



St Helena's Care Home, Liverpool

Bat Survey ground Level Tree Assessment

Prepared For: Jagger Jones & Muzzlewhite LLP

Document Reference: 11471.001

February 2026

Version 1.0

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Document Title	Bat Survey Technical Report
Document Ref	11471.001
Version	1
Prepared For	Jagger Jones & Muzzlewhite

Author	BS
Date	February, 2026
Checked	JC
Approved	JC

Amendment History					
Version	Date	Modified by	Check/ Approved by	Reason	Status

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Executive Summary

1. The Environment Partnership (TEP) was commissioned by Jagger Jones & Muzzlewhite LLP in December, 2025 to undertake bat surveys to inform works taking place at St. Helena's Residential Care Home, Huyton. Liverpool
2. This survey follows on from an Arboricultural Impact Assessment and Method Statement in 2024, where fifteen individual trees, four groups of trees/shrubs and one hedge were identified by Godwin Tree Surveys. Two individual trees (T3 and T4) were classified as retention category 'U' (unsuitable for retention). Both trees were viewed as having hazardous defects that pose a safety risk.
3. As proposals require the felling of two early mature Sycamore trees on the grounds of safety. Prior to felling the two trees required preliminary bat roost assessment to look for Potential Roost Features (PRF).
4. The PRF inspection surveys, identified:
 - Tree TB2 was assessed to have PRF-I bat roost habitat suitability; and
 - Tree TB3 was assessed to have PRF-I bat roost habitat suitability;
5. Reasonable Avoidance Measures (RAMs) are provided to use on the trees assessed in order to limit damage to bats in the unlikely event of them being present in the PRF-I features identified as having low suitability for roosting bats.

1.0 Introduction

- 1.1 The Environment Partnership (TEP) was commissioned by Jagger Jones & Muzzlewhite LLP in December, 2025 to undertake bat surveys to inform works taking place at St. Helena's Residential Care Home at site location (hereafter referred to as the 'Site').
- 1.2 The proposals for the Site involve renovations to the existing building, and following arboricultural surveys there is a requirement to fell two early mature Sycamore trees (T3 and T4) on the grounds of safety. Prior to felling a request for a ground based preliminary roost assessment is carried out.
- 1.3 This survey follows on from an Arboricultural Impact Assessment and Method Statement¹ in 2024, where fifteen individual trees, four groups of trees/shrubs and one hedge were identified by Godwin Tree Surveys. Two individual trees (T3 and T4) were classified as retention category 'U' (unsuitable for retention). Both trees were viewed as having hazardous defects that pose a safety risk.

Purpose of this Document

- 1.4 This technical report has the following objectives:
- Give an overview of the habitats present within the site which could be used by bats for roosting, foraging and commuting;
 - Identify and characterise any confirmed bat roosts within the site, including species and status of roosts;
 - Evaluate the value of the site for bats;
- 1.5 Assess potential impacts of site proposals on bat roosting, foraging and commuting.
- 1.6 Determine required further actions for implementing avoidance, mitigation, compensation and enhancement measures, in relation to impacts of site proposals on bat roosting, foraging and commuting.

Site Description

- 1.7 The site is located in Huyton, in the metropolitan borough of Knowsley, Merseyside, England. The location of the site in the context of the wider landscape is depicted by the red line shown in Figure 1. The approximate central grid reference of the site is SJ 43692 90584.

¹ Godwins Tree Surveys, April 2024, Arboricultural Impact Assessment with Arboricultural Method Statement. Project No. AIA.13809.01

- 1.8 The habitat within the site is predominantly a two-story building, with tarmacadam surfaced hardstanding on the western side, amenity grass on south and eastern sides and scattered trees around the perimeter. Within 50m of the Site, to the north is an active railway corridor running east to west, that could provide landscape connectivity along its tree and scrub lined edges. The wider landscape includes a mosaic of sub-urban gardens, amenity parkland (including a golf course), motorway corridor and arable farmland.

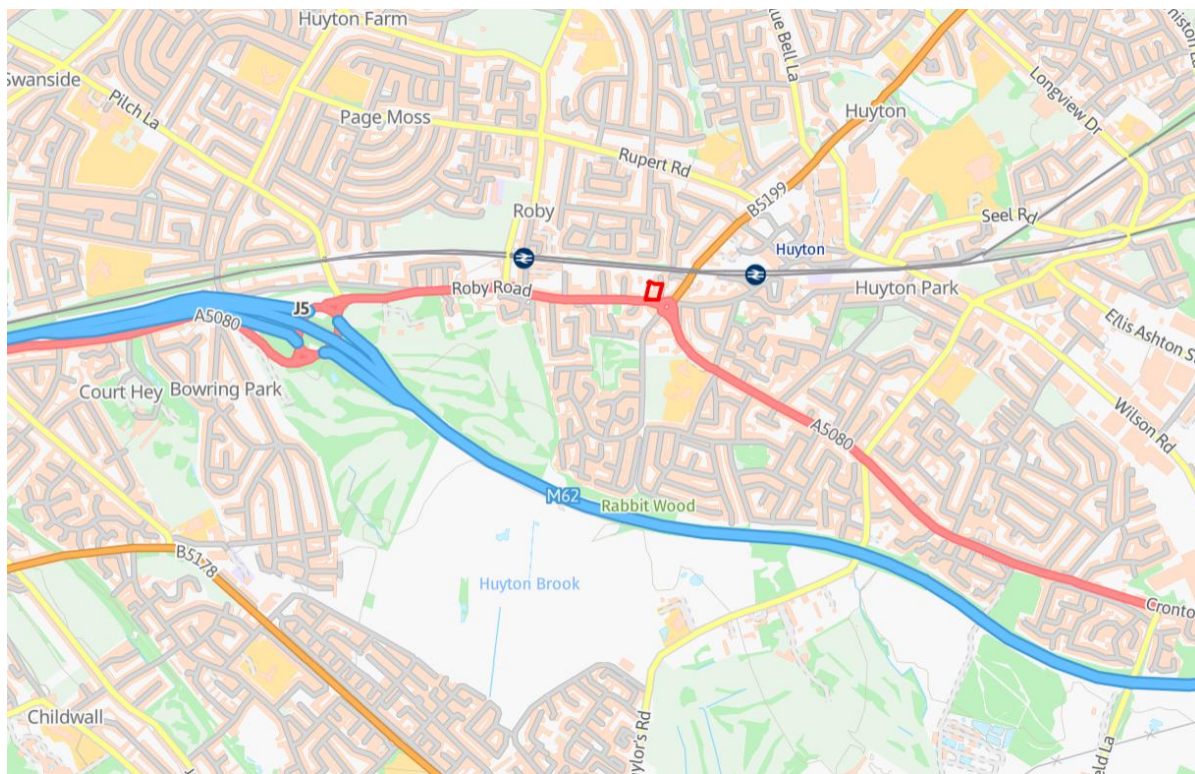


Figure 1: Site location in the context of the wider landscape.

2.0 Legislation

- 2.1 All bat species and their roosts are legally protected in the UK. All bats are listed as European Protected Species (EPS) in the Conservation of Natural Habitats and of Wild Fauna and Flora, better known as the Habitats Directive². Annex II of the Habitats Directive lists bat species of community interest requiring designation of Special Areas of Conservation (SACs). Annex IV of the Habitats Directive lists all bats as species of community interest in need of strict protection.
- 2.2 The Conservation of Habitats and Species Regulations 2017³ and the Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019⁴ (England and Wales), The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)⁵ (Scotland) and The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended)⁶, transpose elements of the Habitats Directive into national law and are referred to as the 'Habitats Regulations'. There is also protection for bats and roosts in England and Wales under Schedule 5 of the Wildlife & Countryside Act 1981 (as amended)⁷. Under UK legislation it is a criminal offence if any persons:
- Intentionally kill, injure, or take any bat;
 - Intentionally or recklessly damage, destroy or obstruct any place used for shelter or protection by a bat (even if bats are not occupying the roost at the time);
 - Intentionally or recklessly disturb a bat whilst it occupies a place used for shelter or protection; and
 - Possess or advertise/sell/exchange a bat (dead or alive) or any part of a bat.
- 2.3 Section 41 (S41) of the Natural Environment and Rural Communities Act 2006 (NERC) (England)⁸, Section 7 (S7) of the Environment (Wales) Act 2016⁹, Section

² Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora. Eur-Lex. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A01992L0043-20130701>

³ Conservation of Habitats and Species Regulations 2017 (SI 2017/1012). Available at: <https://www.legislation.gov.uk/uksi/2017/1012/>

⁴ Conservation of Habitats and Species Regulations 2019 (SI 2019/579). Available at: <https://www.legislation.gov.uk/uksi/2019/579/>

⁵ The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended) No. 2716. Available at: <https://www.legislation.gov.uk/uksi/1994/2716/contents/made>

⁶ The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (as amended) No. 380. Available at: <https://www.legislation.gov.uk/nisr/1995/380/contents/made>

⁷ Wildlife and Countryside Act 1981 (as amended) c. 69. Available at: <https://www.legislation.gov.uk/ukpga/1981/69/>

⁸ Natural Environment and Rural Communities Act 2006 c. 16. UK Public General Acts. Available at: <https://www.legislation.gov.uk/ukpga/2006/16/>

⁹ Environment (Wales) Act 2016 (anaw 3) Part 1 Section 7. Acts of the National Assembly for Wales. Available at: <https://www.legislation.gov.uk/anaw/2016/3/section/7>

2(4) (S2) of the Nature Conservation (Scotland) Act 2004¹⁰ and Section 3(1) (S3) of the Wildlife and Natural Environment Act (Northern Ireland) 2011¹¹ also identify bat species regarded by Statutory Nature Conservation Organisations (SNCOs) as being of 'principal importance' for the purposes of conserving biodiversity. Species of principal importance (SPI) are drawn from earlier lists of United Kingdom Biodiversity Action Plan (BAP) Priority Species and Habitats.

- 2.4 Local authorities also identify bat species of importance within Local Biodiversity Action Plans (LBAP) for the purposes of conserving biodiversity.

¹⁰ Nature Conservation (Scotland) Act 2004 asp 6 Part 1 Section 2. Acts of the Scottish Parliament. Available at: <https://www.legislation.gov.uk/asp/2004/6/section/2>

¹¹ Wildlife and Natural Environment Act (Northern Ireland) 2011, C. 15. Acts of the Northern Ireland Assembly: <https://www.legislation.gov.uk/nia/2011/15/contents>

3.0 Methods

- 3.1 The following bat surveys were undertaken in accordance with the Bat Conservation Trust (BCT) Good Practice Guidelines (Collins, 2023)¹². Detailed data collation, field survey and data analysis and evaluation methodologies are provided at Appendix A.

Roost Surveys

Preliminary Roost Assessment - Trees

- 3.2 A targeted Ground Level Tree Assessment (GLTA) of the two trees within the site was carried out on 19th December 2025 by a qualified TEP ecologist.
- 3.3 Following the GLTA, trees were categorised with reference to their bat roost habitat suitability (PRF-M, PRF-I or None) as determined by their characteristics and potential roost features (PRFs).

Survey Constraints

- 3.4 The GLTA was undertaken during suitable weather conditions and therefore there was no significant constraint to the survey. Poor light conditions can cause PRFs to be missed, wind can blow away external signs e.g., droppings at certain times of year and rain can wash away droppings and make staining around roost entrances difficult to distinguish.
- 3.5 Optimal conditions for identifying tree PRFs are when trees are not in leaf. The recommended survey window for GLTA is between December and March (inclusive). As the GLTA was carried out in December, this is considered an optimal season for survey. Poor light and dense foliage (including ivy *Hedera helix* cover) can cause PRFs to be missed from ground level vantage points. However, it is the surveyors opinion that the ivy was not sufficiently dense enough to obscure potential features. The ivy growth was not viewed as provide suitable features for roosting
- 3.6 No periods of rain were experienced during the GLTA. Rain can reduce apparent suitability of PRFs, as staining from bat roosts can be less obvious and damp bark colouration can affect visibility.
- 3.7 There were no constraints affecting the GLTA surveys.

¹² Collins, J. (ed.) (2023) Bat Surveys for Professional Ecologists Good Practice Guidelines (4th edition). The Bat Conservation Trust, London. ISBN-978-1-7395126-0-6

PRF Inspection Surveys - Trees

- 3.8 A ground level survey assessing potential roost features (PRFs) was undertaken by a TEP bat licensed consultant, on the morning of 19th December, 2025. Both trees were inspected from the ground using a range of equipment to make an appropriate assessment of the tree's status. This involved the use of a high-powered torch, binoculars, a camera with telephoto lens. A mirror and torch. As well as a professional high-definition endoscope (mounted on a telescopic pole where required) as well as a high-definition Go-Pro 11 on a telescopic pole with a torch provided additional illumination of features where required, viewed with a remote wireless screen.

Survey Constraints

- 3.9 The trees are viewed as not safe to climb due to the disease and decay noted in the Arboricultural survey.
- 3.10 All features present were suitably assessed using a range of ground level techniques and it is considered that there were no constraints affecting the PRF inspection surveys.

Evaluation

- 3.11 For the purposes of this technical report and of assigning value to bats, the guidance set out in the Chartered Institute of Ecology and Environmental Management (CIEEM) UK Bat Mitigation Guidelines (Reason and Wray, 2023¹³) as detailed at Appendix A, has been followed. This includes an assessment of whether the site supports habitats for bat roosting, foraging and/or commuting and determines the importance of the site with regard to bats, whilst taking account of regional variations in bat distribution and rarity, roost status importance and the importance of bat commuting and foraging habitat in the context of the surrounding landscape.

Evaluation Constraints

- 3.12 Conservation status varies between the different countries of the UK reflecting abundance and distribution. For example, there are seven priority species in England and Scotland, eight in Wales, and three in Northern Ireland, reflecting these differences. There are also differences in abundance and distribution within each country boundary. The absence of a species from an area does not mean that it never occurs in that region. When rarities do occur, their value therefore will be specifically assessed and counted as 'Rare' in that region. For example, lesser horseshoe bats *Rhinolophus hipposideros* are occasionally recorded in Northern England and should be treated in the 'Rarest Annex II Species and Very Rare' category where they do arise even though they are not on the list of species 'normally' encountered in that region.
- 3.13 A precautionary approach to assessing roost presence within the landscape has also been taken when assessing proximity/connectivity to roosts based on activity levels noted within the site, suitable roost habitat within the locality and desk study data.

¹³ Reason, P.F. and Wray, S. (2023). UK Bat Mitigation Guidelines: a guide to impact assessment, mitigation and compensation for developments affecting bats. Chartered Institute of Ecology and Environmental Management, Ampfield.

4.0 Results

Ecological Desk Study

- 4.1 The Multi-Agency Geographic Information for the Countryside (MAGIC) data identified eight locations where Natural England EPS Mitigation Licences for bat roosts have been in place within 5 km of the site. These are summarised in Table 1.

Table 1: Natural England mitigation licences within 5 km of the site.

Species on Licence	Licence Reference	Dates Valid	Licensable Activities
Common Pipistrelle Soprano Pipistrelle	2015-10030-EPS-MIT	08/05/2015 to 31/05/2020	Destroy resting
Common pipistrelle Soprano pipistrelle; Brown long-eared; Whiskered.	EPSM2013-5749	19/04/2013 to 30/09/2016	Destroy breeding
Common Pipistrelle Soprano Pipistrelle; Brown long-eared, Natterer's	EPSM2013-5867	03/12/2013 to 30/09/2014	Destroy resting
Common Pipistrelle	EPSM2010-2694	01/04/2011 to 31/12/2012	Destroy resting
Common Pipistrelle	2017-28108-EPS-MIT	24/03/2017 to 30/06/2017	Destroy resting
Brown long-eared, Common Pipistrelle	2017-28690-EPS-MIT-1	01/08/2017 to 30/11/2018	Destroy resting
Common Pipistrelle	2018-38343-EPS-MIT	01/01/2019 to 31/01/2022	Destroy resting
Common Pipistrelle	2020-49681-EPS-MIT	22/10/2020 to 21/10/2025	Destroy resting

- 4.2 There are no statutory designated sites identified for their bat populations located within 5 km of the site.

Roost Surveys

Preliminary Roost Assessment - Trees

- 4.3 The detailed findings and a photographic record of the GLTA are presented below. The two trees requested for survey are located on the north western side of the plot of a former residential care home, currently being renovated. The Site drawings can be found in the associated arboricultural report by Godwins Arboriculture Ltd ref: AIA.13809.01, 12th April 2024. See Appendix



Plate 1 View north from site entrance showing trees and shrubs along the western boundary.



Plate 2 View of BT 4 behind Site Office in the northern site corner

- 4.4 A summary of the categorisations of trees based on their location, characteristics and PRFs is provided in Table 2 below.

PRF Inspection Surveys - Trees

- 4.5 During the GLTA PRF inspection surveys, trees identified were categorised as to their potential bat roost habitat suitability. The detailed findings and a photographic record of the PRF inspection surveys are presented in Table 2.
- 4.6 Tree TB2 was assessed to have PRF-I bat roost habitat suitability; and
- 4.7 Tree TB3 was assessed to have PRF-I bat roost habitat suitability;

Table 2: PRF inspection survey findings, photographic record and potential roost habitat suitability categorisation of trees based on their location, characteristics and PRFs.

BT3	Tree Description:	Sycamore <i>Acer pseudoplatanus</i> <i>Basal cavity, Early-mature, somewhat poor formed specimen</i> <i>DBH: 0.48(m)</i> <i>Single stem</i> <i>7m tall</i> PRF 1: Evidence of rot at base of tree. The hole located at the base of the tree in a SW direction is assessed as one PRF. The access hole into heartwood cavity is from ground level to a height of 0.10cm and is ca.4cm wide. The internal cavity appears to be over 30% of diameter of tree. But is unlikely to provide hibernation opportunities for bats in its location and in the context of the surrounding landscape. Cavity feature was Inspected via endoscope. This was investigated to 50cm depth internally. There was no evidence of bat use within the cavity. The cavity is broad, spired. The rot cavity contained woodlice and slugs at the time of the survey. It is not viewed that the feature is likely potential for day/night/feeding/transitional occasional bat roost use. PRF 2: Ivy cover. Superficially from a distance the ivy cover up the tree appears H&S Considerations: Proximity to car park. Proximity to Site office. Tree subject to rot. Further Survey Requirements: No further surveys required. The tree features were inspected using a variety of techniques and the features are not as useable as they initially appear. The hollow base of PRF 1 is the exception, but in the local context shouldn't be viewed as more than a PRF-I.
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	Photos:				
Categorisation of Potential Bat Roost Habitat Suitability					PRF-I

Arb Reference		T3
BT4	Tree Description: Sycamore <i>Acer pseudoplatanus</i> Standard Health - fungal damaged at base, mature, minor deadwood in crown DBH: 0.55(m) Single stem 12m tall PRF 1: Ivy covered tree that superficially appears to provide dense vegetative cover, but on closer inspection Ivy stem cover is sparse and provides negligible opportunities for bat roosting. PRF2: Knot hole in central leader branch c. 10m, SW facing. Initially appear to provide opportunities. Viewed through binocular shows feature is tightly sealed and no roosting feature is present. PRF3: Knot hole on lateral branch, c.10m south facing. Initially appear to provide opportunities. Viewed through binocular shows feature is tightly sealed and no roosting feature is present. PRF4: PRF height 4m, Minor limb in south west orientation at c.4m elevation. Partly ivy covered. Broken limb is mostly sealed, with a shallow cavity on left side of branch with potential for single bat use. There was however, no evidence of bat use. The feature over hangs the tarmac covered car park and faces the care home. The feature has potential for day/night/feeding/transitional occasional bat roost use. H&S Considerations: Unstable dead/diseased wood throughout.	

	Photos:				
Categorisation of Potential Bat Roost Habitat Suitability					PRF-I
Arb Reference					T4

5.0 Evaluation

Species Rarity

- 5.1 Species identified within the locality from the MAGIC desk study records indicates the wider landscape supports mainly widespread species (common pipistrelle, soprano pipistrelle and brown long-eared). In addition to occasional species that are widespread in many geographies but not abundant within all of these included; noctule and Myotis species i.e., whiskered and Natterer's.

Roost Assessment

- 5.2 There are more mature areas of woodland and abundant residential buildings within the wider locality that may provide roost habitat for bats. Bats are also more transitional in their use of tree roost habitat and can often roost opportunistically when seeking shelter or refuge. Trees within the site with potential roost habitat suitability may therefore be used by bats within the wider landscape as part of their wider roost habitat resource.
- 5.3 Ecological Desk Study data confirmed the presence of common pipistrelle, soprano pipistrelle, and brown long-eared roosts within the wider landscape in addition to the presence of Natterer's and whiskered within the locality. The site may fall within the Core Sustainance Zone (CSZ) for roosts associated with recorded species.
- 5.4 Overall, the majority of habitats within the site are of limited value to supporting bat roosts within the wider landscape, however the adjoining linear habitat features e.g., scrub and woodland along railway embankments and associated with the parks and gardens are likely of higher value for providing connectivity within the wider landscape and maintaining roost viability, sustainability, and resilience within the surrounding locality.

Commuting and Foraging Assessment

- 5.5 The site value for commuting and foraging is limited as the site comprises of a large two-story building, with tarmacadam surfaced hardstanding on the western side, amenity grass on south and eastern sides and scattered trees around the perimeter mostly on the western side.
- 5.6 The potential wildlife corridors around the site are provided by an active railway corridor running east to west, with potential to provide landscape connectivity along its tree and scrub lined edges. The wider landscape includes a mosaic of sub-urban gardens, amenity parkland (including a golf course), motorway corridor and arable farmland.

5.7 The site is viewed as having negligible value for commuting and foraging for bats.

6.0 Recommendations

Roost Habitat

Trees

- 6.1 Where trees identified as having suitability for roosting bats require removal, this will impact on potential bat roost resource availability within the site. Bats are transitional in their use of roost habitat, roost functionality can be impacted by severance of commuting routes and indirect disturbance from external lighting.
- 6.2 Loss of roost habitat for bats due to the removal of trees within the site should be negated via the provision of replacement roost boxes in the proposed development. Replacement roost boxes should act to replicate the size, height and aspects of tree roost habitat lost. These should be installed in a south-east, or south-west orientation in line with requirements set out in Appendix C. Replacement roost boxes will be situated near features to provide suitable flight-lines such as woodland edge habitat or linear scrub and will have an entrance close to appropriate habitat. Boxes should be positioned in a south-west and south-east facing direction at a minimum height of 4m from ground level. Roost boxes should include a variety of designs that will support a variety of species and roost types. Boxes will be positioned in areas where conditions such as temperature and humidity will be maintained by surrounding vegetation structure e.g. on trees sheltered by surrounding tree or scrub cover.
- 6.3 Most bat species prefer to fly in dark areas straight into vegetation. All replacement roost habitat should be positioned away from sources of external lighting or where light spillage may influence use of a box. Positioning and specification of any boxes should be agreed at an early stage with the project ecologist to ensure that they are fully considered in the overall scheme design.
- 6.4 Reasonable Avoidance Measures should be implemented. The RAMs outlined in Section 7 include details of precautionary soft felling measures to be implemented whilst removing or pruning trees with bat roost habitat suitability.

Commuting and Foraging Habitat

- 6.5 New tree, hedgerow and scrub/shrub planting within the development should always be considered to continue any function of linear features connecting the wider landscape area, which may be used by commuting bats in the wider landscape.

7.0 Reasonable Avoidance Measures

- 7.1 The Reasonable Avoidance Measures (RAMs) set out below are intended for use on trees assessed as having PRF-I suitability for roosting bats that will be impacted.

Sensitive Work Programming

- 7.2 Works to the trees identified as having suitability to support roosting bats should be undertaken between November and early March.
- 7.3 Felling works may still proceed out with the bat hibernation season. However, if these works are completed in the bird nesting season (March to August inclusive), additional RAMs with regard to nesting birds must be followed in advance of works commencing.
- 7.4 In the unlikely event that roosting bats are found during felling then works must cease and advice must be sought from a licensed bat ecologist to determine the requirement for nocturnal roost surveys and a Natural England bat licence.

Toolbox Talk

- 7.5 Prior to commencing the removal of the trees with suitability for roosting bats, a toolbox talk will be given to contractors on site. This will set out requirements during works and the actions to be taken if bats are discovered. Information regarding bat identification will be given.

Pre-commencement Inspection

- 7.6 An inspection of all potential roost features within the trees identified for removal will be undertaken by a licensed bat ecologist immediately prior to works commencing. An endoscope may be used, and some parts of the tree inspection may need to be undertaken by climbers or via a Mobile Elevated Working Platform (MEWP).
- 7.7 If a full inspection of the potential roost features can be undertaken and the absence of bats can be confirmed the licensed bat ecologist will sign off the works and the works can be undertaken without supervision. Felling works must be completed within 24 hours of the aerial inspection.

Soft Felling Techniques

- 7.8 Where potential roost features and ivy cannot be fully inspected on the day and the absence of bats cannot be proved, or if works cannot be completed on the same day as the pre-commencement inspection, a destructive search, using soft felling techniques, will be overseen by a licensed bat ecologist via a MEWP.

- 7.9 Where a MEWP cannot be used due to safety concerns regarding climbing, a machine mounted tree shear will be used to fell the tree in sections. These sections containing the potential roost features must then be lowered to the ground with care. The licensed bat ecologist will then inspect the features and ivy. If evidence of roosting bats is found the section of the tree should be retained on site, either propped up or strapped to an adjacent retained tree so that bats can continue to use the roost whilst consultation with Natural England is undertaken.
- 7.10 Once all of the potential roost features are removed, the licensed bat ecologist will sign off the works and the felling can be continued without supervision.

Licence Requirements

- 7.11 In the unlikely event that roosting bats are found during the felling works then works must cease immediately and further advice must be sought from a licensed bat ecologist.
- 7.12 A protected species mitigation licence application will need to be made to Natural England. If a licence is required, then the trees that support roosting bats will need to remain in place until the licence is granted.
- 7.13 Three nocturnal roost surveys may be required to inform the licence application. These surveys are seasonally constrained and must be undertaken between May and August inclusive. Due to the seasonality of nocturnal roost surveys and the processing time for licences (on average approximately six weeks), this may cause significant delays to the project.

Appendix A: Methodologies

Ecological Desk Study

- 7.14 A data search regarding historic bat species records, protected habitats and protected sites is usually collated as part of a desk study in line with best practice guideline recommendations. However, in the context of the survey of the two trees associated with this Site, no request was submitted to Mersey Biobank. It is viewed that any data provided by the local record centre is unlikely to provide valuable information to add to the assessment of the two tree trees assessed in this urban area.

Roost Surveys

Preliminary Roost Assessment - Trees

- 7.15 Ground Level Tree Assessments (GLTA) are used to assess the available roosting resource and the need for further survey and/or mitigation. GLTA includes a detailed daytime inspection of the exterior of trees from the ground to look for potential roost features (PRFs) suitable for bats to use and any evidence of bat roosting. The only conclusive sign of a bat roost is actual bats or their droppings. Where droppings are found and it is possible to collect them, these are sent for laboratory analysis. The absence of droppings does not mean that bats are absent from a PRF.
- 7.16 GLTAs are carried out systematically, with surveyors viewing around all parts of the tree (from all angles and from both close to the trunk and further away), aided by use of close focusing binoculars and a high-powered torch where required. Observations are recorded in a standard format including details of:
- Tree species, height and diameter at breast height.
 - Tree age and health.
 - PRF type.
 - PRF location on the tree, height and orientation.
 - Bat roost habitat suitability of the PRF.
- 7.17 Additional factors assessed during a GLTA include the availability of tree roost habitat and habitats within the surrounding landscape value. Following a GLTA, trees are categorised with reference to Table 6.1 of the BCT 2023 Guidelines as determined by their characteristics and associated PRFs. PRFs are not inspected in any detail during GLTA and therefore categorisation is only an estimate of their potential for supporting roosting bats.

Table A1: Guidelines for assessing the potential roost habitat suitability of trees for bats in accordance with Table 6.1 of the BCT 2023 Guidelines.

Potential Roost Habitat Suitability	Description
None	No PRFs likely to be used by roosting bats or highly unlikely to be any.
PRF-I	PRF is only suitable for individual bats or very small numbers of bats either due to size or lack of suitable surrounding habitats. Potential for use by individual bats opportunistically at any time of the year. These PRFs do not provide enough space, shelter, protection, appropriate conditions (e.g., temperature, humidity, height above ground level, light levels etc.) 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 roosts). Categorisation is irrespective of species conservation status.
PRF-M	PRF is suitable for multiple bats and may therefore be used by a maternity colony. Tree may also include numerous PRFs that could be used by larger numbers of bats due to their size, shelter, protection, conditions (e.g., temperature, humidity, height above ground level, light levels etc.) and surrounding habitat. Categorisation is irrespective of species conservation status.

- 7.18 Where there are fewer or larger numbers of trees with features categorised as PRF-I present, there may be requirement for further surveys due to the increased likelihood of a roost being present.
- 7.19 All trees surveyed during a GLTA are numbered, marked on a map or plan and geo-referenced.
- 7.20 GLTA are best undertaken in clear, dry weather with good light conditions to prevent PRFs being missed. Bright sunshine can make it difficult to see PRFs in a tree due to glare, poor light conditions can cause PRFs to be missed, wind can blow away external signs e.g., droppings and rain can wash away droppings and make staining around roost entrances difficult to distinguish.
- 7.21 Optimal conditions for identifying tree PRFs are when trees are not in leaf. The recommended survey window for GLTA is between December and March (inclusive).

PRF Inspection Surveys - Trees

- 7.22 Trees identified during Ground Level Tree Assessments (GLTA) as having suitability for bat roosting are subject to Potential Roost Feature (PRF) inspection surveys in accordance with their categorisation and potential impacts.
- 7.23 A PRF inspection survey involves the use of tree-climbing or access equipment such as ladders, Mobile Elevating Working Platforms (MEWPs) or scaffold towers to

gain access to PRFs. PRFs are inspected at height to allow a more detailed assessment of their likely suitability for bats and to determine the presence/likely absence of bats at the time of the survey. Closer inspection of PRFs also allows more accurate assessment of the need for further survey and/or mitigation. For example, PRFs that appear to have bat roost habitat suitability from the ground may have none when inspected at height e.g., if they are superficial and shallower than they initially appeared, or scar tissue not identified as a PRF may be obscuring a PRF-M with suitability not detected from ground level.

- 7.24 PRF inspections surveys are undertaken by a combination of qualified aerial tree climbing and rescue teams, health and safety assistants and bat licensed consultant dependent on methods used for aerial inspection. As a minimum, a bat licensed consultant is always used to undertake PRF inspection surveys as evidence of bats such as live or dead bats and droppings (staining or odour may also be present) are searched for and surveys may cause disturbance to roosting bats where present.
- 7.25 Close focusing binoculars, a high-powered torch, a high-definition digital endoscope camera, mirrors, pole mounted inspection cameras and extendable ladders up to maximum ladder height of 3.8 m are used, where appropriate, to search for any bats or field signs.
- 7.26 PRF inspection surveys are undertaken during daylight hours as poor light conditions can have health and safety constraints and cause disturbance to bats closer to emergence times.
- 7.27 PRF inspection surveys are carried out systematically and consistently around all parts of the tree, with the results recorded consistently. Observations noted during PRF inspection surveys include:
 - Stem or limb dimensions where the PRF is and the entrance dimensions.
 - PRF internal dimensions, substrate, condition and shape.
 - Whether any competitors are present e.g., nesting birds, squirrels.
 - Whether bats or any signs of bats are absent or present.
 - If bats are present the species, number and status and their location within the PRF.
- 7.28 Where bats are recorded and where feasible a photograph is taken and any droppings present are taken, dried and sent off for DNA analysis.
- 7.29 PRF inspection surveys can be carried out at any time of year to further assess the suitability of a PRF.
- 7.30 Where PRF inspection surveys are required to determine presence or likely absence of roosts, three visits between May and September, with at least two in the

period May to August are undertaken. Multiple survey visits should be spread out to sample as much of the recommended survey period as possible and as a minimum, surveys should be spaced at least three weeks apart more.

- 7.31 Where access is not possible for PRF inspection surveys due to health and safety constraints or where features are too extensive to survey thoroughly, these should be surveyed using presence/likely absence emergence surveys supported by NVAs. Where PRF inspection surveys identify large roosts or maternity roosts then presence/likely absence emergence surveys should be undertaken as an alternative to PRF inspection surveys to minimise disturbance.
- 7.32 PRF inspection surveys are best carried out in dry and calm weather to ensure the safety of surveyors.
- 7.33 PRF inspections surveys also consider other protected species such as birds and red squirrels and, where present, the timing of surveys is adjusted as required to avoid any impacts or the appropriate mitigation licensing obtained.

Commuting and Foraging Assessment

- 7.34 It is not possible to adopt the same matrix-based approach for valuing bat commuting routes/flight-lines and foraging areas as for roost importance, as assessment requires a higher degree of professional judgement. Geographical levels of importance are not defined by ‘numbers of bats using a feature’, because numbers of individuals can be difficult to determine, and colony sizes vary across species and region. The importance of bat commuting and foraging areas includes assessment of a variety of factors, for example:
- Levels of bat activity - indicating reliance (or otherwise) on specific habitats/features;
 - Landscape context - distribution and abundance of suitable foraging habitats, flight-lines, and overall connectivity;
 - Species assemblage - consideration of bats using features, their conservation status and whether any species present are at the edge-of-range;
 - Proximity/connectivity to roosts - review of species and roost type influence value; and
 - Species’ habitat preferences - the site context within the landscape and habitats present will vary the value of the site to different species.

Bat Species Assemblage Assessment

- 7.35 The numerical scoring system from the 2023 UK Bat Mitigation Guidelines designed to assess the importance of a bat assemblage within a site/survey area in consideration of species distribution is outlined below. A score is assigned to each species that is present within a site/survey area depending on rarity categorisation.

Table A8: Species assemblage numerical scoring based on rarity in accordance with the 2023 UK Bat Mitigation Guidelines.

Rarity Category (species in each category are determined by region)	Bat Assemblage Score
Widespread all geographies	1
Widespread in many geographies, but not as abundant in all	2
Rarer or restricted distribution	3
Rarest Annex II species and very rare	4
Widespread all geographies	1



Appendix B: Arboriculture Report Ref. AIA.13809.01



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Appendix C: Bat boxes

External Bat Box Details

Model, Design, Specifications, Position and Installation

Example specifications of the external bat boxes recommended for installing on site are provided within Table 3 below.

Table 3: External Bat Box Details

Name/Model with Website Link	Photograph	Description	Designed For	Specifications	Position and Installation	Maintenance
Schwegler 2F General Purpose Bat Box		Woodcrete box to be hung from trees and is designed for both small and larger bats. Designed as a summer roosting space and has a removable front panel. It will last for at least 20 - 25 years, is painted black to absorb warmth and has also a rough surface for bats to cling to and climb up.	Most UK bats.	Numbers: 2 in total Specification: 16cm W x 33cm H, Weight 4kg.	Location: The bat boxes will be installed on trees facing south-east and south-west with no obstructions to flight lines. Height: Any height in a tree above 4 meters	Self-cleaning design, however, entrance cleaning (wiping) recommended after 3 years conducted by bat licenced ecologist.

References or Useful Links

Great Britain

Bat Tree Habitat Key. (2018) Bat Roosts in Trees: A Guide to Identification and Assessment for Tree-Care and Ecology Professionals.

BCT (2019) Blocking potential roost features in trees in advance of clearance felling (non-forestry) - BCT Position Statement.

<https://tinyurl.com/y6z5zn2a>

BS 5837:2012 Trees in relation to design, demolition and construction—Recommendations



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