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Hotham Hall, Hotham

Bat Survey, August 2023.

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1.0 EXECUTIVE SUMMARY

1.1 In April 2022, Wold Ecology was commissioned by Hotham Hall Estate Ltd to undertake a bat survey at Hotham Hall. The site is located at approximate national grid reference SE 89595 33728 in Hotham, East Yorkshire.

1.2 The field surveys during May 2022, July 2022, August 2022 and August 2023 identified the following roosts:

Structure/ reference	Species	Count/ estimate	Roost location	Site status assessment	Conservation significance of roost	Use and importance of the site throughout the year
Stable 2 Roost 1	Soprano pipistrelle	3	Beneath a ridge tile	Day roost	LOW	No evidence to suggest a maternity roost or significant numbers of bats. Summer use.
Stable 2 Roost 2	Soprano pipistrelle	1	Above eaves	Day roost	LOW	
Stable 2 Roost 3	Common pipistrelle	3	Above eaves	Day roost	LOW	
Stable 2 Roost 4	Common pipistrelle	2	Above eaves	Day roost	LOW	
Stable 2 Roost 5	Common pipistrelle	1	Beneath a lead ridge	Day roost	LOW	
Stable 2 Roost 6	Common pipistrelle	1	Roof timber and external wall	Day roost	LOW	
Stable 2 Roost 7	Common pipistrelle	1	Above eaves	Day roost	LOW	
Stable 2 Roost 8	Daubenton's	6	Beneath lead flashing	Day roost	LOW	
Stable 2 Roost 9	Daubenton's	1	Beneath lead flashing	Day roost	LOW	
Stable 2 Roost 10	Daubenton's	1	Beneath lead ridge	Day roost	LOW	
Stable 2 Roost 11	Brown long- eared	1	Adjacent to ridge	Day roost	LOW	

1.3

The field survey results are summarised below:

		Application Site Status
<p>Natural England Development License Required prior to building works – Stable 2</p>	Bats	<p>As stable 2 supports common pipistrelle, soprano pipistrelle, Daubenton's and brown long-eared day roosts, any works that will disturb, modify or permanently lose the roosts <u>will</u> require a development licence from Natural England. It is also possible that individual bats could roost in other parts of stable 2 and or wider site at other times of year. A licence will be obtained prior to the following works commencing on stable 2:</p> <ul style="list-style-type: none"> • Exclusion of bats and destructive searches by a bat licensed ecologist • Roof stripping and maintenance work • Erection of scaffolding adjacent to the stable and within 5m of a roost • Pointing of masonry • Soft strip • New windows and doors • Internal conversion <p>The roosts will be disturbed and destroyed as part of the proposed re-roofing, conversion and structural repair work to the stable. Details of appropriate mitigation to be included in the Natural England licence application are outlined in section 7.0.</p>
<p>Proceed with caution, timing constraints</p>	Birds	<p>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).</p>
<p>No roosting bats, Method Statement approach (Section 7.0) – Stable 1 Stable 3 Pool House Outbuilding Trees</p>	Bats	<p>The field surveys during May 2022, July 2022, August 2022 and August 2023 identified no evidence of roosting bats in stable 1, stable 3, pool house, outbuilding or studied trees. As no bats or signs of bats were recorded in stable 1, stable 3, pool house, outbuilding or studied trees, a Natural England European Protected Species development license is not required. The method statement outlined in section 7.11 details the best working practice and precautions to be taken to avoid breaking the law and must be followed and provided to all contractors involved with the renovation,/ demolition of the buildings and tree felling.</p>
<p>No constraints</p>	Barn owl	<p>There was no evidence of barn owls <i>Tyto alba</i> roosting in the buildings or trees. No further surveys recommended.</p>

1.4

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

1.5

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.

- 1.6 Planning consent for a development does not provide a defence against prosecution under this act.
- 1.7 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.
- 1.8 The data collected to support the output of this report is valid for one year. This report is valid until **August 2024**. After this time, additional surveys need to be undertaken to confirm that the status of the building and trees to be felled, as a bat roost, has not changed.
- 1.9 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 10 figure grid references to be shared.

Date	Taxon Name	Common Name	Location	County	Grid reference	Record Type	Abundance
26/05/22	Pipistrellus pipistrellus	Common Pipistrelle	Hotham Hall, Hotham	E. Yorkshire	SE 89595 33728	Day x 3	6
26/05/22	Pipistrellus pygmaeus	Soprano pipistrelle	Hotham Hall, Hotham	E. Yorkshire	SE 89595 33728	Day x 1	1
26/05/22	Myotis daubentonii	Daubenton's	Hotham Hall, Hotham	E. Yorkshire	SE 89595 33728	Day x 1	3
24/07/22	Pipistrellus pipistrellus	Common Pipistrelle	Hotham Hall, Hotham	E. Yorkshire	SE 89595 33728	Day x 1	1
24/07/22	Pipistrellus pygmaeus	Soprano pipistrelle	Hotham Hall, Hotham	E. Yorkshire	SE 89595 33728	Day x 2	4
24/07/22	Myotis daubentonii	Daubenton's	Hotham Hall, Hotham	E. Yorkshire	SE 89595 33728	Day x 2	7
24/07/22	Plecotus auritus	Brown long-eared	Hotham Hall, Hotham	E. Yorkshire	SE 89595 33728	Day x 1	1
25/08/22	Pipistrellus pygmaeus	Soprano pipistrelle	Hotham Hall, Hotham	E. Yorkshire	SE 89595 33728	Day x 1	1
25/08/22	Plecotus auritus	Brown long-eared	Hotham Hall, Hotham	E. Yorkshire	SE 89595 33728	Day x 1	1
25/08/22	Myotis daubentonii	Daubenton's	Hotham Hall, Hotham	E. Yorkshire	SE 89595 33728	Day x 1	3
11/08/23	Pipistrellus pipistrellus	Common Pipistrelle	Hotham Hall, Hotham	E. Yorkshire	SE 89595 33728	Day x 1	1
11/08/23	Myotis daubentonii	Daubenton's	Hotham Hall, Hotham	E. Yorkshire	SE 89595 33728	Day x 2	7

2.0 INTRODUCTION

2.1 Background Information

2.1.1 In April 2022, Wold Ecology was commissioned by Hotham Hall Estate Ltd to undertake a bat survey at Hotham Hall. The site is located at approximate national grid reference SE 89595 33728 in Hotham, East Yorkshire.

2.1.2 The Application Site comprises the following buildings:

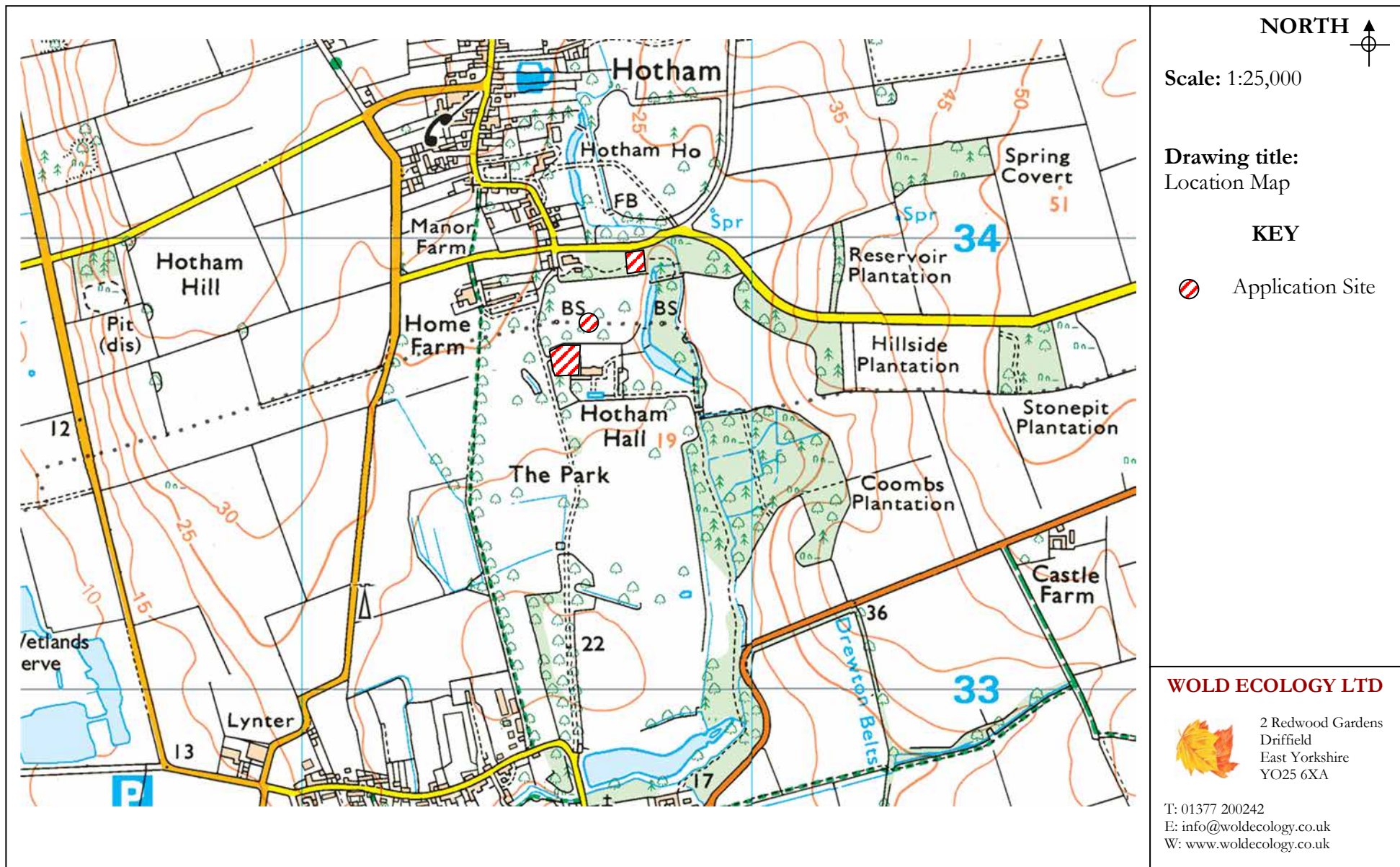
- Stable 1
- Stable 2
- Stable 3
- Pool house
- Outbuilding
- Trees

2.1.3 The proposed development includes the conversion of the former stable building into residential, demolition of the pool house and outbuilding, minor pruning of trees and felling of trees in the plantation woodland to allow for a new access drive.

2.2 Survey Objectives

2.2.1 The site was visited and assessed on 26th May 2022, 24th July 2022, 25th August 2022 and 11th August 2023; this was to determine whether the buildings on site 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 accessible roof voids. An assessment of the on-site potential 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. Emergence (dusk) surveys x 2. Return (dawn) survey x 2. Endoscope survey (where accessible)
Identify swarming, commuting or mating sites	Yes	The survey 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 (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.
 - c) Protect and enhance valued landscapes, sites of biodiversity or geological value and soils (in a manner commensurate with their statutory status or identified quality in the development plan).
 - d) recognise the intrinsic character and beauty of the countryside, and the wider benefits from natural capital and ecosystem services – including the economic and other benefits of the best and most versatile agricultural land, and of trees and woodland.
 - e) Minimise impacts on and provide net gains for biodiversity, including by establishing coherent ecological networks that are more resilient to current and future pressures.
 - f) Prevent new and existing development from contributing to, being put at unacceptable risk from, or being adversely affected by, unacceptable levels of soil, air, water or noise pollution or land instability. Development should, wherever possible, help to improve local environmental conditions such as air and water quality, taking into account relevant information such as river basin management plans.
- 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.
 - 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.freeseerve.co.uk/bats.htm>

4.2 Data Review and Desk Study

4.2.1 Currently, there is no pre-existing information on bats at the site.

4.2.2 There are records of brown long-eared bat *Plecotus auritus*, noctule *Nyctalus noctula*, Natterer's bat *Myotis nattereri*, Daubenton's bat *Myotis daubentonii*, whiskered bat *Myotis mystacinus*, soprano pipistrelle *Pipistrellus pygmaeus* and common pipistrelle *Pipistrellus pipistrellus* within the surrounding 5km radius of the Application Site. (source – NEYEDC 2021 and Wold Ecology network pers comm). Wold Ecology bat records date from 2006 and include over 1000 bat activity surveys.

4.2.3 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	700m: NW	N	Y
Brown long-eared Barbastelle	2km: SE	Y	Y

Common pipistrelle Brown long-eared	2km: SE	N	Y
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4.2.4 Wold Ecology have recorded the following bat roosts within 2km:

Date	Taxon Name	Common Name	Location	County	Grid reference	Record Type	Abundance
2008	Pipistrellus pipistrellus	Common pipistrelle	Fox House Farm, Drewton	E. Yorkshire	SE 92360 33137	Day	4
2008	Plecotus auritus	Brown long-eared	Fox House Farm, Drewton	E. Yorkshire	SE 92360 33137	Day	1
2009	Plecotus auritus	Brown long-eared	Kettlethorpe Farm	E. Yorkshire	SE 91677 33457	Day	1
2012	Pipistrellus pipistrellus	Common pipistrelle	Milestone Farm, Everthorpe	E. Yorkshire	SE 90497 31822	Day	1
2012	Plecotus auritus	Brown long-eared	Milestone Farm, Everthorpe	E. Yorkshire	SE 90497 31822	Day	2
February 2020	Pipistrellus pipistrellus	Common Pipistrelle	Low Croft Cottage, Hotham	E. Yorkshire	SE 89411 34403	Hibernation	1

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
26/05/22	Stable 1 Stable 2 Stable 3 Outbuilding Pool House Trees	Cluson CB2 lamp Dart endoscope Dewalt Laser Measure. 3.9m telescopic ladders Binoculars	14°C, 20% cloud. Beaufort 1, SW. No recent rain.
Comments (to include # of surveyors used for each visit): 3 surveyors undertook the visual inspection.			

25/08/22	Stable 1 Stable 2 Stable 3 Outbuilding Pool House P. oak tree	Cluson CB2 lamp Dart endoscope Dewalt Laser Measure 3.9m telescopic ladders Binoculars Phantom 4 Drone	17°C, 60% cloud. Beaufort 1, W. No recent rain.
Comments (to include # of surveyors used for each visit): 3 surveyors undertook the visual inspection.			
Personnel: Chris Toohie (Class 2 bat license - 2019-44215-CLS-CLS and RC027) – 26 th May 2022 and 25 th August 2022 John Woodmansey (Class 1 bat license - 2021-52077-CLS-CLS) – 26 th May 2022 Graham Coulbeck (2021-55198-CLS-CLS) – 26 th May 2022 and 25 th August 2022 Abi Catherall (Class 1 bat license 2022-10667-CL17-BAT) – 25 th August 2022			

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
26/05/22	Sunset: 2115 Start: 2055 Finish: 2315	Stable 1 Stable 2 Stable 3 Outbuilding Pool House Trees	Cluson CB2 lamp Digital thermometer Anabat Walkabout Wildlife Acoustics EM Touch 2 PRO EM3 Anabat Express Pulsar Helion thermal imaging scope	14°C - 11°C, 20% cloud. Beaufort 1, SW. No recent rain.
Comments (to include # of surveyors used for each visit): 13 surveyors were positioned around the site so that all potential access points, identified in the daytime, visual inspection, could be observed.				
25/08/22	Sunset: 2011 Start: 1950 Finish: 2210	Stable 2	Cluson CB2 lamp Digital thermometer Anabat Walkabout Wildlife Acoustics EM Touch 2 PRO EM3 Anabat Express Pulsar Helion thermal imaging scope	17°C - 15°C, 60% cloud. Beaufort 1, W. No recent rain.

Comments (to include # of surveyors used for each visit): 6 surveyors were positioned around the site so that all potential access points, identified in the daytime, visual inspection, could be observed.

Personnel:

Chris Toohie (Class 2 bat license - 2019-44215-CLS-CLS and RC027) – 26th May 2022 and 25th August 2022
 Daniel Lombard (Class 1 bat licence – 2015-11490-CLS-CLS) – 26th May 2022
 Graham Coulbeck (2021-55198-CLS-CLS) – 26th May 2022 and 25th August 2022
 George Day (Class 1 bat licence – 2017-29163-CLS-CLS) – 26th May 2022
 Matthew Arnold (Class 1 bat licence – 2018-35035- CLS-CLS) – 26th May 2022
 Karl Hornsey (Class 1 bat licence - 2019-40221-CLS-CLS) – 26th May 2022
 Josh Saunders (2020 – 46828 – CLS-CLS) – 26th May 2022 and 25th August 2022
 John Woodmansey (Class 1 bat license - 2021-52077-CLS-CLS) – 26th May 2022 and 25th August 2022
 Abi Catherall (Class 1 bat license 2022-10667-CL17-BAT) – 26th May 2022 and 25th August 2022
 Tom Gale, David Aitken, Abby Mycroft and Malcolm Richardson – 26th May 2022
 James Bentley – 25th August 2022

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
24/07/22	Sunrise: 0503 Start: 0250 Finish: 0520	Stable 1 Stable 2 Stable 3 Outbuilding Trees	Cluson CB2 lamp Digital thermometer Anabat Walkabout Wildlife Acoustics EM Touch 2 PRO EM3 Anabat Express Pulsar Helion thermal imaging scope	14°C - 13°C, 20% cloud. Beaufort 0. No recent rain.
Comments (to include # of surveyors used for each visit): 7 surveyors were positioned around the site so that all potential access points, identified in the daytime, visual inspection, could be observed. Two surveyors were located in the northern boundary plantation.				
11/08/23	Sunrise: 0533 Start: 0333 Finish: 0548	Stable 2	Cluson CB2 lamp Digital thermometer Anabat Walkabout Wildlife Acoustics EM Touch 2 PRO EM3 Anabat Express Pulsar Helion thermal imaging scope	18°C - 17°C, 70% cloud. Beaufort 1, NE. No recent rain.
Comments (to include # of surveyors used for each visit): 6 surveyors were positioned around the site so that all potential access points, identified in the daytime, visual inspection, could be observed.				

Personnel:

Chris Toohie (Class 2 bat license - 2019-44215-CLS-CLS and RC027) – 24th July 2022

Graham Coulbeck (2021-55198-CLS-CLS) – 24th July 2022 and 11th August 2023

Matthew Arnold (Class 1 bat licence – 2018-35035- CLS-CLS) – 24th July 2022 and 11th August 2023

Karl Hornsey (Class 1 bat licence - 2019-40221-CLS-CLS) – 24th July 2022 and 11th August 2023

Josh Saunders (2020 – 46828 – CLS-CLS) – 24th July 2022

John Woodmansey (Class 1 bat license - 2021-52077-CLS-CLS) – 24th July 2022 and 11th August 2023

Malcolm Richardson – 24th July 2022 and 11th August 2023

James Bentley - 11th August 2023

4.5 Summary of personnel

Chris Toohie MCIEEM	Project Manager of Wold Ecology with over 16 years' experience surveying bats. Chris has conducted over 950 bat activity surveys since 2006, held over 145 Natural England development licenses and is one of only 221 (January 2022) Natural England Registered Consultants who can hold a Bat Mitigation Class Licence.	RC027 and 2019-44215-CLS-CLS
Daniel Lombard MCIEEM	Experienced bat surveyor since 2010, Daniel has assisted with over 500 bat surveys for Wold Ecology since 2008 and is currently working towards his bat handling license.	2015-11490-CLS-CLS
Graham Coulbeck	Experienced Wold Ecology Ltd bat surveyor with over 3 years of bat activity survey experience undertaken under the tuition of Wold Ecology licensed bat ecologists. Graham has undertaken over 150 bat activity surveys.	2021-55198-CLS-CLS
George Day	Experienced bat surveyor since 2013. George has undertaken over 150 bat surveys with Wold Ecology Ltd and is currently working towards his bat handling license.	2017-29163-CLS-CLS
Karl Hornsey	Experienced bat surveyor since 2015, Karl has undertaken over 200 bat surveys with Wold Ecology Ltd and is currently working towards his bat handling license.	2019-40221-CLS-CLS
Matthew Arnold	Experienced Wold Ecology Ltd bat surveyor, Matthew has conducted over 200 bat activity surveys for Wold Ecology since 2013.	2018-35035-CLS-CLS
Josh Saunders	Experienced Wold Ecology Ltd bat surveyor, Josh has conducted over 250 bat activity surveys for Wold Ecology since 2017.	2020 – 46828 – CLS-CLS
John Woodmansey	Experienced Wold Ecology Ltd bat surveyor, John has conducted over 150 bat activity surveys for Wold Ecology since 2018 including tree surveys from a rope and harness.	2021-52077-CLS-CLS
Abi Catherall	Experienced bat surveyor, Abi has conducted over 50 bat activity surveys including bat monitoring with the North Yorkshire Bat Group.	2022-10667-CL17-BAT
James Bentley	Experienced Wold Ecology Ltd bat surveyor with over 2 years of bat activity survey experience undertaken under the tuition of Wold Ecology licensed bat ecologists. James has undertaken over 50 bat activity surveys.	N/A
Malcolm Richardson Abby Mycroft David Aitken Tom Gale	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 on the southern edge of Hotham village, in a rural location. The Application Site is approximately 28ha and comprises Hotham Hall with associated buildings and mature private gardens, arable land, lawns, trees and watercourses. The hall and grounds are immediately surrounded by arable/grazed pasture and woodland cover. The studied buildings are immediately surrounded by mature private gardens, large lawns with parkland trees and hard standing. Hotham Hall also has bat roosting potential but is outside of the survey remit.

5.1.2 Adjacent Landscapes

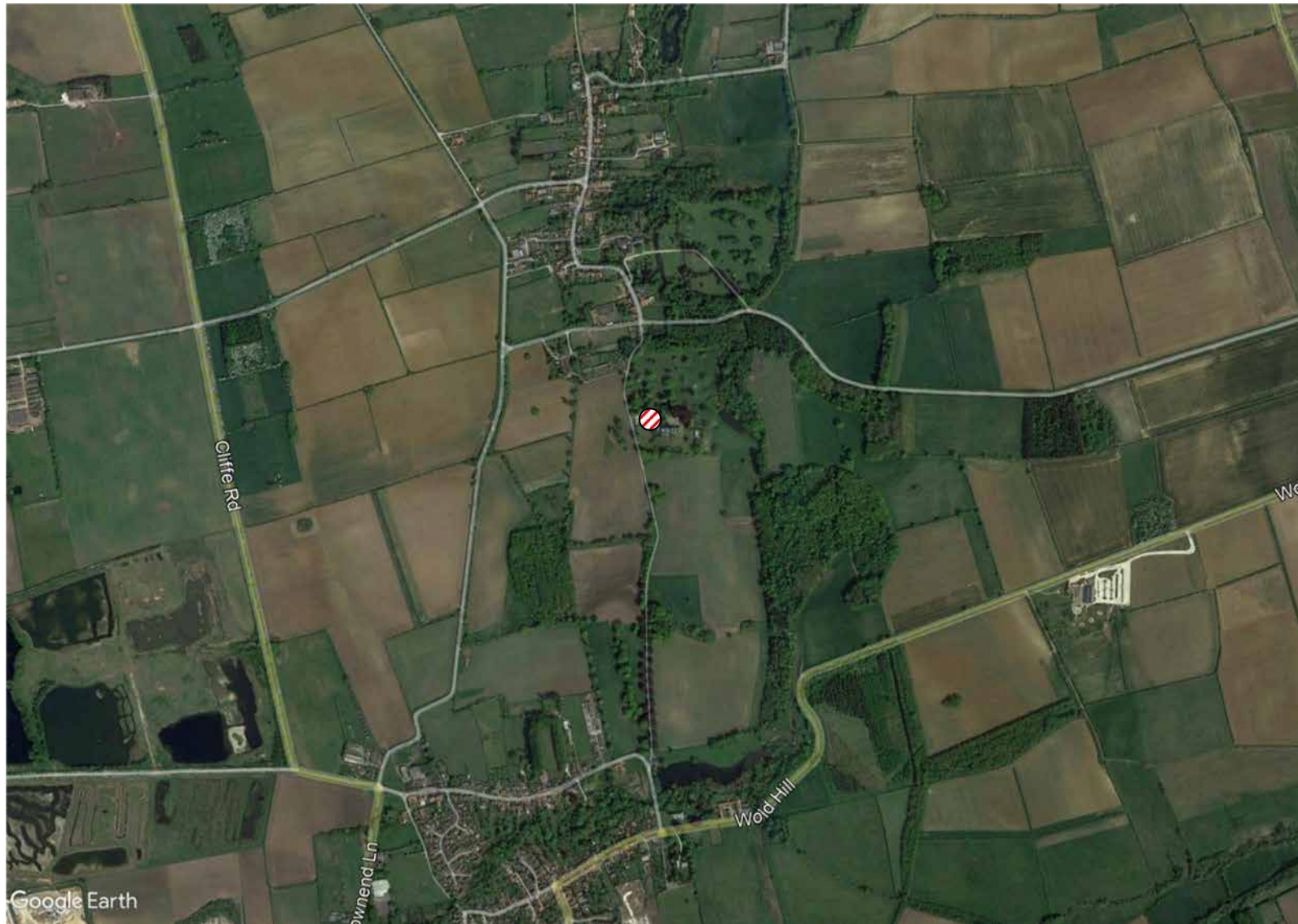
5.1.2.1 Habitats within 2km surrounding Hotham Hall is primarily low-lying agricultural land dominated by arable production with some grazed pasture. Woodland cover within 2km is good and occurs as small shelterbelts, parkland trees, plantations and semi natural woodland. Whilst the Application Site is not connected to any ecologically valuable habitat, connectivity within 2km is provided by hedgerows, hedgerows with trees and ditches that drain the predominant arable land and link the site with the wider countryside.

5.1.2.2 Wold Ecology concludes that the adjacent habitats that include tree lines, parkland trees, woodland cover, grasslands and watercourses connect the Application Site to the wider countryside. Consequently, the Application Site and adjacent habitats within 200m are considered to be important 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
- Hedgerows with trees
- Mature trees and woodland
- Riverside Plantation
- Coombes Plantation
- Stonepit Plantation
- Hillside Plantation
- Spring Covert
- Arable
- Mature private gardens
- Ponds and watercourses
- Hotham Beck
- Grazed pasture
- Disused Railway



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. **Stable 1** - is single storey and comprises local stone brick walls and a hipped pitched roof covered with pan tiles. The roof appears to have been replaced within the previous 20 years; it is lined with a breathable membrane and supported by smooth sawn timbers. The building is used for storage.
 - b. **Stable 2** - is two storey and comprises local stone walls and a hipped roof covered with slates. The roof is supported by smooth sawn timbers and is partially unlined with areas lined with a bitumen felt and breathable roof membrane. Stable 2 is used for storage.
 - c. **Stable 3** - is single storey and comprises local stone walls and a multi-pitched roof covered with slates. The roof is supported by smooth sawn timbers and is partially unlined with areas lined with a bitumen felt and timber panels. Stable 3 is used for storage.
 - d. **Outbuilding** - the single storey outbuilding comprises brick walls and a mono pitched roof covered in slates. The roof is supported by smooth sawn timbers and is no lined.
 - e. **Pool house** - the single storey pool house is located within the swimming pool garden and comprise stone walls and a pitched roof covered in slates.
 - f. **P. oak tree** - a single pedunculate oak *Quercus robur* tree is located adjacent to the proposed access road, the tree is over 100 years old.
 - g. **Northern boundary plantation woodland** - this section of plantation along the northern boundary will be partially cleared to allow the new access road. The trees are less than 80 year and primarily comprises mixed broadleaf species with occasional conifers.
- 5.2.2 **Stable 1** (see 5.5 plates 1 - 3) - the following roosting opportunities were present within the fabric of the stable:
- Gaps beneath the lead ridges and ridge tiles where mortar has been displaced.
 - There are no missing ridges.
 - Gaps beneath slates although the majority appeared tight fitting.
 - Gaps in missing mortar below gable slates.
 - There are no missing or slipped slates.
 - 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.
 - Gaps between felt and pan tiles above.
 - Bat access into the building is provided by open doors.
 - No evidence of bats was observed.
 - Stable 1 has been assessed as having a MODERATE SUITABILITY to support bats.
- 5.2.3 **Stable 2** (see 5.5 plates 4 - 13) - the following roosting opportunities were present within the fabric of the stable:
- Gaps beneath lead ridges and ridge tiles were mortar has been displaced.
 - Gaps beneath slates although the majority are tight fitting.
 - Gaps below lead flashing adjacent to chimneys.
 - Gaps above the eaves and behind timber barge boards.
 - Missing mortar in the stone work.

- Gaps adjacent to timber doors and timber window frames.
- Gaps adjacent to timber lintels.
- Gaps above the internal wall plates.
- Gaps between felt/breathable membranes/boarding and slates above.
- Gaps above the ridge beam.
- The following evidence of bats was observed:
 - Twenty bat droppings were observed on the first floor of stable 2. The location of the bat droppings suggests a light sampling bat/a roost located above the ridge. The bat droppings correspond with the brown long-eared ay roost (Roost 10).
- The building has been assessed as having a HIGH SUITABILITY to support bats.

5.2.4 **Stable 3** (see 5.5 plates 14 and 15) - the following roosting opportunities were present within the fabric of the stable:

- Gaps beneath the lead ridges.
- There are no missing ridges.
- Gaps beneath slates although the majority appeared 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.
- There was no open doors/window access into the building.
- Gaps between internal roof membrane and slates above.
- There was no open doors/window bat access into the building.
- No evidence of bats was observed.
- Stable 1 has been assessed as having a MODERATE SUITABILITY to support bats.

5.2.5 **Pool house** (see 5.5 plates 16 and 17) - the following roosting opportunities were present within the fabric of the building:

- There are no gaps beneath the ridge tiles, and none are missing.
- Gaps beneath slates although most are tight fitting.
- Gaps below the west gable slates.
- Gaps above the boxed timber eaves on the gables.
- 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.
- There was no open doors/window bat access into the building.
- Ivy *Hedera helix* is present on the east gable, but this is considered to be of sub optimum structure to support roosting bats. The abundant foliage restricts free flight access into cavities and the age of the ivy has yet to form large diameter ivy stems with associated gaps and crevices.
- No evidence of bats was observed.
- The pool house has been assessed as having a LOW SUITABILITY to support bats.

5.2.5 **Outbuilding** (see 5.5 plate 19) - the following roosting opportunities were present within the fabric of the building:

- Gaps beneath slates although most are tight fitting.

- Gaps in missing mortar below gable slates.
- Gaps below lead flashing adjacent to chimneys.
- Lead flashing is tight fitting.
- There are no gaps in the external mortar suitable for roosting bats.
- The timber doors and timber window frames were tight fitting.
- Bat access into the building is provided by barred windows.
- No evidence of bats was observed.
- The outbuilding has been assessed as having a LOW SUITABILITY to support bats.

5.2.7 **Pedunculate oak tree** (see 5.5 plate 20 and 21) - the following roosting opportunities were present within the tree:

- A single knot hole was observed in a lower branch. The cavity extends up to 20cm in the branch and the entrance hole has an approximate radius of 4cm

5.2.8 **Northern boundary plantation trees** (see 5.5 plate 21) - no roosting opportunities were present within the fabric of the trees due to the following:

- The majority of trees are in good condition, but a small number of knot holes were observed in some of the trees.

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 and trees have the following suitability for bats:

	Negligible	Low	Moderate	High
Application Site habitats (<2km)			X	
Stable 1			X	
Stable 2			X	
Stable 3				X
Outbuilding		X		
Pool House		X		
P. oak tree		X		
Northern boundary plantation trees		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.

5.3 Justification of activity surveys

5.3.1 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.

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

	Emergence (dusk)			Re-entry (dawn)		
	LOW	MOD	HIGH	LOW	MOD	HIGH
Stable 1		x 1			x 1	
Stable 2			x 2			x 1
Stable 3		x 1			x 1	
Outbuilding	x 1					
Pool House	x 1					
P. oak tree	x 1					
Northern boundary plantation trees				x 1		

5.4 Results of Activity Surveys

5.4.1 Emergence Survey

5.4.1.1 26th May 2022

- The first soprano pipistrelle bat was detected at 2120. This was close to the anticipated (< 30 minutes after sunset) emergence time and suggests that the bat did emerge from a roost close by. The bat appeared from west of the studied buildings.
- Common pipistrelle, soprano pipistrelle, Daubenton's, noctule and brown long-eared bats were detected and/or observed foraging and commuting around the site.
- No bats were observed emerging from the outbuilding, pool house or oak tree.
- The following bat roosts were observed:
 - **Roost 2** – Soprano pipistrelle roost located in a gap above the eaves on the east elevation of stable 2. The roost contains 1 bat (see 5.5 plate 4).
 - **Roost 3** – common pipistrelle roost located in a gap above the eaves on the west elevation of stable 2. The roost contains 3 bats (see 5.5 plate 8).
 - **Roost 4** – common pipistrelle roost located in a gap above the eaves on the west elevation of stable 2. The roost contains 2 bats (see 5.5 plate 8).
 - **Roost 6** – common pipistrelle roost located in a gap between a timber beam and the stonework on the south elevation of stable 2. The roost contains 1 bat.
 - **Roost 8** – Daubenton's roost located in a gap between a timber beam/stonework and beneath lead flashing on the south elevation of stable 2. The roost contains 3 bats (see 5.5 plate 4).

5.4.1.2 25th August 2022

- The first common pipistrelle bat was detected at 2024. This was close to the anticipated (< 30 minutes after sunset) emergence time and suggests that the bat did emerge d from a roost close by. The bat appeared from north of the studied buildings.
- Common pipistrelle, soprano pipistrelle, Daubenton's, noctule and brown long-eared bats were detected and/or observed foraging and commuting around the site.
- The following bat roosts were observed:
 - **Roost 2** – Soprano pipistrelle roost located in a gap above the eaves on the east elevation of stable 2. The roost contains 1 bat (see 5.5 plate 4).
 - **Roost 10** – Daubenton's roost located in a gap beneath a lead ridge on the south elevation of stable 2. The roost contains 1 bat (see 5.5 plate 4).
 - **Roost 11** – Brown long-eared roost located adjacent to an internal ridge beam inside stable 2. The roost contains 1 bat (see 5.5 plate 12).

5.4.1.3 For survey results see appendix 9.4 and 9.5.

5.4.2 Return Survey

5.4.2.1 24th July 2022

- Bat activity was constant throughout much of the survey with the site used by common pipistrelle, soprano pipistrelle, Daubenton's and brown long-eared bats.
- No bats were observed returning to roosts in the studied plantation trees, stable 1, stable 3 or the outbuilding.
- The following bat roosts were observed:
 - **Roost 1** – soprano pipistrelle roost located in a gap below a lead ridge on the west elevation of stable 2. The roost contains 3 bats (see 5.5, plate 8).
 - **Roost 2** – Soprano pipistrelle roost located in a gap above the eaves on the east elevation of stable 2. The roost contains 1 bat (see 5.5 plate 4).
 - **Roost 5** – common pipistrelle roost located in a gap below a lead ridge on the south elevation of stable 2. The roost contains 1 bat (see 5.5, plate 4).
 - **Roost 8** – Daubenton's roost located in a gap between a timber beam/stonework and beneath lead flashing on the south elevation of stable 2. The roost contains 6 bats (see 5.5 plate 4).
 - **Roost 9** – Daubenton's roost located in a gap below lead flashing on the south elevation of stable 2. The roost contains 1 bat (see 5.5, plate 4).

5.4.2.2 **11th August 2023**

- Bat activity was constant throughout much of the survey with the site used by common pipistrelle, soprano pipistrelle, Daubenton's, Natterer's, whiskered, noctule and brown long-eared bats.
- The following bat roosts were observed:
 - **Roost 7** – common pipistrelle roost located in a gap above the eaves on the south elevation of stable 2. The roost contains 1 bat (see 5.5 plate 8).
 - **Roost 8** – Daubenton's roost located in a gap between a timber beam/stonework and beneath lead flashing on the south elevation of stable 2. The roost contains 6 bats (see 5.5 plate 4).
 - **Roost 9** – Daubenton's roost located in a gap below lead flashing on the south elevation of stable 2. The roost contains 1 bat (see 5.5, plate 4).

5.4.2.3 For survey results see appendix section 9.4 and 9.5.

5.5

Photographs of key features – August 2022

Plate 1 – Stable 1, south elevation.



Plate 2 – Stable 1, north and east elevations.



Plate 3 – stable 1, internal roof void.



Plate 4 – Stable 2, south and east elevations.

Roost 5 – common pipistrelle day roost x 1 bat.

Roost 10 – Daubenton's day roost x 1 bat.



Roost 9 – Daubenton's day roost x 1 bat.

Roost 8 – Daubenton's day roost x 6 bats.

Plate 5 – Stable 2, north and east elevations.

Roost 2 – soprano pipistrelle day roost x 1 bat.



Plate 6 – Stable 2, east elevation.

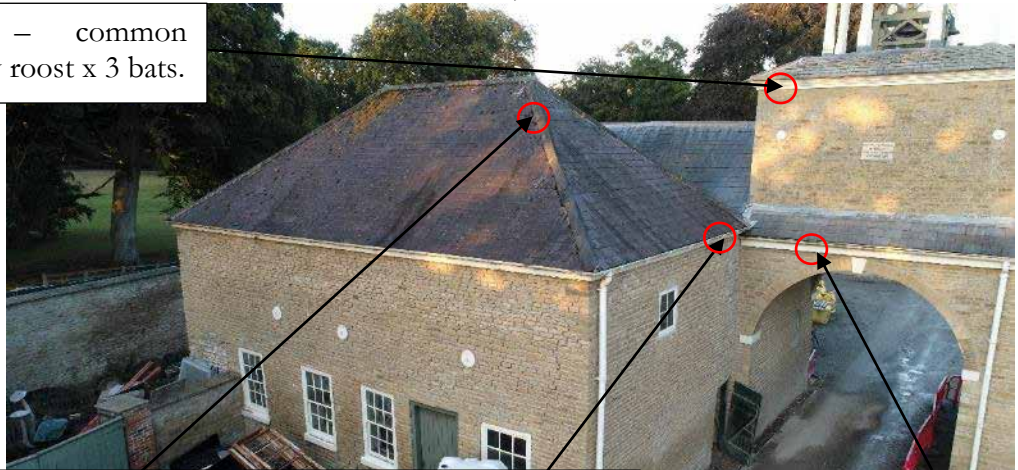


Plate 7 – Stable 2, south and east elevations.



Plate 8 – Stable 2, west elevations.

Roost 3 – common pipistrelle day roost x 3 bats.



Roost 1 – soprano pipistrelle day roost x 3 bats.

Roost 7 – common pipistrelle day roost x 1 bat.

Roost 4 – common pipistrelle day roost x 2 bats.

Plate 9 – Stable 2, north and west elevations.



Plate 10 – Stable 2, west elevation.



Plate 11 – stable 2 (clock tower), internal roof void.



Plate 12 – stable 2, internal roof void.



Roost 11 – brown long-eared day roost x 1 bat.

Plate 13 – stable 2, internal roof void.



Plate 14 – stable 3,



Plate 15 – stable 3,



Plate 16 – pool house, south and west gable



Plate 17 – pool house, north and east gable



Plate 18 – outbuilding

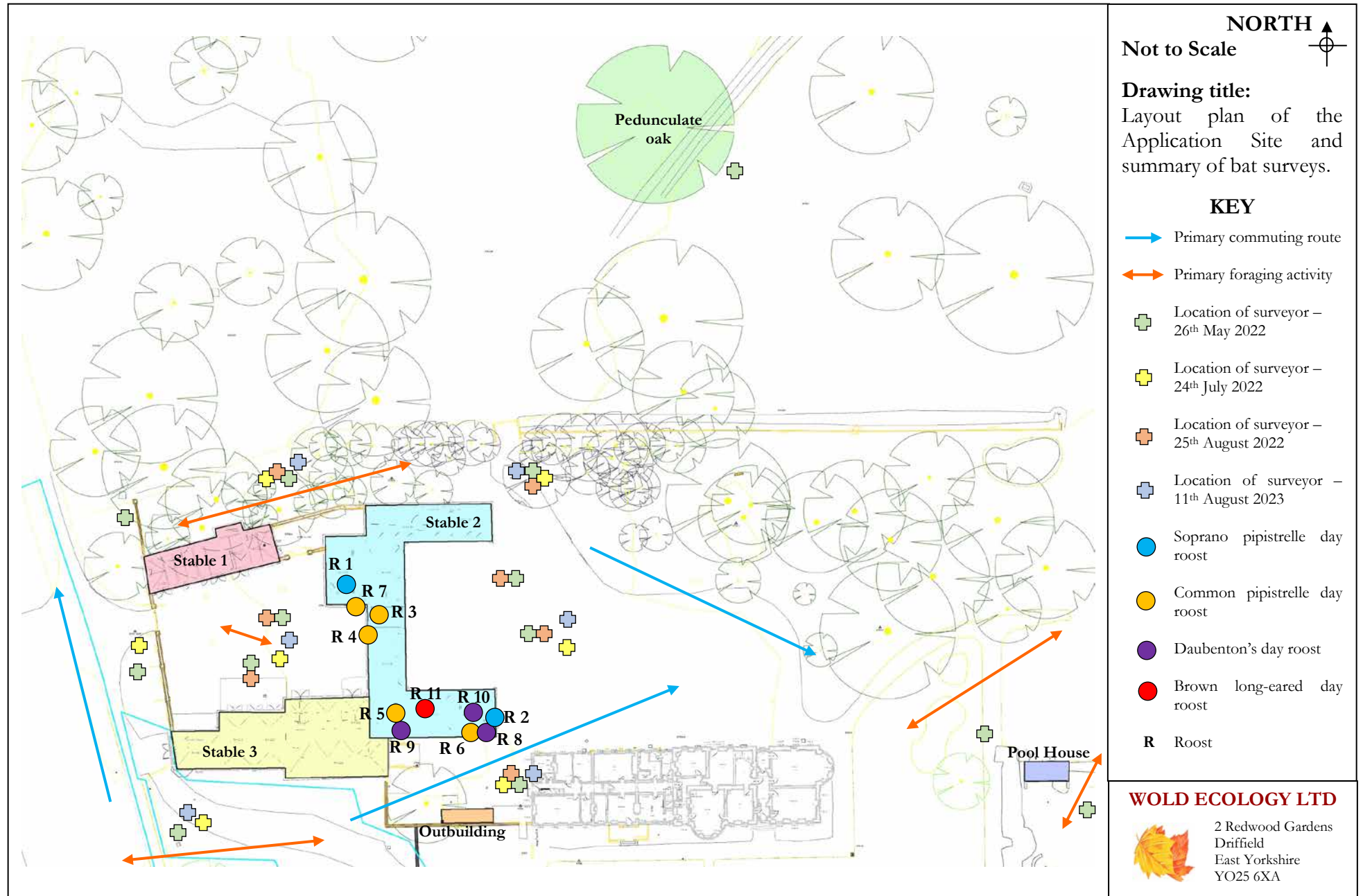


Plate 19 – pedunculate oak tree



Plate 20 – Northern boundary plantation woodland to be partially cleared felled for the new access drive







NORTH 

Scale unknown

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

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5.6 Summary of field surveys conducted in 2022 and 2023

Date	Type of survey	Results
26/05/22	Habitat assessment	Wold Ecology concludes that the adjacent habitats that include tree lines, parkland trees, woodland cover, grasslands and watercourses connect the Application Site to the wider countryside. Consequently, the Application Site and adjacent habitats within 200m are considered to be important to the favourable conservation status of local bat populations.
26/05/22 25/08/22	Visual inspection.	<p><i>Stable 1</i> 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 stable has been assessed as having a MODERATE SUITABILITY to support roosting bats (see 5.3 plates 1 - 3).</p> <p><i>Stable 2</i> The following evidence of bats was observed:</p> <ul style="list-style-type: none"> • Twenty bat droppings were observed on the first floor of stable 2. The location of the bat droppings suggests a light sampling bat/a roost located above the ridge. The bat droppings correspond with the brown long-eared ay roost (Roost 10) <p>Stable 2 has been assessed as having HIGH SUITABILITY to support roosting bats, due to the presence of bat droppings and other features which have potential to provide roosting opportunities for bats (see 5.3 plates 4 - 13).</p> <p><i>Stable 3</i> There were no signs of roosting bats or bat activity inside the stable, 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 roosting bats (see 5.3 plates 14 and 15).</p> <p><i>Pool house</i> There were no signs of roosting bats or bat activity, and the outbuilding has few features to support roosting bats. Consequently, the building has a LOW SUITABILITY to support roosting bats (see 5.3 plates 16 and 17).</p> <p><i>Outbuilding</i> There were no signs of roosting bats or bat activity, and the outbuilding has few features to support roosting bats. Consequently, the building has a LOW SUITABILITY to support roosting bats (see 5.3 plate 18).</p> <p><i>Pedunculate oak tree</i> There were no signs of roosting bats or bat activity, and the tree has few features to support roosting bats. Consequently, the tree has a LOW SUITABILITY to support roosting bats (see 5.3 plates 19 and 20).</p> <p><i>Plantation woodland</i> There were no signs of roosting bats or bat activity, and the trees have few features to support roosting bats. Consequently, the tree has a LOW SUITABILITY to support roosting bats (see 5.3 plate 20).</p>

Date	Spp.	Roost type	Structure Reference	Roost Location	Access points (including #)	Dimension of roost or explanation where the roost is
26/05/22 (emergence)	Soprano pipistrelle x 1 bat	Day	Stable 2 Roost 2	Located in a gap above the eaves behind a timber barge board	External roost x 1 access point	Gap approximately 30mm x 90mm.
	Common pipistrelle x 3 bats	Day	Stable 2 Roost 3	Located in a gap above the eaves behind a timber barge board	External roost x 1 access point	Gap approximately 30mm x 90mm.
	Common pipistrelle x 2 bats	Day	Stable Roost 4	Located in a gap above the eaves behind a timber barge board	External roost x 1 access point	Gap approximately 30mm x 90mm.
	Common pipistrelle x 1 bat	Day	Stable 2 Roost 6	Located in between a roof timber and external stonework	External roost x 1 access point	Gap approximately 20mm x 80mm.
	Daubenton's x 3 bat	Day	Stable 2 Roost 8	Located in a gap below lead flashing	External roost x 1 access point	Gap approximately 20mm x 80mm.
24/07/22 (return)	Soprano pipistrelle x 3 bats	Day	Stable 2 Roost 1	Located in a gap below the ridge	External roost x 1 access point	Gap approximately 30mm x 50mm.
	Soprano pipistrelle x 1 bat	Day	Stable 2 Roost 2	Located in a gap above the eaves behind a timber barge board	External roost x 1 access point	Gap approximately 30mm x 90mm.
	Common pipistrelle	Day	Stable 2 Roost 5	Located in a gap below a lead ridge	External roost x 1 access point	Gap approximately 20mm x 40mm.
	Daubenton's x 6 bats	Day	Stable 2 Roost 8	Located in a gap below lead flashing	External roost x 2 access points below the lead	Gap approximately 20mm x 80mm.
	Daubenton's x 1 bat	Day	Stable 2 Roost 9	Located in a gap below lead flashing	External roost x 1 access point	Gap approximately 20mm x 40mm.

25/08/22 (emergence)	Soprano pipistrelle x 1 bat	Day	Stable 2 Roost 2	Located in a gap above the eaves behind a timber barge board	External roost x 1 access point	Gap approximately 30mm x 90mm.
	Daubenton's x 1 bat	Day	Stable 2 Roost 10	Located in a gap below a lead ridge	External roost x 1 access point	Gap approximately 20mm x 40mm.
	Brown long-eared x 1 bat	Day	Stable 2 Roost 11	Located adjacent to the internal ridge	Internal roost, access via a gap adjacent to a lead ridge	Access crevice 70mm x 20mm
11/08/23 (return)	Common pipistrelle x 1 bat	Day	Stable 2 Roost 7	Located in a gap above the eaves	External roost x 1 access point	Gap approximately 30mm x 90mm.
	Daubenton's x 6 bats	Day	Stable 2 Roost 8	Located in a gap below lead flashing	External roost x 2 access points below the lead	Gap approximately 20mm x 80mm.
	Daubenton's x 1 bat	Day	Stable 2 Roost 9	Located in a gap below lead flashing	External roost x 1 access point	Gap approximately 20mm x 40mm.

5.7 Interpretation and Evaluation of Survey Results

5.7.1 Presence/absence

5.7.1.1 The site has been visited three times by Wold Ecology during 2022 and once during 2023. The data provides an insight into how bats utilise the site during early, mid and late 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 2022, July 2022, August 2022 and August 2023, it has been determined that stable 2 at Hotham Hall contains the following bat roosts (see 9.3):

Structure/reference	Species	Count/estimate	Roost location	Site status assessment	Conservation significance of roost	Use and importance of the site throughout the year
Stable 2 Roost 1	Soprano pipistrelle	3	Beneath a ridge tile	Day roost	LOW	No evidence to suggest a maternity roost or significant numbers of bats. Summer use.
Stable 2 Roost 2	Soprano pipistrelle	1	Above eaves	Day roost	LOW	
Stable 2 Roost 3	Common pipistrelle	3	Above eaves	Day roost	LOW	

Stable 2 Roost 4	Common pipistrelle	2	Above eaves	Day roost	LOW
Stable 2 Roost 5	Common pipistrelle	1	Beneath a lead ridge	Day roost	LOW
Stable 2 Roost 6	Common pipistrelle	1	Roof timber and external wall	Day roost	LOW
Stable 2 Roost 7	Common pipistrelle	1	Above eaves	Day roost	LOW
Stable 2 Roost 8	Daubenton's	6	Beneath lead flashing	Day roost	LOW
Stable 2 Roost 9	Daubenton's	1	Beneath lead flashing	Day roost	LOW
Stable 2 Roost 10	Daubenton's	1	Beneath lead ridge	Day roost	LOW
Stable 2 Roost 11	Brown long-eared	1	Adjacent to ridge	Day roost	LOW

5.7.1.3 No signs of roosting bats or bat roosts were in stable 1, stable 3, outbuilding, pool house, oak tree or studied northern plantation trees.

5.7.1.4 A single brown long-eared bat was observed entering a roost beneath a slate on Hotham Hall, the hall was outside of the survey remit.

5.7.2 Site Status Assessment

5.7.2.1 Based on a building inspection, two emergence surveys and two return surveys, it has been determined that stable 2 supports:

- Two separate soprano pipistrelle roosts.
- Five separate common pipistrelle roosts.
- Three separate Daubenton's roosts.
- A single brown long-eared roost.

5.7.2.2 All roosts are located adjacent/within 500m of surrounding favourable foraging habitat which will have a significant role in the ecology of the local bat population.

5.7.2.3 The survey results are based on survey work conducted in May, July and August. The buildings and trees on site have features which have low/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.

5.7.2.4 Wold Ecology concludes that the studied buildings and trees at Hotham Hall is unlikely to support a maternity roost for the following reasons:

- No accumulation of droppings or staining's conducive of significant numbers of bats was observed (although these are sometimes hard to detect).
- Although 6 Daubenton's bats emerged from roost 7, there was no accumulation of droppings or high numbers of droppings on the wall below the roost. In addition, Daubenton's maternity roosts range from 20 or more bats with males can often form their own colony up to 20 bats. Wold Ecology concludes that based on current information, roost 7 is a day roost.

5.7.3 Constraints

5.7.3.1 There are no constraints to the survey.

6.0 IMPACT ASSESSMENT – in the absence of mitigation

6.1 Stable 2 supports soprano pipistrelle, common pipistrelle, Daubenton's and brown long-eared day roosts. The proposed development to stable 2 will involve the conversion of the building into residential. Unsupervised structural work, erection of scaffolding, removal of slates, re-roofing, re-pointing, internal refurbishment and soft strip will result in major disturbance to the roosts. 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 stable 2 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 slates and the contractor steps on the slates 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 and this may lead to roost abandonment = moderate negative at a site level.
- The works involve re-roofing the roof under which the bats are roosting, if bats are resting on the ridge beam or wall plates, 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**

- In the absence of mitigation, the proposed work to stable 2 will involve the permanent loss of 11 day roosts.
- 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 if heavy force is used to remove the roof components = major negative at a site level.
- The works involve re-roofing the roof under which the bats are roosting, if bats are found beneath slates or if they are roosting on or above the ridge beam, there is the potential for killing/injury of bats = major negative at a site level.
- The sealing up of the access points during pointing up of the external stone work and eaves could kill/injure bats through entombment if bats are roosting within the crevice = major negative at a site level.
- New glazing could 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 timber eaves 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 significantly alter the habitat on site and consequently, there will be no fragmentation and isolation during the development as the surrounding, supporting habitat will not largely remain unaffected. The loss of part of the northern boundary plantation will create a ride through the woodland which will increase levels of light and shade and create a linear feature for bats.

6.6 Post development: interference impacts

6.6.1 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. There are no current plans to install new lighting that will shine into the adjacent/surrounding foraging habitat, trees or bat box locations.

6.6.2 Based on current data, the impact from lighting to bat species foraging and commuting around the Application Site is likely to be **negligible**.

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, July and August.

6.7.2 The common pipistrelle, soprano pipistrelle and brown long-eared day roosts in Stable 2 are of low conservation significance to Yorkshire. The roosts each contain less than 4 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 Daubenton's day roost in Stable 2 is of low conservation significance to Yorkshire. The roost contain less than 8 individual bats and is most probably occupied by male bats. 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.

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

Species and numbers	Roost type	Predicted Scale of Impact			Notes
		Site	County	Regional	
Soprano pipistrelle x 4	Day x 2	X			In the absence of mitigation, the building works would cause the loss of 2 day roosts used by 4 bats.
Common pipistrelle x 8	Day x 5	X			In the absence of mitigation, the building works would cause the loss of 5 day roosts used by 8 bats.
Daubenton's x 8	Day x 3	X			In the absence of mitigation, the building works would cause the loss of 3 day roosts used by 8 bats.
Brown long-eared x 1	Day x 1	X			In the absence of mitigation, the building works would cause the loss of a day roost used by 1 bat.

- 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 **low**.
- 6.8.2 Stable 1, stable 2, the pedunculate oak tree and the studied northern boundary plantation trees did not contain bat roosts.
- 6.8.3 Bat activity surrounding the site was good, with a total of 5 species of bats observed foraging and commuting.

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 **As stable 2 supports a common pipistrelle, soprano pipistrelle, Daubenton's and brown long-eared day roosts, any works that will disturb, modify or permanently lose the roosts will require a development licence from Natural England. It is also possible that individual bats could roost in other parts of stable 2 and or wider site at other times of year.** A licence will be obtained prior to the following works commencing on stable 2:

- Exclusion of bats and destructive searches by a bat licensed ecologist
- Roof stripping and maintenance work
- Erection of scaffolding adjacent to the stable and within 5m of a roost
- Pointing of masonry
- Soft strip
- New windows and doors
- Internal conversion

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:

- 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 (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).


7.1.7 The site does not meet the criteria for a Natural England Bat Mitigation Class Licence due to the number of bats and 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.
 - 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.

- 7.2.2 The common pipistrelle, soprano pipistrelle, Daubenton's and brown long-eared roosts in stable 2 are of low conservation significance and therefore requires 'more or less like for like' replacement with no constraints on timing.
- 7.2.3 As stable 2 supports only a single brown long-eared bat roosting internally and all other roosts are external; a bat loft has not been recommended for this site.

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

Low	Roost status	Mitigation/compensation requirement (depending on impact)
Conservation significance 	<div style="border: 2px solid red; padding: 5px;"> Feeding perches of common/rarer species Individual bats of common species Small numbers of common species. Not a maternity site </div>	Flexibility over provision of bat-boxes, access to new buildings etc. No conditions about timing or monitoring
	Feeding perches of Annex II species	Provision of new roost facilities where possible. Need not be exactly like-for-like, but should be suitable, based on species' requirements. Minimal timing constraints or monitoring requirements
	Small numbers of rarer species. Not a maternity site	
	Hibernation sites for small numbers of common/rarer species	Timing constraints. More or less like-for-like replacement. Bats not to be left without a roost and must be given time to find the replacement. Monitoring for 2 years preferred.
	Maternity sites of common species	
	Maternity sites of rarer species	Timing constraints. Like-for-like replacement as a minimum. No destruction of former roost until replacement completed and usage demonstrated. Monitoring for at least 2 years.
	Significant hibernation sites for rarer/rarest species or all species assemblages	
	Sites meeting SSSI guidelines	Oppose interference with existing roosts or seek improved roost provision. Timing constraints. No destruction of former roost until replacement completed and significant usage demonstrated. Monitoring for as long as possible.
High	Maternity sites of rarest species	

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 avoid late October – early March. This will prevent disturbance to potentially hibernating bats. 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 other mandatory timing constraints when low numbers of summer roosting bats are observed.

7.3.2.3 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.

7.3.3 Site Induction

7.3.3.1 Prior to works commencing on site, the bat ecologist will present a tool box talk 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

7.3.3.2 The toolbox talk will only be presented by the named bat ecologist on the Natural England license documentation and the method statement and license will be kept on site at all times.

7.3.4 Pre-Works Surveys

7.3.4.1 A dusk survey (under suitable weather conditions ($>6^{\circ}\text{C}$)) will be undertaken to assess activity.

7.3.4.2 An endoscope will be used to conduct a thorough inspection of all features with bat roosting potential including known roost sites, internal roof timbers, roof structures and masonry of the building; 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.

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

7.3.5 Exclusion of Roosts

7.3.5.1 To enable the exclusion to take place in stable 2, 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 stable 2 and will only be required as an absolute last option.

7.3.5.2 A device will be used to exclude roosts 1 - 11. Exclusion of bats will be undertaken if suitable weather conditions prevail (night time temperatures for four consecutive nights are $> 6^{\circ}\text{C}$).

7.3.5.3 The exclusion devices will either be constructed from a plastic sheet (or similar material) or a section of smooth drainage pipe (or similar) with a diameter of 50mm. This will be secured around the roost in order to allow the bat to leave the roost but prevent its return, exclusion devices will remain for 5 days under suitable weather conditions or remain longer until suitable weather conditions prevail.

7.3.5.4 Once the bat ecologist is satisfied that the roots are empty, the roost access points will then be blocked immediately. Gaps and cracks with potential to be used as roosts will also be checked with an endoscope and blocked during exclusion.

7.3.5.5 If necessary, the internal roosting bats brown long eared bats will be excluded by blocking the access to the barn through the south elevation opening. 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 stable 2 will also be sealed during the exclusion process. The south door will be opened 30 minutes prior to sunset until the bats have left the interior of stable 2. At the end of this period an emergence survey (under suitable weather conditions ($>8^{\circ}\text{C}$)) will

be undertaken to assess whether the bats have vacated the stable 2. Anabat will be left in the barn to monitor activity and help confirm exclusion.

- 7.3.5.6 After 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 stable 2 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 stable 2, all external fittings and fixtures with bat roosting potential (roof coverings, roof timbers, masonry, doors/window frames, timbers etc.) will be carefully removed, by hand under the watching brief of a bat ecologist.

7.3.6.2 All roof coverings with bat roosting potential will be removed by hand. During the spring, summer and autumn period, 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 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.
- 7.3.7.2 Bats should 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 site 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 $>6^{\circ}\text{C}$) for them to be released at dusk on site. Bats will only be handled by an ecologist, licensed to handle bats.

- 7.3.7.4 If building and re-roofing work is 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 3m² 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°C 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 roost and at an accessible height (<5m above ground level) for the bat ecologist to access easily. Three temporary hibernation boxes will be present on site so that different species can be placed in separate boxes.
- 7.3.7.7 If the night time temperature is above 6°C 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.

7.4 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 through the provision of bat boxes and roosting opportunities. There should be a net gain in roosting opportunities post development.

7.5 In situ retention of bat roosts

- 7.5.1 There will be no in situ retention of bat roosts.
- 7.5.1 The brown long-eared day roost in the adjacent Hotham Hall is outside of the proposed development and will remain unaltered. 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 roost. As the aforementioned roost is located at heights greater than 7m and in locations inaccessible without the use of scaffolding or an elevated platform, marking the roost and temporarily blocking the roost is not applicable.

7.6 Modification of existing roosts

- 7.6.1 There will be no modification of existing bat roosts.

7.8 Bat boxes

- 7.8.1 Wold Ecology recommends that at least 6 Schwegler 2FN bat boxes are sited on trees within the grounds of Hotham Hall. 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.
- 7.8.3 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.
- 7.8.4 Wold Ecology recommends that 4 1FR bat tubes are located on stable 2. The 1FR bat tubes will be sited within the external south and west elevation walls of the stable 2, close to the eaves and existing roost sites.
- 7.8.5 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.
- 7.8.6 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.de and www.bct.org.uk.
- 7.8.7 The ridges of stable 2 roof will be covered with lead flashing. When the lead ridge is laid, it is important to ensure a space beneath the ridge lead remains unfilled forming a small tunnel in which the bats can roost. The ridge ends will be well sealed to avoid through drafts. The roost cavity will be 20mm high by a minimum of 30mm wide and 70mm in length. Access will be via a 20mm high gap in the lead.
- 7.8.8 Roofing felt beneath the lead ridges will be traditional bitumen type 1f felt. A breathable membrane can be used but Natural England requires a certificate proving that a non-bitumen coated roofing membrane (NBCRM) has passed a 'snagging propensity test' before it will licence its use in areas where it may come into contact with roosting bats. The testing and certification of the membrane must follow the protocol set out within Essah et al (2020).
- 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 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

7.9.3 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 trees/woodland/watercourse habitat used by foraging and commuting bats. A light intrusion lux level besides trees/woodland edges/watercourse along the boundaries of Hotham Hall will be 1 lux or below.

7.10 Timber treatment

7.10.1 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>

- 7.11 Method Statement – Stable 1, stable 3, pool house, outbuilding and trees**
- 7.11.1 This statement should be copied to contractors and all those involved with demolition, timber treatment, roofing, building works and tree felling, whose work may affect bats and their roosts on site. Even though bats have not been found, demolition should occur as though bats could be present.**
- 7.11.2 Timing
- 7.11.2.1 There are no mandatory timing constraints when roosting bats have not been found.
- 7.11.3 Locating Bats
- 7.11.3.1 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:
- Underneath slates and tiles and roof coverings
 - Underneath ridge tiles
 - Crevices in stone work and gaps in mortar
 - Mortise joints in roof timbers
 - Above the eaves and internal wall plates
 - Around window/door frames
 - Under lead flashing
 - Roof timbers including ridge beams and rafters
 - Knot holes and cavities in trees
- 7.11.4 Working Approach
- 7.11.4.1 Careful removal by hand of all fittings and fixtures as describe in 7.11.3.1. Wall cavities should be checked prior to demolition (if applicable) and pointing.
- 7.11.4.2 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.
- 7.11.4.3 Tree felling
- Keep tree work to a minimum retaining all potential roosts where possible. A precautionary inspection of the tree(s) by the tree work contractor looking for signs of bats should be carried out before starting work. This should include an inspection of all holes and niches using a torch and preferably an endoscope.
 - The trees will be felled as carefully as possible to reduce the impact shock on the trees being felled and adjacent trees within the woodland. Operatives will inspect any cavities or hollow sections prior to snedding branches and limb cutting. Cavities should not be directly cut through.

- Where possible, avoid cross cutting in proximity to cavities or hollows. Limbs with internal fissures should be pruned carefully to maintain integrity of features as potential roost sites.
- Any sections felled containing cavities should be lowered carefully and left on the ground (minimum of 48 hours) with the openings clear, allowing anything inside an opportunity to escape.
- Split limbs that are under tension may need to be wedged open to prevent their closure when pressure is released, potentially trapping bats.

7.11.4.4 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>

7.11.5 Late discoveries

7.11.5.1 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.

7.11.5.2 Bats should 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 site at dusk or placed into a bat box located on site.

7.11.5.3 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 >6⁰C) for them to be released at dusk on site. Bats will only be handled by an ecologist, licensed to handle bats.

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
Small passerine*	1	Stable 1	Inactive
Large nests**	1	Stable 2	Inactive
Swallow <i>Hirundo rustica</i>	1	Stable 2	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	2
Schwegler starling box 3S	Tree box	2
Schwegler swift box #16S	Building box for eaves	4

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.

Bat Conservation Trust. 'Bats in Churches' leaflet.

Bat Conservation Trust. 'Bat Surveys for Professional Ecologists, 3rd Edition (2016).

Bat Conservation Trust. 'Biodiversity for Low and Zero Carbon Buildings: A Technical Guide to New Build'. Dr Carol Williams, 2010.

Mitchell-Jones A.J. (2004). 'Bat Mitigation Guidelines.' English Nature, Peterborough.

English Nature (1993) 'Bats in Roofs; A Guide for Surveyors'.

English Nature Northumbria Team (2004) 'Bat surveys for development proposals in North-East England'. English Nature.

Guidance Note 08/18 – Bat Conservation Trust ;Bats and artificial lighting in the UK - Bats and the Built Environment series'. 2018

Habitat Management for Bats. (2001). A guide for land managers, land owners and their advisors. JNCC.

Horacek, I. Notes on the ecology of bats of the genus *Plecotus*. Vestník Československé Společnosti Zoologické.

Mitchell-Jones, A.J. & McLeish, A.P. (1999) 'The bat workers' manual' 2nd edition. Joint Nature Conservation Committee.

Mitchell-Jones, A.J. (2004) 'Bat mitigation guidelines'. English Nature, Peterborough.

The Bat Conservation Trust www.bats.org.uk Much additional information is available on bats at this website.

Thomas, D.W. 1995. The physiological ecology of hibernation in vespertilionid bats. Symposia of the Zoological Society of London 67: 233–244.

Town and Country Planning Association 'Biodiversity Positive: Eco-towns biodiversity positive'. 2011. <http://www.tcpa.org.uk/pages/biodiversity.html>

UK Mammals: Species Status and Population Trends. JNCC / Tracking Mammals Partnership. 2005

www.bats.org.uk

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 10.2.1 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.

10.4 Bat records for activity surveys conducted in 2022 and 2023

Date – 26 th May 2022					
Loc.	Time	Species	kHz	Direction	Comment
1 & 2	2120	S. Pipistrelle	55	E	Commuting
6	2128	C. Pipistrelle	45	W	Emerged from a gap behind a timber eave on the west elevation of the stable 2 Roost 3
1 & 2	2130	S. Pipistrelle	55		Audible
2	2132	C. Pipistrelle	45	N	Commuting
6	2138	S. Pipistrelle	55	W	Emerged from a gap behind a timber eave on the east elevation of the stable 2 Roost 2
2	2140	C. Pipistrelle	45	N	Commuting
7, 8 & 1	2140	C. Pipistrelle	45	N	Commuting
13, 1 & 2	2141	Noctule	20		Audible
11	2142	C. Pipistrelle	45	S	Commuting
3, 4 & 6	2142	Noctule	20	SE	Commuting
12	2145 - 2156	C. Pipistrelle	45		Foraging
7	2145 - 2155	C. Pipistrelle	45		Foraging
10	2146	C. Pipistrelle x 2	45	W	Emerged from a gap beneath a slate on the stables Roost 4
8 & 7	2146	C. Pipistrelle	45	S	Commuting
6, 5, 4 & 3	2147	S. Pipistrelle	55	N	Commuting
6, 5, 4 & 3	2149	S. Pipistrelle	55	N	Commuting
10	2150	C. Pipistrelle x 3	45	N	Emerged from a gap beneath a slate on the stables Roost 3
1 & 2	2151	S. Pipistrelle	55		Audible
11	2154	S. Pipistrelle	55		Audible
1 & 2	2155	S. Pipistrelle	55	E	Commuting
9 & 10	2155	C. Pipistrelle	45		Foraging
11	2155	C. Pipistrelle	45	E	Commuting
12	2156	S. Pipistrelle	55		Audible
12	2159	C. Pipistrelle	45		Audible
13	2200	C. Pipistrelle	45		Audible
1 & 2	2204	S. Pipistrelle	55	E	Commuting
11	2204 - 2240	C. Pipistrelle	45		Foraging
13	2209	C. Pipistrelle	45		Audible

1	2210	S. Pipistrelle	55	N	Commuting
12	2212	C. Pipistrelle	45		Audible
7	2213	S. Pipistrelle	55	W	Commuting
2	2213	Brown long-eared	45	N	Commuting
3	2214	Brown long-eared	39		Audible
5, 6 & 7	2215	Brown long-eared	45	SW	Commuting
1 & 2	2215	S. Pipistrelle	55	E	Commuting
1	2215	Daubenton's	51	E	Commuting
1 & 2	2216	S. Pipistrelle	55		Audible
12	2217	C. Pipistrelle	45		Audible
7 & 6	2217	Noctule	51		Audible
12	2218	S. Pipistrelle	55		Audible
1	2218	Daubenton's	51	E	Commuting
11 & 12	2219	Noctule	20		Audible
6, 5, 4 & 3	2220	S. Pipistrelle	55	N	Commuting
3, 4 & 5	2220	S. Pipistrelle	55		Foraging
11	2221	Daubenton's	51	E	Commuting
6, 10 & 8	2221	Daubenton's x 2	51	NW	Commuting
1	2225	S. Pipistrelle x 2	55	N	Commuting
13, 1 & 2	2226	Noctule	20		Audible
11 & 12	2227	Daubenton's	51		Audible
5, 6 & 7	2231	S. Pipistrelle	55	SW	Commuting
11	2231	S. Pipistrelle	55		Audible
12	2234	S. Pipistrelle	55		Audible
9, 10, 3 & 4	2234	S. Pipistrelle	55	NE	Commuting
12	2238	C. Pipistrelle	45		Audible
13	2238	C. Pipistrelle	45		Audible
3	2240	S. Pipistrelle	55		Audible
2	2242	S. Pipistrelle	55		Audible
13 & 3	2242	C. Pipistrelle	45		Audible
6	2246	Daubenton's	51	W	Emerged from a gap adjacent to a timber and stonework on stable 2 Roost 8
12	2248	C. Pipistrelle	45		Audible
6, 5, 4 & 3	2249	S. Pipistrelle	55	N	Commuting
11	2250	S. Pipistrelle	55		Foraging
11 & 12	2256	Noctule	20		Audible
11 & 12	2258	Daubenton's	51		Audible
7 & 6	2258	Noctule	51		Audible

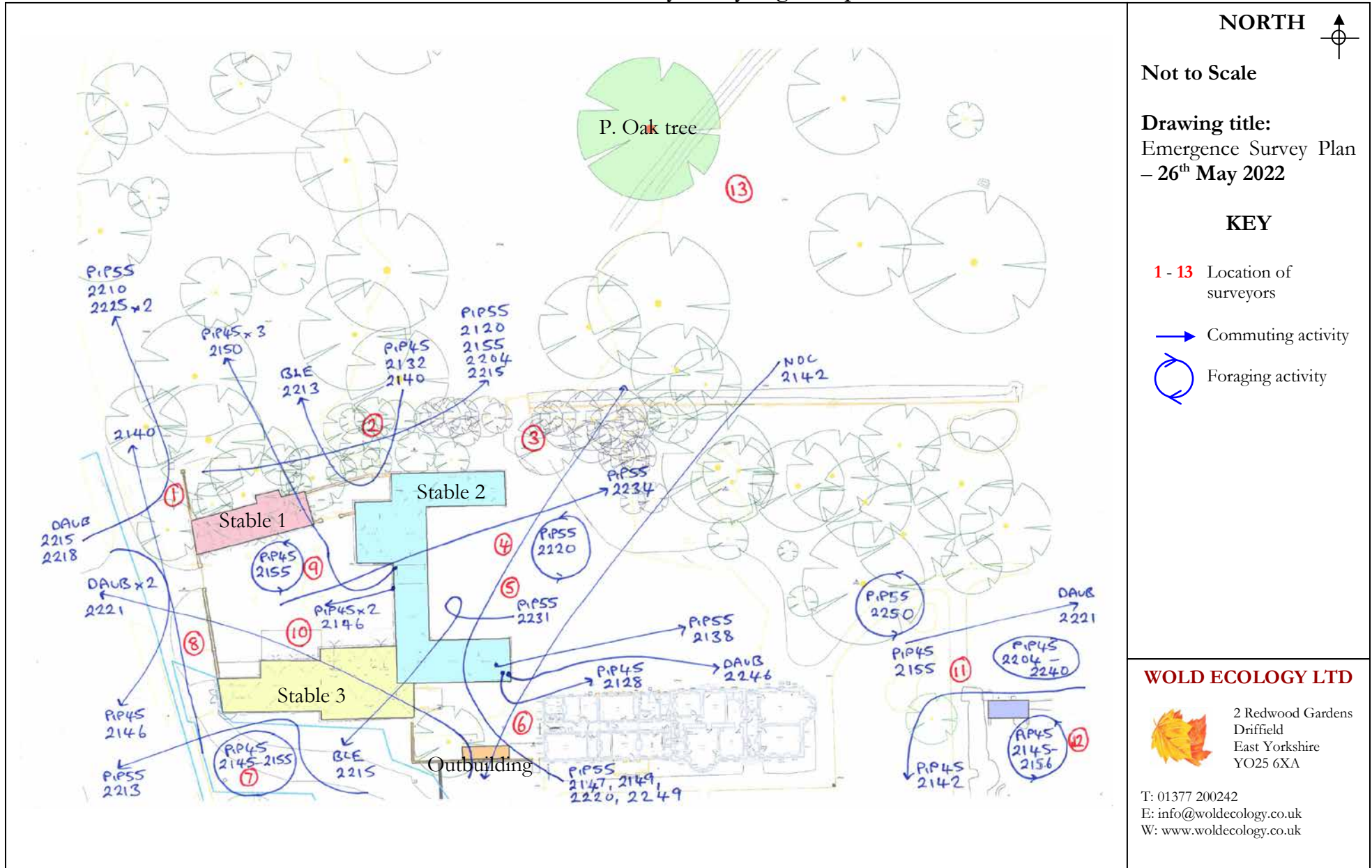
Date – 24 th July 2022					
1	0306 - 0319	C. Pipistrelle	45		Foraging
5	0317 - 0413	C. Pipistrelle	45		Foraging
7 & 5	0321	S. Pipistrelle	55	S	Commuting
7 & 5	0322	Daubenton's	51	S	Commuting
4	0325	S. Pipistrelle	55		Foraging
5	0329	Daubenton's	51	S	Commuting
5 & 6	0330	C. Pipistrelle	45	N	Commuting
5	0338	Daubenton's	51	S	Commuting
5	0339	Brown long-eared	39	S	Commuting
5 & 6	0347	S. Pipistrelle	55	N	Commuting
		C. Pipistrelle	45		Commuting
		S. Pipistrelle	55		Commuting
5 & 6	0354	C. Pipistrelle	45	N	Commuting
5	0354 - 0359	S. Pipistrelle	55		Foraging
5	0356	Brown long-eared	39	S	Commuting
2 & 3	0356	Noctule	20	E	Commuting
		C. Pipistrelle	45		Commuting
		C. Pipistrelle	45		Commuting
5 & 6	0400	S. Pipistrelle	55	N	Commuting
4 & 3	0408	Daubenton's	51	NE	Commuting
4	0410 - 0433	Daubenton's x 6	51		Returned to a roost beneath lead flashing on the south elevation of stable 2 Roost 8
4	0417	Daubenton's	51		Returned to a roost beneath lead flashing on the south elevation of stable 2 Roost 9
4	0421	Brown long-eared	39		Returned to a roost beneath a slate on Hotham Hall.
5 & 6	0437	S. Pipistrelle	55	N	Commuting
5	0427	Daubenton's	51	S	Commuting
3 & 4	0435	C. Pipistrelle	45	SW	Commuting
4 & 3	0438	S. Pipistrelle	55	NE	Commuting
6 & 7	0438	S. Pipistrelle	55		Returned to a roost beneath a ridge on the west elevation of stable 2 Roost 1
2 & 3	0439	S. Pipistrelle	55	E	Commuting
3 & 4	0441	S. Pipistrelle	55		Returned to a roost behind a timber eave on the east elevation of stable 2 Roost 2

4	0450	C. Pipistrelle	45		Returned to a roost beneath a lead ridge on the south elevation of stable 2 Roost 5
Date – 25th August 2022					
1	2024	C. Pipistrelle	45	W	Commuting
7 & 1	2031	S. Pipistrelle	55	NE	Commuting
1 & 2	2032	C. Pipistrelle	45	E	Commuting
2	2033	C. Pipistrelle	45		Audible
1	2034	S. Pipistrelle	55	E	Commuting
5	2034	C. Pipistrelle	45	S	Commuting
2	2034	S. Pipistrelle	55		Audible
3 & 4	2036	C. Pipistrelle	45		Audible
4 & 3	2036	C. Pipistrelle	45	N	Commuting
2 & 3	2037	C. Pipistrelle	45	E	Commuting
1	2038	C. Pipistrelle	45	E	Commuting
2	2038	C. Pipistrelle	45		Audible
1 & 7	2038 - 2100	S. Pipistrelle	55		Foraging
3 & 4	2040	S. Pipistrelle	55		Audible
4 & 3	2040	C. Pipistrelle	45	N	Commuting
5	2041	C. Pipistrelle	45	E	Commuting
5 & 4	2042	Daubenton's	51	NW	Emerged from a gap below a lead ridge Roost 10
3 & 4	2045	S. Pipistrelle	55		Audible
3 & 4	2046	S. Pipistrelle	55	E	Commuting
1, 7 & 6	2046	S. Pipistrelle	55	W	Commuting
5	2049	S. Pipistrelle	55	W	Emerged from a gap behind a timber barge board Roost 2
1	2047	S. Pipistrelle	55	W	Commuting
7, 3 & 4	2047 - 2051	C. Pipistrelle	45		Foraging
5	2050	C. Pipistrelle	45	E	Commuting
2	2052	S. Pipistrelle	55		Audible
2 - 5	2055	Noctule	20		Audible
5	2059	Brown long-eared	39	E	Commuting
5	2101	Daubenton's x 2	51	S	Commuting
5	2103	C. Pipistrelle	45	S	Commuting
4	2103	C. Pipistrelle	45		Audible
5	2103	C. Pipistrelle	45	S	Commuting
1 & 2	2108	Daubenton's	51		Audible
5	2111 - 2134	Brown long-eared	39		Roosting adjacent to ridge beam and light sampling in stable 2

					Roost 11
1 & 2	2124	Daubenton's	51		Audible
1 & 2	2130	Daubenton's	51		Audible
5 & 4	2134	Brown long-eared	39	N	Emerged from a gap beneath a lead ridge on stable 2
					Roost 11
2	2140	Daubenton's	51		Audible
6 & 7	2140	C. Pipistrelle	45	W	Commuting
2	2141	C. Pipistrelle	45		Audible
7 & 6	2141	C. Pipistrelle	45		Foraging
4 & 3	2143	C. Pipistrelle	45	N	Commuting
6 & 7	2145	C. Pipistrelle	45	W	Commuting
3 & 4	2152	C. Pipistrelle	45		Audible
Date – 11 th August 2023					
4	0342	S. Pipistrelle	55		Audible
3	0345	Brown long-eared	39		Audible
6	0348	Brown long-eared	39		Audible
5	0350	Brown long-eared	39		Audible
4	0350	S. Pipistrelle	55		Audible
2	0351	Brown long-eared	39		Audible
3	0350	S. Pipistrelle	55		Audible
5 & 6	0352	C. Pipistrelle	45		Audible
5	0355	C. Pipistrelle	45		Audible
5	0400	Brown long-eared	39		Audible
3	0406	S. Pipistrelle	55		Audible
4	0409	S. Pipistrelle	55		Audible
5	0410	Brown long-eared	39		Audible
5	0411	Noctule	20		Audible
4 & 5	0412	Brown long-eared	39		Audible
1	0417	S. Pipistrelle	55		Audible
3	0422	C. Pipistrelle	45		Audible
1	0422	C. Pipistrelle	45		Audible
4	0423	Brown long-eared	39		Audible
5	0424	S. Pipistrelle	55		Audible
4	0426	Natterer's	49		Foraging
4	0428	Whiskered	47		Audible
3	0428	C. Pipistrelle	45		Audible
5	0429	C. Pipistrelle	45		Audible
4	0430	Noctule	20		Audible
4	0431	Daubenton's	51		Audible
2	0432	Noctule	20		Audible
2	0433	C. Pipistrelle	45		Audible

4	0434	Whiskered	47		Audible
5	0435	S. Pipistrelle	55		Audible
4	0435	Daubenton's x 6	51		Returned to a roost beneath lead flashing on the south elevation of stable 2 Roost 8
4	0437	Daubenton's	51		Returned to a roost beneath lead flashing on the south elevation of stable 2 Roost 9
6	0437	Noctule	20		Audible
5	0438	Noctule	20		Audible
5	0440	S. Pipistrelle	55		Audible
5	0442	Noctule	20		Audible
5	0442	C. Pipistrelle	45	W	Commuting
5	0444	Noctule	20		Audible
1 & 5	0446	C. Pipistrelle	45		Audible
5	0450	C. Pipistrelle	45	NE	Commuting
5	0452	C. Pipistrelle	45	NE	Commuting
6	0455	S. Pipistrelle	55	N	Commuting
4	0500	S. Pipistrelle x 3	55		Returned to a roost under the gutter on the house outside of the boundary
5	0502	S. Pipistrelle	55		Audible
1	0505	C. Pipistrelle	45	N	Commuting
6	0507	C. Pipistrelle	45		Returned to a gap above the eaves on the south elevation of stable 2 Roost 7

10.5 Bat Activity Survey Flight Maps



NORTH

Not to Scale

Drawing title:
Emergence Survey Plan
– 26th May 2022

KEY

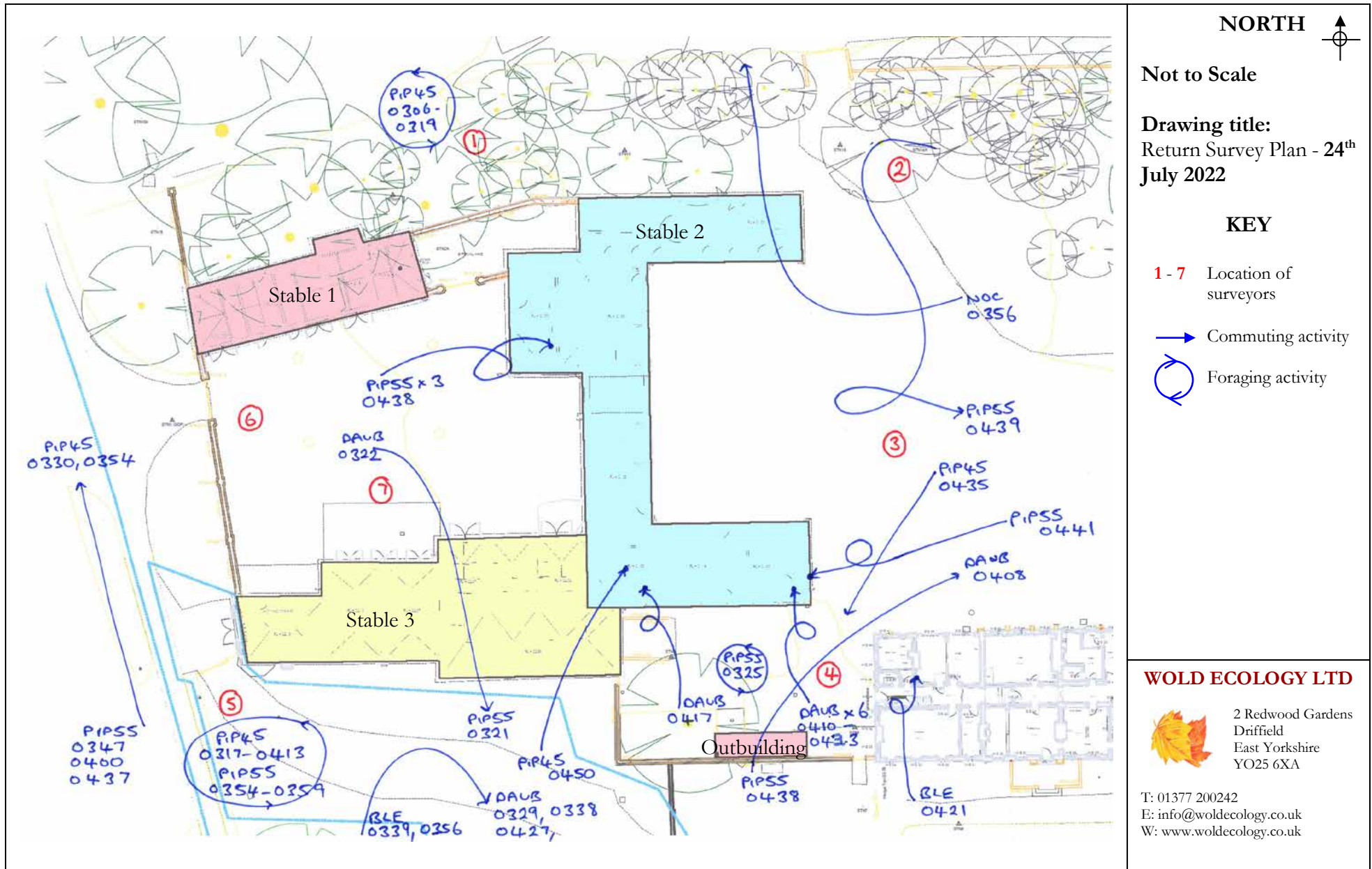
- 1 - 13 Location of surveyors
- Commuting activity
- Foraging activity

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NORTH ↑

Not to Scale

Drawing title:
Return Survey Plan - 24th
July 2022

KEY

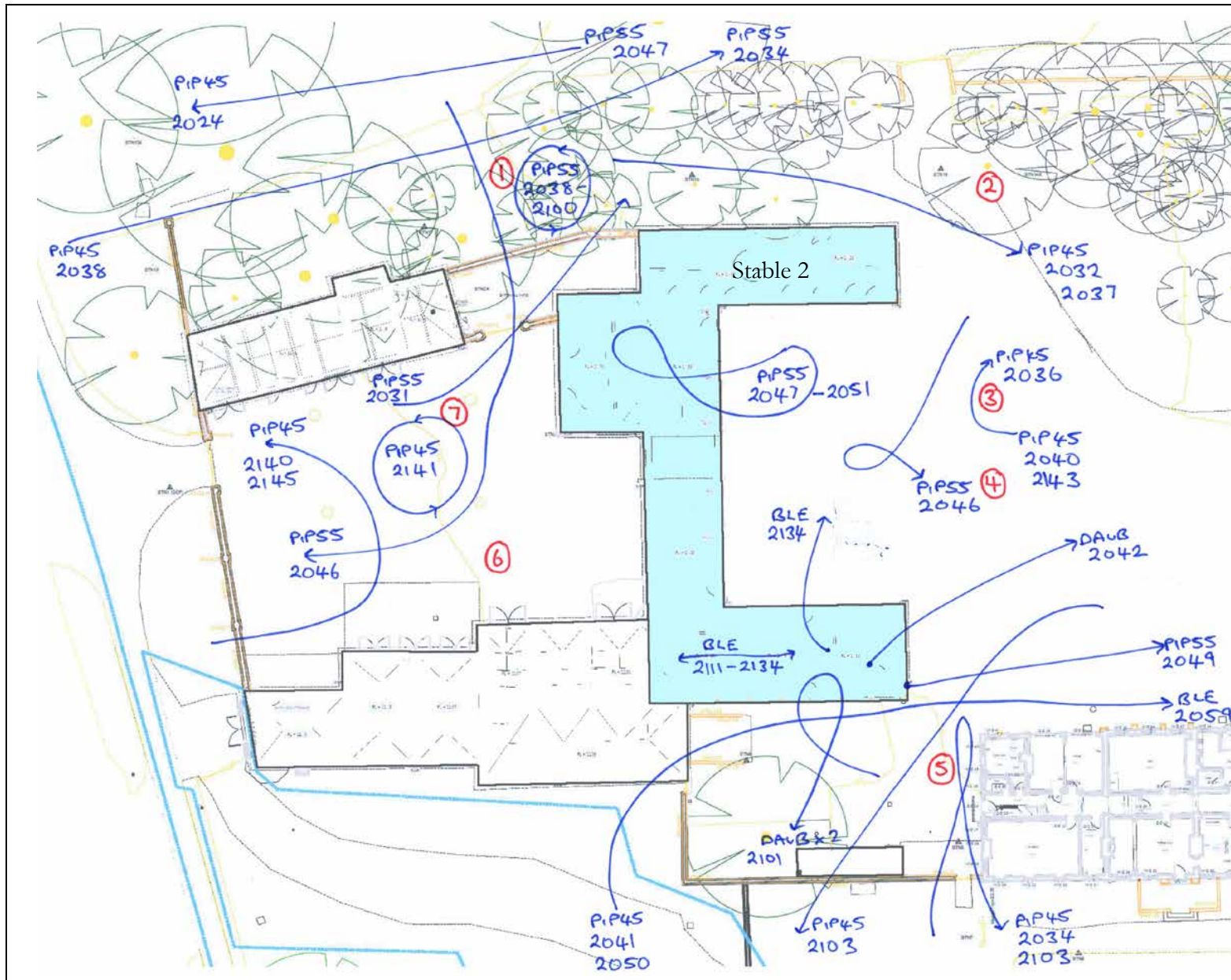
- 1 - 7 Location of surveyors
- Commuting activity
- ↻ Foraging activity

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NORTH 

Not to Scale

Drawing title:
Emergence Survey Plan
– 25th August 2022

KEY

- 1 - 7 Location of surveyors
-  Commuting activity
-  Foraging activity

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