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Manor Farm, Harpham

Preliminary Bat Roost Assessment, December 2021.

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DOCUMENT CHECKING

Issue No.	Date.	Status.	Verified by.
1	08/01/2022	Draft for internal review.	Daniel Lombard B Sc MCIEEM
2	13/01/2022	Submission of non-draft version for client.	Chris Toohie MSc MCIEEM
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TABLE OF CONTENTS

1.0	EXECUTIVE SUMMARY	3
2.0	INTRODUCTION	5
3.0	BACKGROUND TO SPECIES	7
4.0	ASSESSMENT METHODOLOGY	10
5.0	RESULTS	13
6.0	IMPACT ASSESSMENT – in the absence of mitigation	32
7.0	MITIGATION & COMPENSATION	34
8.0	BIRDS	41
9.0	REFERENCES	43
10.0	APPENDICES	44

1.0 EXECUTIVE SUMMARY

1.1 In December 2021, Wold Ecology Ltd was commissioned by Smooth Build Harpham Ltd to undertake a preliminary bat roost assessment at Manor Farm, Harpham. The site is located at approximate National Grid Reference TA 09262 61563, in East Yorkshire.

1.2 The preliminary bat roost assessment results are summarised below:

		Application Site Status
Bat Activity Surveys Required - Plot 4	Bats	Bat droppings were discovered in the plot 4 during the survey and consequently, there is a risk of bats being present in the building at other times of year, especially during the spring to autumn months. Further bat activity surveys should be undertaken between May – late August. This is to ensure bats are not roosting in plot 4 prior to conversion works commencing.
Bat Activity Surveys Required - Plot 1 Plot 2 Plot 3 Plot 5	Bats	Although no signs of roosting bats were discovered during the field survey and daytime inspection, there is a risk of bats being present in plots 1, 2, 3 and 5 at other times of year, especially during the summer months. Further bat activity surveys should be undertaken between May – late August. This is to ensure bats are not roosting in the cottage prior to demolition and roofing works.
Proceed with caution, timing constraints	Birds	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 – mid February to early September. Planning consent for a development does not provide a defence against prosecution under this act. Bird's nests were observed in the buildings (refer to section 8.0).
No further surveys required – Farm house Nissen hut	Bats	There was no evidence to suggest the presence of bats in the farm house or Nissen hut. It is considered that the proposed demolition of the Nissen hut and internal refurbishment/chimney repairs to the farm house will have none/negligible impacts on bat species. Any removal of roofing will require advice from a bat ecologist prior to tile removal.
No constraints	Barn owl	There was no evidence of barn owls <i>Tyto alba</i> roosting in the buildings. No further surveys recommended.

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

1.4 All bats and their roosts are fully protected under the Wildlife and Countryside Act 1981 (as amended by the Countryside and Rights of Way Act 2000) and are further protected under the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019. Should any bats or evidence of bats be found prior to or during development, work must stop immediately, and Natural England contacted for further advice. This is a legal requirement under the aforementioned acts and applies to whoever carries out the work.

- 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 **December 2022**. After this time, additional surveys need to be undertaken to confirm that the status of the building, as a bat roost, has not changed.

2.0 INTRODUCTION

2.1 Background Information

2.1.1 In December 2021, Wold Ecology Ltd was commissioned by Smooth Build Harpham Ltd to undertake a preliminary bat roost assessment at Manor Farm, Harpham. The site is located at approximate National Grid Reference TA 09262 61563, in East Yorkshire.

2.1.2 The Application Site comprises the following:

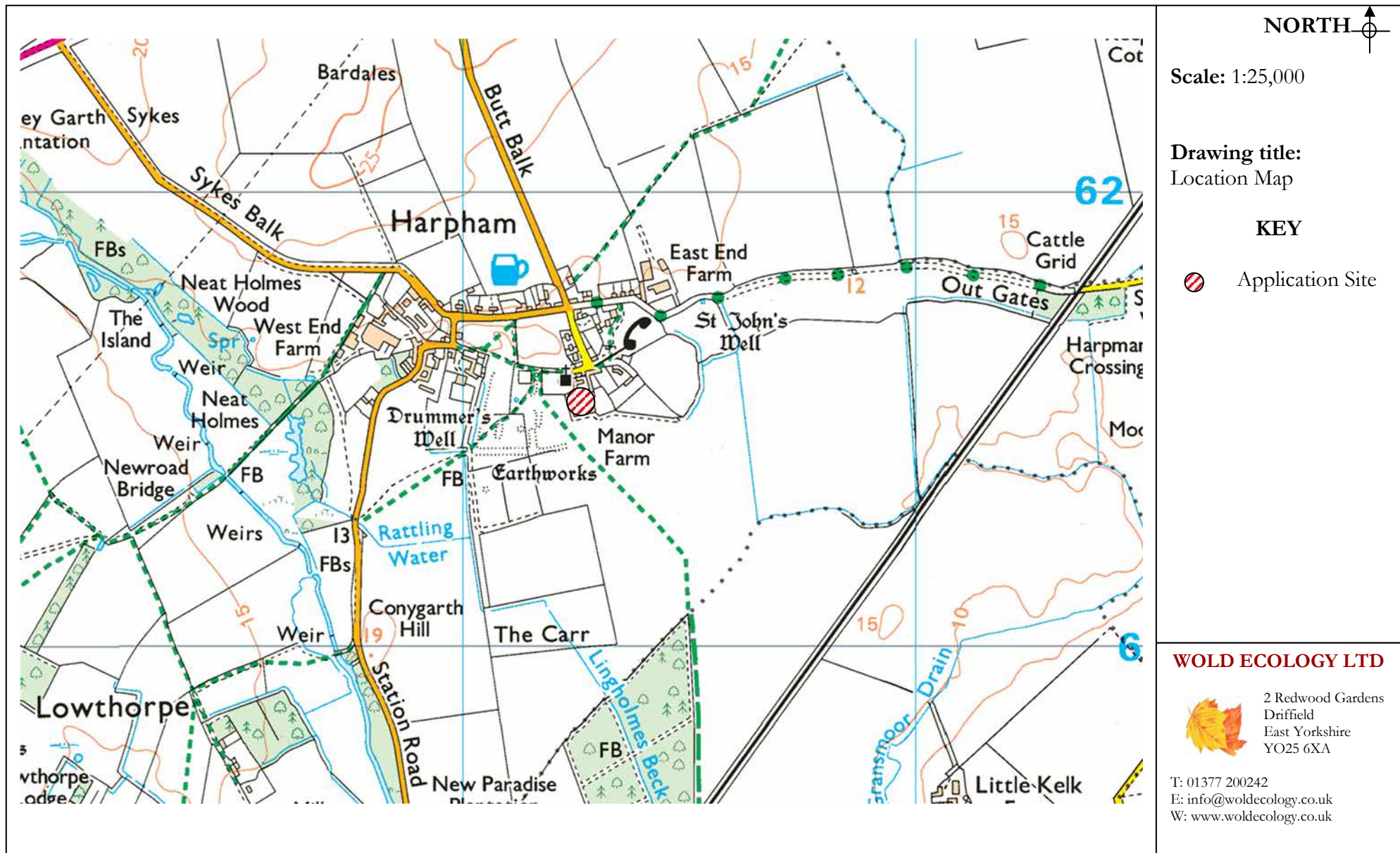
- Plots 1 - 5
- Farm house
- Nissen Hut

2.1.3 The proposed development includes the conversion of Plots 1 – 5 to residential dwellings including structural work, partial demolition and rebuild, re-roofing and internal refurbishment. The Nissen Hut will be demolished, and the farm house will be refurbished.

2.2 Survey Objectives

2.2.1 The site was visited and assessed on 17th December 2021; this was to determine whether the buildings on site contained bat roosts or was suitable to support roosting bats during other times of the year. 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 suitability for bats and the likelihood of their presence. Desktop study.
Determine bat usage e.g.s maternity roost, summer roosts	Yes	An assessment of whether bats are a constraint to the development. Hibernation survey. Endoscope survey (where accessible) A bat activity survey has not been undertaken.
Identify swarming, commuting, or mating sites	No	N/A
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.
Birds	Yes	The visual inspection also recorded any other visible active/disused nests and bird activity within the buildings.



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 (Amendment) (EU Exit) Regulations 2019, 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 Planning Authority (LPA), as part of the planning application process. This is specified in the following legislation:

- National Planning Policy Framework (NPPF): Conserving and Enhancing the Natural Environment.

3.3.2 To protect and enhance biodiversity and geodiversity, plans should:

- a) Identify, map and safeguard components of local wildlife-rich habitats and wider ecological networks, including the hierarchy of international, national

and locally designated sites of importance for biodiversity; wildlife corridors and stepping stones that connect them; and areas identified by national and local partnerships for habitat management, enhancement, restoration or creation.

- b) promote the conservation, restoration and enhancement of priority habitats, ecological networks and the protection and recovery of priority species; and identify and pursue opportunities for securing measurable net gains for biodiversity.

3.3.3 When determining planning applications, local planning authorities should apply the following principles:

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

3.3.4 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'.

3.3.5 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).

- 3.3.6 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.’
- 3.3.7 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.
- 3.3.8 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.yorkbats.freeseve.co.uk/bats.htm>

4.2 Data Review and Desk Study

4.2.1 The following bat roosts were recorded during 2013:

- Common pipistrelle day roost located in a gap adjacent to a timber door frame on the west elevation of Plot 4, the roost contains 1 bat (Curtis Ecology 2013).
- Common pipistrelle day roost located in a gap in the external brickwork on the west elevation of Plot 4, the roost contains 1 bat (Curtis Ecology 2013).
- Over sixty Natterer's bats were observed roosting in the porch of the adjacent church (Curtis Ecology 2013).

4.2.2 The following roosts have been recorded during 2015:

- Common pipistrelle day roost located in a gap adjacent to a timber door frame on the west elevation of Plot 4, the roost contains 1 bat (Julian Hall Environmental Resource Management, 2015).
- Natterer's day roost located above the eaves on the west elevation of plot 4, the roost contains 2 bats (Julian Hall Environmental Resource Management, 2015).

- Common pipistrelle day roost located in a gap in the external brickwork on the west elevation of Plot 4, the roost contains 1 bat (Julian Hall Environmental Resource Management, 2015).
- Twenty brown long-eared bats were observed roosting in the adjacent church (Julian Hall Environmental Resource Management, 2015).

4.2.3 Wold Ecology employees, field surveyors and network of associate ecologists have recorded brown long-eared *Plecotus auritus*, noctule *Nyctalus noctula*, Natterer’s *Myotis nattereri*, Daubenton’s *Myotis daubentonii*, whiskered *Myotis mystacinus*, 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 1500 bat activity surveys.

4.2.4 There are no known Natural England development licenses relating to bats within 2km of the Application Site (source – www.magic.gov.uk).

4.2.5 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
July 2021	<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	Little Kelk Farm, Little Kelk	E. Yorkshire	TA 10080 60650	Day	1
August 2021	<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	Little Kelk Farm, Little Kelk	E. Yorkshire	TA 10080 60650	Day	1
August 2021	<i>Myotis nattereri</i>	Natterer’s	Little Kelk Farm, Little Kelk	E. Yorkshire	TA 10080 60650	Maternity	37
August 2021	<i>Myotis nattereri</i>	Natterer’s	Little Kelk Farm, Little Kelk	E. Yorkshire	TA 10080 60650	Day	8
June 2021	<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	Lowfield Farm, Kelk	E. Yorkshire	TA 10289 58306	Day x 5	5
May 2021	<i>Myotis mystacinus</i>	Whiskered	Lowfield Farm, Kelk	E. Yorkshire	TA 10289 58306	Day	1
May/June 2016	<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	Gembling	E. Yorkshire	TA 10273 56945	Day x 5	10
2010	<i>Pipistrellus pipistrellus</i>	Common Pipistrelle	Foston Church	E. Yorkshire	TA 10053 55820	Day x 5	7

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

4.3.2 Summary of daytime inspection and visual survey

Date of each survey visit	Structure reference/location	Equipment used/available	Weather
17/12/21	Plots 1 - 5 Farm house Nissen Hut	Binoculars, 1million candle power clu-lite torch, micro Dart endoscope, Dewalt DW03050 Laser Measure. 3.9m telescopic ladders Phantom 4 Drone	5°C, 10% 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 - 2019-44215-CLS-CLS and RC027) – 17 th December 2021			

4.3.3 Personnel

Chris Toohie MCIEEM	Project Manager of Wold Ecology with over 15 years' experience surveying bats. Chris has conducted over 900 bat activity surveys since 2006, held over 135 Natural England development licenses and is one of only 221 (November 2021) Natural England Registered Consultants who can hold a Bat Mitigation Class Licence.	RC027 and 2019-44215- CLS-CLS
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5.0 RESULTS

5.1 Habitat description

5.1.1 The Application Site is located on the south eastern boundary of Harpham village, in a rural location. The Application Site is less than 1 ha, and the studied buildings are immediately surrounded by arable, rough grassland, residential dwellings with mature private gardens, an orchard and a cemetery within a former farm yard that has been inactive for a number of years. There are no other structures within the red line boundary which have bat roosting potential.

5.1.2 Adjacent Landscapes

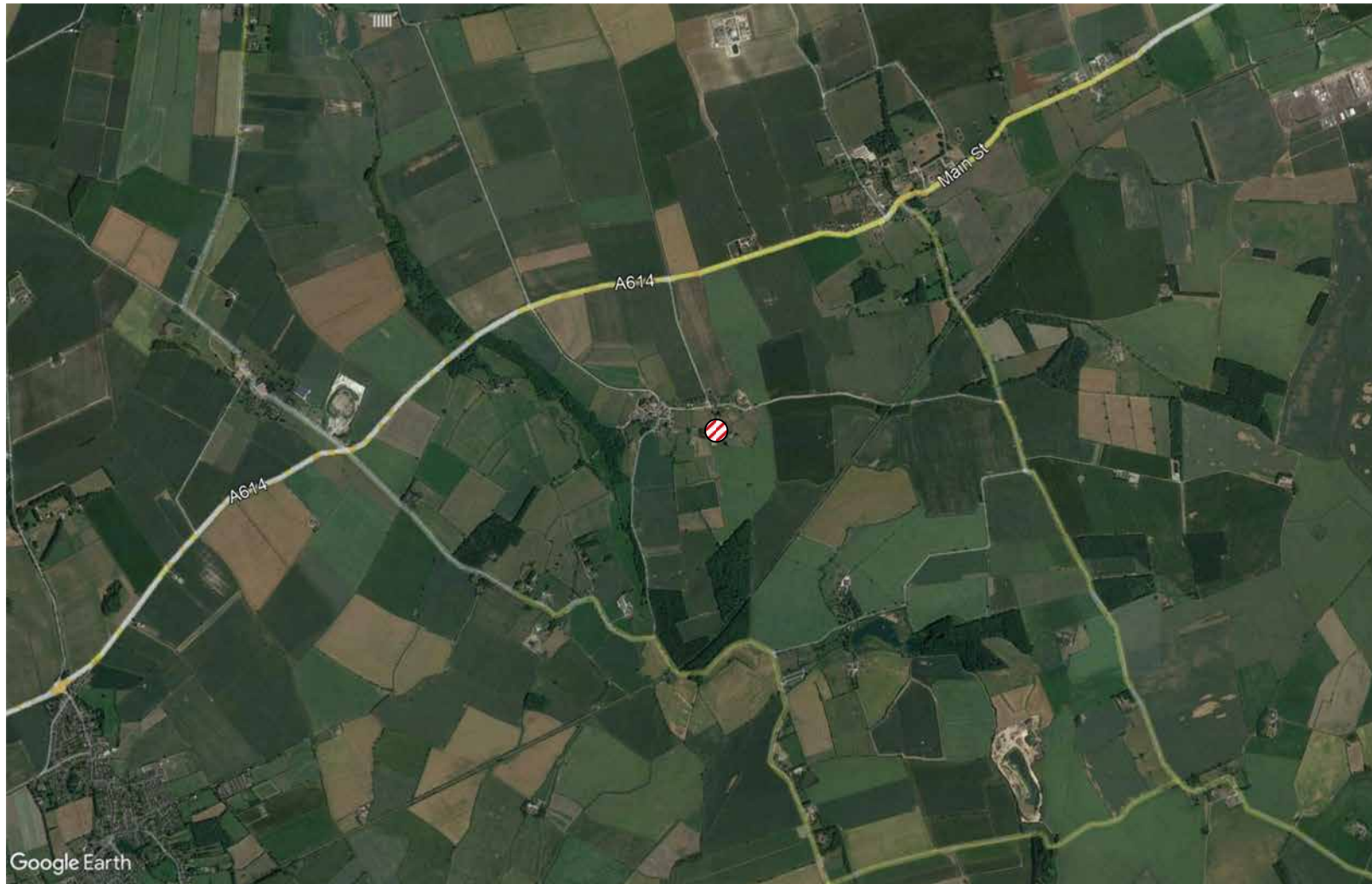
5.1.2.1 The village of Harpham is surrounded mixed agricultural land dominated by arable with grazed pastures. Woodland cover within 2km is good and occurs as shelterbelts adjacent to farms and small holdings, riparian woodland, semi natural woodland and plantations. Habitat connectivity is provided by hedgerows that bound most arable fields, scrub, watercourses and woodland cover.

5.1.2.2 Wold Ecology concludes that the adjacent habitats could be used by small numbers of commuting and foraging bats. These habitats are not extensive and are similar to surrounding mature private gardens/arable land and consequently, the Application Site and immediately adjacent habitats are not considered to be integral to the favourable conservation 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
- Mature trees and woodland
- Ash Nursery
- Bracey Garth Plantation
- Church Wood
- Lingholmes Plantation
- Jerry Plantation
- New Paradise Plantation
- Turtle Hill Wood
- Danes Graves Wood
- Skillings Wood
- Hords Covert
- Arable
- Mature private gardens
- Kelk Beck
- Lowthorpe Beck
- Lingholmes Beck
- Rattling Water
- Gransmoor Beck
- Kelk Lake
- Grazed pasture



NORTH 

Scale: 1:25,000

Drawing title:
Aerial Photograph

KEY

 Application Site

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5.2 Building descriptions

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

- a. **Plot 1** - is single storey and comprises brick walls and a pitched roof covered with pan tiles. The roof is supported by smooth sawn timbers and is underdrawn. The building is not used.
- b. **Plot 2** - is two storey and comprises brick walls and a pitched roof covered with pan tiles. The roof is supported by smooth sawn timbers and is underdrawn with a plastic membrane. The building is not used.
- c. **Plot 3** – the ‘L’ shaped building is single storey and comprises brick walls and a pitched roof covered with pan tiles although some sections of roof have been removed/collapsed. The roof is supported by smooth sawn timbers and is underdrawn. The building is not used.
- d. **Plot 4** - is primarily two storey and comprises brick walls and a pitched roof covered with pan tiles. The roof is supported by smooth sawn timbers and is underdrawn with timber slats and breathable membrane. The building is not used.
- e. **Plot 5** – the ‘L’ shaped building is single storey and comprises brick walls and a pitched roof covered with pan tiles. The roof is supported by smooth sawn timbers and is underdrawn. The building is not used.
- f. **Nissen Hut** – is single storey and comprises a steel frame and a curved roof. The walls and roof comprise corrugated tin sheets and the building is unused.
- g. **Farm house** - is two storey and comprises brick walls and a pitched roof covered with pan tiles. The roof is supported by smooth sawn timbers and is underdrawn with a bitumen felt product. The dwelling is not occupied.

5.2.2 **Plot 1** (see 5.5 plates 1 - 3) - the following roosting opportunities were present within the fabric of the building:

- There are no gaps beneath the ridge tiles, and none are missing.
- 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 external brick work.
- Gaps adjacent to timber doors and timber windows.
- Gaps above the internal wall plates.
- Gaps between timber slats and pan tiles above.
- Gaps in the internal brick work.
- Access into the building is provided by open doors and windows.
- There was no open doors/window access into the building.
- No evidence of bats was observed.
- The building has been assessed as having a MODERATE SUITABILITY to support bats.

5.2.3 **Plot 2** (see 5.5 plates 4 and 5) - the following roosting opportunities were present within the fabric of the building:

- 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 external brick work.
- Gaps adjacent to timber doors and timber windows.
- Gaps adjacent to first floor ceiling beams.
- Gaps above the internal wall plates.
- Gaps between timber slats/plastic membrane and pan tiles above.
- Gaps in the internal brick work.
- Access into the building is provided by open doors and windows.
- No evidence of bats was observed.
- The building has been assessed as having a MODERATE SUITABILITY to support bats.

5.2.4 **Plot 3** (see 5.5 plates 6 - 9) - the following roosting opportunities were present within the fabric of the building:

- Gaps beneath the ridge tiles where mortar has been displaced.
- Missing ridge tiles.
- Loose fitting pan tiles with gaps beneath.
- Missing/slipped pan tiles.
- Gaps above the eaves.
- Missing mortar in the external brick 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 brick work.
- Access into the building is provided by the open north elevation.
- No evidence of bats was observed.
- The building has been assessed as having a MODERATE SUITABILITY to support bats.

5.2.5 **Plot 4** (see 5.5 plates 10 - 15) - the following roosting opportunities were present within the fabric of the building:

- Gaps beneath the ridge tiles where mortar has been displaced.
- 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 external brick work.
- Gaps adjacent to timber doors and timber windows.
- Gaps above the internal wall plates.
- Gaps above the ridge beam.
- Gaps between timber slats/breathable membrane and pan tiles above.
- Gaps in the internal brick work.
- Access into the building is provided by open doors and windows.
- There was no open doors/window access into the building.
- No evidence of bats was observed.
- The following evidence of bats was observed:

- Six bat droppings were observed on the ground floor of the building. The location of the bat droppings suggests a light sampling bat/a roost located above the ridge or internal wall plate.
- The building has been assessed as having a HIGH SUITABILITY to support bats in numerous locations.

5.2.6 **Plot 5** (see 5.5 plates 16 - 18) - the following roosting opportunities were present within the fabric of the building:

- Gaps beneath the ridge tiles where mortar has been displaced.
- There are no missing ridge tiles.
- Loose fitting pan tiles with gaps beneath.
- Gaps in missing mortar below gable tiles.
- Gaps above the eaves.
- Missing mortar in the external brick 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 brick work.
- Access into the building is provided by the open south and east elevations.
- No evidence of bats was observed.
- The building has been assessed as having a MODERATE SUITABILITY to support bats.

5.2.6 **Nissen Hut** (see 5.5 plates 19 and 20) - no roosting opportunities were present within the fabric of the hut due to the following:

- The steel frame and corrugated tin sheets were tight fitting.
- The single skin block work foundation structure ensures that there are no gaps within a wall cavity.
- No evidence of bats was observed.
- The hut has been assessed as having a NEGLIGIBLE SUITABILITY to support bats.

5.2.7 **Farm house** (see 5.5 plates 21 - 23) - the following roosting opportunities were present within the fabric of the building:

- There are no gaps beneath the ridge tiles, and none are missing.
- Loose fitting pan tiles with gaps beneath.
- Lead flashing is tight fitting.
- Gaps above the eaves.
- There are no gaps in the external mortar suitable for roosting bats.
- The timber doors and timber window frames were tight fitting.
- Gaps above the internal wall plates were thick with cobwebs.
- Gaps between felt and pan tiles above.
- Gaps in the internal brick stone work.
- There was no open doors/window bat access into the building.
- No evidence of bats was observed.
- The building has been assessed as having a LOW 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		
Plot 1			X	
Plot 2			X	
Plot 3			X	
Plot 4				X
Plot 5			X	
Nissen Hut	X			
Residential House		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.

5.4 Results of Activity Surveys

5.4.1 There is no current (with the previous 2 years) bat activity survey data available for this site.

5.5

Photographs of key features – December 2021

Plate 1 – Plot 1, east elevation and south gable



Plate 2 – Plot 1, west elevation and south gable.



Plate 3 – Plot 1, internal roof void.



Plate 4 – Plot 2, west elevation and north gables.



Plate 5 – Plot 2, east and south elevations.



Plate 6 – Plot 3, east and south elevations.



Plate 7 – Plot 3, west and south elevations.



Plate 8 – Plot 3, east and north elevations.



Plate 9 – Plot 3, internal roof structure.



Plate 10 – Plot 4, east elevation.



Plate 11 – Plot 4, east elevation and south gable.



Plate 12 – Plot 4, west elevation and north gable.



Plate 13 – Plot 4, west elevation and south gables.



Plate 14 – Plot 4, internal roof void



Plate 15 – Plot 4, bat droppings observed on ground floor



Plate 16 – Plot 5, south and east elevations.



Plate 17 – Plot 5, east elevation and south gable.



Plate 18 – Plot 6, internal roof void



Plate 19 – Nissen hut



Plate 20 – Nissen hut internal roof structure.



Plate 21 – Farm house, north elevation and east gable.

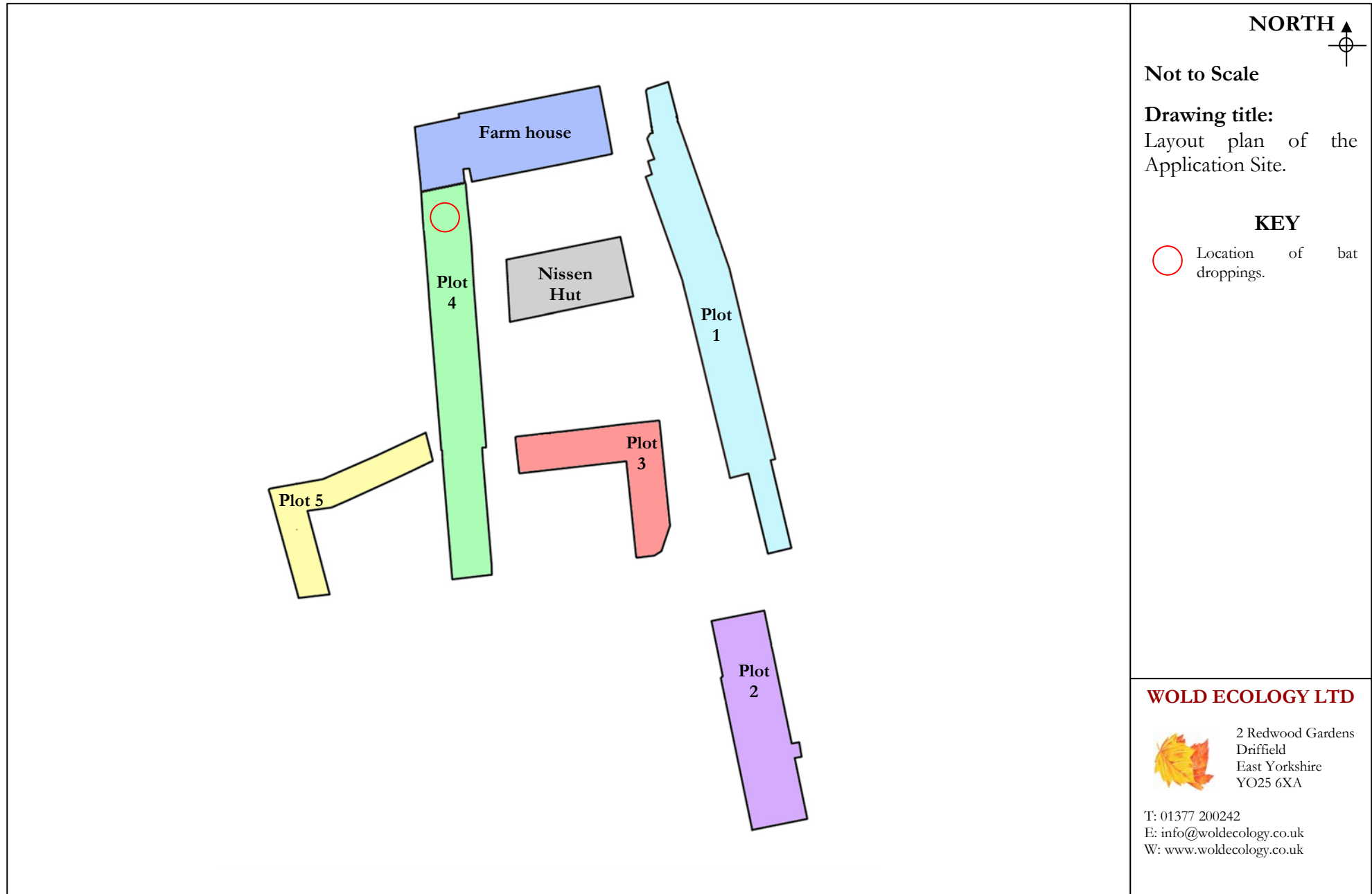


Plate 22 – Farm house, south elevation and east gable.



Plate 23 – Farm house, internal roof void.





NORTH ↑

Not to Scale

Drawing title:
Layout plan of the Application Site.

KEY

○ Location of bat droppings.

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NORTH 

Scale unknown

Drawing title:
Aerial photograph of the
buildings – Phantom 4K

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5.6 Summary of field surveys conducted in 2021

Date	Type of survey	Results	Building Dimensions (m)		
			L	W	H
17/12/21	Habitat assessment	Wold Ecology concludes that the adjacent habitats could be used by small numbers of commuting and foraging bats. These habitats are not extensive and are similar to surrounding mature private gardens/arable land and consequently, the Application Site and immediately adjacent habitats are not considered to be integral to the favourable conservation status of local bat populations.			
17/12/21	Visual inspection.	<p><i>Plot 1</i></p> <p>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 1 - 3).</p>	43	5.4	5.2
		<p><i>Plot 2</i></p> <p>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 4 and 5).</p>	18.8	6.1	5.0
		<p><i>Plot 3</i></p> <p>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 6 - 9).</p>	18.3	3.9	4.1
		<p><i>Plot 4</i></p> <p>The following evidence of bats was observed:</p> <ul style="list-style-type: none"> Six bat droppings were observed on the ground floor of the building. The location of the bat droppings suggests a light sampling bat/a roost located above the ridge or internal wall plate. <p>Plot 4 has been assessed as having HIGH SUITABILITY to support bats, due to the presence of bat droppings, historic roost sites and other features which have potential to provide roosting opportunities for bats (see 5.3 plates 10 - 15).</p> 	51.8	4.9	6.8
		<p><i>Plot 5</i></p> <p>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 16 - 18).</p>	20.5	4	2.9

		<p><i>Nissen Hut</i></p> <p>There were no signs of roosting bats or bat activity, and the building has no features to support roosting bats. Consequently, the building has a NEGLIGIBLE SUITABILITY to support bats (see 5.3 plates 19 and 20).</p>	15.5	7.6	4.1
		<p><i>Farm house</i></p> <p>There were no signs of roosting bats or bat activity, and the building has few features to support roosting bats. Consequently, the building has a LOW SUITABILITY to support bats (see 5.3 plates 21 - 23).</p>	17.9	8.7	3.3
17/12/21	Hibernation	No hibernating bats were observed during the endoscope inspection.			

5.7 Interpretation and Evaluation of Survey Results

5.7.1 Presence/absence

5.7.1.1 The information collected to date is based on the findings of one visit to the site in December 2021. Evidence of bats were observed in plot 4 during the field survey and historic bat surveys have identified roosting bats in this building.

5.7.1.2 From the current results, it is not possible to fully determine the species, number of bats or whether bats are currently using plot 4, or whether bats are using plots 1, 2, 3 and 5 as a roost. The presence of bat droppings, the age, composition of the aforementioned buildings suggests that there is an increased potential for bats to be present. These features include:

- Gaps beneath pan tiles and missing tiles
- Missing mortar beneath ridge tiles
- Gaps behind cement fibre skirts on the gables.
- Missing mortar in the brick work
- Subsidence cracks
- Gaps above the eaves and internal wall plates
- Gaps adjacent to timber window/door frames
- Gaps and crevices in the roof structure
- Gaps between roof tiles and felt
- Gaps between roof tiles and timber slats
- Presence of ivy

5.7.1.3 In addition, the local surrounding habitat composition and historical information suggests that there is an increased potential for bats to be present at some point during spring, summer, or autumn months.

5.7.1.4 Currently, from the data collected during one visit, the likelihood that bats are present within the Nissen Hut to be demolished and the internal components of the farm house which will be refurbished is negligible. This is supported by the fact that the buildings are in good condition with no roosting opportunities for bats observed. The daytime assessment detected no signs of bat usage or activity and consequently, the impact to bats from the demolition of the Nissen hut and refurbishment of the farm house is considered to be **negligible**.

5.7.2 Site Status Assessment

- 5.7.2.1 The assessment is based on one daytime survey conducted in December. During this time of year bats are usually in hibernation, therefore, bats are inactive. Natural England and the Bat Conservation Trust state that the optimum bat activity survey season is early May to late August although bat activity surveys during late April, September and early October may also provide useful survey data in addition to optimum season bat activity surveys. Consequently, it is not possible to fully determine whether bats are actually roosting in plots 1 - 5. Due to the presence of bat droppings in plot 4 and features likely to support bats, plots 1 - 5 have been assessed as having a HIGH/MODERATE SUITABILITY for roosting bats.
- 5.7.2.2 However, due to the absence of suitable features likely to support bats, the Nissen hut and the farm house (excluding the roof structure) have been assessed as having a NEGLIGIBLE SUITABILITY for roosting bats.
- 5.7.2.3 Although December is an optimum time of year to conduct hibernation bat surveys, it can be difficult to detect bats which are usually tucked away deep in wall cavities, crevices where winter temperatures are more stable or located at heights unsafe for the field surveyor to access. The conditions needed by bats for hibernation require the maintenance of a relatively stable, low temperature (2 – 6°C). Suitable sites include; old trees, caves, cellars, tunnels, and icehouses, however species such as pipistrelle bats are likely to be detected in deep crevices on the sheltered external walls of buildings at higher winter temperatures.
- 5.7.2.4 Based on the evidence collected to date, it is possible that plots 1 – 5 at Manor Farm could support individual or significant numbers of bats. These roosts could be:
- Maternity.
 - Day.
 - Night.
 - Transition.
 - Lekking (mating).
- 5.7.2.5 Wold Ecology considers that the studied buildings at Manor Farm are unlikely to support hibernating bats for the following reasons:
- The buildings are currently unused and are not heated.
 - The body temperature of hibernating bats is near the ambient temperature. The composition of the buildings will not ensure that consistent temperatures of between 0°C and 5°C will be maintained.
 - The brickwork and pan tile structure of the buildings ensure that fluctuating temperatures occur; this can result in shorter bouts of hibernation or temperatures too cold for bats survive. Arousals represent 80–90% of the total cost of hibernation, because bats must raise their body temperature to euthermic levels (Thomas et al. 1990).
 - No hibernating bats were observed during the December 2021 endoscope survey.

5.7.3 Constraints

- 5.7.3.1 Evidence of bats may have been removed by winter autumn weather conditions. Mid winter is difficult time to observe evidence of bat usage as snow, ice, wind, and rain usually remove them.

- 5.7.3.2 Bat activity surveys between the months of May and August have not been undertaken since 2015.

6.0 IMPACT ASSESSMENT – in the absence of mitigation

- 6.1 It is not always possible to predict the full pre-, mid-development and long-term impacts on bat populations based on a single daytime survey conducted in December. Plots 1 - 5 have been assessed as having a moderate/high suitability for roosting bats (see 9.2.4). This has been determined by the absence of signs of bat activity and usage on site but the presence of features likely to support a number of roosting bats (see section 5.2). These features include:

- Gaps beneath pan tiles and missing tiles
- Missing mortar beneath ridge tiles
- Gaps behind cement fibre skirts on the gables.
- Missing mortar in the brick work
- Subsidence cracks
- Gaps above the eaves and internal wall plates
- Gaps adjacent to timber window/door frames
- Gaps and crevices in the roof structure
- Gaps between roof tiles and felt
- Gaps between roof tiles and timber slats
- Presence of ivy

- 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 the buildings which will cause an obstruction to the access points = minor negative at a site level.
- Roof stripping could kill/injure bats if they are resting between tiles 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 demolition and building work may impact on roosting bats that may be present = major negative at a site level.
- The works involve re-roofing the roof under which may be roosting, if bats are resting on the ridge beam, there is the potential for disturbing bats = moderate negative at a site level.

- 6.3 **Long-term impacts: roost modification**

- 6.3.1 No modification of roosts will occur.

- 6.4 **Long-term impacts: roost loss**

- 6.4.1 The long-term impacts of potential roost losses are unknown until further activity surveys are completed.

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

6.6.1 The interference impacts are unknown until further activity surveys are completed.

6.7 Further survey recommendations

6.7.1 The current information obtained is based on a desk top study, visual inspection and a daytime assessment survey conducted in December.

6.7.2 In order to prevent any potential impacts occurring to bats present, it is recommended further activity surveys are undertaken. This will provide further information on bats at the site and should target all elevations of plots 1 - 5.

6.7.3 The level of survey to give confidence in a **negative result** is summarised as (Bat Surveys for Professional Ecologists, 3rd Edition. Bat Conservation Trust, 2016):

Low Roost Suitability	Moderate Roost Suitability	High Roost Suitability
One survey visit. One dusk emergence or dawn re-entry survey.	Two separate survey visits. One dusk emergence survey and a separate dawn re-entry survey.	Three separate survey visits. At least one dusk emergence survey and a separate dawn re-entry survey. The third visit could either be dusk or dawn.
May to August.	May to September with at least one survey between May to August.	May to September with at least two surveys between May to August.

Activity surveys should be at least 2 weeks apart. Moderate buildings will be assessed according to site location and habitats within the locality and if there is a possibility that late emerging bats are present, a dawn survey will be more appropriate.

6.7.4 The Application Site requires the following surveys between May and late September:

	Emergence (dusk)			Re-entry (dawn)		
	LOW	MOD	HIGH	LOW	MOD	HIGH
Plot 1		x 1			x 1	
Plot 2		x 1			x 1	
Plot 3		x 1			x 1	
Plot 4			x 2		x 1	
Plot 5		x 1			x 1	
Farm house	Negligible building - No further surveys recommended unless roof replacement is required.					
Nissen hut	Negligible building - No further surveys recommended.					

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 development licence from Natural England. Under the Wildlife and Countryside Act (1981) and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019, it is an offence for anyone without a licence to:

- Deliberately take, injure or kill a wild bat
- Intentionally or recklessly disturb a bat in its roost or deliberately disturb a group of bats.
- Damage or destroy a place used by bats for breeding or resting (roosts) (even if bats are not occupying the roost at the time)
- Possess or advertise/sell/exchange a bat of a species found in the wild in the EU (dead or alive) or any part of a bat.
- Intentionally or recklessly obstruct access to a bat roost.

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 **Additional bat activity survey work between May and August will be required to determine the impact on bat populations. This will result in one of the following ways forward with the proposed development. The bat activity surveys should target plots 1 - 5.**

7.1.5 If a bat roost is identified and the proposed development activity will result in roost destruction or disturbance to the roost, it will be necessary to obtain a Natural England development licence prior to site works. The licence application process currently requires the input of a qualified bat ecologist/consultant and includes:

- Up to three bat activity surveys between May and September to support the licence application. The submission of a licence to capture, disturb and/or destroy the roosts or resting places of bats.
- 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 bat survey was undertaken. Details of any changes to conditions and habitats and/or structures on site will be documented.
- 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 (Amendment) (EU Exit) Regulations 2019, 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).

7.1.6 It is possible that the Application Site meets the criteria for a Natural England Bat Mitigation Class Licence which was launched in spring 2015 (previously Bat Low Impact Class License) and trials have successfully reduced the burden on the customer by reducing the application paper work, scrutiny of the three tests prior to a licence being granted and speed in which a licence decision is determined. It also enabled a more proportionate approach to licensing to be taken for certain case types which will reduce the delays if roosting bats are present. The licence application process currently requires the input of a qualified bat ecologist/consultant and includes:

- The Bat Mitigation Class Licence requires 3 surveys to be completed within the previous activity survey season.
- It is designed for low impact and low numbers of roosting bats only, e.g. not maternity roosts or hibernacula. The development must also not affect more than three separate roost sites of the seven most common and widespread bat species. The low impact bat class license negates the statutory 6 to 10 week period for a normal license to be considered, although there is still a waiting period of around 5 to 15 working days (the average during the trial was 6 working days).
- 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.
- Chris Toohie is one of only 221 bat ecologists (November 2021) in the UK that can hold a Bat Mitigation Class Licence.
- For additional information on licences please refer to Natural England Guidance Leaflet WML-G12 (see www.naturalengland.org).

7.1.7 The Local Authority must be satisfied that the proposed development must meet a purpose of the three tests detailed in section 3.3.3.

- 7.1.8 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 to incorporate a bat loft and to incorporate permanent roosting opportunities (bat tiles, bat boxes, eave designs etc.)
 - Altering the timing of the works
 - The creation of replacement roosts and/or habitats.

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. Maternity roosts of common and widespread species require 'more or less like for like' replacement with constraints on timing (Bat Mitigation Guidelines, 2004). Bat boxes are inappropriate substitutes for significant roosts in buildings and do not constitute 'like for like' replacement.
 - 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.

- 7.3 If no bat roosts are detected during the bat activity surveys, building work can commence with adherence to the following provisional method statement (see 7.4 below). Section 7.4 identifies provisional working practices and precautions necessary to avoid injury or death to any bats that may be present in the buildings.

7.4 Provisional Method Statement – subject to summer bat activity surveys

- 7.4.1 **This statement should be copied to contractors and all those involved with tile removal, timber treatment, roofing, structural works, demolition, new glazing and building works. These are the provisional recommendations and are subject to amendments following further field surveys during late spring/summer months. Even if bats are not found, building works should occur as though bats could be present.**

7.4.2 Timing

- 7.4.2.1 There will be no mandatory timing constraints if roosting bats are not found during the activity surveys or if the site supports summer roosts with low numbers of bats present.

- 7.4.2.2 In the unlikely event that a maternity roost is present on site, the optimum period for carrying out works is 1st October until 15th 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.

7.4.3 Locating Bats

7.4.3.1 Bats are by nature highly secretive, mobile mammals; therefore, bats and their roosts can be very difficult to detect. A pipistrelle bat is capable of roosting in a crack measuring 20mm. In order to reduce any unnecessary disturbance, injury, or death of any late discoveries of individual bats roosting in the buildings the following procedures should be implemented. Common roosts locations must be checked. These include:

- Gaps beneath pan tiles and missing tiles
- Missing mortar beneath ridge tiles
- Gaps behind cement fibre skirts on the gables.
- Missing mortar in the brick work
- Subsidence cracks
- Gaps above the eaves and internal wall plates
- Gaps adjacent to timber window/door frames
- Gaps and crevices in the roof structure
- Gaps between roof tiles and felt
- Gaps between roof tiles and timber slats
- Presence of ivy

7.4.4 Working Approach

7.4.4.1 Careful removal by hand of all fittings and fixtures as describe in 7.4.3. Wall cavities should be checked prior to demolition and pointing.

7.4.4.2 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.

7.4.4.3 In the event that bats are discovered, the following will be implemented:

- Immediately stop the work that you are undertaking.
- Do not expose the bat or cause it to fly out of the roost on its own accord.
- Contact Wold Ecology on 01377 200242 or 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 personnel.
- Grounded bats must be carefully placed in a lidded, ventilated box with a piece of clean cloth and a small shallow container with some water. The box must be kept in a safe and quiet location.
- Any underweight or injured bats must be taken into temporary care by an experienced bat carer and looked after until such time that the bat can be transferred to a suitable replacement roost at the same site, or weather conditions are suitable for release at the same site.

7.4.4.5 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.

7.4.4.6 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^oC) for them to be released at dusk in the mitigation area.

7.5 Mitigation

7.5.1 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 through the provision of roosting opportunities. There should be a net gain in roosting opportunities post development.

7.6 Bat Loft

7.6.1 A bat loft has currently not been recommended for this site.

7.7 Bat boxes

7.7.1 Specially designed bat boxes can be located on site and are available from Wold Ecology or online. Schwegler Bat Boxes are recommended and well tested boxes and provide additional roost habitats:

- 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.
- The **1FQ** is an attractive box designed specifically to be fitted on the external wall of a house, barn, or other building. Equally appealing to bats as a roost or a nursery, it features a special porous coating to help maintain the ideal temperature inside along with a rough sawn front panel to enable the bats to land securely.
- Bat Tube (**1FR** and **2FR**) system. The tube is designed to meet behavioural requirements of the types of bats that roost in buildings i.e. pipistrelle spp. This design can be installed flush to external walls and beneath a rendered surface.
- Alternative bat boxes are available, these should comprise woodcrete and not timber.

7.7.2 The majority of these 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.de and www.bct.org.uk.

7.7.3 Wold Ecology recommends that at least 3 bat boxes are located on new buildings or trees on site. Bat boxes should be erected on south, east or west elevations; 3-5 metres above ground level or close to roof lines.

7.8 Lighting

7.8.1 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).

7.8.2 It is recommended that a lighting consultant is employed to design a lighting plan based on the following principles:

- 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.
- 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 1 lux at ground level.
- Aim for lighting column of 5m or less, hooded and cowled to prevent light spill, for main lighting columns.
- All luminaires should lack UV elements when manufactured. Metal halide, fluorescent sources should not be used.
- LED luminaires should be used where possible due to their sharp cut-off, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (ideally <2700Kelvin) should be adopted to reduce blue light component.
- Luminaires should feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats (Stone, 2012).
- Internal luminaires can be recessed where installed in proximity to windows to reduce glare and light spill.
- The use of specialist bollard or low-level downward directional luminaires to retain darkness above can be considered.
- Only luminaires with an upward light ratio of 0% and with good optical control should be used.
- Luminaires should always be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting should be set on motion-sensors and short (1min) timers.
- As a last resort, accessories such as baffles, hoods or louvres can be used to reduce light spill and direct it only to where it is needed.
- Light spill can be successfully screened through soft landscaping and the installation of walls, fences and bunding

7.8.3 At this site, new lighting design will ensure lights will **not** be mounted where they will shine directly on to bat boxes, or the surrounding cemetery/church/hedgerows habitat used by foraging and commuting bats. A light intrusion lux level besides the church/hedgerows along the west and southern boundaries will be 1 lux or below.

7.9 Timber treatment

7.9.1 It is good practice, where bats may come into contact with roof timbers, to carry out timber treatment 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. A list of Natural England approved paints and timber treatments is available at <https://www.gov.uk/guidance/bat-roosts-use-of-chemical-pest-control-products-and-timber-treatments-in-or-near-them>

8.0 BIRDS

8.1 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.

8.2 The daytime assessment identified whether the studied buildings had any signs of residency and/or barn owl usage. Specifically, the visual survey involved:

- An assessment of the suitability of buildings or stone feature to enable access for breeding barn owls.
- A thorough check for pellets, feathers or signs of old nest remains in the form of pellet debris and/or old broken egg shells.

8.3 The visual inspection also recorded any other visible active/disused nests and bird activity within the buildings.

8.4 Field survey results

8.4.1 There was no evidence of barn owls *Tyto alba* roosting in the buildings. No further surveys are recommended.

8.4.2 The following nests were observed:

Species/nest type	Number	Location	Comment
Swallow <i>Hirundo rustica</i>	4	Plot 1	Inactive
Small passerine*	2	Plot 4	Inactive
Large nests**	2	Plot 4	Inactive

* Small passerine nest primarily moss, feathers, leaves and vegetation suitable for tits, blackbird *Turdus merula*, robin *Erithacus rubecula*, wren *Troglodytes troglodytes* etc.

** Larger nest primarily twigs suitable for wood pigeon *Columba palumbus*, feral pigeon *Columba livia*, collared dove *Streptopelia decaocto*, Jackdaw *Corvus monedula* etc.

8.5 Biodiversity Gains and Recommendation

8.5.1 All nests should remain undisturbed and intact until after the breeding bird season – mid February to early September. Any destructive building works (e.g. demolition, roof stripping, internal conversion, pointing of masonry etc.) and removal of trees, shrubs, scrub and tall vegetation should be undertaken outside of the bird nesting season which is between the months of mid-September and early February inclusive or be carefully checked by an ecologist to confirm no active nests are present. If nesting birds are found during the watching brief, destructive works will need to stop until the young have fledged.

8.5.2 In order to increase nesting opportunities for birds, it is recommended that Schwegler bird boxes are erected throughout the site. Local Authority guidance recommends that 25% of houses within a development should contain a bird box.

8.5.3 Bird boxes will target species of conservation concern. A summary of recommended bird boxes are listed below:

Name	Description	Number
Schwegler nest box 1B	Tree box	1
Schwegler nest box 2GR	Tree box	1
Schwegler swift box #16S	Building box for eaves	2
Schwegler sparrow terrace #1SP	Brick building box	2

- 8.5.4 Boxes should be placed so that the entrance does not face the prevailing wind, rain and strong sunlight. The sector from north to south east should be used, with south facing boxes positioned in more shaded areas. Boxes should be positioned away from the damp side of the tree trunk, usually told by algae, lichen and moss growth. Boxes should also be angled downwards to stop rain blowing into them.
- 8.5.5 Many species will use boxes at a wide variety of heights however to give the box protection in areas with a lot of human or mammalian predator activity they should be placed approximately 3-4 metres above ground level. A clear flight path should be available to and from the nest box.

9.0 REFERENCES

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10.0 APPENDICES

10.1 Background to Bats - Bat Biology.

- 10.1.1 Bats roost in a variety of 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).
- 10.1.2 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 bad 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.
- 10.1.3 Bats do not stay in the same roost throughout the year. They have different requirements of roosts at different 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 consist 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.
- 10.1.4 Typical roost sites 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.
- 10.1.5 The conditions needed by bats for hibernation require the maintenance of a relatively stable low temperature (2 – 6^o). Suitable sites include; old trees, caves, cellars, tunnels, and icehouses.
- 10.1.6 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 different species of bat, although there is often niche separation.
- 10.1.7 Bats have a complex social structure based on ‘meta populations’ and also utilise other transitional or intermediate roost sites. The several different 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.

10.1.8 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.

10.1.9 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.

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

10.1.11 A summary of the legal protection afforded to bats under both European and British law is provided by the Bat Conservation Trust (BCT, 2010): ‘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 (Amendment) (EU Exit) Regulations 2019. 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.’
- 10.1.12 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.
- 10.1.13 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.
- 10.1.14 ‘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 (Amendment) (EU Exit) Regulations 2019. This includes all developments and engineering schemes, regardless of whether or not they require planning permission.
- 10.1.15 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.

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

- 10.2.1 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 Country 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.

10.3 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.