West Winch Housing Access Road

Environmental Statement Chapter 8: Biodiversity Annex 8.11 Bat Roost Survey Report

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1 Introduction

1.1 Methodology

Overview

1.1.1 Bat Roost surveys were undertaken for the Proposed Scheme for trees and structures within respective survey areas for the (previous) Scheme Boundary (all maps have been updated with the latest Scheme Boundary (October 2023)).

Desk Study

1.1.2 A biological record search was commissioned to inform the ES for the Proposed Scheme in September 2023. The desk study was commissioned through Norfolk Biological Information Service (NBIS) to include records of bat roosts up to 5km from the Scheme Boundary.

Ground Level Tree Assessments

1.1.3 All trees within a 25m buffer of the Scheme Boundary were subject to a Ground Level Tree Assessment (GLTA), the survey area as shown in Appendix A. All GLTA surveys were completed by ecologists competent in recognising suitable features for tree-roosting bats. The GLTA surveys were undertaken on 8 January, 14 January 2021 and 9 March 2021.

1.1.4 A visual inspection of the trees from ground level using binoculars and a high-powered torch was undertaken to search for features which provide potential roosting opportunities for bats such as:

- woodpecker holes;
- rot holes;
- hazard beams;
- cracks and splits (e.g., frost cracks);
- knot holes;
- cankers;

- dense ivy; and
- lifting/peeling bark.

1.1.5 Where potential roost features were identified, their location and a brief description were recorded, in order to aid further survey work as required. Where possible, each feature was visually inspected for evidence of use by roosting bats, including:

- bat droppings in, around or below the potential roost feature;
- urine staining below the potential roost feature;
- scratch marks; and,
- characteristic staining (from fur oils).

1.1.6 If features were present at a height possible for a ground-level inspection to be safely completed (e.g., 2m high), then this was completed by a Level 2 licensed or accredited bat surveyor using high powered torches and/or an endoscope. Trees were categorised in line with the descriptions in Table 1-1. Trees categorised as having negligible suitability to support roosting bats are not discussed further in this report, beyond those which were downgraded to negligible suitability following further inspection.

Table 1-1 Tree bat roost suitability classification (Collins, 2016)

Bat roosting suitability	**Description of roosting behaviour**
Confirmed	A tree with features confirmed to be used by roosting bats either by historic records or evidence recorded during survey.
High	A tree with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.

Bat roosting suitability	Description of roosting behaviour
Moderate	A tree with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (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).
Low	A tree of sufficient size and age to contain potential roosting features but with none seen from the ground or features with only very limited roosting potential.
Negligible	A tree with features of negligible value to tree-roosting bats.

1.1.7 For trees assessed as being of low, moderate or high suitability, information on species, approximate height in metres, and age class was collected. Additionally, a ten-figure grid reference and photographs were collected for all trees assessed as low, moderate or high suitability.

1.1.8 Trees that were assessed as moderate suitability, high suitability or confirmed roost were then subject to further survey in the form of ground level or aerial inspection surveys or if they were unsafe to climb, emergence/re-entry surveys.

Preliminary Bat Roost Assessment of Structures

1.1.9 All structures that were assessed as potentially impacted by the Proposed Scheme within a 50m buffer of the Scheme Boundary were subject to a external PBRA survey, the survey area as shown in Appendix A. Due to access restrictions during COVID-19 only an external inspection was undertaken and a precautionary roosting suitability assigned.

1.1.10 A visual inspection of the exterior of structure using binoculars was completed to search for features which may provide potential roosting opportunities for bats. Where suitable features were noted, their location and a brief description

of their character was recorded. Additionally, each feature was visually inspected for evidence indicating use by roosting bats such as:

- droppings;
- urine staining;
- scratch marks; and
- characteristic staining (from fur oils).

1.1.11 Structures were categorised in line with the descriptions in Table 1-2 below. The Preliminary Bat Roost Assessment was conducted on 14 January 2021.

Table 1-2 Structure bat roost suitability classification (Collins, 2016)

Category	Description
Confirmed	Structures with features confirmed to be used by roosting bats either by historic records, or evidence recorded during survey.
High	A structure with one or more potential roost sites that are obviously suitable for use by larger numbers of bats on a more regular basis and potentially for longer periods of time due to their size, shelter, protection, conditions and surrounding habitat.
Moderate	A structure with one or more potential roost sites that could be used by bats due to their size, shelter, protection, conditions and surrounding habitat but unlikely to support a roost of high conservation status (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).
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 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).
Negligible	A structure with features of negligible value to structure-roosting bats.

Inspections Surveys of Trees

1.1.12 Trees with moderate and high suitability for roosting bats, as identified in the GLTA were subject to aerial and ground level inspection surveys using an endoscope or torches.. Surveys were conducted in summer 2021 to identify summer roosts (including maternity roosts) and winter 2022 to identify winter and hibernation roosts.

1.1.13 Negligible and low suitability trees did not receive a follow-up presence/likely absence survey in accordance with best practice survey guidance (Collins, 2016). Low suitability trees have been recorded on a plan and are considered further as part of the bat mitigation strategy for the Proposed Scheme.

1.1.14 Aerial inspection surveys were undertaken by qualified tree-climbers holding or accredited under a Level 2 Natural England bat licence (or were supervised by an ecologist holding a Natural England Level 2 licence).

1.1.15 Summer inspection surveys were undertaken between May 2022 and September 2022. The dates of these surveys were:

- 12 May 2021,
- 13 May 2021,
- 1 July 2021,
- 2 September 2021; and
- 17 September 2021.

1.1.16 Winter inspection surveys were undertaken between January and March 2022. The dates of these surveys were:

- 15 January 2022
- 8 February 2022
- 1 March
- 2 March

1.1.17 Surveyors undertook inspections with high powered torches, endoscopes and mirrors. After inspection, the suitability of the potential roost feature was re-evaluated depending on the suitability of the feature to support roosting bats, and re-categorised as appropriate (as low, moderate or high). Where roosts were identified, the suitability of trees was changed to 'confirmed roost'. All confirmed roosts were subject to three summer surveys and two winter surveys.

1.1.18 The number of aerial inspections conducted for each tree was proportional to the level of bat roosting suitability assigned. In accordance with current best practice guidance (Collins, 2016), two summer inspections were completed for trees with moderate suitability, and three summer inspections were completed for trees with high suitability or trees with confirmed roosting status. Two winter surveys were conducted on moderate and high suitability trees. Surveys were conducted at least two weeks apart for both summer and winter surveys.

Dusk Emergence and Dawn Re-Entry Surveys of Trees and Structures

1.1.19 In addition to trees which could not be safely climbed, structures assessed as having suitability to support roosting bats were subject to dusk emergence/dawn re-entry surveys to determine the presence or likely absence of roosting bats.

1.1.20 Dusk emergence/dawn re-entry surveys were undertaken by surveyors experienced in completing emergence/re-entry surveys for trees and structures.

1.1.21 Surveyors noted features on the tree or structure from which bats were observed emerging or returning. Surveyors recorded the species and time of activity, as well as noting any flight lines and comments on activity (i.e., commuting or foraging).

1.1.22 For emergence/re-entry surveys of trees and structures, the number of survey visits completed was proportional to the level of assigned bat roosting suitability as show in Table 1-3 below. This is in line with current best practice

guidance (Collins, 2016). A single survey visit for trees comprised the following:

- aerial inspection survey (as described above, where safe and practical to do so);
- dawn re-entry survey; or
- dusk emergence survey.

1.1.23 A single survey visit for structures comprised either a dusk emergence survey or a dawn re-entry survey.

Table 1-3 Recommended number of presence/likely absence based on Collins (2016)

Roost suitability	Recommended minimum number of survey visits for trees	Recommended minimum number of survey visits for structures
Low	No further survey required. Tree will be subject to checks immediately prior to felling.	One survey visit.
Moderate	Two separate survey visits.	Two separate survey visits.
High	Three separate survey visits	Three separate survey visits.
Confirmed Roost	At least three separate survey visits, or until the roost has been characterised.	At least three separate survey visits, or until the roost has been characterised.

1.1.24 During tree surveys, surveyors positioned themselves in order to achieve optimal visibility of the tree and any potential roosting features and a minimum of two surveyors were required for each tree.

1.1.25 During structure surveys, sufficient numbers of surveyors were positioned around the structure on each survey to ensure visibility of all the potential roosting features identified during the Preliminary Bat Roost Assessment (PBRA) surveys.

1.1.26 Dusk emergence surveys began 15 minutes before sunset and continued for 1.5 hours after sunset. The dawn re-entry surveys began 1.5 hours before sunrise and continued until 15 minutes after sunrise.

1.1.27 Surveyors used EMT (© Wildlife acoustics) bat detectors to listen to and record bat echolocation calls. On every survey occasion, surveyors were aided by either an infra-red or thermal imaging camera to assist visibility of the bats in darkness.

Notes and Limitations

1.1.28 No internal inspection of residential buildings was undertaken due to restriction around COVID-19. To cover this limitation, buildings were assessed as high suitability unless it could be accurately assessed as a lower categorisation from external inspection alone. Buildings assessed as high suitability were then surveyed using dusk/dawn emergence re-entry surveys to detect roosts.

1.1.29 No access was granted to survey High Orchard through emergence re-entry surveys, however due development of the Proposed Scheme design, impacts upon these buildings are not considered likely.

1.1.30 T53 could not be surveyed in full due to the presence of an active bees nest during summer surveys in 2021. The second winter survey in March 2022 determined that the tree was moderate suitability.

1.1.31 A dawn re-entry survey at Structure 2 at Hardwick Farm on 30 July 2021 was stopped before the full survey duration could be completed due to rain. No bats were observed re-entering the structure during the survey and the survey was repeated 5 August 202 to cover this limitation.

1.2 Results

Desk Study

1.2.1 The following roosting bat records were returned within 5km of the Scheme Boundary.

- All Saint's Church, East Winch. Approximately 4.9km east of the Scheme Boundary:
    - Serotine Bat roost.
    - Natterer's Bat roost
    - Pipistrelle Bat roost
    - Single count of a roosting Common Pipistrelle.
    - Count of three Soprano Pipistrelle roosting.
    - Single count of Brown Long-eared Bat Roost.
- St Mary the Virgin Church, Wiggenhall. Approximately 3.7km west of the Scheme Boundary:
    - Single Natterer's Bat.
    - Counts of two to 12 Common Pipistrelle.
    - Counts of 15 to 83 Soprano Pipistrelle.
    - Counts of one and two Brown Long-eared Bat.
- Maternity roost of nine adult Brown Long-eared Bats and three pups approximately 3.6km south of the Scheme Boundary.
- St Peter and St Paul's Church Watlington approximately 3.5km south of the Scheme Boundary
    - Single count of one Soprano Pipistrelle roost.
    - Counts of four to six Common Pipistrelle roosting.
    - Counts of 19 to 20 Natterer's Bat.
- Mintlyn Crematorium approximately 3km north of the Scheme Boundary.

- Counts between one and 25 Brown Long-eared Bats within bat boxes.
- Counts between three and 357 Soprano Pipistrelle at Mintlyn Crematorium building.
- Single counts of Barbastelle Bat, Daubenton's Bat and Natterer's Bat within bat boxes.
- Counts between one and 18 Common Noctule within bat boxes.
- Counts between three and 74 Pipistrelle bats within bat boxes.

- A count of 13 Common Pipistrelle and one Brown Long-eared Bat at St Nicholas Church, Kings Lynns approximately 2.6km north of the Scheme Boundary.
- A count of 133 Soprano Pipistrelle maternity roost at a building roost approximately 1.3km north of the Scheme Boundary.
- A count of 271 Soprano Pipistrelle at a building roost in North Runcton (assumed 271 individual bats) 465m east of the Scheme Boundary.
- Multiple records of one to three emerging bats at Moat Farm approximately 300m west of the Scheme Boundary. Species included Soprano Pipistrelle and Brown Long-eared Bat.

Trees

1.2.2 A total of 63 trees with suitability for roosting bats were identified within the Survey Area through the GLTA survey and subsequent inspection surveys. The location of these trees is presented in Appendix B. The description of the trees and their suitability is presented in Table C1, Appendix C and results of the emergence re-entry surveys of trees is presented in Appendix D.

1.2.3 Four trees (T39, T40, T52 and T54) were identified during the GLTA survey but were not located within the 25m buffer of the Scheme Boundary and a full survey effort was not undertaken for these trees. T52 and T54 were both surveyed by aerial inspection to verify their suitability but were not surveyed

further as they were outside of the Survey Area. T39 and T40 were identified during the GLTA were not inspected further due to their distance from the Survey Area and Scheme Boundary.

1.2.4 The GLTA, inspection surveys and emergence/re-entry surveys identified the following roost trees and trees with suitability for roosting:

- Six confirmed roosts.
- Eight trees high suitability trees.
- Fifteen moderate suitability trees.
- Forty low suitability trees.

1.2.5 Surveys of trees identified multiple roosts, the majority of which were located within Sheep's Course Wood. Outside of this area, the only roost identified was within a mature oak tree (T4) located approximately 80m south of Sheep's Course Wood, connected by a hedgerow. A summer day roost of two Common Pipistrelle was identified behind flaking bark during a dawn re-entry survey in July 2021.

1.2.6 A total of five roosts were identified within Sheep's Course Wood. These roosts all contained individual bats during summer and winter. Summer roost surveys identified a single Pipistrelle Bat within a hazard beam (T28) in May 2021 no further summer roosts were identified during summer inspection surveys. Winter inspection surveys (including wintering GLTA) identified the following four roosts.

- T29 – Single Brown Long Eared Bat identified with endoscope (2 March 2022).
- T64 – Single Pipistrelle bat identified in rot feature at base of tree (8 February 2022).
- T23 – Single Myotis Bat identified in rot hole of Oak (8 January 2021).

- T24 – Single Natterer's Bat identified in Sycamore rot whole entrance (8 January 2021).

Structures

1.2.7 A total of seven structures were identified within the survey area as being potentially affected by the Proposed Scheme. Their suitability for roosting bats, as described in Table 1-4 below and their locations are presented in Appendix

1.2.8 No access permission was granted to survey High Orchard and as such not surveys were completed for this building. A precautionary high suitability was assigned for this building.

Table 1-4 Structure suitability

Structure reference	Structure type	Suitability
Hardwick Farm – Structure 1	Farm building	Low
Hardwick Farm – Structure 2	Farm building	High
Hardwick Farm – Structure 3	Barn	High
Hill Cottages	Residential	High
Agricultural Barns (A47)	Barn	Moderate
Scout Building	Commercial	Low
High Orchard	Residential	High (no access so a precautionary high suitability assigned).

Dusk Emergence and Dawn Re-entry Surveys of Structures

1.2.9 A total of six structures were subject to dusk emergence and/or dawn re-entry surveys in 2021. No roosts were identified during these surveys. The final bat roost suitability of all structures is shown in Table D1, Appendix D.

1.2.10 Dusk emergence and/or dawn re-entry surveys of the Agricultural Barns (A47) were undertaken for the Proposed Scheme in 2019. A single Common Pipistrelle was recorded emerging from the Agricultural Barn (A47) during a dusk emergence survey on two occasions, one undertaken on 20 August 2019 and one undertaken on 29 August 2019.

1.3 References

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