminary Bat Roost Assessment and subsequent bat emergence/re-entry surveys on a number of buildings on a parcel of land at Harborough Farm, Clintons Lane, Bough Beech, Kent, TN8 7PP. The purpose was to highlight the potential of the site to support protected species and if present, evaluate the value of the site for said species, notably bats, as well as recommend suitable avoidance, mitigation, compensation and/or enhancement measures and licencing requirements, where appropriate. When implemented successfully, these recommendations will ensure that the development proceeds in line with all relevant laws pertaining protected bat species and their habitats, as well as contributing to an increase in site biodiversity. This report has been produced in accordance with NPPF – more specifically *Chapter 15 ‘Conserving and Enhancing the Natural Environment’* as well as the Sevenoaks District Council Core Strategy (2011).

Based on current proposals, the results of the Preliminary Bat Roost Assessment and bat emergence/re-entry surveys can be summarised in the following table:

Protected Species/Habitats	Suitable Habitat Present	Recommended Further Surveys	Avoidance, Mitigation, Compensation and Enhancement Measures
Bats (Roosting)	<p>The main dwelling (building B1) and the old hay barn (building B3) were identified as a confirmed roost.</p> <p>Outbuildings B2 and B4 are considered likely absent of roosting bats.</p> <p>Trees T1 and T2 were identified as having suitability to support roosting bats.</p>	None required.	<p>A European Protected Species Mitigation Licence shall be required to facilitate the works to buildings B1 and B2. An outline of the required avoidance and mitigation measures are detailed within section 4.3.</p> <p>Compensation roosts in the form of bat boxes and bat access roof tiles shall be incorporated into the new proposals for building B3.</p> <p>Implementation of a sensitive lighting mitigation strategy.</p>
Bats (Foraging and Commuting)	Foraging and commuting bats were observed during the surveys, primarily foraging along the northern and southern boundaries which are dominated by a mature treeline and hedgerow, respectively.	None required.	Implementation of a sensitive lighting strategy and provision of night-scented flowers within any landscaping works.

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1 INTRODUCTION

1.1 INSTRUCTION

1.1.1 PJC Consultancy Ltd were commissioned by Bridget Reading to undertake a preliminary bat roost assessment (PBRA) of existing buildings and trees, and subsequent bat emergence/re-entry surveys of said buildings, previously identified as having suitability to support roosting bats within a parcel of land at Harborough Farm, Clintons Lane, Bough Beech, TN8 7PP (hereafter referred to as the 'Site').

1.2 DOCUMENTS AND INFORMATION PROVIDED

1.2.1 PJC Consultancy Ltd was provided with the following documents relating to the Site in September 2021:

- Outbuildings Plan as Existing, drawing no: 95-00/28/P04 (Reading + West Architects LLP, 2020);
- Outbuildings Plan as Existing, drawing no: 95-000/28/P05 (Reading + West Architects LLP, 2020);
- Outbuildings as Proposed, drawing no: 95-000/28/P10 (Reading + West Architects LLP, 2020);
- Outbuildings as Proposed, drawing no: 95-000/27/P11 (Reading + West Architects LLP, 2020);
- Proposed Porch Plans as Existing, drawing no: 95-000/27/P04 (Reading + West Architects LLP, 2020);
- Proposed Porch Elevations as Existing, drawing no: 95-000/27/P05 (Reading + West Architects LLP, 2020);
- Proposed Porch Plans as Proposed, drawing no: 95-000/27/P06 (Reading + West Architects LLP, 2020);
- Proposed Porch Elevations as Proposed, drawing no: 95-000/27/P07 (Reading + West Architects LLP, 2020); and
- Barn and New extension Elevations as Proposed, drawing no: 95-000/27/P11 (Reading + West Architects LLP, 2020).

1.3 SURVEY OBJECTIVES

1.3.1 The aim of the PBRA is to evaluate the existing building(s) and tree(s) for bats, and to provide recommendations for further surveys, mitigation, compensation and enhancement measures, and licensing requirements to satisfy legal and planning policy requirements where applicable.

1.3.2 The aim of the bat emergence/re-entry surveys is to identify potential ecological constraints and opportunities in respect of potential roosting bats associated with the proposed development. The objectives of the bat dusk emergence/dawn re-entry surveys is to:

- Ascertain presence or likely absence of bat roosts within buildings B1–B3;
- If present, determine which species are present and the size and nature of the roost, and
- Evaluate the Site for bats and provide recommendations for further survey, mitigation, compensation and enhancement measures and licensing requirements to satisfy safely legal and planning policy requirements where appropriate.

1.4 SCOPE OF THIS REPORT

1.4.1 This PRBA and bat emergence/re-entry surveys are only concerned with the buildings and trees within the property boundaries of the Site, or areas that have the potential to be affected by the proposed new development.

1.5 PROPOSAL

1.5.1 The proposed development comprises the demolition of the porch on the existing main residential dwelling (building B1) and the replacement of a new porch in its place. The proposals also include the conversion and extension of building B3 into a residential property which will include re-roofing the building and the demolition of the stables (building B2) and log store (building B4).

1.6 SITE DESCRIPTION

1.6.1 The Site, approximately 0.1 ha in size, is located north of Clinton Lane, approximately 1.6km south-west of Bough Beech Reservoir. Situated within a rural landscape, the Site is bordered by agricultural fields and woodland parcels interspersed with scattered residential properties. The location of the Site within its environs can be seen in Appendix I.

1.7 LEGISLATION AND PLANNING POLICY

1.7.1 This PBRA and bat emergence/re-entry survey report has been compiled with reference to relevant wildlife and countryside legislation, planning policy and the UK Biodiversity Framework. Their context and applicability is explained as appropriate in the relevant sections of the report and additional details are presented in Appendix II.

1.7.2 Bats and their roosts are protected under European (Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019) and national (Wildlife and Countryside Act 1981 (as amended)) legislation. This means that it is an offence to:

- Deliberately capture, injure or kill a wild bat;
- Deliberately disturb wild bats; *'disturbance of animals includes in particular any disturbance which is likely:*
 - (a) to impair their ability —
 - (i) to survive, to breed or reproduce, or to rear or nurture their young; or
 - (ii) in the case of animals of a hibernating or migratory species, to hibernate or migrate; or

- (b) to affect significantly the local distribution or abundance of the species to which they belong.’ and

- Damage or destroy a breeding site or resting place used by this species.

1.7.3 Certain species of bats including the brown long-eared *Plecotus auritus* and soprano pipistrelle *Pipistrellus pygmaeus* bat are also listed as a Species of Principal Importance (SPI) under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006. This means public bodies, including local planning authorities have a duty to have regard for SPI when carrying out their functions, including determining planning applications.

1.7.4 Due to the high level of protection afforded to bats and their habitat, a European Protected Species Licence (EPSL) must be sought from Natural England before any works directly or indirectly affecting a confirmed bat roost can proceed. Licencing is subject to three tests, as defined under the Habitats Regulations 2019; the planning authority must also apply these before granting permission for activities affecting bats. For permission to be granted the following criteria must be satisfied:

- The proposal is necessary ‘to preserve public health or public safety or other imperative reasons of overriding public interest including those of a social or economic nature and beneficial consequences of primary importance for the environment’;
- ‘There is no satisfactory alternative’; and
- The proposals ‘will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range’.

2 METHODOLOGY

2.1 DESK STUDY

2.1.1 A desk study was undertaken in April 2020 with the objective of collating and reviewing existing ecological information and obtaining data and information held by relevant third parties. Biological records were requested from Kent & Medway Biological Records Centre (KMBRC), which included records of legally protected and notable species, notably bats, within the zone of influence.

2.1.2 The zone of influence is the area over which ecological features, such protected and notable habitats and species, may be affected by the biophysical changes caused by the proposed development and associated activities. Due to the location of the Site and nature of the proposed development, it is considered that a zone of 5km from the centre of the Sites location is appropriate for the gathering of information for the desk study.

2.2 PRELIMINARY BAT ROOST ASSESSMENT

2.2.1 All buildings and trees within the Site were subject to a preliminary bat roost assessment (PBRA) on 25th March 2020 by Tara Hall BSc(Hons) ACIEEM (Natural England class 2 bat licence holder). The external and internal inspection of the buildings and trees was to assess potential roosting features (PRFs) such as presented in Tables 1 and 2. The PBRA was undertaken in accordance with best practice survey standards (BCT, 2016).

Table 1: Features of trees commonly used by bats.

Features of trees used as bat roosts	Signs indicating possible use by bats
Natural holes. Woodpecker holes. Cracks/splits in major limbs. Loose bark. Hollows/cavities. Dense epicormic growth (bats may roost within it). Bird and bat boxes.	Tiny scratches around entry point. Staining around entry point. Bat droppings in, around or below entrance. Audible squeaking at dusk or in warm weather. Flies around entry point. Distinctive smell of bats. Smoothing of surfaces around cavity

Table 2: Features of buildings commonly used by bats.

Features of building or built structure	Signs indicating possible use by bats
Type of building. Age of building. Aspect of PRF. Wall construction – cavity walls or rubble-filled walls. Form of the roof – presence of gable ends, hipped roofs, nature and condition of the roof covering. Presence of hanging tiles, weather boarding or other forms of cladding.	Tiny scratches around entry point. Staining around entry point. Bat droppings in, around or below entry point. Feeding remains below entry point. Cobweb free potential entry points. Audible squeaking at dusk or in warm weather. Flies around entry point. Distinctive smell of bats. Smoothing of surfaces around entry point.

<p>Nature of the eaves – sealed by a soffit or boxed eave and tightness of fit to exterior walls.</p> <p>Presence and condition of lead flashing.</p> <p>Gaps under eaves, around windows, under tiles, lead flashing.</p> <p>Presence and type of roof lining.</p> <p>Presence on roof insulation.</p>	
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2.2.2 The buildings and trees were assessed in accordance with the criteria listed above and assigned to one of five categories as listed in Table 3 below.

Table 3: Categorisation system for visual inspection of structures and trees.

Category	Description
Confirmed roost	Bats discovered roosting within structure or tree, or recorded emerging from/entering structure or tree at dusk and/or dawn. Structure or tree found to contain conclusive evidence of occupation by bats, such as bat droppings. A confirmed record (as supplied by an established source such as the local bat group) would also apply to this category.
High potential	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Moderate potential	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status.
Low potential	A structure with one or more potential roost sites that could be used by individual bats opportunistically. However these potential roost sites do not provide enough space, shelter, protection, appropriate conditions and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats. A tree of sufficient size and age to contain potential roost features but with none seen from the ground or features seen with only very limited roosting potential.
Negligible potential	A structure or tree with no features capable of supporting roosting bats.

2.3 BAT DNA ANALYSIS

2.3.1 During the PBRA, bat droppings were recorded on a windowsill on the southern aspect of building B1 and on storage beneath the apex of building B3. These droppings were collected by Tara Hall BSc(Hons) ACIEEM (Natural England bat class two licence holder) on 25th March 2020 and sent for laboratory analysis (SureScreen Life Sciences). The DNA from each dropping sample was extracted and a short fragment of the bat mitochondrial gene amplified using Polymerase Chain Reaction (PCR) (if a sample is very degraded, a restorative enzyme treatment is used instead). The amplified gene was then sequenced to give the full genetic sequence and matched against a database of known species to identify

the origin of the species of the bat droppings.

2.4 BAT EMERGENCE/RE-ENTRY SURVEY

2.4.1 The bat emergence/re-entry surveys were undertaken in accordance with good practice guidance (Collins, 2016). During the surveys surveyors; Tara Hall BSc(Hons) ACIEEM (Natural England bat class two licence holder and five years survey experience), Kate Baldock BSc(Hons) MSc (Natural England bat class two licence holder and over 10 years survey experience), Tom Knight BSc(Hons) MSc MCIEEM (Natural England bat class one licence holder and nine years survey experience), Kari McSherry (nine years survey experience), Nicolle Stevens BSc(Hons) ACIEEM (Natural England bat class one licence holder and three years survey experience), Zoe Courchene BSc(Hons) MSc (four years survey experience), Tom Howland BSc(Hons) (one years survey experience), Alexandra Ash BSc(Hons) (one years survey experience) and Jeremy Coleman FdSc (five years survey experience), watched and listened for bats emerging from, or returning to roost. Surveyor locations were utilised to fully cover the potential roosting features on all suitable buildings.

2.4.2 As building B1 and B3 were identified as a confirmed bat roost for a whiskered *Myotis mystacinus* bat(s) and brown long-eared(s) respectively, during the PBRA, three separate survey visits comprising two dusk emergence surveys and a single dawn re-entry survey were undertaken on each building. As building B2 was identified as having low suitability to support roosting bats, a single dusk emergence survey was undertaken on this building.

2.4.3 The dusk emergence surveys began at least 15 minutes before sunset and continued for up to 90 minutes after sunset. The dawn re-entry survey began at least 120 minutes before sunrise and continued up to 15 minutes after sunrise. The details of each survey visit are presented in Table 4 below.

2.4.4 The surveyors used Echo Meter Touch (EMT), EMT Pro, Bat Box III D and Elekon Batlogger M bat detectors connected to electronic tablets to listen to and record echolocation calls of bats observed. During the survey, surveyors mapped the flight-lines used by any bats observed and noted any features used by the bats to access/egress buildings B1-B3.

Table 4: Bat emergence/re-entry survey visit details.

Date	Building Surveyed	Sunset/Sunrise Time	Start Time	End Time	Temp (°C) start-finish	Cloud Cover (%) start-finish	Wind Speed (B'fort Scale) start-finish	Precip. start-finish
11/06/20	B1 & B3	21:15	21:00	22:45	14 - 13	100 - 90	B1 - B0	0 - 0
29/06/20	B1, B2 & B3	21:17	21:02	22:47	12 - 11	100 - 30	B2 - B1	0 - 0
15/09/20	B1 & B3	06:35	04:35	06:35	15 - 14	0 - 10	B0 - B0	0 - 0

2.5 LIMITATIONS

2.5.1 It should be noted that whilst every effort has been made to provide a comprehensive description of the Site, no single investigation could ensure the complete characterisation and prediction of the natural environment.

2.5.2 Due to the transient nature of bats and the fact that the habitats present on site and their

management are likely to change over time, the findings of the preliminary bat roost assessment are only considered valid for a period of up to two years from the date the survey was undertaken. The findings of the bat emergence/re-entry surveys only considered valid for a period of up to 12 months from the date the surveys were undertaken.

- 2.5.3 This document has been prepared for the stated proposal (1.5.1) and should not be relied upon or used for any other project without an additional check being carried out by the author as to its suitability in relation to any updated proposals. PJC Consultancy accepts no responsibility or liability for the consequence of this document being used for a purpose other than the purposes for which it was commissioned. PJC Consultancy accepts no responsibility or liability for this document to any party other than the person by whom it was commissioned.

3 RESULTS

3.1 DESK STUDY

Protected and Notable Species

3.1.1 Records of protected and notable species identified within the zone of influence are summarised in Table 5 below.

Table 5: Summary of protected and notable species within the zone of influence.

Taxon Name	Common name	Legal Status	No. of Records	Distance and Aspect of Nearest Record	Date of Most Recent Record
Bats					
<i>Eptesicus serotinus</i>	Serotine	Habitat Regs (2019), W&CA Sch5	26 (incl. 5 roosts)	240m south-east	2019
<i>Nyctalus leisleri</i>	Leisler's Bat	Habitat Regs (2019), W&CA Sch5	2	4km west	2011
<i>Nyctalus noctula</i>	Noctule	Habitat Regs (2019), W&CA Sch5, NERC S41	37 (incl. 2 roosts)	1.5km south-east	2019
<i>Pipistrellus pipistrellus</i>	Common pipistrelle	Habitat Regs (2019), W&CA Sch5	199 (incl. 34 roosts)	240m south-east	2019
<i>Pipistrellus pygmaeus</i>	Soprano pipistrelle	Habitat Regs (2019), W&CA Sch5, NERC S41	82 (incl. 14 roosts)	1km south-east	2019
<i>Pipistrellus nathusii</i>	Nathusius pipistrelle	Habitat Regs (2019), W&CA Sch5	1	4.5km south-west	2016
<i>Myotis mystacinus</i>	Whiskered	Habitat Regs (2019), W&CA Sch5	6	3km south	2019
<i>Myotis brandtii</i>	Brandt's	Habitat Regs (2019), W&CA Sch5	1	3.9km south	2010
<i>Myotis nattereri</i>	Natterer's	Habitat Regs (2019), W&CA Sch5	20 (incl. 11 roosts)	1.7km east	2019
<i>Myotis daubentonii</i>	Daubenton's	Habitat Regs (2019), W&CA Sch5	40 (incl. 4 roosts)	1.7km south	2020
<i>Myotis bechsteinii</i>	Bechstein's	Habitat Regs (2019), W&CA Sch5, NERC S41	8 (incl. 5 roosts)	3.5km south	2019
<i>Plecotus auritus</i>	Brown long-eared	Habitat Regs (2019), W&CA Sch5, NERC S41	108 (incl. 56 roosts)	1km north	2019

3.2 PRELIMINARY BAT ROOST ASSESSMENT

3.2.1 A description of the buildings and trees and any potential roosting features (PRF) are detailed in Tables 6 and 7 below, whilst Site photographs are presented in Appendix III.

Table 6: PBRA results of buildings within the Site.

B1
External Description
A double storey 16th century building refurbished in the 1980's. The building was comprised of brick-and-mortar, which was in good condition, with original clay hanging tiles on the first floor. The building supported a pitched clay tiled roof with hipped gable ends on the eastern and western aspects, with flat and pitched dormas on the northern aspect. A single storey extension comprised of the same materials, a pitched clay tiled roof was present on the eastern aspect.
A single storey porch was recorded on the northern aspect. The eaves were open but filled with insulation and netting in places.
Internal Description
The roof void was divided into two and only one half was accessible. The accessible half supported a floor to apex height of 50cm, was very heavily cobwebbed and supported insulation. The accessible half was lined with painted timber sarking. A small hole connected both voids together. The inaccessible half supported original timber trusses and felt lining which was ripped above the hatch exposing the underside of the clay tiles.
Evidence of Bats
Bat droppings were recorded on the flat dorma roof on the northern aspect and windowsill on the southern aspect.
Potential Roost Features
Multiple lifted and missing roof and hanging tiles.
Potential to Support Roosting Bats
Confirmed.

B2 – Stable
External Description
Single storey building comprised of painted rendered breezeblocks and timber weatherboarding which was in reasonable condition. The building supported brick and mortar wall ends which were in good condition. The building supported a pitched clay tiled roof which was in new condition for the majority with some original tiles present. The eaves were open providing internal access into the building.
Internal Description
In use for storage at the time of the assessment, the building was lined with plywood boarding and chipboard cladding in good condition. The roof was lined with breathable roofing membrane, also in good condition. The building supported timber trusses in reasonable condition. A small gap was observed at the gable end apex.
Evidence of Bats
None observed at the time of the assessment.
Potential Roost Features
Crevices under the roof tiles. Potential internal access at the eaves.
Potential to Support Roosting Bats
Low.

B3 – Old Hay Barn
External Description
A two storey building comprised of painted timber weatherboarding in poor condition. The building supported a pitched clay tiled roof with hip ends on the eastern and western aspects. Multiple lifted and missing tiles were recorded on all aspects. The eaves were open.
Internal Description

The building was supported by the original timber frame in reasonable condition. The roof was lined with bitumen 1F type felt.
Evidence of Bats
Approximately 10 droppings (five of which were fresh) were recorded on storage beneath a ridge tile at the western aspect.
Potential Roost Features
Gaps within the braces and joins of the timber frame. Roosting opportunities at the apex. Many lifted and missing tiles.
Potential to Support Roosting Bats
Confirmed.

B4 – Log Store
Description
Single storey building of timber structure with painted timber weatherboarding. The timber was in reasonable condition. The building was open sided on the northern aspect and supported a monopitched corrugated metal roof.
Evidence of Bats
None observed at the time of the assessment.
Potential Roost Features
None observed at the time of the assessment.
Potential to Support Roosting Bats
Negligible.

Table 7: PBRA results of trees within or immediately adjacent the Site.

T1
Description
Mature horse chestnut <i>Aesculus hippocastanum</i> approximately 10m in height.
Evidence of Bats
None observed at the time of the assessment.
Potential Roost Features
Lateral tear out on a first canopy branch approximately 4m high leading to a potentially large cavity. Another tear out with upwards cavity approximately 6m high.
Potential to Support Roosting Bats
Moderate.

T2
Description
Mature oak <i>Quercus</i> sp. approximately 12m tall.
Evidence of Bats
None observed at the time of the assessment.
Potential Roost Features
Ivy cladding could be obscuring potential roosting features.
Potential to Support Roosting Bats
Low.

3.3 BAT DNA ANALYSIS

- 3.3.1 The results of the bat DNA analysis were received on the 9th April 2020. The sample taken from the windowsill of building B1 confirmed the droppings were from whiskered bat(s) and

the sample taken from building B3 confirmed the droppings were from brown long-eared bat(s) (see Appendix IV for laboratory results).

3.4 BAT EMERGENCE/RE-ENTRY SURVEYS

Roosting Bats

Building B1

3.4.1 Bats were recorded emerging from and re-entering building B1 during both the emergence survey on the 11th June and the re-entry survey on 15th September 2020. The results are summarised below:

- A total of six, with a peak count of four common pipistrelle bats;
- A total of one, with a peak count of one whiskered bat; and
- A total of five, with a peak count of three soprano pipistrelle bats.

3.4.2 On the 11th July 2020, one common pipistrelle bat (CP01) was observed emerging from beneath a hanging tile at the south-eastern aspect of the building at 21:30 (15 minutes after sunset). At 21:32 (17 minutes after sunset), a soprano pipistrelle bat (SP01) emerged from a hanging tile on the eastern gable end. A second common pipistrelle bat (CP02) was observed emerging from a different hanging tile on the eastern gable end at 21:35 (20 minutes after sunset). At 21:42 (27 minutes after sunset), a second soprano pipistrelle bat (SP02) emerged from under the eaves on the south-eastern corner.

3.4.3 On the 15th September 2020, two common pipistrelle bats (CP03 and CP04) re-entered beneath a lifted hanging tile close to the lead flashing on the northern aspect of the building at 06:00 (35 minutes before sunrise). A single soprano pipistrelle bat (SP03) re-entered a hanging tile on the southern aspect of the building at 06:04 (31 minutes before sunrise). Another soprano pipistrelle bat (SP04) re-entered a lifted hanging tile on the eastern aspect of the building at 06:10 (25 minutes before sunrise), just as a *Myotis* bat species (likely a whiskered bat (MYO01)) re-entered a lifted hanging tile at the southern aspect of the building at the same time. At 06:12 (23 minutes before sunrise), a common pipistrelle bat (CP05) re-entered beneath a different hanging tile on the southern aspect, whilst a common pipistrelle bat (CP06) re-entered a lifted roof tile on the north-eastern aspect close to the chimney at 06:14 (21 minutes before sunrise). At 06:18 (17 minutes before sunrise), a soprano pipistrelle bat (SP05) re-entered the same lifted hanging tile as SP03.

3.4.4 A summary of the roosts present within building B1 is presented in Table 2, below.

Table 2: Summary of bat roosts present within building B1.

Species and Number of Bats	Type of Roost	Number of Roosts Present	Location of Roost
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Common pipistrelle (6)	Summer day	5	<ul style="list-style-type: none"> • Hanging tile on the south-eastern aspect (peak count of one); • Hanging tile on the eastern gable end (peak count of one); • Hanging tile on the northern aspect (peak count of two); • Hanging tile on the southern aspect (peak count of one); and • Roof tile on north-eastern aspect (peak count of one).
Soprano pipistrelle (5)	Summer day	4	<ul style="list-style-type: none"> • Hanging tile on the eastern gable end (peak count of one); • Under the eaves on the south-eastern corner (peak count of one); • Hanging tile on the southern aspect (peak count of two); and • Hanging tile on the eastern aspect (peak count of one).
Whiskered (1)	Summer day	1	<ul style="list-style-type: none"> • Hanging tile on the southern aspect (peak count of one).

Building B2

3.4.5 No bats were observed emerging or re-entering building B2 during the further recommended emergence survey.

Building B3

3.4.6 Bats were also recorded emerging from and re-entering building B3 during the emergence surveys on the 11th and 29th June, and the re-entry survey on 15th September 2020. The results are summarised below:

- A total of three, with a peak count of one common pipistrelle bat;
- A total of one, with a peak count of one brown long-eared bat; and
- A total of one, with a peak count of one soprano pipistrelle bat.

3.4.7 At 21:20 (5 minutes after sunset) on the 11th June 2020, a single common pipistrelle bat (CP07) emerged from beneath the eaves on the eastern aspect and later re-entered the same location at 21:51 (36 minutes after sunset). At 22:04 (49 minutes after sunset), a brown long-eared bat (BLE01) emerged from under the eaves at the south-eastern aspect.

3.4.8 On 29th June 2020, a soprano pipistrelle (SP06) emerged from beneath a lifted roof tile on the south-eastern aspect of the building at 21:32 (15 minutes after sunset). At 21:55 (38 minutes after sunset), a common pipistrelle (CP08) re-entered a lifted roof tile on the north-western aspect.

3.4.9 On 15th September 2020, a common pipistrelle (CP09) re-entered the same location as CP08 at 06:19 (16 minutes before sunset).

3.4.10 A summary of the roosts present within building B3 is presented in Table 3, below.

Table 3: Summary of bat roosts present within building B3.

Species and Number of Bats	Type of Roost	Number of Roosts Present	Location of Roost
Common pipistrelle (3)	Summer day	2	<ul style="list-style-type: none"> Under the eaves on eastern aspect (peak count of one); and Roof tile on the north-western aspect (peak count of one).
Soprano pipistrelle (1)	Summer day	1	<ul style="list-style-type: none"> Roof tile on the south-eastern aspect (peak count of one).
Brown long-eared (1)	Summer day	1	<ul style="list-style-type: none"> Roosting at apex at the western elevation but emerged from under the eaves on the south-eastern aspect (peak count of one).

3.4.11 The bats that were recorded emerging and/or re-entering both buildings B1 and B3 during the further emergence and re-entry surveys, emerged and/or re-entered within the expected times for the species identified, which also aided with species identification.

3.4.12 The location of all emergence/re-entry points for are presented in Appendix V.

Foraging and Commuting Bats

3.4.13 Overall, activity during the surveys was considered to be moderate, which is consistent with the amount of suitable foraging habitat present within the Site and wider surroundings. In total, five bat species were recorded foraging and/or commuting within the Site during the surveys. These were common and soprano pipistrelle bats, brown long-eared bats, noctule bats and *Myotis* bat sp. The surveys were dominated by activity from individual common and soprano pipistrelle bats, with occasional calls from *Myotis* bat sp., brown long-eared bats and noctule bats during all three surveys.

3.4.14 The majority of bat activity was by common and soprano pipistrelle bats foraging along the northern and southern boundaries which are dominated by a mature treeline and hedgerow, respectively.

4 DISCUSSION AND RECOMMENDATIONS

4.1 EVALUATION

4.1.1 All bats are European protected species (EPS) and both individual animals and their roosts are afforded protection under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 and the Wildlife and Countryside Act, 1981 (as amended). Certain bat species are also listed as Species of Principal Importance (SPI) under the NERC Act 2006.

4.1.2 Overall, 530 records comprising 12 bat species were identified within the zone of influence, which included approximately 131 roosts. The nearest record is of an unspecified roost approximately 500m east of the Site.

Roosting Bats

4.1.3 As part of the PBRA, building B1 was found to support evidence of roosting bats in the form of whiskered bat droppings, building B2 was identified as having low suitability to support roosting bats and building B3 was found to support evidence of roosting bats in the form of brown long-eared droppings.

4.1.4 The potential roosting features identified within the buildings were considered suitable for summer roosts for a low number of species and were not considered suitable as a maternity roost. No evidence of a maternity roost was identified during the preliminary bat roost assessment or further emergence/re-entry surveys which were undertaken throughout the active bat survey season, including the maternity season.

4.1.5 Building B4 was identified as having negligible suitability to support roosting bats and therefore roosting bats are considered likely absent from building B4.

4.1.6 As part of the PBRA, tree T1 was identified as having moderate suitability to support roosting bats and tree T2 was identified as having low suitability to support roosting bats.

4.1.7 It should be noted that the PBRA was undertaken from the ground and therefore it was not possible to accurately determine the characteristics of the feature, for example the depth of the feature within the tree. The above classification therefore follows a precautionary approach using professional judgement.

4.1.8 Given that all trees within the Site are to be retained as part of the proposed development, no further surveys are considered necessary on these trees.

Building B1

4.1.9 During the further emergence/re-entry surveys, building B1 was found to support three species of roosting bats.

4.1.10 Building B1 was found to support a summer day roost for up to six common pipistrelle bats, up to five soprano pipistrelle bats and one whiskered bat.

Building B2

- 4.1.11 No bats were observed emerging from building B2 during the further recommended dusk emergence survey and therefore roosting bats are considered likely absent from building B2.

Building B3

- 4.1.12 During the further emergence/re-entry surveys, building B3 was found to support three species of roosting bats.
- 4.1.13 Building B3 was found to support a summer day roost for up to three common pipistrelle bats, one brown long-eared bat and one soprano pipistrelle bat.
- 4.1.14 Both common and soprano pipistrelle bats and brown long-eared bats are common and widespread bat species with a stable range across the southeast. Although whiskered bats are widely distributed in England, the species are considered scarce and elusive across Kent (Kent Bat Group, 2018).
- 4.1.15 Although not located within the development boundary, it should be noted that a summer day roost for up to two soprano pipistrelle bats (a peak count of one) was identified within the garage building at the northern aspect of building B1, beneath a lifted hanging tile at the southern gable end. Although the proposed works on-site shall not lead to the destruction of this nearby summer day roost, indirect impacts such as disturbance through increased noise and vibration levels could negatively affect the summer day roost(s).

Foraging and Commuting Bats

- 4.1.16 Overall, bat activity across the Site was moderate and was dominated by foraging and commuting common and soprano pipistrelle bats.
- 4.1.17 The Site supports potential foraging habitat in the form of the mature treeline along the northern Site boundary and a hedgerow along the southern boundary. Therefore, the lighting scheme associated with the proposed new development should be implemented in accordance with 'Bats and Lighting in the UK' (BCT, 2016). This should aim to:
- Maintain a dark corridor along all Site boundaries;
 - Use minimum light levels necessary. For example, there should be times throughout the evening (when bats are most active) when all lights are unlit to avoid affecting bat activity. Lighting can also be installed using a timer or movement sensor to avoid long periods of an area being lit at night;
 - Use hoods, louvres or other similar design features to avoid light spill onto retained and any newly created suitable bat foraging and commuting habitat;
 - Use narrow spectrum light sources where possible (BCT, 2009) to lower the range of species affected by lighting, specifically avoiding use of mercury or halide lamps, using instead low or high-pressure sodium lamps;
 - If security lighting is required, then this should be installed using a timer or movement sensor to avoid long periods of the area being lit at night; and

- All artificial lighting shall be directed away from any existing or new roost features.

4.2 IMPACT ASSESSMENT

Roosting Bats

Building B1

- 4.2.1 Overall, the common and soprano pipistrelle bats summer day roosts in building B1 are considered to be of 'low' conservation importance (Mitchell-Jones, 2004) and of 'site or local' value (Wray, et al., 2010).
- 4.2.2 The whiskered bat summer day roost within building B1 is considered to be of 'medium' conservation importance and of 'county' value.
- 4.2.3 The current proposals include the removal of the existing porch on the northern aspect of building B1 and the replacement of another in its place. Although some roof tiles will be removed to facilitate the proposed development, the proposals will not result in the destruction or modification of any roosts identified.
- 4.2.4 Therefore, the proposed development will result in the temporary disturbance to all roosts identified within building B1. As such, the scale of impact resulting in the temporary disturbance to all roosts identified within building B1 is considered to be 'low' (Mitchell-Jones, 2004).

Buildings B2 and B4

- 4.2.5 Given paragraphs 4.1.5 and 4.1.11 above, it is considered highly unlikely that bats are currently utilising buildings B2 and B4 to roost. As such, the renovation and demolition works on these buildings can commence without contravening any known legal or planning policies pertaining to bats. In the unlikely event that a bat is discovered within either of these buildings during works, all work must stop immediately and advice sought from a suitably licensed ecologist.

Building B3

- 4.2.6 Overall, the common and soprano pipistrelle bats and brown long-eared bat summer day roosts in building B3 are considered to be of 'low' conservation importance (Mitchell-Jones, 2004) and of 'site or local' value (Wray, et al., 2010).
- 4.2.7 The proposals also include the conversion and extension of building B3 into a residential property, which will include re-roofing the building.
- 4.2.8 Given that CP07 and BLE01 emerged from under the open eaves on building B3 and given that BLE01 was recorded roosting at the apex at the western aspect of building B3, it cannot be ruled out that both species are using the eaves to access the entirety of the internal aspects of the building to roost.
- 4.2.9 Therefore, the proposed development will result in the loss of all roosts identified within building B3. As such, the scale of impact resulting in the loss of the brown long-eared bat

summer day roost (BLE01), common pipistrelle bat summer day roosts (CP07–09) and soprano pipistrelle bat summer day roost (SP06) within building B3 is considered to be ‘low’ (Mitchell–Jones, 2004).

Foraging and Commuting Bats

4.2.10 The habitats within the Site are to be retained throughout the development. On this basis, the proposed development is considered unlikely to result in the loss or degradation of bat foraging and commuting habitat or sever important commuting routes, or obstruct access between potential bat roosts and important foraging habitats, providing the mitigation measures in relation to lighting described above are implemented during the construction and operational phase of the proposed development.

4.3 MITIGATION AND COMPENSATION

4.3.1 Given that buildings B1 and B3 have each been confirmed as a bat roost for three species of bat, a European Protected Species Mitigation (EPSM) licence shall be obtained prior to works commencing to enable the proposed works to be lawfully undertaken, whilst ensuring the favourable conservation status of the species concerned is achieved.

4.3.2 The EPSM licence application will be accompanied by a Method Statement, which will comprehensively detail the mitigation requirements in respect to roosting bats. A summary of the mitigation requirements is provided below, however please note that this may change subject to the licence. Please note that a licence can only be applied for once planning permission has been granted. A minimum of 30 working days should be allowed from submission of an EPSM licence application to the issue of the licence.

Mitigation

Buildings B1 and B3

4.3.3 In order to progress with the proposed development and maintain the favourable conservation status of roosting bat species identified within buildings B1 and B3, the mitigation measures detailed within the EPSM licence must be adhered to, which will include, but not be limited to:

- In advance of works commencing, 3no artificial bat boxes shall be installed on suitable mature retained trees within the Site. The boxes shall be sited in suitable locations that are unlikely to be disturbed during construction and post–development activities. The boxes shall be positioned between 3–6m up the main stem facing in a southerly or south–easterly direction. More than one box can be installed per tree. The boxes shall comprise: 1no Improved Cavity Bat Boxes (or similar) suitable for cavity dwelling bats such as brown long–eared bats and 2no Kent Bat Boxes (or similar) suitable for common and soprano pipistrelle bats. In the unlikely event that bats are discovered during works, the licensed bat ecologist will carefully move the bat(s) to one of these pre–installed bat boxes. The boxes are considered to be temporary and can be removed, if required, once the bat roosting features (as detailed in paragraph 4.3.4 and 4.3.5 below) have been installed. However, in the event a bat or bats are moved to the bat box during works, the tree mounted boxes shall remain in situ permanently;

- The Method Statement must be provided to all work personnel by the licensed bat ecologist prior to the commencement of works on site. In addition, all site workers shall receive a 'toolbox talk' by the licensed ecologist (or named ecologist) prior to starting works. This will outline the bat roosts present within buildings B1 and B3, the legislation relating to bats, measures that will be used to protect them, good working practices, licensable activities and what to do should bats be found;
- Sensitive removal practices of all areas considered to be 'bat sensitive' including soft stripping of roof tiles shall be implemented at an appropriate time of year under the direction and supervision of a suitably licensed ecologist or accredited agent/named ecologist. All roof shall be removed by hand and carefully checked for bats, which may be present underneath each tile. Works shall ideally be conducted between the end of March and April and/or between September and October, avoiding the core hibernation season (November to mid-March), to ensure proposed works will avoid times when disturbance may impact on the survival of bats. Spring and autumn generally provide the optimum period for such operations when bats are least vulnerable to disturbance. Works will also be restricted to daytime working hours only. Night-time working is prohibited including within a one-hour period before sunset and sunrise;
- The porch replacement on building B1 will be located within close proximity to three common pipistrelle bat summer day roosts (CP03-04 and CP06). As such, a 2m 'no construction' buffer zone shall be implemented around all of the bat roosts within building B1, which shall ensure the summer day roosts for common and soprano pipistrelle bats and Myotis sp. bat present on all aspects of the building, especially the northern aspect, are not impacted by the construction phase of the development;
- Building B1 shall remain unlit and clear flight paths into and out of the structure (including hanging tiles) must be maintained at all times.
- Where roofing membranes are required, they shall be Bitumen type 1F felt, breathable roofing membranes (BRM) shall not be used, as bats can become entangled within the fibres as they fray over time. In addition, if wood timber treatments are required, only the approved timber products may be used, which can be found here: <https://www.gov.uk/government/publications/bat-roosts-insecticides-and-timber-treatments/timber-treatment-products-suitable-for-use-in-or-near-bat-roosts>; and
- Implementation of a sensitive lighting mitigation strategy, as detailed in 4.1.17 above, to prevent any adverse impacts on any roosts potentially present within the trees.

Compensation

Building B3

- 4.3.4 To compensate for the destruction of the brown long-eared summer day roost within building B3, an Improved Cavity Bat Box (suitable for cavity dwelling bat species such as long-eared bats) shall be installed onto the western aspect of building B3.
- 4.3.5 To compensate for the loss of the common pipistrelle and soprano pipistrelle bat summer day roosts within building B3, two bat access roof tiles shall be incorporated into the new roof; one on the south-eastern aspect and one on the north-western aspect. A Kent bat box (suitable for crevice dwelling bat species such as pipistrelles) will also be installed under the eaves at the eastern aspect.

- 4.3.6 The location of the compensatory bat roosts can be seen in Appendix VI.
- 4.3.7 All other bat roosts, including all roosts identified within building B1, will be retained as part of the proposed development and as such, no compensatory roosts are required for these roosts.
- 4.3.8 It should be noted that specific mitigation and compensation measures will be confirmed during the licence application process.

4.4 ECOLOGICAL ENHANCEMENTS

4.4.1 Under Section 40 of the NERC Act 2006 there is a duty to have regard to biodiversity conservation. In addition, the National Planning Policy Framework (NPPF, 2021) and Sevenoaks District Council Core Strategy (2011) encourages ecological enhancement to be integrated into development projects in order to achieve an overall net-gain in biodiversity. Consideration should therefore also be given to the following ecological enhancements in respect of bats:

- Inclusion of nectar-rich plant species in soft landscaping areas that are attractive to night-flying insects to enhance foraging opportunities for bats; and
- Creation of additional linear habitat (tree-lines and hedgerows) along the Site boundaries to provide additional commuting opportunities for bats.

4.4.2 It is also recommended that additional bat access roof tiles be incorporated into the roof of building B3 to increase the roosting opportunities for bats. Approximately two bat access roof tiles could be incorporated onto both the eastern and western aspects of building B3.

CONTACT DETAILS

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Date: 13th September 2021

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6 APPENDICES

APPENDIX I: SITE LOCATION PLAN



LEGEND:

— Site Boundary

STATUS: FOR INFORMATION ONLY



Sussex Office: Rocks Yard, Victoria Rd, Herstmonceux, Hailsham, BN27 4TG.
T: 01323 832120.
Kent Office: Unit 1, Hanover Mill, Mersham, Nr Ashford, Kent, TN25 6NU.
T: 01233 225365
E: contact@pjconsultancy.com
W: <https://www.pjconsultancy.com>

CLIENT: **Bridget Reading**

PROJECT: **Harborough Farm
Clintons Farm
TN8 7PP**

TITLE: **Appendix I: Site Location Plan**

SCALE AT A4: 1:471.1	DRAWN: NS	APPROVED: TK
PROJECTION: EPSG:3857	DATE: 02/12/20	DATE: 12/09/21

DRAWING No:
PJC/4296E/20/A1/V1

APPENDIX II: LEGISLATION AND PLANNING POLICY

Legislation

The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019

The Conservation of Habitats and Species Regulations 2019 is the UK transposition of the European Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna, 1992, or the 'Habitats Directive'. The directive provides protection of key habitats and species of European importance. Those key habitats and species are listed in Annexes II and IV of the directive.

Those species protected under the regulations and most likely encountered during development include:

- All bat species
- Hazel dormouse
- Great crested newt
- Common otter

The Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act 1981 (as amended) is the primary legislation for the protection of wildlife in Great Britain. This legislation is the means by which the Convention on the Conservation of European Wildlife and Natural Habitats (the 'Bern Convention') and the European Union Directives on the Conservation of Wild Birds (79/409/EEC) and Natural Habitats and Wild Fauna and Flora (92/43/FFC) are implemented in Great Britain. All breeding birds, their nests, eggs and young are protected under the Act, which makes it illegal to knowingly destroy or disturb the nest site during nesting season. Schedules 1, 5 and 8 afford protection to individual birds, other animals and plants respectively. The Countryside and Rights of Way (CRoW) Act 2000 makes it an offence to 'recklessly' disturb a protected animal whilst it is using a place of rest or shelter or breeding/nest site

Those species protected under the act and most likely encountered during development include:

- All bat species
- All nesting birds
- Hazel dormouse
- Great crested newt
- Common otter
- Water vole
- All native reptile species
- White-clawed crayfish

The Natural Environment and Rural Communities Act (NERC) 2006

Section 40 of the Act requires all public bodies to have regard to biodiversity conservation when carrying out their functions. This is commonly referred to as the 'biodiversity duty'. Section 41 of the Act provides a list of habitats and species, which are of 'principal importance for the conservation of biodiversity.' This list aids decision makers such as public bodies in implementing their duty under Section 40 of the Act. Under the Act these

habitats and species are regarded as a material consideration in determining planning applications.

Species and Habitat Specific Legislation

Bats

All native UK bat species are fully protected by UK law under Schedule 5 (in respect of section 9(4)(b) and (c) and (5) only) and Schedule 6 of the Wildlife and Countryside Act (1981, as amended), and under Schedule 2 of the Conservation of Habitats and Species Regulations 2017. It is illegal to deliberately capture, injure or kill a bat or to intentionally or recklessly disturb bats. It is also illegal to damage, destroy or intentionally or recklessly obstruct access to a breeding or resting place used by a bat.

Any activity that would result in a contravention of the above legislation would likely require an EPS licence from the relevant statutory body (NE, CCW or SNH). Works or mitigation activities involving interference with bats or bat shelters must be carried out by a licensed bat worker.

Biodiversity Policies

National Planning Policy Framework (NPPF) 2021

Published in 2021 the NPPF sets out the Government's planning policies for England and how these are expected to be applied by local authorities. It replaces all the Planning Policy Statements and Guidance (PPSs and PPGs). The NPPF emphasises the need for sustainable development, whilst specifying the need for protection of designated sites and priority habitats and priority species (as listed in section 41 of the Natural Environment and Rural Communities (NERC) Act 2006). Paragraph 174 of The National Planning Policy Framework (NPPF) states:

“Planning policies and decisions should contribute to and enhance the natural and local environment by:

- a) protecting and enhancing valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan);
- b) recognising the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland;
- c) maintaining the character of the undeveloped coast, while improving public access to it where appropriate;
- d) minimising impacts on and providing net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures;
- e) preventing new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans; and

- f) remediating and mitigating despoiled, degraded, derelict, contaminated and unstable land, where appropriate.”

Paragraph 179 states that “to protect and enhance biodiversity and geodiversity, plans should:

- a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national and locally designated sites of importance for biodiversity⁵⁶; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation⁵⁷; and
- b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.”

Furthermore, paragraph 185 states that when determining planning applications, local planning authorities should aim to conserve and enhance biodiversity by applying the following principles:

- a) if significant harm to biodiversity resulting 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;
- b) development on land within or outside a Site of Special Scientific Interest, and which is likely to have an adverse effect on it (either individually or in combination with other developments), should not normally be permitted. The only exception is where the benefits of the development in the location proposed clearly outweigh both its likely impact on the features of the site that make it of special scientific interest, and any broader impacts on the national network of Sites of Special Scientific Interest;
- c) development resulting in the loss or deterioration of irreplaceable habitats (such as ancient woodland and ancient or veteran trees) should be refused, unless there are wholly exceptional reasons⁵⁸ and a suitable compensation strategy exists; and
- d) development whose primary objective is to conserve or enhance biodiversity should be supported; while opportunities to incorporate biodiversity improvements in and around developments should be encouraged, especially where this can secure measurable net gains for biodiversity.

Paragraph 181 states:

“The following should be given the same protection as habitats sites:

- a) potential Special Protection Areas and possible Special Areas of Conservation;
- b) listed or proposed Ramsar sites⁵⁹; and
- c) sites identified, or required, as compensatory measures for adverse effects on habitats sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites.”

Paragraph 182 states:

“The presumption in favour of sustainable development does not apply where development requiring appropriate assessment because of its potential impact on a habitats site is being planned or determined.”

The UK Biodiversity Framework (2011–2020).

The UK Biodiversity Framework is an important framework that is owned, governed and implemented by the four UK countries, assisted by Defra and JNCC in their UK co-ordination capacities. Although differing in details and approach, the four UK countries have published strategies which promote the same principles and address the same global targets: joining-up our approach to biodiversity across sectors; and identifying, valuing and protecting our 'Natural Capital' to protect national well-being now and in the future. This new framework has been developed to enhance the recovery of priority habitats and species in England (published under section 41 of the NERC Act 2006), thereby contributing to the delivery of the England Biodiversity Strategy. The framework has been developed and endorsed by the England Biodiversity Group and wider partnership. It is the starting point for a more integrated approach to biodiversity conservation in England, building on the strengths of the former UK Biodiversity Action Plan (BAP) process and improving those areas where insufficient progress was being made.

Sevenoaks District Council Core Strategy (Adopted 2011)

The Sevenoaks District Council Core Strategy (2011) sets out the relevant policies for the control of development in regards to the natural environment and biodiversity.

Policy SP 11 Biodiversity

"The biodiversity of the District will be conserved and opportunities sought for enhancement to ensure no net loss of biodiversity. Sites designated for biodiversity value will be protected with the highest level of protection given to nationally designated Sites of Special Scientific Interest, followed by Local Wildlife Sites and sites of local importance for biodiversity. Designated sites will be managed with the primary objective of promoting biodiversity whilst also providing for appropriate levels of public access. Opportunities will be sought for the enhancement of biodiversity through the creation, protection, enhancement, extension and management of sites and through the maintenance and, where possible, enhancement of a green infrastructure network to improve connectivity between habitats."

APPENDIX III: SITE PHOTOGRAPHS



Photograph 1: The southern aspect of building B1. Photograph taken by Nicolle Stevens on 15th September 2020.



Photograph 2: The northern and western aspect of building B3 with western aspect of building B1 in the background. Photograph taken by Tara Hall on 25th March 2020.



Photograph 3: The internals of building B3. Photograph taken by Tara Hall on 25th March 2020.



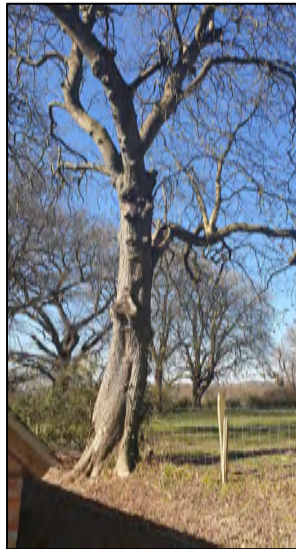
Photograph 4: Brown long-eared droppings within building B3. Photograph taken by Tara Hall on 25th March 2020.



Photograph 5: Building B4. Photograph taken by Tara Hall on 25th March 2020.



Photograph 6: Building B2. Photograph taken by Tara Hall on 25th March 2020.



Photograph 7: Tree T1. Photograph taken by Tara Hall on 25th March 2020.

APPENDIX IV: BAT DNA ANALYSIS

Folio No: E6673
 Report No: 1
 Order No: Harbbarn
 Client: PJC CONSULTANCY
 Contact: Tara Hall
 Contact Details: tara@pjconsultancy.com
 Date: 09/04/2020

TECHNICAL REPORT

ANALYSIS OF ENVIRONMENTAL DNA FOR THE DETECTION OF BAT SPECIES

Date sample received at Laboratory: 30/03/2020
Date Reported: 09/04/2020
Matters Affecting Results: None

RESULTS

Lab Sample ID.	Site Name	O/S Reference	Genetic Sequence	Common Name	Result	Sequence Similarity
E6673-1	1HB Haybarn, Harborough Farm	TQ 48392 46962	GGAGGGTTCCGGGACTGATTGGTGCC ACTAATAATTGGAGCCCCTGATATA GCTTTTCCCGAATAAATAACATAAG CTTCTGACTGCTTCCCCATCTTTTC TACTACTTTTAGCTTCGTCTGCAGTA GAGGCTGGAGCAGGTACCGGTTGAA CAGTCTATCCCCTTTAGCGGAAA CCTAGCCCAANCAGGAGAN	Brown long-eared bat	Plecotus auritus	97.34%
E6673-2	2HB House, Harborough Farm	TQ 48392 46962	ATCGGAGGCTTTGGGANTGACTAGT GCCCTGATGATTGGCGCTCCTGAT ATANGCCTTCCCGGGTAAATAAT ATAAGTTTCTGACTACTTCCCCATC TTTCTTATTACTACTGGCCTCGTCTA TAGTTGAAGCAGGGCAGGAACTGG TTGAACAGTTTATCCCCTTAGCA GAAACCTAGCCCAAGCAGGAGN	Whiskered bat	Myotis mystacinus	97.81%

METHODOLOGY

First, the DNA from a single bat dropping is extracted and purified. Then, a short fragment of a mitochondrial gene is amplified using polymerase chain reaction (PCR). If the analysis is unassigned the first time, the reaction is performed with different primer. The amplified product is analysed on a gel to confirm that the expected product size was amplified. It then goes through one more purification step before being Sanger sequenced. The sequence results are aligned against a library of known bat reference sequences using bioinformatics software, and we are able to confirm that the dropping sample came from a certain bat species with the reported percent sequence similarity.

INTERPRETATION

Degradation: Samples are extracted following protocol. If DNA is unsuccessfully amplified with SFF primers, specific to bat genome, the reserve samples are then extracted following protocol yet this time with a restorase enzyme which helps repair degraded DNA. If the reserve samples are amplified unsuccessfully, then the sample is amplified with universal 16S

primers, these universal primers will amplify the most prolific DNA in the sample so will detect Bat mitochondrial DNA if it is there, or mouse DNA or bacterial DNA. If bacterial DNA is found this is an indicator that the sample has degraded to such an extent that the SFF primers can no longer detect Bat DNA. If no DNA is amplified whatsoever then the sample has long been degraded as the technique is ultra sensitive. We get few samples with DNA degradation. DNA degrades with time and expedited with the environmental conditions it is exposed to such as sunlight and temperature and moisture, therefore we recommend samples are taken out of direct sunlight, away from moisture and away from warmth where possible. If the sample with the freshest appearance, on top of the surface, is collected taking in to account these environmental parameters then it is likely that the sample has degraded due to the sample being there a long time and Bats may no longer be present. We analyse a sample up to three times to achieve a result. If no DNA is detected after three times, we are confident, there is no longer any DNA in the sample to detect.

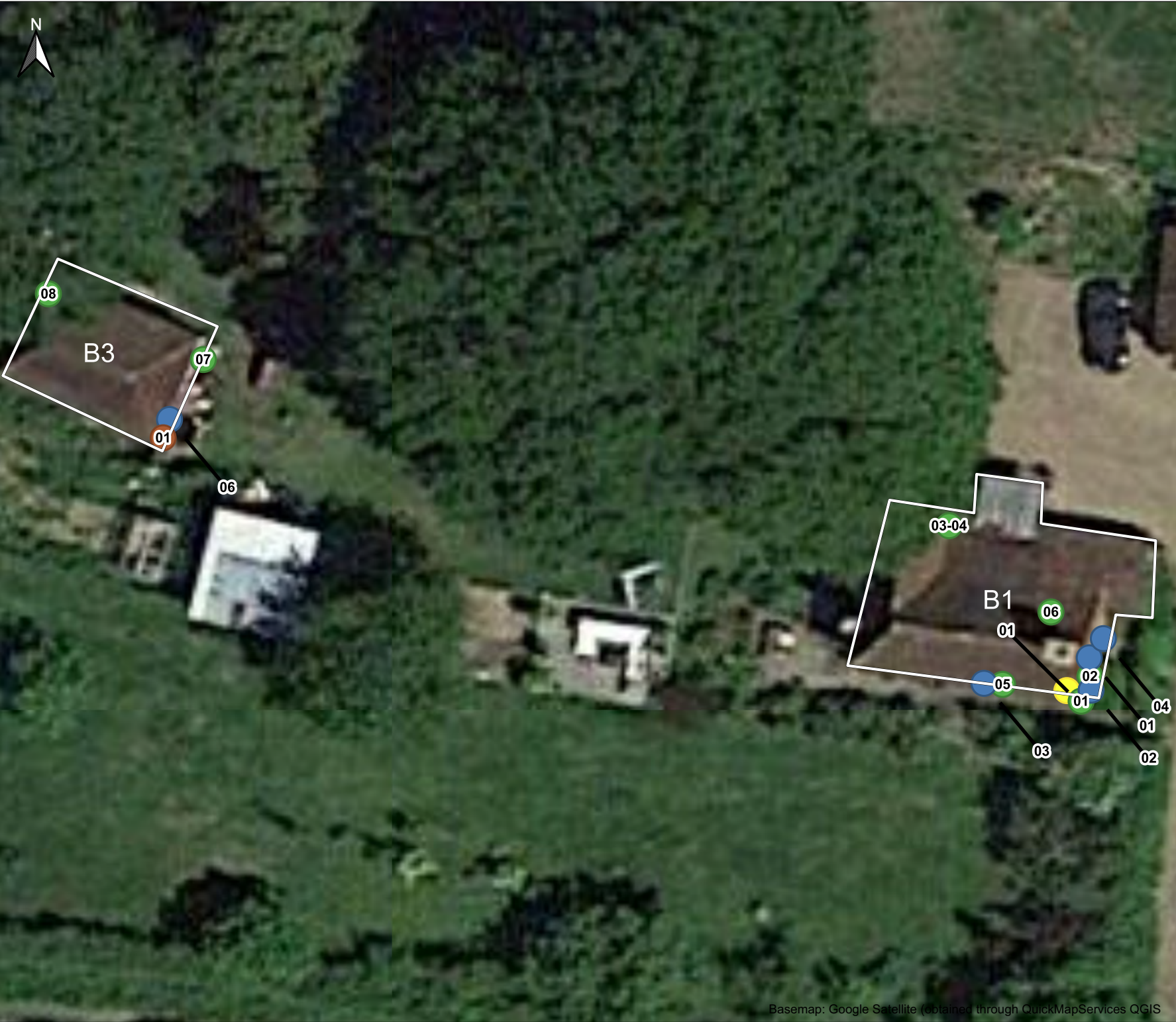
Genus: A samples goes through DNA extraction, PCR to amplify, electrophoresis and then genetically sequenced to give the genetic code for that sample GCTATATACGCGC etc. The genetic sequence obtained is used to cross reference against millions of known genomes to find the closest match. If the sample sequence is not long enough due to sample degradation, or if a non specific part of the genetic code is obtained, then the results may indicate the precise genus but not the precise species. This is especially important for Myotis species as there are so many similar Myotis species with very similar genetic coding. If the results come back an non specific for a species, then the sample resubmitted through the entire analysis again to see if a better quality sequence, a longer sequence or a sequence in a different area of the genome could have been obtained so that we were able to differentiate between the species.

Reported by: Chris Troth

Approved by: Chris Troth

End Of Report

APPENDIX V: BAT EMERGENCE/RE-ENTRY LOCATIONS



LEGEND:

- Brown Long-Eared Bat Roosts
- Common Pipistrelle Bat Roosts
- Soprano Pipistrelle Bat Roosts
- Myotis Sp. Bat Roost

STATUS: FOR INFORMATION ONLY

Arboricultural, Ecological & Landscape Consultancy

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CLIENT: **Bridget Reading**

PROJECT: **Harborough Farm
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TITLE: **Appendix V: Bat Emergence/Re-Entry Locations**

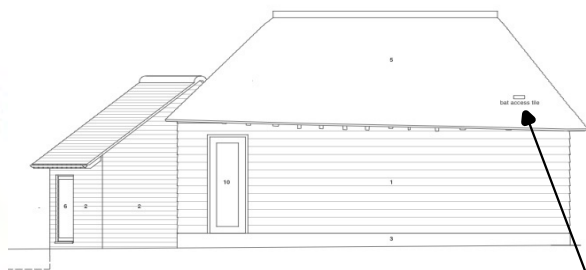
SCALE AT A4: 1:352.6	DRAWN: NS	APPROVED: TK
PROJECTION: EPSG:3857	DATE: 02/12/20	DATE: 13/09/21

DRAWING No: **PJC/4296E/20/A5/V1**

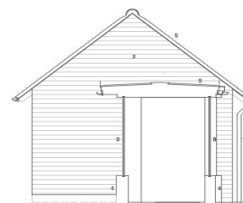
APPENDIX VI: COMPENSATORY ROOST LOCATIONS



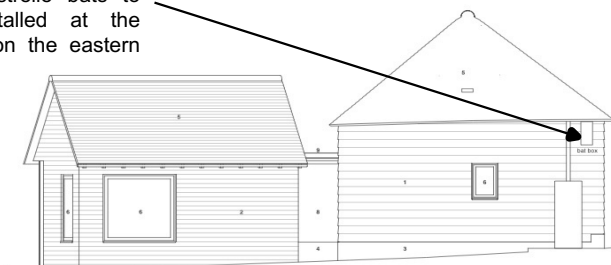
Kent Bat Box suitable for pipistrelle bats to be installed at the eaves on the eastern aspect.



BARN and NEW EXTENSION NORTH ELEVATION AS PROPOSED



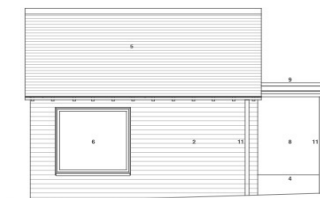
NEW EXTENSION NORTH WEST ELEVATION / SECTION THRU' GLAZED LINK AS PROPOSED



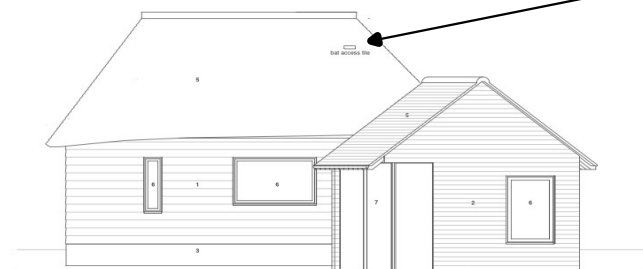
BARN and NEW EXTENSION EAST ELEVATION AS PROPOSED



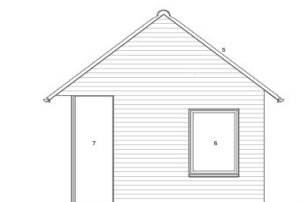
Approximate locations of bat access roof tiles on different elevations to provide roosting opportunities for common and soprano pipistrelles.



NEW EXTENSION NORTH EAST ELEVATION AS PROPOSED



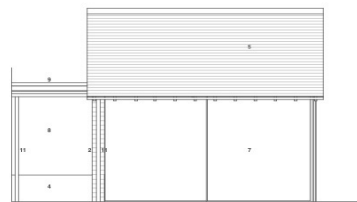
BARN and NEW EXTENSION SOUTH ELEVATION AS PROPOSED



NEW EXTENSION SOUTH EAST ELEVATION AS PROPOSED



BARN and NEW EXTENSION WEST ELEVATION AS PROPOSED



NEW EXTENSION SOUTH WEST ELEVATION AS PROPOSED



Improved Cavity Bat Box suitable for brown long-eared bats to be installed on the western aspect.



JOB	HARBOROUGH FARM BOUGH BEECH KENT TN8 7PP		
DRG. TITLE	BARN and NEW EXTENSION ELEVATIONS AS PROPOSED		
DRG. NO.	95-000/27/P11		
SCALE	1:50 @ A1	DATE	NOV 2020
REVISION			
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TITLE: **Appendix VI: Locations of Compensatory Roosts**

STATUS: **FOR INFORMATION ONLY**

PROJECTION AT A4: **EPSG:4326**

DRAWN: **NS**

APPROVED: **TK**

SCALE AT A4: **1:891,000**

DATE: **12/09/21**

DATE: **13/09/21**

DRAWING No: **PJC/4296E/20/A6/V1**