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Thirley Cotes Farm, Harwood Dale

Bat Survey, June 2018.

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NYMNPA
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1.0 EXECUTIVE SUMMARY

1.1 The field surveys during March, May and June 2018 identified the following roosts:

Date	Spp.	Roost type	Structure Reference	Roost Location	Access points (including #)	Dimension of roost or explanation where the roost is
07/05/18	Brown long-eared	Day x 4	Barn 1 **Roost 1**	Located in a gap below ridge tile	External roost x 1 access point	Gap below ridge tile approximately 40mm x 15mm
	Brown long-eared	Day x 1	Barn 2 **Roost 2**	Located in a gap below ridge tile	External roost x 1 access point	Gap below ridge tile approximately 30mm x 15mm
	Soprano pipistrelle	Day x 1	Barn 2 **Roost 4**	Located in a gap under a ridge tile	External roost x 1 access point	Missing mortar under ridge tile approximately 30mm x 40mm.
	Soprano pipistrelle	Day x 1	Garage **Roost 5**	Located in a gap above a scaffolding board adjacent to the roof	Internal roost x 1 access point via opening on the north elevation	Gap approximately 20mm x 1000mm.
26/06/18	Brown long-eared	Day x 1	Barn 1 **Roost 1**	Located in a gap below ridge tile	External roost x 1 access point	Gap below ridge tile approximately 40mm x 15mm
	Brown long-eared	Maternity x10	Barn 1 **Roost 3**	Located in a gap in the internal stonework	Internal roost x 1 access point via the missing ridge	Missing mortar in the stonework approximately 60mm x 40mm.
23/03/18	Hibernation	No hibernating bats were observed during the endoscope inspection.				

1.2 The following bat roosts were observed in adjacent buildings which will not be affected by the proposed building and conversion works to barn, barn or the garage:

Date	Spp.	Roost type	Structure Reference	Roost Location	Access points (including #)	Dimension of roost or explanation where the roost is
07/05/18	Soprano pipistrelle	Day x 1	Converted barn	Located in a gap in the external stone work on south elevation of the converted barn	External roost x 1 access point	Missing mortar in external stone work
	Soprano pipistrelle	Maternity x 82	Farm house	Located in a gap in the external stone work on the south	External roost x 1 access point	Missing mortar in external stone work adjacent to the chimney

				elevation of the house.		
	Common pipistrelle	Day x 4	Farmhouse	Located in a gap in the external stone work on the south elevation of the house.	External roost x 1 access point	Missing mortar in external stone work
26/06/18	Soprano pipistrelle	Maternity x 144	Farm House	Located in a gap in the eaves on the north elevation of the house.	External roost x 1 access point	Gap below the eaves
	Soprano pipistrelle	Satellite x 36	Converted barn	Located in a gap in the eaves on the south elevation of the barn.	External roost x 1 access point	Gap below the eaves

1.3 The roosts will be disturbed and destroyed as part of the proposed conversion and structural repair work to barns 1 and 2; the roost in the garage will be disturbed and modified. All other roosts in the farmhouse and converted barn will remain unaltered. **Consequently, a Natural England European Protected Species development license is required before conversation work to barn 1, barn 2 and the garage can commence.** Details of appropriate mitigation to be included in the licence application are outlined in section 7.0.

1.4 A Natural England licence will be obtained prior to the following works commencing barn 1, barn 2 and the garage:

- Exclusion of bats and destructive searches by a bat licensed ecologist
- Roof stripping and maintenance work
- Erection of scaffolding adjacent to the building and within 5m of the roost
- Pointing of masonry
- Demolition and soft strip
- New windows and doors
- Internal conversion
- Any future works to the farm house and converted barn will also need a Natural England license

1.5 Planning consent for a development does not provide a defence against prosecution under this act.

1.6 Habitat enhancement for bats should be implemented as outlined in section 7.0, in order to improve foraging opportunities to bats in the local area.

1.7 The data collected to support the output of this report is valid for one year. This report is valid until **June 2019**. After this time, additional surveys need to be undertaken to confirm that the status of the building, as a bat roost, has not changed.

1.8 Species list within this report will be forwarded to the local biodiversity records centre to be included on their national database. No personal information will be sent. Please contact Wold Ecology if you do not wish the species accounts and 10figure grid references to be shared.

Date	Taxon Name	Common Name	Location	County	Grid reference	Record Type	Abundance
May 2018	Plecotus auritus	Brown long-eared	Thirley Coates	N. Yorkshire	SE 97596 95092	Day x 2	5
May 2018	Pipistrellus pipistrellus	Common pipistrelle	Thirley Coates	N. Yorkshire	SE 97596 95092	Day	4
June 2018	Pipistrellus pygmaeus	Soprano pipistrelle	Thirley Coates	N. Yorkshire	SE 97596 95092	Day x 3	3
June 2018	Pipistrellus pygmaeus	Soprano pipistrelle	Thirley Coates	N. Yorkshire	SE 97596 95092	Maternity	144
June 2018	Pipistrellus pygmaeus	Soprano pipistrelle	Thirley Coates	N. Yorkshire	SE 97596 95092	Satellite	36
June 2018	Plecotus auritus	Brown long-eared	Thirley Coates	N. Yorkshire	SE 97596 95092	Maternity	10

1.9 Birds

- Bird's nests were observed in the studied buildings.
- Birds are afforded various levels of protection and levels of conservation status on a species by species basis. The most significant general legislation for British birds lies within Part 1 of the Wildlife and Countryside Act 1981 (as amended). Under this legislation, it is an offence to, kill, injure or take any wild bird, take, damage or destroy the nest of any wild bird while that nest is in use or being built, take or destroy an egg of any wild bird. All nests should remain undisturbed and intact until after the breeding bird season – 1st March to 31st August.
- Planning consent for a development does not provide a defence against prosecution under this act.
- There was evidence of barn owls *Tyto alba* roosting in barn 1.

2.0 INTRODUCTION

2.1 Background Information

2.1.1 In March 2018, Wold Ecology was commissioned by P & G Durbin Properties to undertake a bat scoping survey at Thirley Cotes Farm, Harwood Dale. The site is located at approximate National Grid Reference SE 97581 95071, in North Yorkshire (see section 5.0).

2.1.2 The Application Site comprises the following buildings:

- Barn1
- Barn 2
- Garage

2.1.3 The proposed development includes the conversion of the barns into holiday lets including new glazing, re-roofing and internal conversion works. The garage will be modified and have a change of use in association with the holiday lets.

2.2 Survey Objectives

2.2.1 The site was visited and assessed on 24thMarch 2018, 7th May 2018 and 26th June 2018; this was to determine whether the studied barns contained bat roosts. The work involved the following elements:

Survey objective	Yes/No	Comments
Determine presence/absence of roosting bats	Yes	A daytime, visual inspection for bat roosts and roosting bats. Internal inspection of all roof voids. An assessment of the on-site potential for bats and the likelihood of their presence. Desktop study.
Determine bat usage e.gs maternity roost, summer roosts	Yes	An assessment of whether bats are a constraint to the development. Emergence (dusk) survey. Return survey. Hibernation survey. Endoscope survey (where accessible)
Identify swarming, commuting or mating sites	Yes	The surveys looked at commuting routes from the roost to foraging grounds to ensure works did not impact these.
Other	Yes	The production of a non-technical summary of the legal implications behind bat presence.
		Report the findings of the field survey work and identify recommendations for a potential mitigation strategy.

3.0 BACKGROUND TO SPECIES

3.1 Ecological overview

3.1.1 There are seventeen species of bat that currently breed in the UK. There is a wide variety of roost type and ecological characteristics between species and for this reason it is necessary to determine the species of bat and the type of roost resident in a structure prior to development. Roosts are utilised by different species of bat, at different times of year for different purposes i.e. summer, breeding, hibernating, and mating etc. (for more detailed information see section 9.0).

3.1.2 Bat populations have undergone a significant decline in the latter part of the 20th century; the main factors cited for causing loss and decline include:

- A reduction in insect prey abundance, due to high intensity farming practice and inappropriate riparian management.
- Loss of insect-rich feeding habitats and flyways, due to loss of wetlands, hedgerows, and other suitable prey habitats.
- Loss of winter roosting sites in buildings and old trees.
- Disturbance and destruction of roosts, including the loss of maternity roosts due to the use of toxic timber treatment chemicals.

3.2 Legal Framework

3.2.1 A bat survey is required prior to planning permission being granted for a development, in order to prevent the potential disturbance, injury and /or death of bats and the disturbance, obstruction and/or destruction of their roosting places. This is in compliance with the Conservation of Habitats and Species Regulations 2017, provision 41 states an offence is committed if a person:

(a) Deliberately captures, injures, or kills any wild animal of a European protected species (i.e. bats),
(b) Deliberately disturbs wild animals of any such species,
(c) Deliberately takes or destroys the eggs of such an animal, or
(d) Damages or destroys a breeding site or resting place of such an animal.

3.2.2 Section 9 of the Wildlife and Countryside Act (1981) states:

- It is an offence for anyone without a licence to kill, injure, disturb, catch, handle, possess or exchange a bat intentionally. It is also illegal for anyone without a licence to intentionally damage or obstruct access to any place that a bat uses for shelter or protection.

3.2.3 Bat roosts are protected throughout the year, whether or not bats are occupying a roost site.

3.3 Planning Policy Guidance

3.3.1 A bat survey is a requirement of the local authority planning department, as part of the planning application process. This is specified in the following legislation:

- National Planning Policy Framework (NPPF): Biodiversity and Geological Conservation – national planning policy relation to biodiversity. NPPF Biodiversity and Geological Conservation gives further direction with respect to biodiversity conservation and land use change/development. NPPF states that not only should existing biodiversity be conserved, but importantly that

habitats supporting such species should be enhanced or restored where possible. The policies contained within NPPF may be material to decisions on individual planning applications.

3.3.2 Planning authorities must determine whether the proposed development meets the requirements of Article 16 of the EC Habitats Directive before planning permission is granted (where there is a reasonable likelihood of European Protected Species being present). Therefore, during its consideration of a planning application, where the presence of a European protected species is a material consideration, the planning authority must satisfy itself that the proposed development meets three tests as set out in the Directive.

3.3.3 The LPA has to assess whether the development proposal would breach Article 12(1) of the Habitats Directive. If Article 12(1) would be breached, the LPA would have to consider whether Natural England was likely to grant a European protected species licence for the development; and in so doing the LPA would have to consider the three derogation tests:

a) 'Preserving 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'.

In addition, the LPA must be satisfied that:

(b) 'That there is no satisfactory alternative'

(c) 'That the action authorised will not be detrimental to the maintenance of the population of the species concerned at a favourable conservation status in their natural range'.

3.3.4 Relevant Case Law

- Woolley v Cheshire East Borough (2009).
- R. (Morge) v Hampshire County Council (2011).
- Prideaux v. Buckinghamshire County Council and Fcc Environmental UK Limited (2013).

3.3.5 The rulings summarise that if it is clear or perhaps very likely that the requirements of the Directive cannot be met because there is a satisfactory alternative or because there are no conceivable 'other imperative reasons of over-riding public interest" then the authority should act on that and refuse permission.'

3.3.6 The conclusion of the judgement is that LPAs must ensure that the option/alternative that best takes into account all the relevant considerations (not just EPS) should be the preferred option assuming that the other two tests specified in Article 16 (1) are also met.

3.3.7 The judgements also clarified that it was not sufficient for planning authorities to claim that they had discharged their duties by imposing a condition on a consent that requires the developer to obtain a licence from Natural England. Natural England considers it essential that appropriate survey information supports a planning application prior to the determination. Natural England does not regard the conditioning of surveys to a planning consent as an appropriate use of conditions.

4.0 ASSESSMENT METHODOLOGY

4.1 Status of species present in Yorkshire

Bat Specie	UK Status	UK Distribution	Yorkshire Distribution
Common Pipistrelle	Not threatened	Common & widespread	Common & widespread.
Soprano pipistrelle	Not threatened	Common & widespread	Less common than common pipistrelle but fairly widespread.
Nathusius's pipistrelle	Rare	Restricted. Throughout British Isles.	Scarce, bat detector records only.
Brown long-eared	Not threatened	Widespread	Widespread.
Daubenton's	Not threatened	Widespread	Widespread.
Natterer's	Not threatened	Widespread (except N & W Scotland)	Present
Brandt's	Endangered	England and Wales	Few confirmed records.
Whiskered	Endangered	England, Wales, Ireland & S Scotland.	Present.
Noctule	Vulnerable	England, Wales, S Scotland.	Widespread
Leisler	Vulnerable	Widespread throughout the British Isles, except N Scotland.	Rare (locally common in West Yorkshire).
Barbastelle	Rare	England.	No records since 1950's.

Source - http://www.nyorkbats.freeserve.co.uk/bats.htm

4.2 Data Review and Desk Study

4.2.1 Wold Ecology have previously undertaken bat surveys at Thirley Cotes Farm and have recorded roosting brown long-eared *Plecotus auritus,* Natterer's bat *Myotis nattereri,* common pipistrelle *Pipistrellus pipistrellus* and commuting/foraging noctule *Nyctalus noctule.* The activity surveys were undertaken between 2010 – 2013 and the following roosts were observed in the converted barn to the north of the studied barns:

- 11common pipistrelle day roosts x 16 bats
- 4 common pipistrelle transitional roosts x 4 bats
- 2 separate brown long-eared day roosts x 2 bats
- 2 Natterer's day roosts x 3 bats
- 1 Natterer's transitional roost x 1 bat
- Brown long-eared maternity roost x 11 bats

4.2.2 The garage supported a single common pipistrelle day roost x 1 bat.

4.2.3 The aforementioned roosts were destroyed under Natural England license EPSM2011-2956A and compensation measures including a bat loft in the garage

and bat boxes were implemented.

4.2.4 A soprano pipistrelle maternity roost was also observed in the farm house although exact number was not recorded but was estimated at over 50 bats. No works have been undertaken on the farm house.

4.2.5 Wold Ecology employees, field surveyors and network of associate ecologists have recorded brown long-eared *Plecotus auritus*, noctule *Nyctalus noctula*, Natterer's *Myotis nattereri*, soprano pipistrelle *Pipistrellus pygmaeus* and common pipistrelle *Pipistrellus pipistrellus* within 5km of the Application Site. Wold Ecology bat records date from 2006 and include over 1000 bat activity surveys.

4.2.6 Wold Ecology bat activity surveys within 2km of the Application Site have recorded the following roosts:

Date	Taxon Name	Common Name	Location	County	Grid reference	Record Type	Abundance
06/05/16	Pipistrellus pipistrellus	Common Pipistrelle	Roadside Farm	E. Yorkshire	SE 98054 95368	Day	1

4.2.7 The following Natural England development licenses are located within 2km of the Application Site (source - magic.gov.uk):

Specie	Distance from site	Destruction of a breeding site	Destruction of a resting site
Common pipistrelle Whiskered	1.5km: S	N	Y
Common pipistrelle Brown long-eared Natterer's	On site	N Y N	Y Y Y
	On site	Y	Y
Common pipistrelle	550m: NE	N	Y

4.2.8 Consultation with the North Yorkshire Bat Group identified the following bat records within 2km of Thirley Cotes Farm.

Species	Site	Grid ref.	Date	Comment
Unknown	Brooklands Farm, Harwood Dale	SE 966 963	17 Feb 2004	Bat flying in loft. Droppings.

4.3 Daytime and Visual Inspection

4.3.1 The daytime assessment identified whether the area had any signs of occupancy and/or bat usage. This took the form of a methodical search, both internally and externally, for actual roosting bats and their signs. Specifically, the visual survey involved:

- Assessment for droppings on walls, windowsills and in roof spaces
- Endoscope survey.
- Scratch marks and staining on beams, other internal structures and potential entrance and exit holes
- Wing fragments of butterfly and moth species underneath beams and other internal structures
- The presence of dense spider webs at a potential roost can often indicate absence of bats
- Assessment of crevices and cracks in the buildings to assess their importance for roosting bats
- The duration of the daytime, visual inspection was 45 minutes

4.3.2 Summary of daytime inspection and visual survey

Date of each survey visit	Structure reference/location	Equipment used/available	Weather
24/03/18	Barn 1 Barn 2	Binoculars, 1million candle power clu-lite torch, micro Dart endoscope, Dewalt DW03050 Laser Measure. 3.9m telescopic ladders Phantom 4 Drone	10°C, 70% cloud. Beaufort 0. No recent rain.
Comments (to include # of surveyors used for each visit): 1 surveyor undertook the visual inspection.			
07/05/18	Barn 1 Barn 2 Garage	Binoculars, 1million candle power clu-lite torch, micro Dart endoscope, Dewalt DW03050 Laser Measure. 3.9m telescopic ladders	13°C, 70% cloud. Beaufort 0. No recent rain.
Comments (to include # of surveyors used for each visit): 2 surveyors undertook the visual inspection.			
26/06/18	Barn 1 Barn 2 Garage	Binoculars, 1million candle power clu-lite torch, micro Dart endoscope, Dewalt DW03050 Laser Measure. 3.9m telescopic ladders	11°C, 80% cloud. Beaufort 0. No recent rain.
Comments (to include # of surveyors used for each visit): 1 surveyor undertook the visual inspection.			
Personnel: Chris Toohie (Class 2 bat license - 2015-12688-CLS-CLS and RC027) – 24th March 2018 Daniel Lombard (Class 1 bat licence – 2015-11490-CLS-CLS) – 7th May and 26th June 2018 George Day (Class 1 bat licence – 2017-29163-CLS-CLS) – 7th May 2018			

4.4 Activity Surveys

4.4.1 Emergence surveys are used to determine bat presence in a building and can also give a good estimate of the numbers present. Bats can emerge up to 15 minutes before sunset and 2 hours after sunset. The survey times ensured that bats would have emerged from their roost sites and would be foraging (see section 9.4 and 9.5).

4.4.2 Summary of emergence survey(s)

Date of each survey visit	Start/end times and times of sunset	Structure reference/location	Equipment used/available	Weather
07/05/18	Sunset: 2045 Start: 2020 Finish: 2245	Barn 1 Barn 2 Garage	Cluson CB2 1 million candle power lamps Digital thermometer Heterodyne bat detectors Anabat Walkabout Wildlife Acoustics EM Touch 2 PRO EM3 Anabat Express	13°C - 10°C, 70% cloud. Beaufort 0. No recent rain.
Comments (to include # of surveyors used for each visit): 6surveyors were positioned around the site so that all potential access points, identified in the daytime, visual inspection, could be observed.				
Personnel: Daniel Lombard (Class 1 bat licence – 2015-11490-CLS-CLS) – 7th May 2018 George Day (Class 1 bat licence – 2017-29163-CLS-CLS) – 7th May 2018 James Worth, Simon Gladding, Ana Cowie, Joshua Saunders – 7th May 2018				

4.4.3 Return surveys conducted at sunrise are particularly useful as bats tend to swarm outside their roosts for up to 2 hours before entering, thus allowing the surveyor more time to identify the bat and entrance locations. Bats will return to roosts approximately 90 minutes before sunrise and 15 minutes after. The timing of the survey ensured that returning bats would be recorded (see section 9.4 and 9.5).

4.4.4 Summary of return survey(s)

Date of each survey visit	Start/end times and times of sunrise	Structure reference/location	Equipment used/available	Weather
26/06/18	Sunrise: 0430 Start: 0230 Finish: 0500	Barn 1 Barn 2 Garage	Cluson CB2 1 million candle power lamps Digital thermometer Heterodyne bat detectors Anabat Walkabout Wildlife Acoustics EM Touch 2 PRO EM3 Anabat Express Night vision scope	11°C, 80% cloud. Beaufort 0. No recent rain.
Comments (to include # of surveyors used for each visit): 3 surveyors were positioned around the site so that all potential access points, identified in the daytime, visual inspection, could be observed.				
Personnel: Daniel Lombard (Class 1 bat licence – 2015-11490-CLS-CLS) – 26th June 2018 Simon Gladding, Joshua Saunders – 26th June 2018.				

4.5 Summary of personnel

Personnel	Experience	Licence No.
Chris Toohie MCIEEM	Project Manager of Wold Ecology with over 11 years' experience surveying bat roosts for development licences. Chris has conducted over 800 bat surveys, held over 60 development licenses and is one of only 153 (April 2018) Natural England Registered Consultants who is able to make use of the new Bat Low Impact Class Licence.	RC027 and 2015-12688-CLS-CLS
Daniel Lombard MCIEEM	Experienced bat surveyor since 2010, Daniel has assisted with over 300 bat surveys for Wold Ecology and is currently working towards his bat handling license.	2015-11490-CLS-CLS
George Day	Experienced bat surveyor since 2013. George has undertaken over 100 bat surveys with Wold Ecology Ltd and is currently working towards his bat handling license.	2017-29163-CLS-CLS
Simon Gladding	Experienced bat surveyor since 2013, Simon has undertaken over 100 bat surveys with Wold Ecology Ltd and is currently working towards his bat handling license.	N/A
James Worth Josh Saunders Ana Cowie	Wold Ecology Ltd associates with bat activity survey experience undertaken under the tuition of Wold Ecology licensed bat ecologists.	N/A

5.0 RESULTS

5.1 Habitat description

5.1.1 The Application Site is located 1.5 km south east of Harwood Dale village; in a rural location. The Application Site and complex of buildings are less than 1 hectare, the studied barns are immediately surrounded by converted holiday cottages (circa 2011) and private gardens. The converted barns and farm house (outside of the proposed development) also have bat roosting potential.

5.1.2 Adjacent Landscapes

5.1.2.1 Thirley Cotes Farm is immediately surrounded by a broadleaf woodland shelterbelt and agricultural land dominated by arable with grazed pastures; it is located within the North York Moors National Park and habitats within 2km include grazed pastures, arable and a mosaic of woodland, forest and open countryside including moorland. Woodland cover within 2km is good and occurs as shelterbelts adjacent to farms and small holdings, semi natural woodland and plantations. Habitat connectivity and foraging opportunities is excellent and provided by woodland, shelterbelts, hedgerows and a mosaic of interconnecting habitats.

5.1.2.2 Wold Ecology concludes that the adjacent and continuous high-quality habitats that include woodland, tree lines, hedgerows, scrub, and watercourses connect the Application Site to the wider countryside. These habitats are likely to be used regularly by foraging and commuting bats. Consequently, the Application Site and adjacent habitats are considered to be integral to the favourable population status of local bat populations.

5.1.3 Habitat Summary

5.1.3.1 A summary of the surrounding habitat is (radius of < 2km from the site):

- Buildings – farm buildings and residential properties.
- Hedgerow – fragmented.
- Mature trees and woodland.
- Cloughton Woods.
- Harwood Dale Forest.
- Broxa Forest.
- Tongue Field Plantation
- Hodson Moor Plantation
- Cockerill Plantation
- Standingstones Rigg
- Pits Wood.
- Arable.
- Brown Beck
- East Syme
- Thirley Beck
- Keas Beck
- Harwood Dale Beck and tributaries.
- Grazed pasture.

5.2 Building descriptions

5.2.1 The bat survey and assessment targeted the following (see section 5.5):

a. ***Barn 1*** – is single storey and comprises local stone walls and a pitched roof covered with pan tiles and corrugated cement fibre boards. The roof is supported by smooth sawn timbers and the pan tile section is under drawn. The building is used for storage.

b. ***Barn 2*** – is single storey and comprises local stone walls and a pitched roof covered with pan tiles. The roof is supported by smooth sawn timbers and is under drawn. The building is used for storage.

c. ***Garage*** - is single storey and comprises local stone walls and a pitched roof covered with pan tiles. The roof is supported by smooth sawn timbers and is lined with a breathable membrane. The barn was demolished and rebuilt during 2011 and is currently used for storage.

5.2.2 **Barn 1** (see 5.5 plates 1 – 5 and 8) - the following roosting opportunities were present within the fabric of the barn:

- Gaps beneath the ridge tiles where mortar has been displaced.
- There are no missing ridge tiles.
- Loose fitting pan tiles with gaps beneath.
- Missing/slipped pan tiles.
- Gaps in missing mortar below gable tiles.
- Gaps above the eaves.
- Missing mortar in the stone work.
- Gaps adjacent to timber doors and timber windows.
- Gaps above the internal wall plates.
- Gaps above the ridge beam.
- Gaps between timber slats and pan tiles above.
- Gaps in the internal stone work.
- Gaps in the roof structure and mortice joints.
- Access into the building is provided by broken tiles.
- There was no open doors/window access into the building.
- The corrugated cement fibre boards were tightfitting.
- 7th May 2018, the following evidence of bats was observed:
  - Bat droppings were observed on the ground floor of barn 1. The location of the bat droppings suggests a roost located above the ridge (Roost 1).
  - Yellow underwing *Noctua pronuba* wing fragments were located beneath the ridge beam in barn 1.
- The building has been assessed as having a HIGH SUITABILITY to support bats.

5.2.3 **Barn 2** (see 5.5 plates 5 - 7) - the following roosting opportunities were present within the fabric of the barn.

- Gaps beneath the ridge tiles where mortar has been displaced.
- There are no missing ridge tiles.
- Loose fitting pan tiles with gaps beneath.
- Missing/slipped pan tiles.
- Gaps in missing mortar below gable tiles.
- Gaps above the eaves.

- Missing mortar in the stone work.
- Subsidence cracks.
- Gaps adjacent to timber doors and timber windows.
- Gaps above the internal wall plates.
- Gaps above the ridge beam.
- Gaps between timber slats and pan tiles above.
- Gaps in the internal stone work.
- Gaps in the roof structure and mortice joints.
- Access into the building is provided by broken tiles.
- There was no open doors/window access into the building.
- The corrugated cement fibre boards were tightfitting.
- No evidence of bats was observed.
- The building has been assessed as having a MODERATE SUITABILITY to support bats.

5.2.4 **Garage** (see 5.5 plates 9 - 11) - the following roosting opportunities were present within the fabric of the barn.

- There are no gaps beneath the ridge tiles and none are missing.
- Loose fitting pan tiles with gaps beneath.
- There are no gaps in the mortar suitable for roosting bats as the garage was rebuilt during 2011.
- The timber doors and timber window frames were tight fitting.
- Gaps above the internal wall plates.
- Gaps breathable membrane and pan tiles above.
- Gaps in the roof structure and mortice joints.
- Access into the building is provided by an open the north elevation and access holes (approximately 150mm x 150mm) on the east and west gables.
  A slot box and scaffolding boards are present in the roof void which were originally designed as a bat loft as part of a previous development on site. There is no separate roof void in the garage
- No evidence of bats was observed.
- The building has been assessed as having a MODERATE SUITABILITY to support bats.

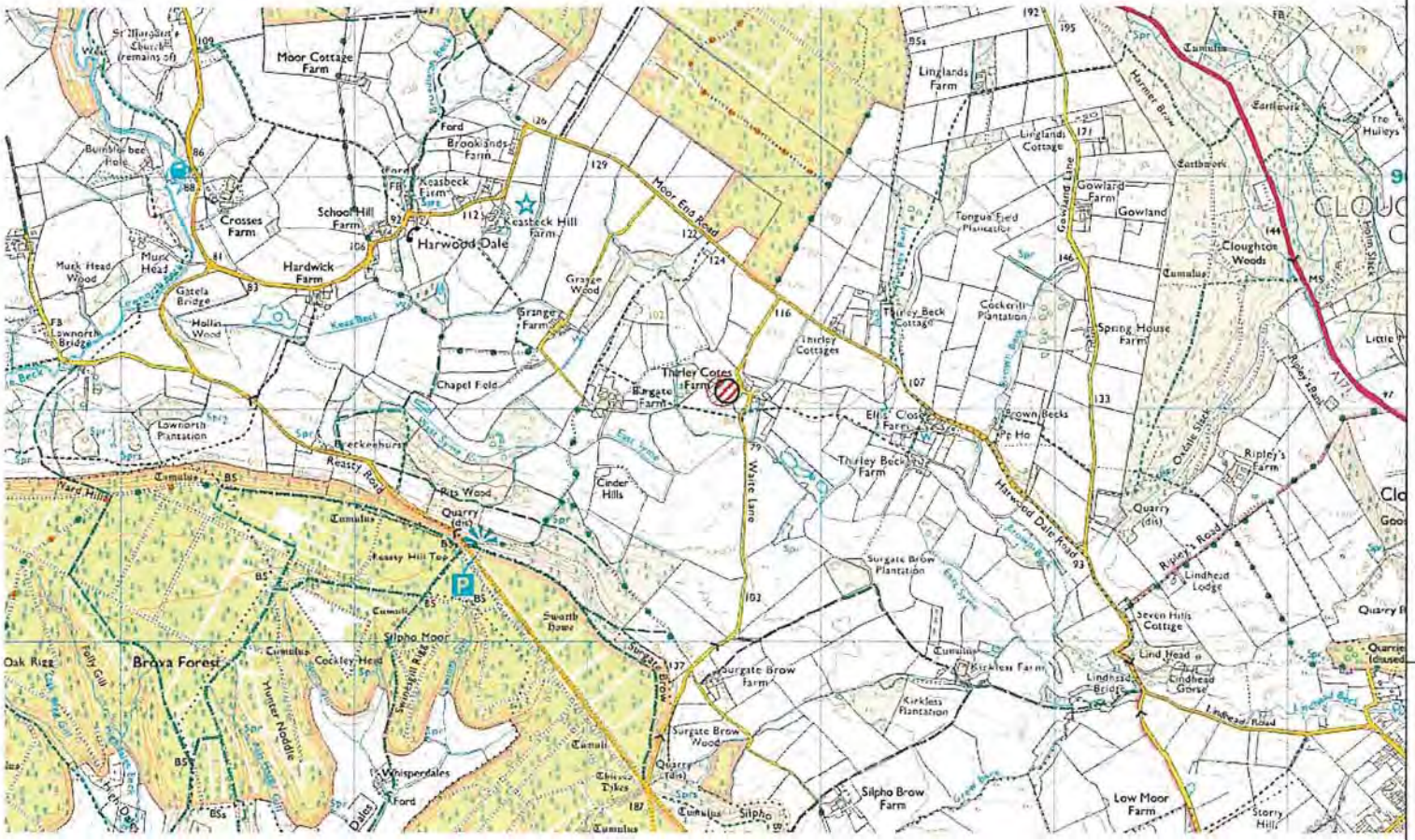
5.3 Based on the field survey and the criteria in table 4.1 (Bat Surveys for Professional Ecologists – 3rd Edition, p35. Bat Conservation Trust, 2016), the Application Site and studied buildings have the following suitability for bats:

	Negligible	Low	Moderate	High
Application Site habitats (<2km)				X
Barn 1				X
Barn 2			X	
Garage			X	

Table 4.1 Guidelines for assessing the potential suitability of proposed development sites for bats, based on the presence of habitat features within the landscape, to be applied using professional judgement.

Suitability	Description Roosting habitats	Commuting and foraging habitats
Negligible	Negligible habitat features on site likely to be used by roosting bats.	Negligible habitat features on site likely to be used by commuting or foraging bats.
Low	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[a] and/or suitable surrounding habitat to be used on a regular basis or by larger numbers of bats (i.e. unlikely to be suitable for maternity or hibernation[b]). A tree of sufficient size and age to contain PRFs but with none seen from the ground or features seen with only very limited roosting potential.[c]	Habitat that could be used by small numbers of commuting bats such as a gappy hedgerow or unvegetated stream, but isolated, i.e. not very well connected to the surrounding landscape by other habitat. Suitable, but isolated habitat that could be used by small numbers of foraging bats such as a lone tree (not in a parkland situation) or a patch of scrub.
Moderate	A structure or tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions[a] and surrounding habitat but unlikely to support a roost of high conservation status (with respect to roost type only – the assessments in this table are made irrespective of species conservation status, which is established after presence is confirmed).	Continuous habitat connected to the wider landscape that could be used by bats for commuting such as lines of trees and scrub or linked back gardens. Habitat that is connected to the wider landscape that could be used by bats for foraging such as trees, scrub, grassland or water.
High	A structure or tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions[a] and surrounding habitat.	Continuous, high-quality habitat that is well connected to the wider landscape that is likely to be used regularly by commuting bats such as river valleys, streams, hedgerows, lines of trees and woodland edge. High-quality habitat that is well connected to the wider landscape that is likely to be used regularly by foraging bats such as broadleaved woodland, tree-lined watercourses and grazed parkland. Site is close to and connected to known roosts.

Source - Bat Surveys for Professional Ecologists – 3rd Edition, p35. Bat Conservation Trust, 2016.



NORTH

Scale: 1:25,000

Drawing title:
Location Map

KEY

Application Site

WOLD ECOLOGY LTD

2 Redwood Gardens
Driffield
East Yorkshire
YO25 6XA

NORTH

Scale: 1:25,000

Drawing title:
Aerial Photograph

KEY

Application Site

WOLD ECOLOGY LTD

2 Redwood Gardens
Driffield
East Yorkshire
YO25 6XA

5.4 Results of Activity Surveys

5.4.1 Emergence Survey

5.4.1.1 **7th May 2018**

- The first soprano pipistrelle bat was detected at 2104, the bat emerged from beneath a ridge tile in barn 2.
- Common pipistrelle, soprano pipistrelle, whiskered, noctule and brown long-eared bats were observed foraging and commuting around the site.
- The following bat roosts were observed:
  - **Roost 1** – brown long-eared roost located in a gap above the ridge beam of barn 1. The roost contains 4 bats (see 5.5 plate 1).
  - **Roost 2** – brown long-eared roost located in a gap above the ridge beam of barn 2. The roost contains 1 bat. (see 5.5 plate 5).
  - **Roost 4** – soprano pipistrelle roost located in a gap under a ridge tile in barn 2. The roost contains 1 bat (see 5.5 plate 5).
  - **Roost 5** – soprano pipistrelle day roost located above a scaffolding board inside the garage. The roost contained 1 bat (see 5.5).
- In addition, the following roosts were observed in adjacent buildings on site which are outside of the proposed development area:
  - A soprano pipistrelle maternity roost (82 bats) and common pipistrelle day roost (4 bats) were located in a gap in the external stonework on the south elevation of the farmhouse.
  - A soprano pipistrelle day roost was located in an external gap in the stonework on the previously converted holiday cottage, the roost contained 1 bat.

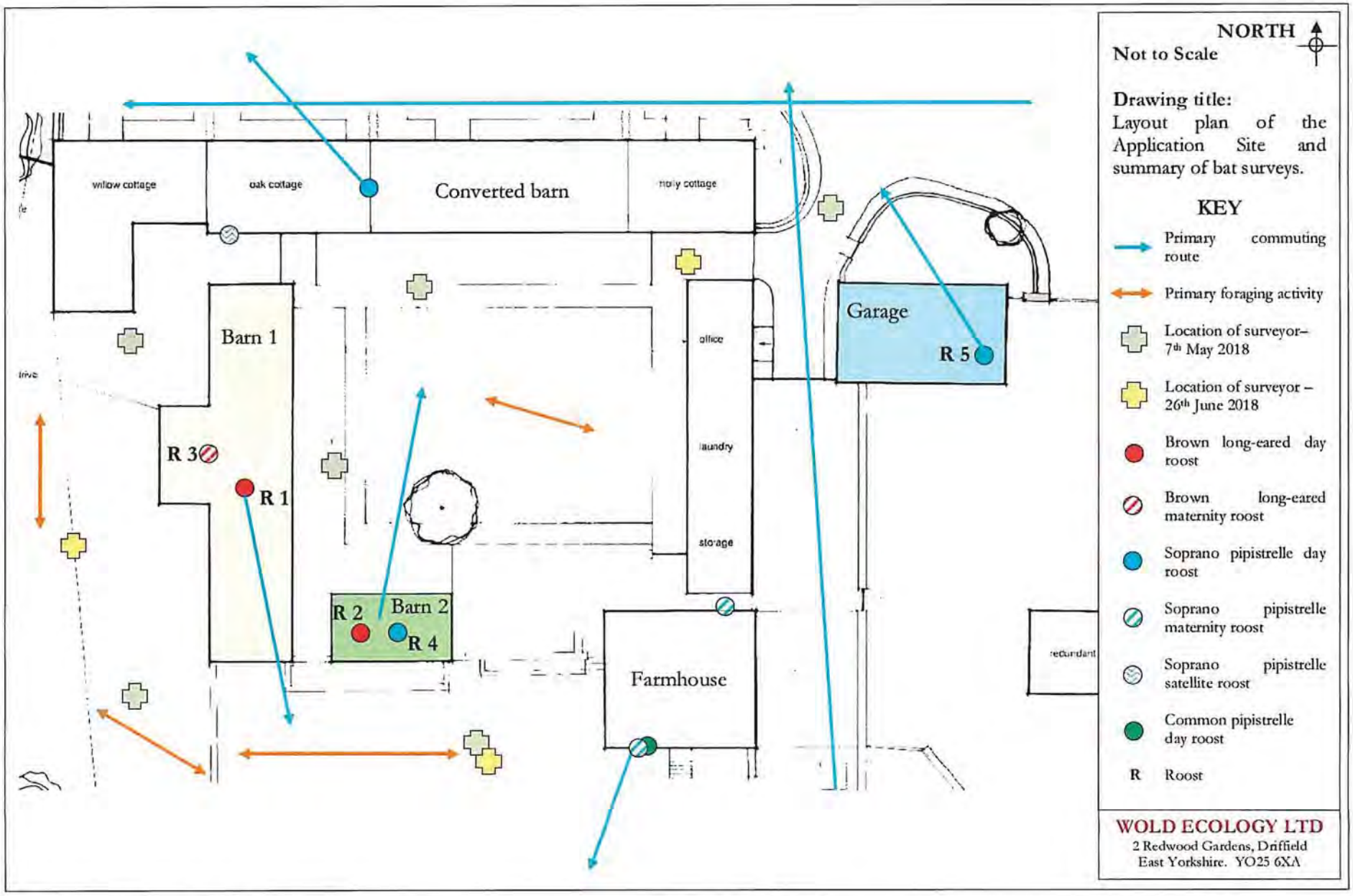
5.4.1.2 For survey results see appendix 9.4 and 9.5.

5.4.2 Return Survey

5.4.2.1 **26th June 2018**

- Bat activity was constant throughout much of the survey with the site used by common pipistrelle, soprano pipistrelle and brown long-eared bats.
- The following bat roosts were observed:
  - **Roost 1** – brown long-eared roost located in a gap above the ridge beam of barn 1. The roost contained 1 bat (see 5.5 plate 1).
  - **Roost 3** – brown long-eared roost located in an internal gap in the stonework on the west elevation of barn 1. The roost contains 10 bats (see 5.5, plate 8).
- In addition, the following roosts were observed in adjacent buildings on site which are outside of the proposed development area:
  - A soprano pipistrelle maternity roost (144 bats) is located in a gap in the external stonework on the north elevation of the farmhouse.
  - A soprano pipistrelle satellite roost was located in an external gap in the stonework on the previously converted holiday cottage, the roost contained 36 bats.

5.4.2.2 For survey results see appendix section 9.4 and 9.5.


willow cottage
oak cottage
Converted barn
holly cottage
Barn 1
office
laundry
storage
Garage
R 5
R 3
R 1
R 2
Barn 2
R 4
Farmhouse
redundant
NORTH
Not to Scale
Drawing title:
Layout plan of the Application Site and summary of bat surveys.
KEY
Primary commuting route
Primary foraging activity
Location of surveyor– 7th May 2018
Location of surveyor – 26th June 2018
Brown long-eared day roost
Brown long-eared maternity roost
Soprano pipistrelle day roost
Soprano pipistrelle maternity roost
Soprano pipistrelle satellite roost
Common pipistrelle day roost
R Roost
WOLD ECOLOGY LTD
2 Redwood Gardens, Driffield
East Yorkshire. YO25 6XA

5.5 Photographs of key features – March and June 2018

Plate 1 – Barn 1, east elevation.

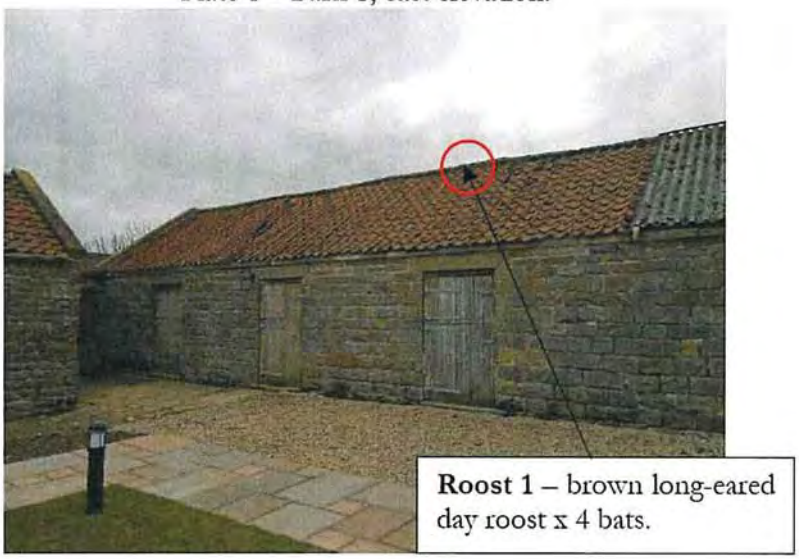


Plate 2 – Barn 1, east elevation and north gable.

Plate 3 – Barn 1, west elevation and south gable.

Plate 4 – Barn 1, internal roof structure.

Plate 5 –Barn 2, east gable and north elevation.

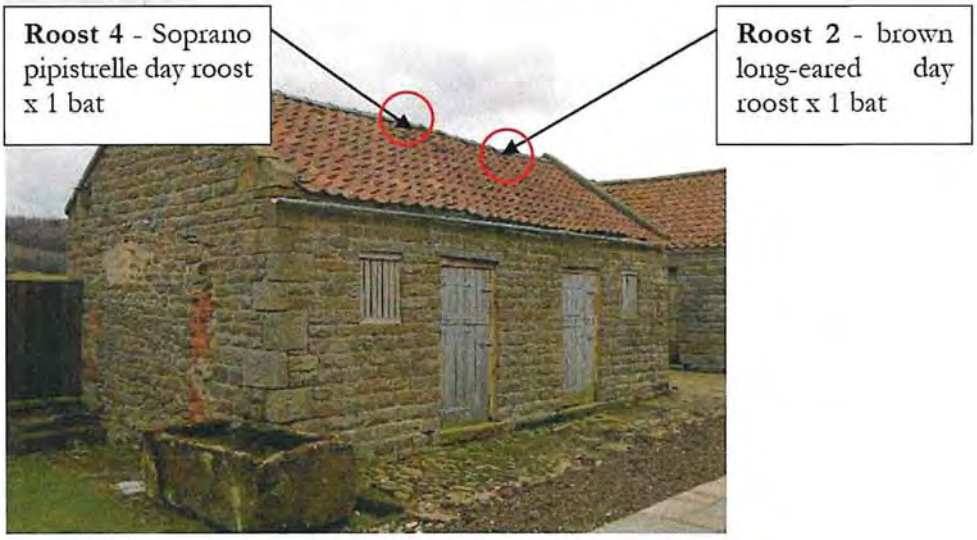


Plate 6 – Barn 2, south elevation.

Plate 7 – Barn 2, internal roof structure

Plate 8 – Barn 1, brown long-eared maternity roost

Roost 3 - Brown long-eared maternity roost x 10 bats

Plate 9 – garage, south elevation and west gable.

Plate 10 – garage, north elevation and east gable.

Plate 11 – Barn 2, internal roof structure

5.6 Summary of field surveys conducted in 2018

Date	Type of survey	Results	Building Dimensions (m)		
			L	W	H*
23/03/18 07/05/18 26/06/18	Habitat assessment	Wold Ecology concludes that the adjacent and continuous high-quality habitats that include woodland, tree lines, hedgerows, scrub, and watercourses connect the Application Site to the wider countryside. These habitats are likely to be used regularly by foraging and commuting bats. Consequently, the Application Site and adjacent habitats are considered to be integral to the favourable population status of local bat populations.			
	Visual inspection.	*Barn 1* Barn 1 has been assessed as having HIGH SUITABILITY to support bats, due to the presence of bat droppings and other features which have potential to provide roosting opportunities for bats (see 5.3 plates 1- 4 and 8). No hibernating bats were observed during the endoscope survey.	26.5	5.0	4.3
		Barn 2 There were no signs of roosting bats or bat activity inside the building, but due to the presence of features with potential to provide roosting opportunities for bats, the building has been assessed as having a MODERATE SUITABILITY to support bats (see 5.3 plates 5 - 7). No hibernating bats were observed during the endoscope survey.	7.5	3.75	4.0
		Garage There were no signs of roosting bats or bat activity inside the building, but due to the presence of features with potential to provide roosting opportunities for bats, the garage has been assessed as having a MODERATE SUITABILITY to support bats (see 5.3 plates 9 - 11).	11	6.1	4.4

Date	Spp.	Roost type	Structure Reference	Roost Location	Access points (including #)	Dimension of roost or explanation where the roost is
07/05/18	Brown long-eared	Day x 4	Barn 1 **Roost 1**	Located in a gap below ridge tile	External roost x 1 access point	Gap below ridge tile approximately 40mm x 15mm
	Brown long-eared	Day x 1	Barn 2 **Roost 2**	Located in a gap below ridge tile	External roost x 1 access point	Gap below ridge tile approximately 30mm x 15mm
	Soprano pipistrelle	Day x 1	Barn 2 **Roost 4**	Located in a gap under a ridge tile	External roost x 1 access point	Missing mortar under ridge tile approximately 30mm x 40mm.

	Soprano pipistrelle	Day x 1	Garage **Roost 5**	Located in a gap above a scaffolding board adjacent to the roof	Internal roost x 1 access point via opening on the north elevation	Gap approximately 20mm x 1000mm.
26/06/18	Brown long-eared	Day x 1	Barn 1 **Roost 1**	Located in a gap below ridge tile	External roost x 1 access point	Gap below ridge tile approximately 40mm x 15mm
	Brown long-eared	Maternity x10	Barn 1 **Roost 3**	Located in a gap in the internal stonework	Internal roost x 1 access point via the missing ridge	Missing mortar in the stonework approximately 60mm x 40mm.
23/03/18	Hibernation	No hibernating bats were observed during the endoscope inspection.				

- Height from ground floor to ridge

5.6.1 The following bat roosts were observed in adjacent buildings which will not be affected by the proposed building and conversion works to barn, barn or the garage:

Date	Spp.	Roost type	Structure Reference	Roost Location	Access points (including #)	Dimension of roost or explanation where the roost is
07/05/18	Soprano pipistrelle	Day x 1	Converted barn	Located in a gap in the external stone work on south elevation of the converted barn	External roost x 1 access point	Missing mortar in external stone work
	Soprano pipistrelle	Maternity x 82	Farm house	Located in a gap in the external stone work on the south elevation of the house.	External roost x 1 access point	Missing mortar in external stone work adjacent to the chimney
	Common pipistrelle	Day x 4	Farmhouse	Located in a gap in the external stone work on the south elevation of the house.	External roost x 1 access point	Missing mortar in external stone work
26/06/18	Soprano pipistrelle	Maternity x 144	Farm House	Located in a gap in the eaves on the north elevation of the house.	External roost x 1 access point	Gap below the eaves
	Soprano pipistrelle	Satellite x 36	Converted barn	Located in a gap in the eaves on the south elevation of the barn.	External roost x 1 access point	Gap below the eaves

5.7 Interpretation and Evaluation of Survey Results

5.7 Interpretation and evaluation

5.7.1 Presence/absence

5.7.1.1 The site has been visited twice by Wold Ecology during 2018. The data provides an insight into how bats utilise the site during early and mid-summer months. The surveys were conducted in optimum conditions with fine weather for a period of 48 hours prior to the surveys. Therefore, bat activity would not have been affected by adverse weather conditions i.e. not emerging or returning to the roost site earlier than usual. The confidence in the results is therefore high.

5.7.1.2 Based on activity surveys conducted during May and June 2018, it has been determined that the studied buildings at Thirley Cotes Farm contain the following bat roosts (see 9.3):

Structure/ reference	Species	Count/ estimate	Site status assessment (maternity etc.)	Conservation significance of roost	Use and importance of the site throughout the year
Barn 1 **Roost 1**	Brown long-eared	4	Day roost	LOW	No evidence to suggest a maternity roost or significant numbers of bats. Roost in association with the maternity roost present in adjacent buildings.
Barn 2 **Roost 2**	Brown long-eared	1	Day roost	LOW	
Barn 1 **Roost 3**	Brown long-eared	10	Maternity Roost	MEDIUM	Summer use only
Barn 2 **Roost 4**	Soprano pipistrelle	1	Day roost	LOW	Roosts in association with the maternity roost present in adjacent buildings.
Garage **Roost 5**	Soprano pipistrelle	1	Day roost	LOW	
The following bat roosts are present within adjacent buildings and will remain unaltered:					
Farm house	Soprano pipistrelle	144	Maternity	MEDIUM	The maternity roost is using two locations on the farm house.
Converted barn	Soprano pipistrelle	36	Satellite	MEDIUM	Associated with the maternity roost located in the farm house
Converted barn	Soprano pipistrelle	1	Day roost	LOW	Roost in association with the maternity roost present in adjacent buildings.
Farm house	Common pipistrelle	4	Day roost	LOW	No evidence to suggest a maternity roost or significant numbers of bats.

5.7.2 Site Status Assessment

5.7.2.1 Based on a building inspection, an emergence and return survey, it has been determined that barn 1, barn 2 and the garage supports:

- Two separate brown long-eared day roosts.
- A brown long-eared maternity roost.
- Two separate soprano pipistrelle day roosts.

5.7.2.2 In addition, the Thirley Cotes site also supports:

- A soprano pipistrelle maternity roost using two location on the farm house
- A soprano pipistrelle satellite roost
- A common pipistrelle day roost

5.7.2.3 All roosts are located adjacent to surrounding favourable foraging habitat which will play a significant role in the ecology of the local bat population.

5.7.2.4 The survey results are based on survey work conducted in March, May and June. Barns 1, 2 and the garage on site have features which have moderate/high suitability to support roosting bats, there remains the possibility that bats could roost in other parts of the site at various times of the year.

5.7.2.5 Wold Ecology considers that barns 1, 2 and the garage are unlikely to support hibernating bats for the following reasons:

- The aforementioned buildings are currently unused and are not heated.
- The body temperature of hibernating bats is near the ambient temperature. The composition of the studied barns and garage will not ensure that consistent temperatures of between 0°C and 5°C will be maintained.
- Brown long-eared bats typically hibernate within caves, tunnels, icehouses, cellars and trees (Horacek, 1975).
- No hibernating bats were observed during the March 2018 visual inspection.

5.7.3 Constraints

5.7.3.2 There is currently no data available to assess bat usage on site during late summer months.

6.0 IMPACT ASSESSMENT – in the absence of mitigation

6.1 Barn 1 supports a brown long-eared maternity roost and associated day roost; barn 2 supports a soprano pipistrelle and brown long-eared day roost and the garage supports a soprano pipistrelle day roost; the wider site also supports a common pipistrelle day roost, soprano pipistrelle maternity roost and satellite roost with a peak count of 180 bats. The proposed development to barns 1 and 2 will involve the conversion of barns 1 and 2 into a holiday-let and the change of use in the garage. Unsupervised structural work, erection of scaffolding, removal of tiles/roofing, re-roofing, re-pointing, modification of the internal roof structure in the garage and internal refurbishment will result in major disturbance to the roosts; there are no plans to disturb or alter the roosts within the adjacent farm house and converted barn. Bats are susceptible to disturbance as a result of a development affecting a roost site. The pre-construction period of the development will result in significant alterations and disturbance to the roost sites.

6.2 **Initial impacts: disturbance** (human presence, noise, vibration, dust, lighting, access obstruction due to scaffolding and plastic sheeting etc.)

- The construction of scaffolding against the roof of barn 1, barn 2 and the garage which will cause an obstruction to the access points=minor negative at a site level.
- Roof stripping of barn 1 and barn 2 could kill/injure bats if they are resting between tiles/roofing and the contractor steps on the tiles to gain higher access = major negative at a site level.
- Lighting during night working could lead to disturbance of emerging and foraging bats, potentially leading to roost abandonment in the short term = moderate negative impact at site level.
- Vibration, noise and dust from the building works may impact on roosting bats that may be present = major negative at a site level.
- Building works to barn 1 during the summer period has potential for significant disturbance through vibration, noise and dust and this may lead to roost abandonment = major negative at a site level.
- Building works to barn 1, barn 2 and the garage will take place adjacent to a soprano pipistrelle maternity and satellite roost of soprano pipistrelle bats located in the farm house and converted barn. Timing of the building works during the summer period has potential for significant disturbance if building works are undertaken during the maternity period through vibration, noise and dust and this may lead to roost abandonment = major negative at a site level.

6.3 Long-term impacts: roost modification

6.3.1 Air flows, temperature and humidity within the roof void of the garage will likely be altered by the addition of a ceiling. However, this will ensure a dark and undisturbed roof void which will be more likely to be used by brown long-eared and *Myotis spp.* bats = slight positive impact on a local level.

6.3.2 No modification of roosts in barns 1 and 2 will occur.

6.4 Long-term impacts: roost loss

- Based on current information and in the absence of mitigation, the conversion of barn 1, barn 2 and the garage will involve the permanent loss of a brown long-eared maternity roost, two separate brown long-eared day roosts and a soprano pipistrelle day roost.
- The removal of the roofing and roof timbers will result in major disturbance to the roosts located in the roof structure and there is potential for killing/injuring bats =major negative at a site level.
- Re-mortaring of stone work and internal plaster boarding could kill/injure bats through entombment if bats are roosting within the crevice = major negative at a site level.
- The works involve re-roofing the roof under which the bats are roosting, if bats are found beneath tiles/ridge tiles/roofing, there is the potential for killing/injury of bats, or if resting on the ridge beam or within the roof structure, there is the potential for disturbance = major negative at a site level.
- New glazing trap bats inside the building and this could kill/injure bats that are roosting in the internal structure = major negative at a site level.
- Removal of stonework and roofing could kill/injure bats if they are resting in gaps adjacent and heavy force is used to remove the masonry = major negative at a site level.

6.5 Long term impacts: fragmentation and isolation of roost

6.5.1 There are no plans to alter the habitat on site and consequently, there will be no fragmentation and isolation during the development as the surrounding, supporting habitat will not be affected.

6.6 Post development: interference impacts

- An increase in lighting through the installation of security lighting on the external walls of buildings will affect bat activity in the location of the roost sites. Low level security lighting will be installed on the new buildings on site however this will not shine into the adjacent foraging habitat, maternity/satellite roosts, garage bat loft or bat box locations, ensuring continued usage of the site for commuting and foraging - low negative at a site level.

6.7 Predicted scale of impacts

6.7.1 The current information obtained is based on a desk top study, visual inspection and activity surveys conducted in May and June 2018.

6.7.2 The soprano pipistrelle and brown long-eared bat day roosts in barn 1, barn 2 and the garage are of low conservation significance to North Yorkshire. The roosts each contain <5 individual bats and are most probably occupied by male bats or none breeding females. Male summer roosts of a common and widespread species are of low conservation significance and therefore, the loss of the roosts will not have a significant impact at a local, regional or national level.

6.7.3 The brown long-eared maternity roost in barn 1 is of medium conservation value to North Yorkshire. The availability of accessible, traditional buildings in the immediate vicinity is low and consequently, the predicated impact on the species at a site level would be moderate. Brown long-eared maternity roosts sometimes are small in number and can contain males within the colony. The loss of a small

maternity roost of a common and widespread species are of medium conservation significance and therefore, the loss of the roost will not have a significant impact at a regional or national level.

6.8 Summary of predicted scale of impacts - in the absence of mitigation

Species and numbers	Roost type	Predicted Scale of Impact (place X in relevant column			Notes
		Site	County	Regional	
Soprano pipistrelle x 2	Day x 2	X			In the absence of mitigation, the conversion works to barn 2 and the alterations to the garage would cause the loss of a day roost and the modification a day roost.
Brown long-eared x 5	Day 2	X			In the absence of mitigation, the conversion works to barns 1 and 2 would cause the loss of two separate day roosts.
Brown long-eared x 10	Maternity	X			In the absence of mitigation, the conversion works to barn 1 would cause the loss of a maternity roost used by 10 bats.

6.8.1 Based on the survey data, assessment and guidance from the Bat Mitigation Guidelines (page 39, English Nature 2004) the overall accumulative impact of the development on bat populations is considered to be **medium.**

6.8.2 In addition, adjacent buildings on site support 181 soprano pipistrelle bats and this number of bats is significant in a county context. These roosts are located in buildings that have no work planned for them and will remain unaltered and undisturbed.

7.0 MITIGATION & COMPENSATION

7.1 Legal Protection

7.1.1 Legal obligations towards bats are generally concerned with roost protection. All developments, known to contain bat roosts, require a licence from Natural England. Under Section 9 of the Wildlife and Countryside Act (1981) it is an offence for anyone without a licence to kill, injure, disturb, catch, handle, possess or exchange a bat intentionally. It is also illegal for anyone without a licence intentionally to damage or obstruct access to any place that a bat uses for shelter or protection.

7.1.2 Planning consent for a development does not provide a defence against prosecution under these acts.

7.1.3 **Bat roosts are protected throughout the year, whether bats are present or not.**

7.1.4 **As barn 1, barn 2 and the garage supports a soprano pipistrelle and a brown long-eared day roosts plus a brown long-eared maternity roost, any works that will disturb or permanently lose the roosts <u>will</u> require a development licence from Natural England. It is also possible that individual bats could turn up roosting in other parts of barn 1, barn 2 and the garage and or wider site.** A licence will be obtained prior to the following works commencing on the barn 1, barn 2 and the garage:

- Exclusion of bats and destructive searches by a bat licensed ecologist
- Roof stripping and maintenance work
- Erection of scaffolding adjacent to the buildings and within 5m of the roosts
- Pointing of masonry
- New windows and doors
- Internal conversion
- Modifications to the roof void within the garage

7.1.5 Mitigation is required to avoid or reduce the impact of a development on roosting and feeding bats present on site. Mitigation is designed to meet the requirements of the bat species present in the roost. The Bat Mitigation Guidelines (2004) defines the key principles which will be required in mitigation proposals. These are: modifying the scheme design, altering the timing of the works and the creation of replacement roosts and/or habitats.

7.1.6 The licence application process currently requires the input of a qualified bat ecologist/consultant and includes:

- An additional bat activity survey during late August or early September to support the license application.
- A walk over survey/check must be undertaken within 3 months prior to the Natural England application submission to ensure that conditions have not changed since the most recent survey was undertaken. Details of any changes to conditions and habitats and/or structures on site since the surveys were undertaken will be documented.
- The submission of a licence to capture, disturb and/or destroy the roosts or resting places of bats.
- The production of a detailed Method Statement to support the application. **This will** include a proposed work programme. One copy will be sent to a

Natural England wildlife adviser for assessment. It should be noted that the Method Statement will be appended to any licence granted. The Method Statement will include the necessary mitigation required of the development. This will include:

- A work timetable which must be followed. This will include completing works when bats are not present in their roost (winter) or when bats are less vulnerable to disturbance (spring/autumn).
- A suitable mitigation plan allowing bats to be able to roost in a like for like replacement for any closed roost (this can be allowing bats back into the roof void).
- Additional bat boxes placed as habitat improvement.
- Bats must not be left without a roost during the active season (April to September inclusive).

- The production of a Reasoned Statement of Application to support the application. This will provide a rational and reasoned justification as to why the proposed activity meets the requirements of the Conservation of Habitats and Species Regulations 2017, Regulations 53(2) (e-g) and 53(9) (a-b).
- The usual timescale expected for the process of an application is approximately 30 working days from the date of acknowledgement of receipt. Natural England wildlife advisers are given 20 working days to fulfil requests for information. This timescale will also apply to requests for licence amendments.
- Additional on-site surveys, watching brief and implementation of license by a bat ecologist.
- For additional information on licences please refer to Natural England Guidance Leaflet WML-G12 (see www.naturalengland.org).

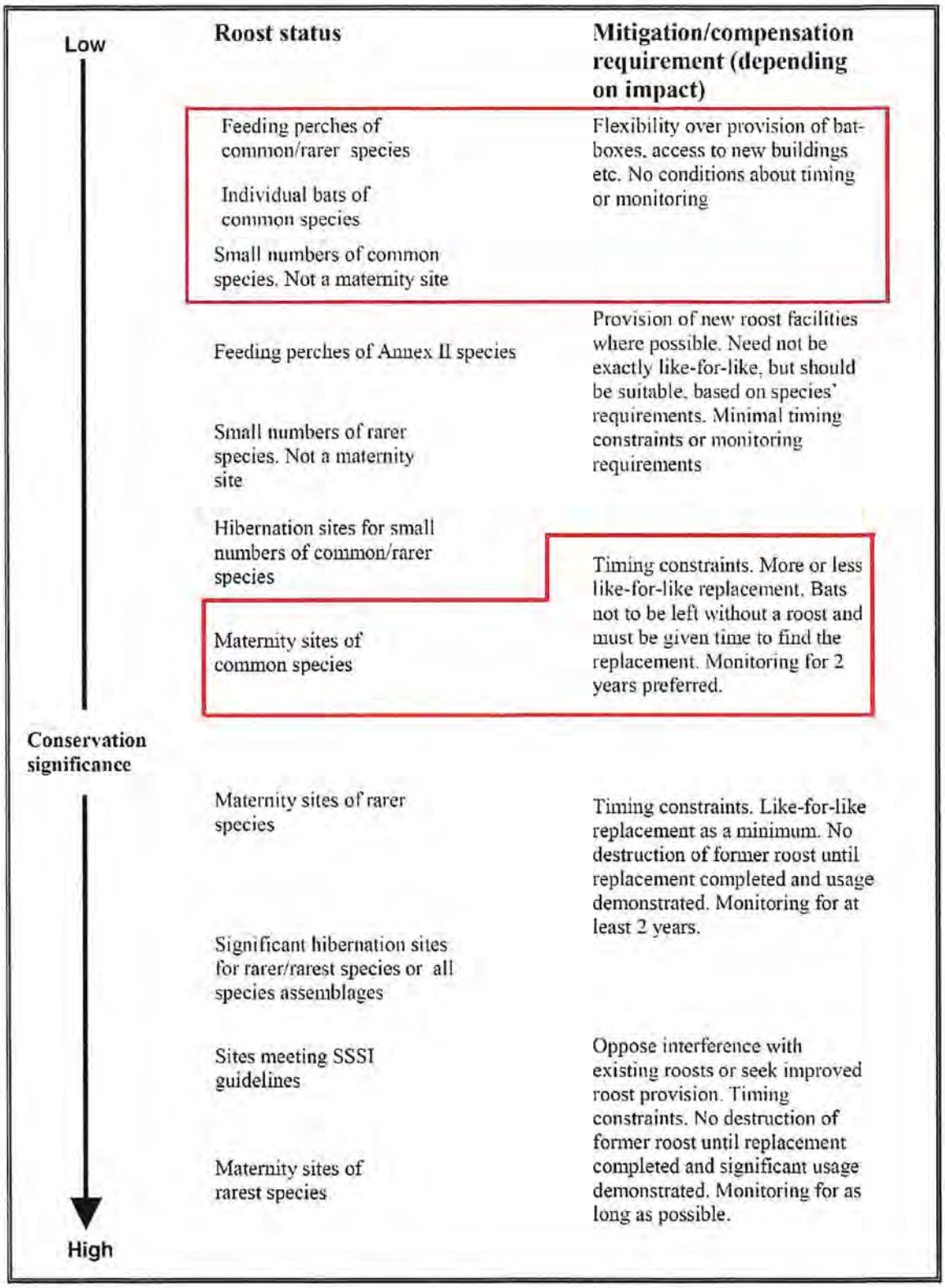
7.1.7 The site does not meet the criteria for a Natural England Low Impact Bat Class Licence due to the number of roosts present.

7.2 Mitigation Strategy

7.2.1 Natural England requires mitigation and compensation to be proportionate to the size of the impact and the importance of the population affected and as a principle:

- There should be no net loss of roost sites and that compensation should provide an enhanced resource since the adoption of new roost sites by bats is not guaranteed.
- The scheme should aim to replace 'like with like' in terms of the status of the site i.e. maternity roost, hibernation roost etc.
- Compensation should ensure that the affected bat population can continue to function as before, so attention may need to be given to surrounding habitats.
- The strategy should be considered to ensure that the bat populations at the site are maintained at a favourable conservation status.
- English Nature (page 39, Bat Mitigation Guidelines 2004) provide guidance on proportionate mitigation depending on the number, species and conservation status of bats observed.

English Nature (2004) guidelines for proportionate mitigation. The definition of common, rare and rarest species requires regional interpretation.



7.2.2 The brown long-eared day roost in barn 1 and the day roosts within barn 2 and the garage (Roosts 1, 2, 4 and 5) are of low conservation significance and therefore requires 'more or less like for like' replacement with no constraints on timing (Bat Mitigation Guidelines, 2004).

7.2.3 The brown long-eared maternity roost in barn 1 (**Roost 3**) is of medium conservation significance, however a maternity roost of a common and widespread specie requires 'more or less like for like' replacement with constraints on timing (Bat Mitigation Guidelines, 2004). Bat boxes are inappropriate substitutes for maternity roosts in buildings in the case of the brown long-eared maternity roost, do not constitute 'like for like' replacement.

7.3 Method Statement

7.3.1 The method statement has been produced based on current survey data. The information will guide any modifications required to the scheme design, outline necessary timing of the works and recommend the creation of replacement roosts and/or habitats. The information contained within the following method statement will be used as guidance to support any subsequent Natural England development license.

7.3.2 Timing

7.3.2.1 It is recommended that the initial start date of the development should commence in October. This will prevent disturbance to potentially hibernating bats and the maternity roosts. If the initial start day is programmed for the winter, a hibernation survey must be conducted prior to works commencing.

7.3.2.2 There are no mandatory timing constraints for barn 2 and the garage where low numbers of summer roosting bats are present.

7.3.2.3 **Due to the presence of a maternity roost in barn 1, the optimum period for carrying out works is mid-September until mid-April.** This time period would relate to the construction of appropriate mitigation and disturbance of roost site. A late discovery plan will need to be included in the final method statement to outline measures to be implemented in the event that bats are discovered during the development.

7.3.2.4 The building works must be carefully programmed so that roosting opportunities are permanently available during the development. Permanent and/or temporary roost sites will be provided prior to building works. Bat boxes will be placed on trees or buildings within 50m of the existing roost sites to ensure roosting opportunities are available throughout the development period.

7.3.2.5 The bat lofts (see section 7.6.1) must be erected and completed prior to mid April so that the roosting provision for the brown long-eared maternity roost is available once the bats have emerged from hibernation.

7.3.3 Pre-Works Surveys

7.3.3.1 A dusk survey (under suitable weather conditions (>8^{0}C)) will be undertaken to assess activity.

7.3.3.2 An endoscope will be used to conduct a thorough inspection of the internal roof timbers, roof structures and masonry of barn 1, barn 2 and the garage; this is in order to detect any roosting bats, prior to works. Empty crevices and gaps will be blocked immediately with pieces of foam prior to disturbance works.

7.3.3.3 A safe working platform will be required so that a thorough and safe inspection of all the structures can be undertaken. This will be either scaffolding, mobile elevated work platform or similar.

7.3.4 Site Induction

7.3.4.1 Prior to works commencing on site, a tool box talk will be given to the license holder, client, site manager, contractors and those involved with site works that may impact upon bats. The toolbox talk, and accompanying method statement will include, but not restricted to. the following:

- Introduction to bats on site
- Background to bats
- Legislation relating to bats
- Description of bat roost locations as described in table 5.6.
- Licensable activities
- Method Statement
- Mitigation*
- What to do if bats are discovered
- Figure E2a – Location of roost sites.
- Figure E3 – Location of mitigation*.
- Figure D – Impacts Plan and licensable works.
- Work Schedule.
- Natural England Annex License*.

* If applicable

7.3.4.2 The toolbox talk will only be presented by the named bat ecologist on the Natural England license documentation.

7.3.5 Exclusion of Roosts

7.3.5.1 To enable the exclusion to take place in barn 1, barn 2 and the garage, an assessment will be made to determine the current level of bat activity. If bats are roosting, an exclusion of roosts will be undertaken. The method to be implemented will aim to exclude bats from the roost by closing access points and allow for them to leave un-stressed on their own accord but not enabling their return, therefore eliminating the chance of bats being present during the development. Capture and removal by hand will only be used where absolutely necessary and possible. The capture of bats is not planned as a method during the exclusion of bats from barn 1, barn 2 and the garage and will only be required as an absolute last option.

7.3.5.2 A device will be used to exclude roosts 1 - 5. The exclusion devices will either be constructed from a plastic acetate sheet (or similar material) or a section of smooth drainage pipe with a diameter of 50mm. This will be secured to the wall/roof/ridge/scaffolding board using gaffer tape (or similar adhesive). This will allow the bat to leave the roost but prevent its return. The method of exclusion will follow the guidance within the Bat Workers Manual (JNCC 2004), Chapter 9: Public Relations, Section 9.1.2 Exclusion of Bat Colonies page 69-70. Once the bat ecologist is satisfied that the roots are empty then the roost access points will be blocked immediately with pieces of foam prior to work proceeding. Gaps and cracks with potential to be used as roosts will also be checked with an endoscope and blocked during exclusion.

7.3.5.3 If necessary, the brown long eared bats will be excluded by blocking the access to barn 1 through the east elevation door. A timber framed, plywood board will be constructed and fitted to the door to ensure there are no gaps. Other openings that have potential points of access into the barn will also be sealed during the exclusion process. The east door will be opened 30 minutes prior to sunset until the bats have left the interior of the building. At the end of this period an emergence survey (under suitable weather conditions (>8^{0}C)) will be undertaken to assess whether the bats have vacated the building. Anabat will be left in the barn to monitor activity and help confirm exclusion.

7.3.5.4 Following successful exclusion, the following will take place:

- Doorways will remain blocked from 30 minutes before sunset until sunrise whilst the work is in progress, or until the barn no longer provides potential roosting habitat. This will be determined by the bat ecologist.
- All exclusion devices will be removed, and roosts blocked using expanding foam or a similar substance.

7.3.6 Destructive Search

7.3.6.1 In order to further reduce any unnecessary disturbance, injury, or death of any late discoveries of individual bats roosting in barn 1, barn 2 and the garage, all fittings and fixtures (roof coverings, doors/windows, bat boxes/scaffolding boards in the garage etc.) will be carefully removed, by hand under the watching brief of a bat ecologist.

7.3.6.2 Remove roof coverings by hand. Only half of the roof should be removed on the first day and the second half 24 hours later. This will create unfavourable conditions for any bats still roosting within the roof structure and encourage the bats to leave on their own accord.

7.3.7 Late discoveries

7.3.7.1 In the unlikely event that bats are discovered, you must:

- Immediately stop the work that you are undertaking.
- Contact Wold Ecology on 01377 200242/07795 071504 for advice.
- Advise colleagues in the vicinity of your work why you have stopped and advise them to be aware of the potential for bats being disturbed, injured or killed.
- Immediately report the matter to your site manager/line manager who will inform relevant people.
- Grounded bats should be covered with a box (not airtight) and all works within 5m should cease until a bat ecologist arrives to move the bat.

7.3.7.2 Bats will only be handled by a licensed bat ecologist, wearing gloves, who has received a rabies vaccination. The bat will be placed either into a holding box, with water provided, and re-released close to the farm at dusk, or placed into a bat box located on site.

7.3.7.3 Injured bats will be taken into care (as directed by the Bat Workers Manual, section 7.3, pages 64 – 66: 3rd edition 2004) and fed and cared for until such time when conditions are suitable (night time temperature are >6^{0}C) for them to be released at dusk in the mitigation area.

7.3.7.4 As some site works work are taking place during winter, there remains the possibility of encountering hibernating bats. The capture of bats is not planned as a method of exclusion during winter months and will only be required as an absolute last option i.e. if the bat is at risk of injury and death.

7.3.7.5 In the event that hibernating bats are discovered, a minimum buffer area of $3m^2$ will be created around the roost. If applicable, all work lighting will face away from the roost to ensure that light contamination and heat do not disturb the bat. The bat will be left undisturbed in situ until night time temperatures are $>6^0C$ consistently for approximately four nights and the bat can either move by its own accord or can be excluded from the roost.

7.3.7.6 If any torpid bats are disturbed and aroused they will be placed in a Schwegler 1FW hibernation box on site. The 1FW bat box will be located within 50m of the bat roosts and at an accessible height (<5m above ground level) for the bat ecologist to access easily.

7.3.7.7 If the night time temperature is above 6^0C and the bat is active, it will be first placed in a holding bag and transferred to a Schwegler bat box that will be located within 50m of the bat roosts and at an accessible height (<5m above ground level) for the bat ecologist to access easily.

7.3.7.8 Injured bats will be taken into care (as directed by the Bat Workers Manual, section 7.3, pages 64 – 66: 3rd edition 2004) and fed and cared for until such time when conditions are suitable (night time temperature are $>6^0C$) for them to be released at dusk in the mitigation area. Bats will only be handled by an ecologist, licensed to handle bats. Gloves will be worn and the ecologist, as aforementioned, will have an up-to-date rabies vaccination. If bats are discovered on site, work will stop immediately, and Wold Ecology will be contacted on 01377 200242 for advice.

7.4 Mitigation

7.4.1 This mitigation strategy is based on survey data currently held. The mitigation strategy will ensure that the bat populations on site are maintained at a favourable conservation status by the retention of the original roost sites where possible. In addition, new roosting opportunities will be created though the provision of bat boxes and roosting opportunities. There should be a net gain in roosting opportunities post development.

7.4.2 Timber treatment should be carried out using Permethryn type chemicals on the Natural England list of approved safe chemicals. New pre-treated timbers i.e. tanalised timber will be allowed to dry thoroughly before use, if applicable. New timbers used at specific roost sites in ridge area will be thoroughly brushed with a stiff yard brush to remove any crystalline residues before use.
A list of Natural England approved paints and timber treatments are available at http://www.naturalengland.org.uk/Images/Bat%20roost%20timber%20treatment_tcm6-10167.pdf.

7.5 In situ retention of bat roosts

7.5.1 The soprano pipistrelle maternity roost in the farm house, soprano pipistrelle satellite roost in the converted barn and the common pipistrelle day roost in the farm house are in excess of 10m from any building works. All contractors will be

made aware of the roost location and informed that cement mixing, concrete breaking or any works that would cause significant dust and vibrations should not be undertaken within 10m of the roosts. As the aforementioned roosts are located at heights greater than 5m and in locations inaccessible without the use of scaffolding or an elevated platform, marking the roosts and temporarily blocking the roosts is not applicable.

7.6 Modification of existing roosts

7.6.1 Bat Loft in the garage

7.6.1.1 A bat loft will be modified in the roof space of the garage. The internal drop will be 2.3m from the ridge board, 11 metres in length and 6 metres wide. Existing access to the bat loft is via two missing stones on the east and west gables will continue to allow use of the roof apex by bats. The access slots are 250mm wide, 100mm in length and are located approximately 400mm above the loft floor and not the apex so that they retain warmer air within the ridge roost area.

7.6.1.2 The roof structure is traditional, open design and **not modern trussed** to allow bat flight activity. Roofing felt in the garage currently comprises a breathable membrane and the roof must be boarded so that a sealed bat loft is created, and the bats have no access to the breathable roof membrane.

7.6.1.3 Existing scaffolding boards, approximately 1m long x 75mm wide x 15mm thick will be re attached to the rafters with 25mm spacers to form a narrow slot butted up to the ridge board at the top end. These will be provided at four locations throughout loft of the garage. The licensed bat ecologist will identify locations immediately prior to their installation.

7.6.1.4 Two open bottomed, rough sawn, slot boxes will be sited within the internal roof structure of the bat loft. These will be constructed from rough soft wood measuring 300mm deep by 450 – 600mm long leaving a narrow space about 30mm wide. This can be attached to the wall to create additional roosting opportunities in the bat loft (see plates 12 and 13).

7.6.1.5 If applicable, insulation should be used on the floor of the bat loft and should be boarded to protect the bats from the insulation.

7.6.1.6 Human access to the bat loft will be via a small internal ceiling hatch 70cm x 50cm, this will allow inspection access but is of insufficient dimensions to allow for storage. A laminated warning notice stating 'Restricted Access. Bat Loft. Please do not enter unless supervised by a license bat ecologist' will be placed inside the bat loft, close to the loft hatch.

Plate 12 - Example of an open bottomed slot box (Norfolk Bat Group)

Plate 13 - Example of an open bottomed slot box (Wold Ecology Ltd)

7.6.1.7 If applicable, insulation should be used on the floor of the bat loft and should be boarded to protect the bats from the insulation.

7.7 New Roost Creation

7.7.1 It is usually recommended that the original roost site is re-created and in addition, new roosting opportunities will be created. However, the design of the buildings and building control restrictions, re-creation of the original roost sites is not possible for this site.

7.7.2 Bat Loft – barn 1

7.7.2.1 A bat loft will be created in the roof space of barn 1. The internal drop will be at least 2m from the ridge board and the proposed bat loft/void should be at least 5 metres in length and 5 metres wide. New access to the proposed bat loft will be created to allow the continued use of the roof apex by bats. An access slot 250mm wide and 100mm in length will be incorporated into the north gable of the barn. This will be located approximately 400mm above the loft floor and not the apex; this will retain warmer air within the ridge roost area.

7.7.2.2 The roof structure of the bat loft will be traditional, open design and **not modern trussed** to allow bat flight activity. Roofing felt in the bat loft should be traditional bitumen type 1f felt. This will not be tight but allowed to sag very slightly between the rafters. Only bitumen felt which **does not** include any of the following words will be used for the bat loft:

- Non-woven
- Polypropylene
- Spun-bond

7.7.2.3 Additional roosting locations will be provided by fixing boards, approximately 1m long x 75mm wide x 15mm thick to the side of the rafters with 25mm spacers to form a narrow slot butted up to the ridge board at the top end. These will be provided at four locations throughout loft of barn 1. The licensed bat ecologist will identify locations immediately prior to their installation.

7.7.2.4 Two open bottomed, rough sawn, slot boxes will be sited within the internal roof structure of the bat loft in barn 1. These will be constructed from rough soft wood measuring 300mm deep by 450 – 600mm long leaving a narrow space about 30mm wide. This can be attached to the wall to create additional roosting opportunities in the bat loft

7.7.2.5 Roofing felt beneath the lead tiles must be traditional bitumen type 1f felt. Only bitumen felt which **does not** include any of the following words will be used for roof pitches where bats are being encouraged to use:

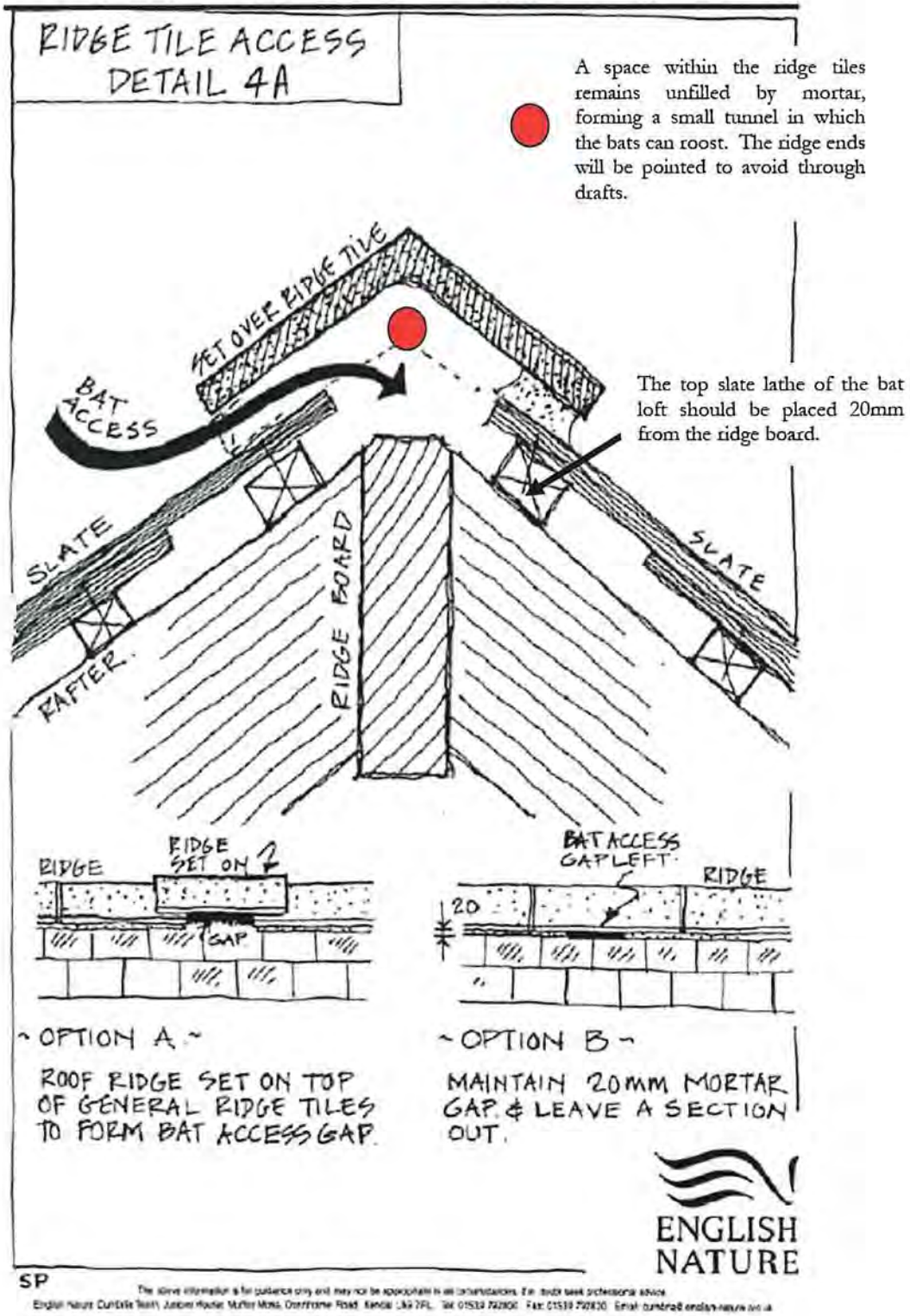
- Non-woven
- Polypropylene
- Spun-bond

7.7.2.6 If applicable, insulation should be used on the floor of the bat loft and should be boarded to protect the bats from the insulation.

7.7.2.7 Human access to the bat loft will be via a small internal ceiling hatch 70cm x 50cm, this will allow inspection access but is of insufficient dimensions to allow for storage. A laminated warning notice stating 'Restricted Access. Bat Loft. Please do not enter unless supervised by a license bat ecologist' will be placed inside the bat loft, close to the loft hatch.

7.7.2.8 The top slate lathe of the bat loft should be placed 20mm from the ridge board. At approximately 2m intervals along the ridge the membrane and under felt will have 30mm x 100mm slots cut out beside the ridge boards to allow bats access to the ridge tiles for roosting. These will need to be inspected before the tiles are laid to ensure proper access is created. When the ridge tiles are laid, it is important to ensure the space within the ridge tiles remains unfilled by mortar forming a small tunnel in which the bats can roost. The ridge ends will be well pointed to avoid through drafts. The design detail will follow plate 14 below.

Plate 14: showing ridge access design detail.



7.8 Bat boxes

7.8.1 Wold Ecology recommends that two Schwegler 1FN bat boxes are sited on trees within the grounds of Thirley Cotes Farm. Schwegler Bat Boxes are recommended and well tested boxes. Bat boxes should be erected on south, east or west aspects of the trees; 3-5 metres above ground level.

7.8.2 The 2FN bat box has two entrances - one at the front and one at the rear against the tree. Bats often creep into the rear entrance but leave by the front. It has a domed roof to allow the bats to form roosting clusters for warmth and this bat box is also designed to be effective against small predators and excludes draughts and light. Due to the opening on the bottom, this bat box does not require cleaning.

7.8.3 Wold Ecology also recommends that two Schwegler 1FR bat boxes are located on barns 1 and 2. Bat boxes should be erected on south, east or west elevations; 3-5 metres above ground level or close to roof lines.

7.8.4 The 1FR bat tubes will be sited within the external walls of the barn. The bat tubes will be erected behind the outer stone and a 30mm x 30mm gap in the mortar will remain open to allow bat access into the bat tube. The bat tube will not be visible and therefore satisfies the requirements of the planning department. John Drewett (North Yorkshire Bat Group) stated that this has worked on previous schemes and ensures that the bats are contained within a designated location within the barn structure.

7.8.5 The majority of Schwegler bat boxes are self-cleaning as they are designed so that the droppings fall out of the entrance. This reduces the possibility of smell during the summer months. For more information on designs and installation of bat boxes see: www.schwegler-natur.deand www.bct.org.uk.

7.9 Lighting

7.9.1 Lighting has a detrimental effect on bat activity; many bats will actually avoid areas that are well lit. Lighting can cause habitat fragmentation by preventing bats from commuting between roosts and foraging grounds (A.J Mitchell-Jones 2004).

7.9.2 The impact on bats can be minimised by the use of low pressure sodium lamps or high-pressure sodium instead of mercury or metal halide lamps where glass glazing is preferred due to its UV filtration characteristics.

7.9.3 Luminaire and light spill accessories - Lighting should be directed to where it is needed, and light spillage avoided. This can be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only.

7.9.4 If applicable, the height of lighting columns in general should be as short as is possible as light at a low level reduces the ecological impact. However, there are cases where a taller column will enable light to be directed downwards at a more acute angle and thereby reduce horizontal spill. For pedestrian lighting, this can take the form of low level lighting that is as directional as possible and below 3 lux at ground level. Aim for lighting column of 5m or less, hooded and cowled to prevent light spill, for main lighting columns

7.9.5 Security lighting power, it is rarely necessary to use a lamp of greater than 2000 lumens (150 W) in security lights. The use of a higher power is not as effective for the intended function and will be more disturbing for bats. Many security lights are fitted with movement sensors which, if well installed and aimed, will reduce the amount of time a light is on each night. This is more easily achieved in a system where the light unit and the movement sensor are able to be separately aimed. If the light is fitted with a timer this should be adjusted to the minimum to reduce the amount of 'lit time'. The light should be aimed to illuminate only the immediate area required by using as sharp a downward angle as possible. This lit area must avoid being directed at, or close to, any bats' roost access points or flight paths from the roost. A shield or hood can be used to control or restrict the area to be lit. Avoid illuminating at a wider angle as this will be more disturbing to foraging and commuting bats as well as people and other wildlife.

7.9.6 At this site, lights will **not** be mounted where they will shine directly on to the bat roosts located in the farm house and converted barn, bat boxes, bat lofts or the surrounding woodland habitat used by foraging and commuting bats.

7.10 Habitat enhancements

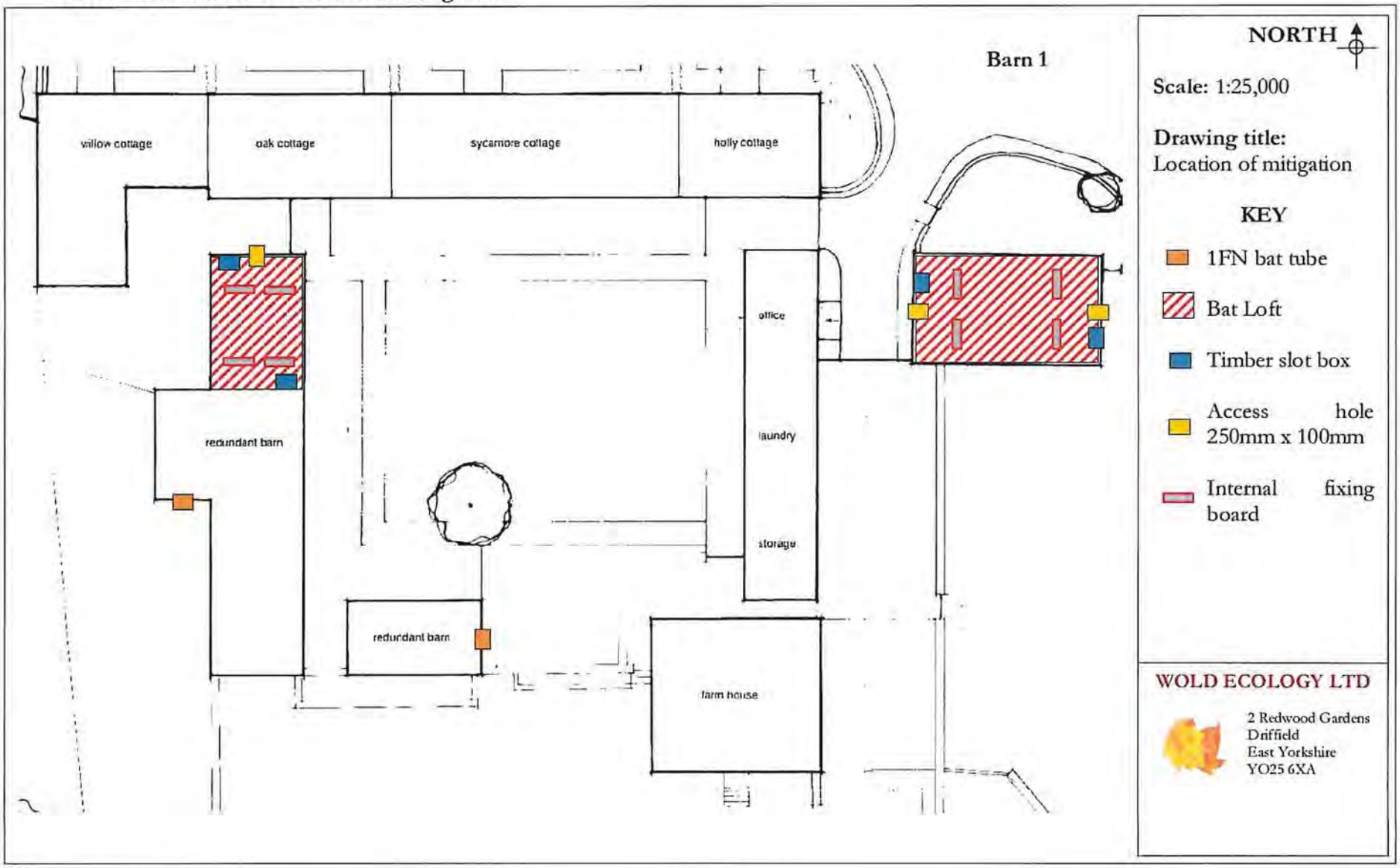
7.10.1 Freshwater, woodland, grassland, urban gardens, trees and amenity green space are suitable foraging habitats for bats whilst linear habitats such as hedgerows and streams are particularly important commuting routes between roosts and foraging ground. Management of these habitats should aim to maintain a favourable status of local populations by encouraging bat usage through the provision of additional roosting opportunities, habitat enhancement and maintaining commuting routes.

7.10.2 It is recommended that the natural landscape remains largely unchanged. Landscaped areas can provide good foraging grounds for bats and the retention of adjacent trees is recommended. Ornamental, semi natural and managed habitats can be improved by growing night-scented flowers and other flowers favoured by insects. Suitable species include:

- Foxglove *Digitalis purpurea*
- Cowslip *Primula veris*
- Red campion *Silene dioica*
- Marjoram *Origanum vulgare*
- Ox-eye daisy *Leucanthemum vulgare*
- Red clover *Trifolium pratense*
- Evening primrose *Oenothera biennis.*
- Honeysuckle *Lonicera periclymenum.*
- Wild Clematis *Clematis virginiana*

7.10.3 More information on suitable planting to encourage bats obtained from The Bat Conservation Trust (www.bats.org).

7.10.4 Location of recommended mitigation



8.0 REFERENCES

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9.0 APPENDICES

9.1 Background to Bats - Bat Biology.

9.1.1 Bats roost in a variety places such as caves, mines, trees and buildings. Woodlands, pasture, ponds and slow flowing rivers or canals provide suitable feeding areas for bats as they support an abundance of suitable insect forage. Bats tend to feed during the first two to three hours after sunset and again before dawn, when insect activity is at its most intense (JNCC 2004).

9.1.2 Bat activity over the course of a year reflects the seasonal climate and the availability of food as follows (The Bat Conservation Trust, undated):
January - March - insect prey is scarce and bats will hibernate alone or in small groups.
April - May - insects are more plentiful and bats will become active. They may become torpid (cool and inactive) in severe weather. Females will start to form groups and will roost in several sites.
June - July - females gather in maternity roosts and give birth to young, which are suckled for several weeks. Males roost alone nearby.
August - September – mothers leave the roost before the young. Bats mate and build up fat for the winter.
October - December – Bats search for potential hibernacula. They become torpid for longer periods and then hibernate.

9.1.3 Bats do not stay in the same roost throughout the year. They have different requirements of roosts at various times of the year. During late April/May the bats leave their winter roosts and the females come together to form 'nursery roosts', these usually consists of pregnant females along with a few non-breeding and immature females. At this time, the males roost either singly or in small numbers. The single offspring is born during late June early July and can fly within 3-5 weeks.

9.1.4 Typical roost site are cracks and crevices in buildings and other structures but more typically under hanging tiles, slates, soffits and cavity walls of fairly modern buildings or holes and splits in trees.

9.1.5 The conditions needed by bats for hibernation require the maintenance of a relatively stable low temperature ($2 – 6^{0}$). Suitable sites include; old trees, caves, cellars, tunnels, and icehouses.

9.1.6 Whilst the summer roosts consist of single species (although 2 – 3 species can be found within one large structure but occupying separate roost sites), winter sites often consist of 4 – 6 species of bat, although there is often niche separation.

9.1.7 Bats have a complex social structure based on 'meta populations' and also utilise other transitional or intermediate roost sites. The several types of roost which bats occupy throughout the year, are as follows:

- **Day roost**: a place where individual bats, or small groups of males, rest or shelter in the day but are rarely found by night in the summer.
- **Night roost**: a place where bats rest or shelter in the night but are rarely found in the day. May be used by a single individual on occasion or it could be used regularly by the whole colony.
- **Feeding roost**: a place where individual bats or a few individuals rest or feed during the night but are rarely present by day.

- **Transitional/occasional roost**: used by a few individuals or occasionally small groups for generally short periods of time on waking from hibernation or in the period prior to hibernation.
- **Swarming site**: where large numbers of males and females gather during late summer to autumn. Appear to be important mating sites
- Mating sites: sites where mating takes place from later summer and can continue through winter.
- **Maternity roost**: where female bats give birth and raise their young to independence.
- **Hibernation roost**: where bats may be found individually or together during winter. They have a constant cool temperature and high humidity. These have to be cold and free from any temperature fluctuation with high humidity. The coldness enables bats to lower their body temperature and become torpid. This saves a lot of energy, enabling them to survive on the fat stores within their bodies that they have built up throughout the summer.
- **Satellite roost**: an alternative roost found in close proximity to the main nursery colony used by a few individual breeding females to small groups of breeding females throughout the breeding season.

9.1.8 The main threats to bats include:

- Habitat loss (e.g. deforestation)
- Loss of feeding areas as a result of modern forestry and farming practices.
- Use of toxic agrochemicals and remedial timber treatment chemicals.
- Disturbance and damage to bat roosts.

9.1.9 Bats have been in decline both nationally and internationally during the latter part of the 20th Century. Bats require a variety of specific habitats in order to meet the basic needs of feeding, breeding and hibernating and are therefore extremely vulnerable to change such as the loss of flight lines through the removal of hedgerows. It is thought that even the two most common and widespread bats, the common pipistrelle and the soprano pipistrelle, have declined by an estimated 70% (1978-1993 figures). There are a number of bat species, which are now considered seriously threatened with one species, the greater mouse-eared bat being classed as extinct as it is no longer breeding in the U.K.

9.1.10 All European bats are listed in Annex IV of the EC Directive 92/94/EEC 'The Conservation of Natural Habitats and of Wild Fauna and Flora' as needing "strict protection". This is translated into British Law under the Habitats and Species Regulations 2017. British bats are included under Schedule 5 of the Wildlife & Countryside Act 1981. They can therefore be described as a 'fully protected' or 'protected' species.

9.1.11 A summary of the legal protection afforded to bats under both European and British law is provided by the Bat Conservation Trust (BCT, 2010) and states:
'All European bat species and their roosts are listed in Annex IV of the EC Directive 92/94/EEC 'The Conservation of Natural Habitats and of Wild Fauna and Flora' as needing "strict protection". This is implemented in Britain under the Conservation of Habitats and Species Regulations 2017 which has updated the Conservation (Natural Habitats &c.) Regulations (as amended). In summary, in the UK, it is an offence to:

- Deliberately capture, injure or kill a bat;

- Deliberately disturb a bat in a way that would affect its ability to survive, breed or rear young, hibernate or migrate or significantly affect the local distribution or abundance of the species;
- Damage or destroy a roost (this is an absolute offence); and
- Possess, control, transport, sell, exchange or offer for sale/exchange any live or dead bat or any part of a bat.'

9.1.12 The species is also listed in Appendix II of the Bonn Convention (and its Agreement on the Conservation of Bats in Europe) and Appendix II of the Bern Convention (and Recommendation 36 on the Conservation of Underground Habitats). Although these are recommendations and not statutory instruments.

9.1.13 Natural England is the Government body responsible for nature conservation. Local planning authorities must consult them before granting planning permission for any work that would be likely to result in harm to the species or its habitat. Natural England issue "survey" licenses for survey work that requires the disturbance or capture of a species for scientific purposes. They also issue "conservation" licenses that are required for actions that are intended to improve the natural habitat of a European protected species or to halt the natural degradation of its habitat.

9.1.14 'Development' licences are issued by Natural England for any actions that may compromise the protection of a European protected species, including bats, under the Conservation of Habitats and Species Regulations 2017. This includes all developments and engineering schemes, regardless of whether or not they require planning permission.

9.1.15 The UK Biodiversity Action Plan states that although the pipistrelle is one of the most abundant and widespread bat species in the UK, it is still thought to have undergone a significant decline in the latter part of this century. The main factors cited for causing loss and decline include:

- A reduction in insect prey abundance, due to high intensity farming practice and inappropriate riparian management.
- Loss of insect-rich feeding habitats and flyways, due to loss of wetlands, hedgerows and other suitable prey habitats.
- Loss of winter roosting sites in buildings and old trees.
- Disturbance and destruction of roosts, including the loss of maternity roosts due to the use of toxic timber treatment chemicals.

9.2 Significance of bat roosts, appraising the nature conservation value;

9.2.1 The significance of bat roosts should be appraised against the following table. Where the extent of the bat roost is unclear a precautionary approach should be taken in evaluating the significance of the roost and the highest potential category should be selected.

Table 9.2.1 Appraisal of significance of bat roosts.

Scale	Summary	Examples
International	Any significant roosting sites for European Annex 2 species	Barbastelle bat roosts are only known applicable feature in East Anglia.

National	Any roosts qualifying as SSSI under the EN criteria.	Details of criteria are given in 9.1.2 Site Selection Guidelines for Biological SSSI's.
Regional	Any significant bat roosts and features, equivalent in interest to qualifying a site as a County Wildlife Site.	Breeding and hibernation roosts of most species.
Local	All other sites supporting feeding bats as Wildlife and Countryside Act protected species.	Bats foraging within a structure, night roosts and minor transition roosts.

9.2.2 Site Selection Guidelines for Biological SSSIs

9.2.2.1 The following statements are made in respect of selecting SSSIs for bats in JNCC (1989) and JNCC (1998) in Section 13;

Sub-section 1.9 Reason for notification
"The bats have become a major focus of conservation concern in Britain, and all 15 species are protected through Schedule 5 of the 1981 Act.
The mouse-eared bat is now virtually extinct in Britain and other species, most notably the two horseshoe bats, are threatened.
Some species, for example the barbastelle, are so rare that little is known about their conservation status, but other species appear to be declining in numbers.
All bats are vulnerable, through their use of a relatively small number of sites for communal roosting and breeding, often in buildings; so, legal protection against disturbance and taking has been an effective conservation measure.
Enhancing the protection of key sites through the SSSI mechanism can be helpful, but the notification of sites in buildings, particularly domestic dwellings, needs to be considered carefully if it is to have the desired effect."

Sub-section 3.3 basis of selection
"The selection of bat roosts is on a national basis except for certain mixed hibernacula in AOSs where large roosts are unknown."

Sub-section 3.3.4 Barbastelle, Bechstein's and grey long-eared bats
"All of these are rare species with no or very few breeding roosts known. Any traditional breeding roosts should be considered for selection if found."

Sub-section 3.3.5 Natterer's, Daubenton's, Whiskered, Brandt's, Serotine, Noctule and Leisler's bats
"These species are reasonably widespread, and it would be difficult to justify the notification of breeding roosts except in the most exceptional circumstances. These might include exceptionally large colonies with a long history of usage of a particular site. In general, protection of roosts of these species should come under section 9 of the 1981 Act."

Sub-section 3.3.6 Pipistrelle and brown long-eared bat
"These two species are widespread and more common than the above. Protection should rely on section 9 of the 1981 Act."

Sub-section 3.3.7 All bat species – mixed assemblages

"Large hibernacula of mixed species are very important and sometimes spectacular, but perhaps number only 20 sites in total. On a national basis, all hibernacula containing (a) four or more species and 50 or more individuals, (b) three species and 100 or more individuals or (c) two species and 150 or more individuals should be selected. In some parts of Britain such large sites are unknown, so alternatively in these areas one hibernaculum site per AOS containing 30 or more bats of two or more species may be considered for selection."
"Because of the complications associated with the notification of sites in buildings, the appropriate CSD mammal's specialist should be consulted over the selection of all such sites."

9.3 Summary of conservation significance of roost types (Bat Mitigation Guidelines, 2004).

Roost type	Development effect	Scale of impact		
		Low	Medium	High
Maternity	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction; modification		✓	
	Temporary disturbance outside breeding season	✓		
	Post-development interference			✓
Major hibernation	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction; modification		✓	
	Temporary disturbance outside hibernation season	✓		
	Post-development interference			✓
Minor hibernation	Destruction			✓
	Isolation caused by fragmentation			✓
	Partial destruction, modification		✓	
	Modified management		✓	
	Temporary disturbance outside hibernation season	✓		
	Post-development interference		✓	
	Temporary destruction, then reinstatement	✓		
Mating	Destruction		✓	
	Isolation caused by fragmentation		✓	
	Partial destruction	✓		
	Modified management	✓		
	Temporary disturbance	✓		
	Post-development interference	✓		
	Temporary destruction, then reinstatement	✓		
Night roost	Destruction	✓		
	Isolation caused by fragmentation	✓		
	Partial destruction	✓		
	Modified management	✓		
	Temporary disturbance	✓		
	Post-development interference	✓		
	Temporary destruction, then reinstatement	✓		

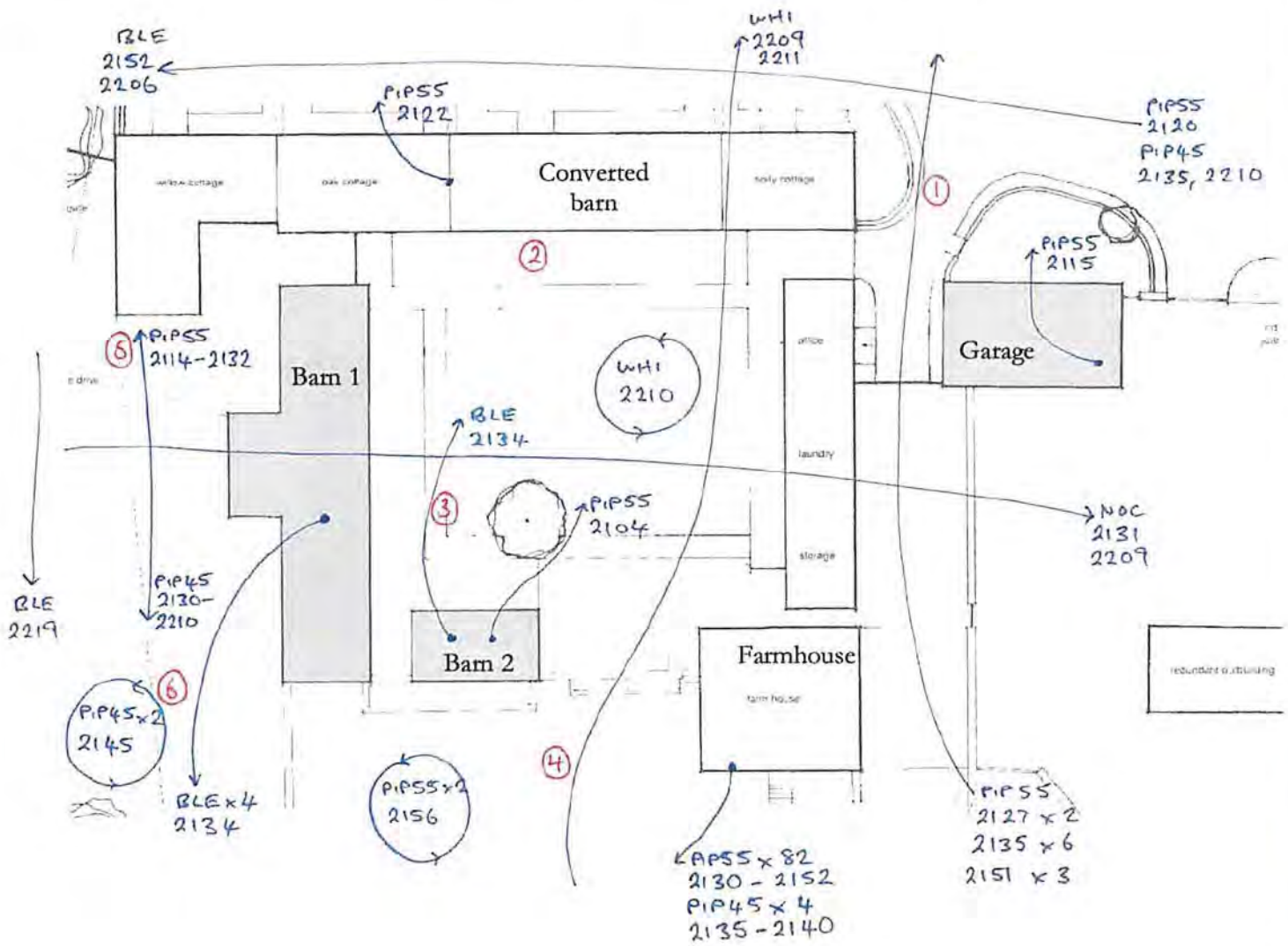
NB This is a general guide only and does not take into account species differences. Medium impacts, in particular, depend on the care with which any mitigation is designed and implemented and could range between high and low.

9.4 Bat records for activity surveys conducted in 2018

Date – 7th May 2018					
Loc.	Time	Species	kHz	Direction	Comment
3	21.04	S. Pipistrelle	55	N	Emerged from a gap under a ridge tile in barn 2 **Roost 4**
5 & 6	21.14	S. Pipistrelle	55		Foraging
1	21.15	S. Pipistrelle	55	N	Emerged from the garage **Roost 5**
1 & 5	21.20	S. Pipistrelle	55	W	Commuting
2	21.22	S. Pipistrelle	55	NW	Emerged from converted barn from external roost in a gap in the stonework
4 & 1	21.27	S. Pipistrelle x 2	55	N	Commuting
5 & 6	21.30	S. Pipistrelle	55		Foraging
4	21.30 – 21.50	S. Pipistrelle x 82	55	SW	Emerged from an external gap in stonework on the south elevation of the farm house
5, 6 & 3	21.31	Noctule	20	E	Commuting
3	21.34	Brown long-eared x 4	39	SE	Emerged from a gap beneath the ridge on barn 1 **Roost 1**
3	21.34	Brown long-eared	39	SE	Emerged from a gap under a ridge tile in barn 2 **Roost 2**
4	21.35 – 21.40	C. Pipistrelle x 4	45	SW	Emerged from an external gap in stonework on the south elevation of the farm house
1 & 5	21.35	C. Pipistrelle	45	W	Commuting
4 & 1	21.35	S. Pipistrelle x 6	55	N	Commuting
2 & 3	21.45	C. Pipistrelle x 2	45		Foraging
4 & 1	21.51	S. Pipistrelle x 3	55	N	Commuting
1 & 5	21.52	Brown long-eared	39	W	Commuting
4	21.56	S. Pipistrelle x 2	55		Foraging
1 & 5	22.06	Brown long-eared	39	W	Commuting
4, 3 & 2	22.09	Whiskered	47	N	Commuting
1 & 5	22.10	C. Pipistrelle	45	W	Commuting
4, 3 & 2	22.09	Whiskered	47	N	Commuting
5, 6 & 3	22.09	Noctule	20	E	Commuting
2 & 3	22.10	Whiskered	47		Foraging
4, 3 & 2	22.11	Whiskered	47	N	Commuting
5 & 6	22.19	Brown long-eared	39	SE	Commuting
Date – 26th June 2018					
1	02.51 –0 3.10	S. Pipistrelle	55	-	Foraging

1	02.55 – 03.15	C. Pipistrelle	45	-	Foraging
1	02.55	Brown long-eared	39	N	Commuting
3	02.58	S. Pipistrelle	55	E	Commuting
2	03.01	S. Pipistrelle	55	S	Commuting
1/2	03.02	Brown long-eared	39	E	Commuting
3	03.05	Brown long-eared	39	N	Commuting
3	03.06	S. Pipistrelle	39	E	Commuting
1/2	03.15 – 04.10	S. Pipistrelle x 36	55	-	Returned to a gap above the eaves on the converted barn
1	03.15	Brown long-eared	39	S	Commuting
2	03.16	C. Pipistrelle	45	W	Commuting
2	03.17 – 04.15	C. Pipistrelle x 144	55	-	Returned to a gap above the eaves on the Farm House.
2	03.18 – 03.50	Brown long-eared x 10	39	-	Returned to an internal gap in the stone work in barn 1 **Roost 3**
2	03.19	S. Pipistrelle	55	S	Commuting
1	03.22	S. Pipistrelle	55	S	Commuting
2	03.27	S. Pipistrelle	55	S	Commuting
1	03.30	S. Pipistrelle	55	S	Commuting
2	03.33	Brown long-eared	39	-	Returned to a gap beneath the ridge on barn 1 **Roost 1**
3.	03.40	S. Pipistrelle	55	E	Commuting

9.5 Bat Activity Survey Flight Maps



NORTH

Not to Scale

Drawing title:
Emergence Survey Plan – 7th May 2018

KEY

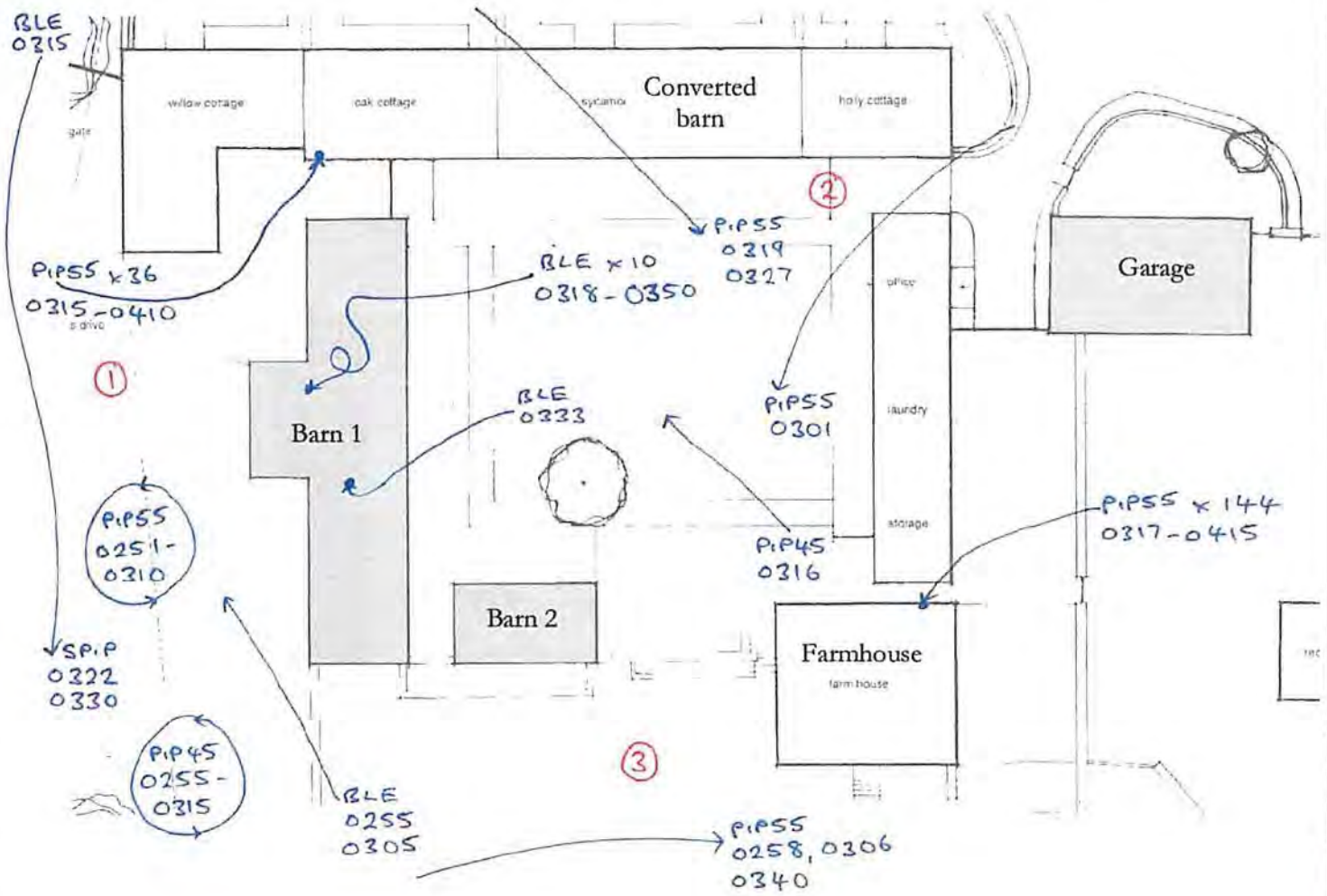
1 - 6 Location of surveyors

→ Commuting activity

Foraging activity

WOLD ECOLOGY LTD

2 Redwood Gardens
Driffield
East Yorkshire
YO25 6XA



NORTH

Not to Scale

Drawing title:
Return Survey Plan – 26th June 2018

KEY

1 - 3 Location of surveyors

→ Commuting activity

Foraging activity

WOLD ECOLOGY LTD

2 Redwood Gardens
Driffield
East Yorkshire
YO25 6XA