

The Network Rail (Stalybridge to Diggle (Saddleworth) Enhancements) Order
NR14 - Environmental Report – Volume 3 Appendices
November 2025

TRANSPORT AND WORKS ACT 1992

Transport and Works (Applications and Objections Procedure) (England and Wales) Rules 2006

THE NETWORK RAIL (STALYBRIDGE TO DIGGLE (SADDLEWORTH) ENHANCEMENTS) ORDER

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1. INTRODUCTION

- 1.1.1 This Ecology Technical Appendix presents an appraisal of the predicted ecology-related impacts and consequential effects of elements of the proposed Network Rail (Stalybridge to Diggle (Saddleworth) Enhancements) Transport and Works Act Order which require deemed planning and the associated temporary construction compounds and accesses required to deliver those elements (as described in Table 1-1 of Chapter 1 in Volume 1 of the Environmental Report [NR14]) (referred to as ‘the relevant works elements’ of the Order Scheme. Further details on the relevant works elements are included in Chapter 3 in Volume 1 of the Environmental Report [NR14] and shown on Figures 1.1.1 to 1.1.6 of the Environmental Report [NR14].
- 1.1.2 The ‘Scheme Area’ within this Technical Appendix (either generally or in respect of a relevant works elements of the Order Scheme) is defined as the combined footprint of areas where deemed planning permission is sought and areas of land temporarily required.
- 1.1.3 The appraisal reported within this Technical Appendix identifies impacts and effects which may arise during both the construction phase and during operation. The purpose of this appraisal is to:
- summarise legislation, policy and guidance relevant to ecological features and an appraisal of their value (section 2);
 - describe the baseline environment in relation to ecology by identifying the ecological features (i.e. designated sites for nature conservation, priority habitats or protected/ priority species listed under Section 41 of the Natural Environment and Rural Communities Act 2006 (NERC Act) that are both present and might be affected by the relevant works and their relative nature conservation importance (section 3);
 - complete an ecological appraisal to identify whether the relevant works would result in any effects on ecological features and assess the likely magnitude of these effects (beneficial or adverse (section 3);
 - set out the measures that are incorporated in the design of the relevant works to avoid or reduce any predicted effects on ecological features of nature conservation importance (section 4);
 - identify ecological compensation or enhancement measures that are proposed to offset any residual impacts based on the outcome of the desk study, field surveys and the ecological appraisal; to be delivered both through planning conditions and Network Rail commitments (section 4); and

- outline the commitment of Network Rail to deliver 10% biodiversity net gain for the wider TRU works, for which the Order Scheme forms part, through compensation both within and outside the Order Scheme Area (section 4).
- 1.1.4 The approach applied when undertaking this appraisal has taken account of the good practice guidance provided by the Chartered Institute of Ecology and Environmental Management¹. It addresses relevant wildlife legislation, policy, and guidance as summarised in this Technical Appendix.
- 1.1.5 The appraisal is supported by the following Technical Appendices:
- Annex A: Ecology Legislation, Planning Policy and Guidance;
 - Annex B: Methodology and Limitations;
 - Annex C: Ecology Survey Data
 - Volume 3, Appendix 6B: Habitats Regulations Assessment of this Report [NR14]
 - Volume 3, Appendix 6C: Proposed Tunnel Bat Survey Methodology of this Report [NR14]

2. RELEVANT LEGISLATION, POLICY AND GUIDANCE

2.1 National and Local Wildlife Legislation

- 2.1.1 This section provides a summary of legislation, policy and guidance that is relevant for the identification and appraisal of ecological features and their value. The following legislation has been considered as part of this appraisal:
- Environment Act 2021, Schedule 14;
 - The Conservation of Habitats and Species Regulations 2017, No. 1012, Part 3, Regulation 43 (as amended);
 - Wildlife and Countryside Act 1981 (as amended);
 - Protection of Badgers Act 1992 (as amended);
 - The Invasive Alien Species (Enforcement and Permitting) Order 2019. SI 2019/527;
 - Natural Environment and Rural Communities Act 2006;
 - Countryside and Rights of Way Act 2000 as amended);
 - The Hedgerow Regulations 1997;

¹ Chartered Institute of Ecology and Environmental Management (CIEEM) (2022). *Guidelines for Ecological Impact Assessment in the UK and Ireland*. [online] Available at: <https://cieem.net/wp-content/uploads/2018/08/ECIA-Guidelines-2018-Terrestrial-Freshwater-Coastal-and-Marine-V1.2-April-22-Compressed.pdf>. [Accessed: 14 July 2025]

- Places for Everyone Joint Development Plan document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan 2022 to 2039. (Greater Manchester Combined Authority, 2024);
- Places for Everyone Joint Development Plan Document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan 2022 to 2039 Adoption Statement Oldham Metropolitan Borough Council (OMBC) (2024);
- Oldham Local Development Framework: Development Plan Document – Joint Core Strategy and Development Management Policies. (OMBC, 2011);
- Saved Unitary Development Plan policies (OMBC, 2006);
- Places for Everyone Joint Development Plan Document for Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Tameside, Trafford and Wigan 2022 to 2039 Adoption Statement Tameside Metropolitan Borough Council (TMBC), (2004);
- Tameside Unitary Development plan (TMBC, 2004);
- Greater Manchester Five-Year Environment Plan 2025-2030 (Greater Manchester Combined Authority, 2024);
- All Our Trees: Greater Manchester’s Tree and Woodland Strategy (City of Trees; 2024);
- Nature for All, A local nature recovery strategy for Greater Manchester – Draft for consultation. (Greater Manchester Combined Authority 2025);
- Greater Manchester Biodiversity Action Plan (Greater Manchester Biodiversity project, 2009).

2.1.2 Compliance with legislation may include the attainment of relevant protected species licences prior to the implementation of the Order Scheme. Further information on the above legislation is provided as Annex A.

2.2 Planning Policy

National Planning Policy

2.2.1 The National Planning Policy Framework (NPPF)² details the Government’s planning policies for England and how these are expected to be applied.

2.2.2 The NPPF provides guidance to local planning authorities on their local plans, sets out how planning authorities should deal with biodiversity when considering planning applications and encourages net gains for biodiversity

² Ministry of Housing, Communities and Local Government (2024). National Planning Policy Framework. [online] Available at: https://assets.publishing.service.gov.uk/media/67aafe8f3b41f783cca46251/NPPF_December_2024.pdf. [Accessed: 14 July 2025]

to be sought through planning policies and decisions. The relevant guidance of the NPPF has been reviewed and incorporated where appropriate.

Local Planning Policy

- 2.2.3 A number of local planning policies relate to ecology, biodiversity and nature conservation and these are summarised in Table A-1, These policies have been considered when appraising potential ecological constraints and opportunities identified by the desk study and field survey, and when determining requirements for further survey, design options and ecological mitigation.

Biodiversity Policy

- 2.2.4 As a result of devolution and new country level and international drivers and requirements, much of the work previously carried out by the UK Biodiversity Action Plan (BAP) is now focused at a country level rather than a UK level. The UK BAP was succeeded by the 'UK Post-2010 Biodiversity Framework'³. The UK list of Species and Habitats of Principal Importance, however, remains an important reference source and has been used to help draw up statutory lists of priorities in England, Scotland, Wales and Northern Ireland. In England, the current lists are those under Section 41 (S41) of the Natural Environment and Rural Communities Act (NERC) 2006⁴.
- 2.2.5 The national strategy for biodiversity is delivered at a local level via numerous local BAP (LBAP). Species and habitats of local conservation concern or value are included in the LBAP and an action plan is created for them. The LBAP relevant to the Order Scheme is The Greater Manchester Biodiversity Action plan (GM BAP)⁵. This identifies key habitats and species that may be found within Order Scheme Area and that may require consideration in design and mitigation. The priority habitats and species that have action plans for them under the GM BAP are detailed in Annex A.

2.3 Relevant Guidelines and Advice

- 2.3.1 The appraisal of the potential impacts of the relevant elements of Order Scheme on ecological features has taken account of the following key ecological guidelines:
- Bat Surveys for Professional Ecologists Good Practice Guidelines 4th Edition (Collins, 2023);

3 JNCC and Defra (on behalf of the Four Countries' Biodiversity Group) (2012) UK Post-2010 Biodiversity Framework. [online] Available at: <https://data.jncc.gov.uk/data/587024ff-864f-4d1d-a669-f38cb448abdc/UK-Post2010-Biodiversity-Framework-2012.pdf>. [Accessed: 14 July 2025]

4 Natural Environment and Rural Communities Act 2006, c. 16, Part 3, Section 41. [online] Available at: <https://www.legislation.gov.uk/ukpga/2006/16/notes/division/6/3/1/2> [Accessed: 14 July 2025]

⁵ Greater Manchester Biodiversity project (2009). *Greater Manchester Biodiversity Action Plan*. [online] Available at: https://gmllrc.org/projects/gm_bap/. [Accessed: 14 July 2025]

- British Standard 42020:2013 Biodiversity: Code of practice for planning and development;
- Guidelines for Preliminary Ecological Appraisal. 2nd Edition (CIEEM, 2017);
- Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine version 1.2. (CIEEM, 2022); and
- Natural England and Department for Environment, Food and Rural Affairs (DEFRA) Standing Advice: Protected species and development: advice for local planning authorities (Natural England, 2025).

3. APPRAISAL OF IMPACTS AND EFFECTS

3.1 Appraisal Methods

Consultation with Stakeholders

- 3.1.1 For the relevant elements of Order Scheme as described in Table 1-1 in Volume 1 of the Environmental Report [NR14], consultation responses of relevance to ecology were received from several parties. This appraisal takes into account these responses, and a summary of ecology-specific comments is outlined below. Further details on consultee feedback and responses is provided in the Consultation Report supporting the TWAO [NR07].

Oldham Metropolitan Borough Council and Tameside Metropolitan Borough Council

- 3.1.2 Liaison with the GMEU Ecology Officers, including Oldham and Tameside Councils, has happened throughout development of Order Scheme. The GMEU enquired on the status of Sites of Biological Importance (SBIs) that are located within Order Scheme boundary, notably Grasscroft pasture SBI (Oldham), Cliffs at Mossley SBI (Tameside) and Armit Road Lodge SBI (Tameside). It was agreed that the mitigation hierarchy would be followed and enhancement would happen within the SBI impacted where feasible.
- 3.1.3 The GMEU were made aware that Network Rail wish to undertake a Biodiversity Net Gain (BNG) assessment using the Natural England Biodiversity Metric 3.0⁶. Metric 3.0 was used to maintain a consistent methodology across TRU and the wider TransPennine Route. BNG is not statutory for TWAOs; therefore, Network Rail are exempt, according to the Department for Environment, Food & Rural Affairs' Biodiversity net gain

⁶ Department for Environment, Food & Rural Affairs (DEFRA). (2021). Biodiversity Metric 3.0. [online] Available at: <https://www.gov.uk/government/news/biodiversity-30-metric-launched-in-new-sustainable-development-toolkit> [Accessed 14 July 2025].

exempt developments⁷ from using the statutory version and being held accountable to the DEFRA Statutory Metric.

- 3.1.4 The GMEU stated that the Biodiversity Metric 3.0 could be used to measure impacts and have the objective to achieve a minimum 10% net gain across Order Scheme. Details of the commitment to achieve 10% BNG for the wider TRU works, for which Order Scheme forms part, is provided in section 4.4.

Natural England

- 3.1.5 Natural England is supportive of Network Rail's commitment to deliver 10% BNG across the TRU project. It requested that the pre and post development value of land within Order Scheme boundary is assessed using the Biodiversity Metric to account for losses within Order Scheme Area. Natural England advised that the mitigation hierarchy should be followed as per the Environment Act 2021 and paragraph 180 of the NPPF with the preference to deliver BNG on-site through habitat retention, enhancement and creation, then seeking off-site locations where this is not possible.
- 3.1.6 The statutory Biodiversity Metric has been used for habitat condition assessments due to the chance that BNG would become statutory for TWAO prior to submission. The data gathered from the statutory Biodiversity Metric condition assessments is comparable to the Biodiversity Metric 3.0 and can be translated accordingly where required.
- 3.1.7 Natural England's Discretionary Advice Service (DAS) was consulted on Order Scheme's impact to bats as a result of the works to Stalybridge and Scout Tunnels. Natural England provided a response letter⁸ and agreed with the suggested methodology⁹ for determining likely presence/ likely absence of roosting bats. Natural England stated the requirement for licencing where applicable, on-site ecological supervision to undertake visual inspections of any potential bat roosting features and sensitive timing to reduce impacts.

Environment Agency

- 3.1.8 The Environment Agency were consulted in relation to using the DEFRA Biodiversity Metric to account for impacts to watercourses within Order Scheme Area. The Environment Agency specified that River MoRPh assessment¹⁰ should be completed to inform the DEFRA Biodiversity Metric.

Canal and Rivers Trust

7 Department for Environment, Food & Rural Affairs (DEFRA) (2024). Biodiversity net gain: exempt developments. [online] Available at: <https://www.gov.uk/guidance/biodiversity-net-gain-exempt-developments>. [Accessed 14 July 2025].

8 Natural England (2024) TransPennine Route Upgrade (TRU) Stalybridge to Saddleworth, Document Reference "2024-08-15 483195 DAS TransPennine Route Upgrade W2B".

9 AtkinsRealis (2024) TRU W2B – Proposed Tunnel Bat Survey Methodology – Technical Appendix

10 Gurnell, A. and Shuker, L. eds. (2022). The MoRPh Survey Technical Reference Manual 2022 version. [online] Available at: https://modularriversurvey.org/wp-content/uploads/MoRPh-Manual-ver-14_Oct22.pdf [Accessed 14 July 2025].

- 3.1.9 The Canal & Rivers Trust were contacted on 27 January 2025 regarding the availability of white-clawed crayfish data on the Huddersfield Canal. The Canal and River's Trust responded on 5 February 2025 with anecdotal evidence.

Methodology and Data Sources

- 3.1.10 The existing ecological baseline has been established using a range of sources including publicly available websites, data from the local biological records centre and field surveys. The detailed methodologies followed during the appraisal are outlined in Annex B and in summary comprised:

Desk Study

- 3.1.11 The desk study included a review of online resources and existing technical reports/ documents for the study area. A data request from Greater Manchester Local Record Centre was undertaken on 30 October 2024. The desk study sources and search areas for different ecological features are summarised in Annex B.

Field Surveys

- 3.1.12 Field surveys were undertaken in line with appropriate best practise guidelines as summarised in Table 3-1.

Table 3-1- Field Surveys

Survey	Description
UK Habitat Classification (UKHab) Surveys	These surveys were completed between May 2024 and June 2025. Habitats and ecological features of interest were recorded following the standard guidance provided in the UK Habitat Classification version 2.0 ¹¹ . The standard UKHab survey method was “extended” to record the presence or potential for protected, priority, and any invasive non-native plant species (INNPS) within the habitats present. A buffer of 50 m beyond Order Scheme was applied where access permitted (see Annex B for further details on the ecological features that were assessed).
Habitat Condition Assessments	These surveys were carried out in the field alongside UKHab habitat surveys on habitat parcels to support the BNG calculations, using statutory Biodiversity Metric 3.0 condition assessment sheets.
Preliminary Roost Assessments (PRAs)	These surveys were carried out in the field alongside UKHab habitat surveys to identify potential roost features in structures that could support roosting bats. PRAs were conducted in accordance with best practice guidelines provided by the Bat

¹¹ UKHAB Ltd (2023). *Habitat Classification v2.0*. [online] Available at: <https://ukhab.org/register/>.

Survey	Description
	Conservation Trust ¹² . A buffer of 50 m beyond Order Scheme was applied where access permitted.
Ground Level Tree Assessments (GLTAs) for bats	Carried out in the field alongside UKHab habitat surveys to identify potential roost features in trees that could support roosting bats. GLTAs were conducted in accordance with best practice guidelines provided by the Bat Conservation Trust ¹²
Bat dusk emergency surveys	<p>Surveys were completed between July and September 2024 on the following structures (see Figures 1.1.1 – 1.1.6 of this Report [NR14]):</p> <p>Heyrod Hall Bridge (MVL3/07); Spring Bank Lane Footbridge (MVL3/09); Manchester Road Footbridge (MVL3/10); Stamford Road Footbridge (MVL3/13); Mossley Station Footbridge (MVL3/14); New Earth Footbridge (MVL3/16); Midge Hall Overbridge (MVL3/19); Wrights Mill Overbridge (MVL3/20); Charlotte Street Overbridge (MVL3/24); Royal George Underbridge (MVL3/25); Footway Underbridge (MVL3/26); Oldham Road Overbridge (MVL3/28); Den Quarry Underbridge (MVL3/30); Uppermill Viaduct (MVL3/31).</p> <p>Further details on the methodology and results of the bat surveys are provided in Annexes B and C respectively.</p>
Bat automated/ static detector (likely presence/ likely absence)*	<p>Surveys were completed between August 2024 and March 2025 on the following structures:</p> <p>Scout Tunnel; Stalybridge Tunnel.</p> <p>*Survey effort replaced dusk emergence following DAS consultation⁸ with Natural England. The GLTA only identified one tree with PRFs which did not require presence/ likely absence surveys.</p> <p>Further details on the agreed methodology following Natural England DAS consultation is provided in Volume 3, Appendix 6D of this Report [NR14].</p>
Badger	Camera trap monitoring of a potential badger sett off Spring Bank Lane.

¹² Collins, J. ed., (2023). Bat Surveys for Professional Ecologists Good Practice Guidelines. 4th ed. [online] Bat Conservation Trust. Available at: <https://www.nhbs.com/bat-surveys-for-professional-ecologists-book>.

Excluded Surveys

- 3.1.13 Targeted plant surveys (National Vegetation Classification (NVC) surveys) have not been completed as the habitats recorded during the UKHab surveys are generally common and widespread throughout Order Scheme Area and in the local area. More detailed habitat and condition assessment surveys will be completed if required to inform the requirements for compensation of certain habitats.
- 3.1.14 Due to the absence of suitable habitat within Order Scheme Area or agreed additional mitigation for supporting the following protected species/ species groups, surveys were not completed and they have not been considered further in this appraisal.
- Aquatic invertebrates – no aquatic habitats to be affected by the relevant elements of the Order Scheme;
 - Fish – no aquatic habitats to be affected by the relevant elements of the Order Scheme;
 - Great crested newt – waterbodies are present within 250 m of the Order Scheme, however, Network Rail wish to proceed under the NatureSpace Organisational Licence;
 - Hazel dormouse– lack of suitable habitat present (coppiced hazel woodland) and the Order Scheme Area is outside of their natural range.
- 3.1.15 Additionally, habitats likely to support terrestrial invertebrates are present throughout the Order Scheme Area, however, they are typical of those found along the railway corridor and are unlikely to support diverse assemblages of invertebrates, or important populations of rare/ priority invertebrates. Localised, small habitat losses/ damage is unlikely to impact upon common invertebrate communities. Measures will be implemented throughout the design and construction phases which will aim to reduce any potential impacts to invertebrate communities by ensuring vegetation is available in areas adjacent to the Order Scheme Area. Terrestrial invertebrates have not been considered further in this appraisal.
- 3.1.16 Based on a review of desk study information, the suitability of habitats identified during the UKHab habitat surveys, and the confined locations of the Order Scheme Area, targeted surveys were not undertaken for the following protected species/ species groups but they are considered further in this appraisal:
- bats (foraging and commuting);
 - birds;
 - reptiles; and

- other priority species – brown hare, common toad, and western European hedgehog.

Study Areas and Survey Areas

- 3.1.17 The ecological 'study area' refers to the areas over which desk-based assessments have been undertaken and these vary for different ecological features (designated sites, habitats, flora and fauna). The study areas for the desk-based study are defined in Annex B.
- 3.1.18 The ecological 'survey area' is defined as the Order Scheme boundary plus a 50 m buffer where access was possible and considered pertinent to the survey.
- 3.1.19 The CIEEM guidelines require the establishment of a 'zone of influence' (Zoi) for the relevant elements which is defined in the guidelines as 'the area over which ecological features (habitats and species) may be affected by biophysical changes as a result of the proposed project and associated activities'. For some ecological features the Zoi will extend beyond the Order Scheme Area, for example where there are ecological or hydrological links beyond the boundary. It will also vary for different ecological features depending on their sensitivity to any environmental changes that may result from a scheme.

3.2 Baseline Conditions and Evaluation

- 3.2.1 The following sections provide a summary of the baseline ecological conditions, which have been identified through desk study and field surveys, for the Order Scheme Area of the relevant elements of the Order Scheme.

Summary of baseline ecological features

- 3.2.2 Refer to Figure 6.1.1 in Volume 2 of the Environmental Report [NR14] for the desk study and survey results for this relevant elements of the Order Scheme.

Designated Sites

- 3.2.3 Four internationally statutory designated sites for nature conservation were identified within the study area of the Order Scheme, comprising of Special Areas of Conservation (SAC) and Special Protection Areas (SPA) as outlined within Table 3-2 below and shown on Figures 6.1.1 in Volume 2 of the Environmental Report [NR14].

Table 3-2 - Internationally important designated sites for nature conservation within the study area of the Order Scheme

Designated site name	Features of Interest	Approximate Distance and direction from Scheme (at closest point)
Peak District Moors (South Pennine Moors Phase 1) SPA	<p>ARTICLE 4.1 QUALIFICATION (79/409/EEC)</p> <p>During the breeding season the area regularly supports:</p> <ul style="list-style-type: none"> • Short-eared owl - at least 2.2% of the GB breeding population Count, as at 1990 and 1998; • Merlin - at least 2.3% of the GB breeding population Count as at 1990 and 1998; • European golden plover - [North-western Europe - breeding] at least 1.9% of the GB breeding population Count, as at 1990 and 1998. 	780 m east of the Order Scheme.
South Pennine Moors SAC	<p>Annex I habitats that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • European dry heaths; • Blanket bog; • Old sessile oak woods with Ilex and Blechnum in the British Isles; • Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: • Northern Atlantic wet heaths with cross-leaved heath; • Transition mires and quaking bogs. 	780 m east of the Order Scheme.
South Pennine Moors Phase 2 SPA	<p>ARTICLE 4.1 QUALIFICATION (79/409/EEC)</p> <p>During the breeding season the area regularly supports:</p>	980 m north of the Order Scheme.

Designated site name	Features of Interest	Approximate Distance and direction from Scheme (at closest point)
	<ul style="list-style-type: none"> Short-eared owl - 0.3% of the GB breeding population Count as at 1990; Merlin - 2.2% of the GB breeding population Count as at 1995; European golden plover - [North-western Europe - breeding] 1.3% of the GB breeding population No count period specified. <p>Article 4.2 Qualification (79/409/EEC): an internationally important assemblage of birds</p>	
Rochdale Canal SAC	<p>Annex II species that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> Floating water-plantain. 	7.45 km west of the Order Scheme, with hydrological connectivity upstream.

3.2.4 Eight Sites of Special Scientific Interest (SSSI) were identified within the study area of the Order Scheme as outlined within Table 3-3 below and shown on Figure 6.1.1 in Volume 2 of the Environmental Report [NR14].

Table 3-3 - Nationally important designated sites for nature conservation within the study area of the Order Scheme

Designated site name	Features of Interest	Approximate Distance and direction from Scheme (at closest point)
Huddersfield Narrow Canal SSSI	<ul style="list-style-type: none"> Designated for the best example of flowing eutrophic water in Greater Manchester, also including swamp, tall fen, and other marginal vegetation; Diverse range of aquatic flora; and Diverse range of aquatic fauna, including molluscs and fresh- 	Within the Order Scheme boundary.

Designated site name	Features of Interest	Approximate Distance and direction from Scheme (at closest point)
	water sponge.	
Dark Peak SSSI	<ul style="list-style-type: none"> Designated as primary moorland area of the Peak District with areas of open and continuous moorland; Nationally important populations of golden plover, dunlin, and very significant populations of meadow pipit; Significant populations of red grouse, short-eared owl, twite, and peregrine; and Diverse range of terrestrial invertebrates. 	780 m east of the Order Scheme.
South Pennine Moors SSSI	<ul style="list-style-type: none"> Designated for containing the largest area of unenclosed moorland within West Yorkshire; Diverse upland plant communities; Extensive areas of blanket bog with species rich acidic flushes and mires; and Supports a nationally important moorland breeding bird assemblage including golden plover and twite. 	780 m north of the Order Scheme.
Standedge Road Cutting SSSI	Designated for features of geological interest.	1.27 km north-east of the Order Scheme.
Lowside Brickworks SSSI	Designated for geological features of natural importance.	3.35 km west of the Order Scheme.
Park Clough SSSI	Designated for features of geological interest.	4.35 km north-east of the Order Scheme.
Hollinwood Branch Canal SSSI	<ul style="list-style-type: none"> Designated for the best example of a mesotrophic standing water system in Greater Manchester and 	4.73 km west of the Order Scheme.

Designated site name	Features of Interest	Approximate Distance and direction from Scheme (at closest point)
	<p>Merseyside;</p> <ul style="list-style-type: none"> Habitats include open water, swamp and tall fen; and Diverse open water plant communities containing several regionally and nationally rare species. 	

3.2.5 Additionally, 22 locally important sites comprising twelve Sites of Biological Importance (SBI) and ten Local Nature Reserves (LNRs) were identified within the study area of the Order Scheme as outlined within Table 3-4 below and shown on Figure 6.2.1 in Volume 2 of the Environmental Report [NR14].

Table 3-4 - Locally important sites for nature conservation within the study area of the Order Scheme

Designated site name	Features of Interest	Approximate Distance and direction from Scheme (at closest point)
Armit Road Lodge SBI	Ponds and small lodges.	Within the Order Scheme.
Cliffs at Mossley SBI	Semi-natural broadleaved woodland. Semi-natural grassland.	Within the Order Scheme.
Grasscroft Pasture SBI	Semi-natural grassland. General species- solitary bees. General species- fungi.	Within the Order Scheme.
Huddersfield Narrow Canal (North) SBI	Large Areas of Standing Open Water.	Within the Order Scheme.
Huddersfield Narrow Canal (South) SBI	Large Areas of Standing Open Water as per the Greater Manchester SBI Selection Guidelines 2016.	Within the Order Scheme.
Moorgate Quarry SBI	Heathland and Bog. Semi-natural grassland. Habitat mosaics.	17 m east of the Order Scheme.
Hartshead SBI	Semi-natural broadleaved woodland.	23 m east of the Order Scheme.

Designated site name	Features of Interest	Approximate Distance and direction from Scheme (at closest point)
Royal George SBI	Ponds and small Lodges. Large Areas of Standing Open Water.	70 m east of the Order Scheme.
Marshes at Staley Hall SBI	Acid grassland with marsh and ditches.	220 m east of the Order Scheme.
Puddle Clay Pits SBI	Site supports a complex mosaic of habitats including marsh, flush, swamp, dry heath, open water, acid and neutral grassland.	240 m east of the Order Scheme.
Castle Clough SBI	Deciduous woodland.	430 m east of the Order Scheme.
Dacres SBI	Lowland meadow and Lowland dry acid grassland.	380 m east of the Order Scheme.
Brushes Valley LNR	Area of woodland, meadow, and wetlands adjacent to Brushes Reservoir.	640 m south-east of the Order Scheme.
Castle Clough and Cowbury Dale LNR	Area of broadleaved woodland straddling the banks of the Staly Brook watercourse.	0.78 km east of the Order Scheme.
Knot Hill LNR	Historically a reservoir, now a site of upland semi-natural habitat with agricultural grazing presence.	1.15 km west of the Order Scheme.
Cowbury Dale LNR	Meadow habitat surrounded by broadleaved woodland with a small lake present.	1.20 km east of the Order Scheme.
Rocher Vale LNR	Site supports a mosaic of habitats including riverbanks, woodland, and a heath.	2.67 km west of the Order Scheme.
Glodwick Lows LNR	Site supports a mosaic of habitats including grassland, heathland and woodland. Wildlife includes foxes, mining bees and field bindweed.	3.06 km west of the Order Scheme.
Haughton Dale LNR	Oak, ash and alder woodlands supporting bluebells and, in wet areas, golden saxifrage. The woodland is an important habitat for birds, including woodpecker, owl, bullfinch and nuthatch.	4.45 km south-west of the Order Scheme.
Hollinwood Branch Canal LNR	Large Areas of Standing Open Water.	4.53 km west of the Order Scheme.
Hurst Clough LNR	Woodland and wildflower meadows supporting butterfly assemblages.	4.56 km south of the Order Scheme.

Designated site name	Features of Interest	Approximate Distance and direction from Scheme (at closest point)
Werneth Low LNR	Site supports a mosaic of habitats including woodland, dry heath, and wetlands.	4.93 km south of the Order Scheme.

Irreplaceable Habitats

- 3.2.6 Six ancient or veteran trees were recorded within the study area of the Order Scheme during the desk study as outlined within Table 3-5 below and shown on Figures 6.4.1 to 6.4.22 in Volume 2 of the Environmental Report [NR14].
- 3.2.7 Lowland fen and blanket bog (Table 3-5) were recorded within the study area of the Order Scheme during the desk study.

Table 3-5 - Ancient or veteran trees recorded within the study area of the Order Scheme during the desk study

Ancient and Veteran Tree (reference)	Details of Ancient or Veteran Tree	Approximate Distance and Direction from the Order Scheme
174081	Veteran silver birch.	120 m east of the Order Scheme.
189809	Veteran common hawthorn.	360 m east of the Order Scheme.
189810	Veteran common hawthorn.	360 m east of the Order Scheme.
189811	Veteran goat willow.	400 m east of the Order Scheme.
189812	Ancient common hawthorn.	530 m east of the Order Scheme.
189813	Veteran common hawthorn.	540 m east of the Order Scheme.

Priority Habitats

- 3.2.8 Several priority habitats, both within the study area during desk study and within the Order Scheme during field surveys, were recorded within the ZOI of the Order Scheme. Of these, deciduous woodland and lowland heathland are present within the Order Scheme as outlined in Table 3-6 below and shown on Figures 6.4.1 to 6.4.22 in Volume 2 of the Environmental Report [NR14].

Table 3-6 - Priority and irreplaceable habitats within the study area of the Order Scheme

Habitat Type	Number of areas/ habitat parcels recorded	Approximate Distance and direction from Scheme (to closest parcel)
Deciduous woodland	970 parcels present within the study area, including 40 parcels within the Order Scheme, and parcels of lowland mixed deciduous woodland identified during the field survey.	Within the Order Scheme.
Lowland heathland	48 parcels present within the study area within the study area, including two parcels within the Order Scheme, and parcels of lowland heathland identified during the field survey.	Within the Order Scheme.
Lowland fen (irreplaceable habitat)	103 parcels recorded within the study area.	Directly adjacent to the Order Scheme in multiple locations.
Grass Moorland	140 parcels recorded within the study area.	65 m west of the Order Scheme.
Upland heathland	201 parcels recorded within the study area.	130 m west of the Order Scheme.
Traditional orchard	9 parcels recorded within the study area.	190 m west of the Order Scheme.
Blanket bog (irreplaceable habitat)	301 parcels recorded within the study area.	350 m north-east of the Order Scheme.
Upland hay meadow	5 parcels recorded within the study area.	1.02 km north-west of the Order Scheme.
Upland flushes fen and swamps	47 parcels recorded within the study area.	1.55 km south-east of the Order Scheme.
Fragmented Heath	10 parcels recorded within the study area.	1.56 km north-east of the Order Scheme.
Good quality semi improved grassland	6 parcels recorded within the study area.	3.07 km south-east of the Order Scheme.
Ponds	2 parcels recorded within the study area.	4 km east of the Order Scheme.
Lowland Meadows	1 parcel recorded within the study area.	4.3 km south of the Order Scheme.
Lowland dry acid grassland	1 parcel recorded within the study area.	4.73 km north-east of the Order Scheme.

Habitats within the Order Scheme

- 3.2.9 There are four priority habitat types listed under Section 41 of the NERC Act (2006) present within the Order Scheme; deciduous woodland, lowland heathland, priority hedgerow, and priority rivers.
- 3.2.10 The field surveys identified sixteen different area-based and seven linear-based habitat types within the Order Scheme. The results are shown in Table and Table 3-7 respectively.

Table 3-7 - Area-based habitat types present within the Order Scheme

UKHab Category	Area (ha)
c1c Cereal crops	0.97
g1c Bracken	0.83
g1d Other lowland acid grassland	0.49
g3c Other neutral grassland	1.15
g4 Modified grassland	5.06
h1a Lowland heathland	0.06
h3d Bramble scrub	0.10
h3h Mixed scrub	1.68
u1 Built-up areas and gardens	0.28
u1b Developed land; sealed surface	10.83
u1c Artificial unvegetated, unsealed surface	0.45
u1d Suburban mosaic of developed and natural surface	0.16
u1f Sparsely vegetated land	0.10
w1f Lowland mixed deciduous woodland	0.10
w1g Other woodland; broadleaved	7.36
w1h Other woodland; mixed	0.32
Total	29.94

Table 3-8 - Linear-based habitat types present within the Order Scheme

Habitat Type	Habitat Length (km)
h2a Hedgerow (priority habitat)	0.191
h2b Other hedgerow	0.234
r191 Ditch	0.300
r2a Rivers (priority habitat)	0.485
r2b Other rivers and streams	1.063
u1e Built linear features	2.764
w1g6 Line of trees	3.704
Total	8.741

Protected and Priority Species

- 3.2.11 The results of the appraisal of the actual or potential presence of protected and priority species are summarised in Table 3-9. This includes relevant data and results from the desk study and the field surveys.

Table 3-9 - Summary results of presence or suitability for protected and priority species within the study area of the Order Scheme

Species/ species group	Summary results
Badger	<p>Desk Study</p> <p>26 badger desk study records were returned by GMLRC within the study area, the closest record being a foraging badger located within the Order Scheme with the nearest recorded sett located approximately 7 m north-west of the Order Scheme.</p> <p>Field Survey</p> <p>A main badger sett was identified off Printworks Road, approximately 4 m east of the Order Scheme comprising multiple sett entrances and high levels of evidence by digging, fresh latrines and recent spoil excavation. Five sett entrances were classified as active and seven were partially active. The main sett is located immediately adjacent of the Order Scheme. Suitable badger sett creation habitat is available closer to the Order Scheme boundary.</p> <p>The suburban location of the Order Scheme is suitable for badger; however, residential, commercial and industrial built environment regularly buffers and enclose the Order Scheme reducing commuting possibilities for badger in the local area. In addition, roads and watercourses form barriers for badger dispersal across the full length of the Order Scheme.</p> <p>Relatively few suspected mammal burrows were recorded within the study area of the Order Scheme, and all such burrows encountered were disregarded as suitable for badger, either at the time of discovery during habitat surveys (i.e. clearly unsuitable for the species, primarily disregarded as rabbit warrens), or through monitoring by camera trapping. Camera trapping was undertaken on a potential badger sett off Spring Bank Lane. Monitoring confirmed that badger were not using the mammal hole during this period.</p> <p>Survey access limitations have prevented full survey coverage. An incidental report of badger activity has been received by a member of public. At the time of writing, access permissions are being progressed and the results of the survey visit will be addressed via an addendum.</p> <p>Badger may be present within the locality of the Order Scheme in low numbers.</p>
Bats	<p>Desk Study</p> <p>A total of 22 records of roosting bats were returned by GMLRC within the study area including</p>

Species/ species group	Summary results
	<p>common pipistrelle, soprano pipistrelle, an unidentified pipistrelle species, Natterer's and unidentified bat species. The closest record is a common pipistrelle day roost within a structure, located approximately 6 m east of the Order Scheme.</p> <p>Defra's Multi-Agency Geographic Information for the Countryside¹³ (MAGIC) search identified seven European Protected Species (EPS) licences for bats within 2 km of the Order Scheme. The closest of which was approximately 220 m north of the Order Scheme which was granted from 09/01/2020 to 08/01/2025 for the destruction of a common pipistrelle and soprano pipistrelle bat resting place (reference 2019-44069-EPS-MIT).</p> <p>In total, 244 records of bat activity were returned by GMLRC within the study area from the following species:</p> <ul style="list-style-type: none"> • Common pipistrelle; • Soprano pipistrelle; • Nathusius' pipistrelle; • Unidentified pipistrelle; • Brown long-eared; • Daubenton's¹⁴; • Myotis sp.; • Noctule; and • Unidentified bat. <p>The closest bat activity record is located on the Order Scheme boundary and comprises a commuting common pipistrelle.</p>

¹³ Multi-Agency Geographic Information for the Countryside (MAGIC) (2025) "Interactive Mapping", available at <https://magic.defra.gov.uk/home.htm>, accessed 20/07/2025

¹⁴ Daubenton's bat belongs to the Myotis genus which can not ordinarily be identified to species level based upon sound analysis alone. This record may not necessarily be correct.

Species/ species group	Summary results
	<p>Field Surveys</p> <p>Structures to be impacted by the Order Scheme extent underwent Preliminary Roost Assessment (PRA) in May 2024, from both on-rail and off-rail positions to provide surveyors with all vantage points required.</p> <p>All structures found to be of ‘Low’, Moderate’, or ‘High’ suitability for roosting bats underwent appropriate dusk emergence presence/ likely absence survey effort to determine presence of bat roosts within these structures. Structures of ‘Negligible’ suitability were scoped out of such surveys and assumed to be likely absent of bat roosts.</p> <p>Trees to be impacted by the Order Scheme underwent a Ground Level Tree Assessment (GLTA) in May 2024, from both on-rail and off-rail positions. One tree was identified as having ‘PRF-I’ suitability for roosting bats. the Order Scheme Area was since amended and the tree will now be retained and will not be directly or indirectly impacted by the Order Scheme. All other trees were determined as having ‘Negligible’ suitability for roosting bats and were scoped out for further assessment.</p> <p>One bat roost was located or assumed to be present within Spring Bank Lane (MVL3/09), a stone arch bridge not included within the Order which has a rail passing underneath a road over the top. Common pipistrelle were confirmed to be roosting, comprising of a day/ transitional roost.</p> <p>Traditional dusk emergence surveys were not possible on Stalybridge and Scout Tunnels due to health and safety limitations. Automated/ static monitoring methodology was agreed in place following Natural England DAS consultation⁸ to determine likely presence/ likely absence of bat roosts within the tunnels. The following roosts are considered likely present at both Stalybridge and Scout Tunnels:</p> <ul style="list-style-type: none"> • Brown long-eared day/ transitional roost; • Common pipistrelle day/ transitional roost; and • Common pipistrelle hibernation roost. <p>Various habitats within the Order Scheme extent offer moderate foraging and commuting suitability for bats, likely supporting multiple species of bats in the local area. Woodland, scrub,</p>

Species/ species group	Summary results
	<p>and grassland habitats present would support foraging and commuting, however, suitability for all bat species is reduced throughout the Order Scheme where significant light-spill (i.e. from street lighting) is adjacent to the Order Scheme, and/ or where roads and other built environment features sever habitat connectivity.</p> <p>Survey access limitations have prevented full survey coverage. At the time of writing, access permissions are being progressed and the results of the survey visit will be addressed via an addendum.</p>
Otter	<p>Desk Study</p> <p>Five otter desk study records were returned by GMLRC within the study area, the closest record being an individual located approximately 90 m east of the Order Scheme, within Huddersfield Narrow canal.</p> <p>Field Surveys</p> <p>Otter suitability was recorded for watercourses within a 50 m buffer of the Order Scheme. Moderate commuting and foraging suitability was recorded, notably at Huddersfield Canal.</p> <p>Low holt creation suitability was recorded and no potential rest sites were identified. Survey access limitations have prevented full survey coverage. At the time of writing, access permissions are being progressed and the results of the survey visit (if applicable) will be addressed via an addendum.</p>
Water Vole	<p>Desk Study</p> <p>Two water vole desk study records were returned by GMLRC within the study area, the closest record located approximately 450 m east of the Order Scheme.</p> <p>Field Surveys</p> <p>Water vole suitability was recorded for watercourses within a 50 m buffer of the Order Scheme. Low burrow creation, commuting and foraging suitability was recorded. Survey access limitations have prevented full survey coverage. At the time of writing, access permissions are being progressed and the results of the survey visit (if applicable) will be addressed via an addendum.</p>
Birds	<p>Desk Study</p>

Species/ species group	Summary results
	<p>A total of 7208 records were returned by GMLRC within the study area including 343 priority records¹⁵ comprising bullfinch (three records within the Order Scheme), cuckoo, curlew, dunnoek, grasshopper warbler, grey partridge, house sparrow, lapwing, lesser redpoll, lesser spotted woodpecker, linnet, red grouse, reed bunting, ring ouzel, skylark, song thrush, starling and yellow wagtail.</p> <p>A total of 46 Schedule 1 bird records were returned by GMLRC within the study area including barn owl, common scoter, kingfisher, and peregrine. The closest record is barn owl, located approximately 7 m east of the Order Scheme.</p> <p>Field Surveys</p> <p>Scrub and woodland habitats within the Order Scheme extent provide nesting opportunities for common species of birds. Due to the suburban nature of the Order Scheme extent and the presence of other disturbance elements (light-spill; noise disturbance; train movements; disturbance from human activities), only common species habituated to an urban/ suburban environment are likely to be present within the vicinity of the Order Scheme.</p> <p>The Order Scheme extent is unsuitable for significant populations of wintering bird species, due to the lack of suitable habitats. There is potential that some grasslands (in the off-rail environment, to be temporarily or permanently impacted by the Order Scheme) may support low numbers of wintering birds such as foraging geese species on transit.</p>
Great crested newt	<p>Desk Study</p> <p>No great crested newt records were returned by GMLRC within the study area.</p> <p>A total of 28 ponds were identified within the study area of the Order Scheme (i.e. within a 500 m buffer of the Order Scheme extent). Of these, 16 ponds were deemed to have no barriers to great crested newt dispersal or significant barriers in habitat connectivity between them and the Order Scheme extent, with 10 of the 16 ponds located within 250 m of the Order Scheme.</p>

¹⁵ Report on the Species and Habitat Review (UK BAP) 2007

Species/ species group	Summary results
	<p>A total of 22 wet ditches were identified within the study area of the Order Scheme (i.e. within a 500 m buffer of the Order Scheme extent). Of these nine wet ditches were deemed to have no barriers to great crested newt dispersal or significant barriers in habitat connectivity between them and the Order Scheme extent, with seven of the nine wet ditches located within 250 m of the Order Scheme.</p> <p>Field Surveys</p> <p>Suitable terrestrial habitat for foraging, refuging and hibernating great crested newt is present within the Order Scheme, notably tussocky grassland, earth banks, mixed scrub, woodland and log piles.</p> <p>No presence/ likely absence surveys were undertaken of any aquatic or terrestrial habitats to determine presence or absence of great crested newts. Network Rail intend to proceed with the great crested newt Organisational Licence for mitigation which has been used successfully on the Leeds to Micklefield TWAO at Austhorpe Lane compound.</p>
Reptiles	<p>Desk Study</p> <p>One slow worm desk study record was returned by GMLRC within the study area, located approximately 100 m west of the Order Scheme.</p> <p>Field Surveys</p> <p>No reptiles were encountered during walkover surveys of the Order Scheme extent and study area and no specific reptile surveys were undertaken.</p> <p>Habitats present have the potential to support populations of widespread reptile species (primarily common lizard, grass snake and slow-worm), especially where cover of scrub and woodland is uninterrupted and features connectivity to other areas of such habitats in the wider locality. Vegetated habitats within the Order Scheme extent that are isolated from other parcels of suitable habitat through presence of urban features are unlikely to support significant populations of reptiles.</p>
White Clawed Crayfish	<p>Desk Study</p> <p>Three white-clawed crayfish desk study records were returned by GMLRC within the study area,</p>

Species/ species group	Summary results
	<p>the closest record located approximately 1.7 km west of the Order Scheme within the River Tame which flows through the Order Scheme and leads into the Castleshaw Reservoir. Due to the non-linear nature of the river, the record is in reality 2.9 km from the Order Scheme. Historic records of white-clawed crayfish are present on the Huddersfield Canal, adjacent to the Order Scheme, though most recent records from 2004 are located approximately 7.2 km north-west of the Order Scheme¹⁶. The Canal & Rivers Trust were contacted and confirmed that the most recent survey was undertaken in 2004 and white-clawed crayfish were identified during a set of lock stoppages between Slaithwaite and Marsden (Lock 27E to Lock 29E). No reports of signal crayfish are identified on the Huddersfield Canal but were reported by the Canal & Rivers Trust to be present on the wider canal network.</p> <p>Field Surveys</p> <p>Low suitability for white-clawed crayfish refuging and foraging habitat was identified within the Order Scheme, notably at Diggle Brook. No in-watercourse works are proposed.</p>
Other priority species	<p>Desk Study</p> <p>A total of 164 priority mammal species desk study records were returned by GMLRC within the study area, comprising brown hare, mountain hare, polecat, European hedgehog and common toad. The closest record was a European hedgehog, located within the Order Scheme boundary.</p> <p>Field Surveys</p> <p>Brown hare, European hedgehog and common toad are likely to be present throughout the Order Scheme extent, mostly notable off the rail corridor within habitat including grasslands, woodlands and scrub. Polecat have the potential to be present, notably within the cropland and hedgerows identified within the Order Scheme.</p> <p>Mountain hare have the potential to be present on the lowland heathland within the Order Scheme.</p>
Other priority species (invertebrates)	Desk Study

¹⁶ Email communication with the Canal & Rivers Trust stated that most recent records are from 2004, where white-clawed crayfish were recorded during a set of lock stoppages between Slaithwaite and Marsden (Lock 27E to Lock 29E). The Canal and Rivers Trust Ecologist has had no reports of signal crayfish, however, they are known to be present on the wider canal network.

Species/ species group	Summary results
	<p>A total of 247 priority invertebrate species desk study records were returned by GMLRC within the study area, including blood-vein, cinnabar, latticed heath, shaded broad-bar, small heath, small phoenix and white-letter hairstreak. The closest record was a small heath, located approximately 40 m west of the Order Scheme.</p> <p>Field Surveys</p> <p>On-rail habitat within the Order Scheme are unlikely to support large populations of priority invertebrates due to disturbance from trains, notably increased airflow and lack of foraging and roosting habitat. Off-rail habitat within the Order Scheme boundary such as species rich grassland and woodland are likely to be more suitable.</p>
Flora	<p>Desk Study</p> <p>No protected or priority species of plant were recorded within the Order Scheme extent.</p> <p>On-rail within the Order Scheme are unlikely to support priority flora due to the urban nature of the rail corridor. Off-rail habitat within the Order Scheme boundary such as species rich grassland and woodland are likely to be more suitable for priority flora.</p> <p>Field Surveys</p> <p>No protected or priority species of plant were recorded within the Order Scheme.</p>
Invasive non-native plant	<p>Field Surveys</p> <p>The following invasive non-native plant species were recorded:</p> <ul style="list-style-type: none"> • There is a significant presence of Himalayan balsam throughout the majority of the Order Scheme extent, including within the existing rail corridor and other parcels of the Order Scheme; • Japanese knotweed is present in isolated stands throughout the Order Scheme, typically upon an embankment adjacent to the rail corridor; • Rhododendron is present frequently across the Order Scheme extent, especially on steep embankments adjacent to the rail corridor where scrub and woodland habitats are dominant;

Species/ species group	Summary results
	<ul style="list-style-type: none"> • Isolated stands of cotoneaster species are also present in these habitats throughout the Order Scheme; • Montbretia is present only at the northernmost extent of the Order Scheme, along the cess and embankment; • Variegated yellow archangel is present in an isolated stand in the northern extent of the Order Scheme, along the cess and embankment; • Japanese rose is present at Printworks Road electricity substation; • Buddleia (not listed under Schedule 9 of the WCA but considered invasive) is present only at the southernmost extent of the Order Scheme, along the cess and embankment; • Cherry laurel (not listed under Schedule 9 of the WCA but considered invasive) is present within Plevins compound.

3.3 Summary of Ecological Features

- 3.3.1 Based on the data and results of the desk study and field surveys, a summary of the ecological features identified within the study areas of the Order Scheme Area is provided in Table

3.4 Evaluation of Ecological Features

- 3.4.1 Based on the information collated during the baseline assessment, a summary of the evaluation of ecological features of importance is provided in Table 3-10, as well as confirmation on whether the feature is scoped into the appraisal. Unless stated otherwise, the ZoI is considered the Order Scheme Area. This is extended to 50 m where there is the potential for hydrological links, or disturbance as a result of the Order Scheme.
- 3.4.2 The level of 'importance' follows the rationale follows the GMEU's SBI selection guidelines¹⁷ whereby certain criteria for sites, habitats or species trigger a particular importance level.

¹⁷ Greater Manchester Ecology Unit (2024) "Greater Manchester Sites of Biological Importance Selection Guidelines (2024)", version 2.1, available at <https://www.tameside.gov.uk/getmedia/2f0ca1c9-4f43-40fb-9808-bd44459a01e1/guidelines.pdf>, accessed 23/07/2025

Table 3-10 - Evaluation of the ecological features within the study area

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
Peak District Moors (South Pennine Moors Phase 1) SPA	780 m east of the Order Scheme.	ARTICLE 4.1 QUALIFICATION (79/409/EEC) During the breeding season the area regularly supports: Short eared owl Merlin European Golden Plover	International	Designated site with internationally important features	Out	No direct habitat loss and no impact pathways identified connecting the SPA and the Order Scheme Area being separated by roads, urban areas and roads at different points along the route. Although there are hydrological connections the Order Scheme lies downstream of the SPA. The proposed works will not cause any disturbance above baseline to birds using the SPA.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						A Habitats Regulations Assessment (HRA) has determined that there are no likely significant effects.
South Pennine Moors SAC	780 m east of the Order Scheme.	<p>Annex I habitats that are a primary reason for selection of this site:</p> <ul style="list-style-type: none"> • European dry heaths; • Blanket bog; • Old sessile oak woodland. • Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site: 	International	Designated site with internationally important features	Out	No direct habitat loss and no impact pathways identified connecting the SAC and the Order Scheme Area being separated by roads, urban areas and roads at different points along the route. Although there are hydrological connections the Order Scheme lies downstream of the SAC.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
		<ul style="list-style-type: none"> Northern Atlantic wet heaths with Erica tetralix Transition mires and quaking bogs 				A HRA has determined that there are no likely significant effects.
South Pennine Moors Phase 2 SPA	980 m north of the Order Scheme	ARTICLE 4.1 QUALIFICATION (79/409/EEC) Short-eared owl Merlin European Golden Plover ARTICLE 4.2 QUALIFICATION (79/409/EEC): AN INTERNATIONALLY Important Assemblage of birds	International	Designated site with internationally important features	Out	No direct habitat loss and no impact pathways identified connecting the SPA and the Order Scheme Area being separated several roads including the A62. Although there are hydrological connections the Order Scheme lies downstream of the SPA. The proposed works will not cause any

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						disturbance above baseline to birds using the SPA. A HRA has determined that there are no likely significant effects.
Rochdale Canal SAC	7.45 km west of the Order Scheme, with hydrological connectivity upstream	Annex II species that are a primary reason for selection of this site: Floating water-plantain (<i>Luronium natans</i>)	International	Designated site with internationally important features	Out	No in-watercourse works are proposed. The SAC is separated from the Order Scheme Area by large urban areas with limited hydrological connectivity.
Huddersfield Narrow Canal SSSI	Within the Order Scheme boundary.	Eutrophic canal including swamp, tall fen, and other marginal vegetation. Diverse range of aquatic flora and fauna; including	National	Designated site with nationally important features	In	No in-watercourse works are proposed, however; the Order Scheme will cross the Canal at existing crossing points at Wool

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
		molluscs and fresh-water sponge.				Road, Mow Halls Lane rail crossing and Egmont Street Bridge. the Order Scheme will be directly adjacent to the Canal at the southern portal of Standedge Tunnel off Sam Road, land off Ward Lane, land east of the railway corridor off Ladcastle Road, land south-east of Saddleworth Rangers and Plevins. Due to the close proximity of the SSSI to the Order Scheme, there is a risk of pollution.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
Ladcastle and Den Quarries SSSI	Immediately adjacent to the Order Scheme boundary.	Quarries designated for features of geological interest	National	Designated site with nationally important features	Out	SSSI is designated for geological features that will not be impacted by the Order Scheme.
Dark Peak SSSI	780 m east of the Order Scheme.	Moorland with significant populations of breeding birds and terrestrial invertebrates.	National	Designated site with nationally important features	Out	No direct habitat loss and no impact pathways identified connecting the SSSI and the Order Scheme Area being separated by urban areas and roads at different points along the route. Although there are hydrological connections the Order Scheme lies downstream of the SSSI. The

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						proposed works will not cause any disturbance above baseline to birds and terrestrial invertebrates using the SSSI.
South Pennine Moors SSSI	780 m east of the Order Scheme.	Moorland and blanket bog with diverse upland plant communities and nationally important breeding bird populations	National	Designated site with nationally important features	Out	No direct habitat loss and no impact pathways identified connecting the SSSI and the Order Scheme Area being separated several roads including the A62. Although there are hydrological connections the Order Scheme lies downstream of the SSSI. The proposed works will not cause any

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						disturbance above baseline to birds using the SSSI.
Standedge Road Cutting SSSI	1.27 km north-east of the Order Scheme.	Designated for features of geological interest.	National	Designated site with nationally important features	Out	SSSI is designated for geological features that will not be impacted by the Order Scheme.
Lowside Brickworks SSSI	3.35 km west of the Order Scheme.	Designated for features of geological interest.	National	Designated site with nationally important features	Out	SSSI is designated for geological features that will not be impacted by the Order Scheme.
Park Clough SSSI	4.35 km north-east of the Order Scheme.	Designated for features of geological interest.	National	Designated site with nationally important features	Out	SSSI is designated for geological features that will not be impacted by the Order Scheme.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
Hollinwood Branch Canal SSSI	4.73 km west of the Order Scheme.	Eutrophic canal including open water, swamp, and tall fen.	National	Designated site with nationally important features	Out	No in-watercourse works are proposed. The SSSI is separated from the Order Scheme by large urban areas with limited hydrological connectivity.
Armit Road Lodge SBI	Within the Order Scheme.	Ponds and small lodges.	County	Selected by GMEU as a site of County importance	In	The SBI will be used for access on foot only using an existing footpath. Small scale branch trimming for maintenance siding may be required.
Cliffs at Mossley SBI	Within the Order Scheme.	Semi-natural broadleaved woodland. Semi-natural grassland.	County	Selected by GMEU as a site of County importance	In	The SBI will be directly impacted with 0.58 ha of habitat loss within the SBI (approximately

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						11% of the total area of the SBI).
Grasscroft Pasture SBI	Within the Order Scheme.	Semi-natural grassland. General species-solitary bees. General species-fungi.	County	Selected by GMEU as a site of County importance	In	The SBI will be directly impacted with 0.47 ha of habitat loss within the SBI (approximately 1% of the total area of the SBI).
Huddersfield Narrow Canal (North) SBI	Within the Order Scheme.	Large Areas of Standing Open Water.	County	Selected by GMEU as a site of County importance	In	No in-watercourse works are proposed however works will be within 10 m from and directly cross the SBI at multiple locations (see Huddersfield Canal SSSI).

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
Huddersfield Narrow Canal (South) SBI	Within the Order Scheme.	Large Areas of Standing Open Water as per the Greater Manchester SBI Selection Guidelines 2016.	County	Selected by GMEU as a site of County importance	In	No in-watercourse works are proposed however works will be within 10 m from and directly cross the SBI at multiple locations (see Huddersfield Canal SSSI).
Moorgate Quarry SBI	15 m east of the Order Scheme.	Heathland and Bog. Semi-natural grassland. Habitat mosaics.	County	Selected by GMEU as a site of County importance	Out	No direct habitat loss or hydrological links and the adjacent works comprise of access using an existing road. The Nuisance Management Plan within Part B of the Code of Construction Practice (CoCP) includes further mitigation measures

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						including dust prevention. Therefore, the SBI will not be impacted by the Order Scheme.
Hartshead SBI	25 m east of the Order Scheme.	Semi-natural broadleaved woodland.	County	Selected by GMEU as a site of County importance	Out	No direct habitat loss or hydrological links and the SBI is separated from the Order Scheme by the A62, River Tame and associated riparian vegetation. The Nuisance Management Plan within the CoCP Part B includes further mitigation measures including dust prevention. Therefore, the SBI

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						will not be impacted by the Order Scheme.
Royal George SBI	70 m east of the Order Scheme.	Ponds and small Lodges. Large Areas of Standing Open Water.	County	Selected by GMEU as a site of County importance	Out	No direct habitat loss and the SBI is separated from the Order Scheme by the Huddersfield Narrow Canal, residential housing and commercial premises and therefore will not be impacted by the Order Scheme.
Marshes at Staley Hall SBI	220 m east of the Order Scheme	Acid grassland with marsh and ditches.	County	Selected by GMEU as a site of County importance	Out	No direct habitat loss and the SBI is separated from the Order Scheme by the Huddersfield Narrow Canal,

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						residential housing and commercial premises and therefore will not be impacted by the Order Scheme.
Puddle Clay Pits SBI	240 m east of the Order Scheme.	Site supports a complex mosaic of habitats including marsh, flush, swamp, dry heath, open water, acid and neutral grassland.	County	Selected by GMEU as a site of County importance	Out	No direct habitat loss and the SBI is separated from the Order Scheme by the Huddersfield Narrow Canal, residential housing and commercial premises and therefore will not be impacted by the Order Scheme.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
Castle Clough SBI	430 m km east of the Order Scheme.	Deciduous woodland.	County	Selected by GMEU as a site of County importance	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Dacres SBI	380 m km east of the Order Scheme.	Lowland meadow and Lowland dry acid grassland.	County	Selected by GMEU as a site of County importance	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Brushes Valley LNR	640 m south-east of the Order Scheme.	Area of woodland, meadow, and wetlands adjacent to Brushes Reservoir.	Local	Local-level conservation priority	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Castle Clough and Cowbury Dale LNR	780 m east of the Order Scheme.	Area of broadleaved woodland straddling the banks of the Staly Brook watercourse.	Local	Local-level conservation priority	Out	No direct habitat loss and no impact pathways identified

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						connecting the feature and the Order Scheme.
Knot Hill LNR	1.15 km west of the Order Scheme.	Historically a reservoir, now a site of upland semi-natural habitat with agricultural grazing presence.	Local	Local-level conservation priority	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Cowbury Dale LNR	1.20 km east of the Order Scheme.	Meadow habitat surrounded by broadleaved woodland with a small lake present.	Local	Local-level conservation priority	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Rocher Vale LNR	2.67 km west of the Order Scheme.	Site supports a mosaic of habitats including riverbanks, woodland, and a heath.	Local	Local-level conservation priority	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
Glodwick Lows LNR	3.06 km west of the Order Scheme.	Site supports a mosaic of habitats including grassland, heathland and woodland. Wildlife includes foxes, mining bees and field bindweed.	Local	Local-level conservation priority	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Haughton Dale LNR	4.45 km south-west of the Order Scheme.	Oak, ash and alder woodlands supporting bluebells and, in wet areas, golden saxifrage. The woodland is an important habitat for birds, including woodpecker, owl, bullfinch and nuthatch.	Local	Local-level conservation priority	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Hollinwood Branch Canal LNR	4.53 km west of the Order Scheme.	Large Areas of Standing Open Water.	Local	Local-level conservation priority	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
Hurst Clough LNR	4.56 km south of the Order Scheme.	Woodland and wildflower meadows supporting butterfly assemblages.	Local	Local-level conservation priority	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Werneth Low LNR	4.93 km south of the Order Scheme.	Site supports a mosaic of habitats including woodland, dry heath, and wetlands.	Local	Local-level conservation priority	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Ancient/ veteran trees	0.12 km east of the Order Scheme.	No ancient/veteran trees are located within the Order Scheme	District	Irreplaceable habitat with few records within the district.	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Deciduous woodland	Within the Order Scheme	40 parcels located within the Order Scheme	Local	National priority habitat. The habitat is widespread in	In	0.043 ha will be impacted as part of the Order Scheme through

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
				Greater Manchester, but likely of local importance.		tree removal and crown reduction.
Lowland heathland	Within the Order Scheme.	2 parcels located within the Order Scheme	Local	Parcels surrounded by Himalayan balsam and Japanese knotweed. Lack of higher quality heathland species.	In	One area of 0.03 ha may be affected through use of an access track used to cross over Standedge tunnel western portal. 0.056 ha of lowland heathland will be lost during planned works at the entrance of Butterhouse Tunnel (planned parking and laydown area construction).
Lowland fen (irreplaceable habitat)	Directly adjacent to the Order Scheme in multiple	No parcels are located within the Order Scheme. One parcel is located directly	District	Generally encompassed within SBIs. Parcels are	Out	No direct habitat loss and no impact pathways identified

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
	locations.	adjacent to the Order Scheme.		fragmented.		connecting the feature to the Order Scheme. No in-watercourse works are proposed and no hydrological impacts are expected to surrounding watercourses.
Priority Hedgerow	Within the Order Scheme	Runs along the edge of the Order Scheme at Brownhill Lane.	Local	Supplementary attribute to other high quality habitat. Hedgerows generally widespread in Greater Manchester but likely of local value.	In	Potential for habitat loss if the priority hedgerow is removed as part of the works on Brownhill Lane for a new pedestrian diversion.
Priority River	5 m west of the Order Scheme	A section of the Huddersfield Narrow canal where the Order Scheme connects to	District	Mesotrophic waterbody over 1 ha. Likely of district level	In	No in-watercourse works are proposed however works will be

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
		the towpath.		importance.		within 5 m from the watercourse (see Huddersfield Canal SSSI and Huddersfield Narrow Canal (North) SBI).
Grass Moorland	65 m west of the Order Scheme.	No parcels are located within the Order Scheme.	Local	Fragmented parcel adjacent to golf course. Likely of local importance.	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Upland heathland	130 m west of the Order Scheme.	No parcels are located within the Order Scheme.	Local	Fragmented parcel below 300 m above sea level, adjacent to urban area. Likely of local importance.	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Traditional orchard	190 m west of the Order Scheme.	No parcels are located within the Order Scheme.	Local	Not considered for SBI selection criteria. Likely of local importance.	Out	No direct habitat loss and no impact pathways identified connecting the

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						feature and the Order Scheme.
Blanket bog (irreplaceable habitat)	350 m north-east of the Order Scheme.	No parcels are located within the Order Scheme.	County	Irreplaceable habitat that is uncommon in Greater Manchester. Likely of county importance.	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Upland hay meadow	1.02 km north-west of the Order Scheme.	No parcels are located within the Order Scheme.	County	Grassland habitat that is uncommon in Greater Manchester. Likely of county importance.	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Upland flushes fen and swamps	1.55 km south-east of the Order Scheme.	No parcels are located within the Order Scheme.	County	Habitat that is uncommon in Greater Manchester. Likely of county importance.	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
Fragmented Heath	1.56 km north-east of the Order Scheme.	No parcels are located within the Order Scheme.	County	Habitat that is uncommon in Greater Manchester. Likely of county importance.	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Ponds	4 km east of the Order Scheme.	No ponds are located within the Order Scheme.	Local	Priority habitat in Greater Manchester. Widespread but likely of local importance.	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Lowland Meadows	4.3 km south of the Order Scheme.	No parcels are located within the Order Scheme.	County	Grassland habitat that is uncommon in Greater Manchester. Likely of county importance.	Out	No direct habitat loss and no impact pathways identified connecting the feature and the Order Scheme.
Lowland dry acid grassland	4.73 km north-east of the Order Scheme.	No parcels are located within the Order Scheme.	County	Grassland habitat that is uncommon in Greater Manchester.	Out	No direct habitat loss and no impact pathways identified

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
				Likely of county importance.		connecting the feature and the Order Scheme.
Semi-natural habitats (Other neutral grassland, other lowland acid grassland, modified scrub, hedgerows, and line of trees).	Within the Order Scheme Area	Some Scheme elements contain habitats which do not meet the criteria to be priority habitats but are otherwise beneficial as habitats for protected species or are of higher ecological value than others in the locality.	Local	Generally widespread and common habitats which aren't priority habitats within Greater Manchester. Collectively, and due to the linear nature of the habitats, the habitats are likely of local value.	In (Other neutral grassland, other lowland acid grassland, modified scrub, hedgerows, line of trees).	Potential for loss or degradation of habitats of higher ecological value than those commonly found within the wider rail network.
Badger	Within and adjacent to the Order Scheme Area	A main badger sett is present immediately adjacent to the Order Scheme, located off Printworks Road. Scrub embankments and grassland on and adjacent to the rail	Local	Foraging areas are restricted by existing roads and railway. However, due to the present of a main sett, and linear nature of the Order	In	Potential for badgers to be present in and within close proximity to the Order Scheme Area due to the habitats present.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
		adjacent to some of the Order Scheme elements have potential for badger sett creation foraging and commuting.		Scheme, the wider population is considered of local value.		Temporary works are occurring within 20 m of the badger sett.
Bats - Roosting	Within and adjacent to the Order Scheme	One structure (Spring Bank Lane (MVL3/09) with a confirmed common pipistrelle day/transitional roost, however this is outside the Order Scheme. Likely roosting identified at Stalybridge and Scout Tunnels both with common pipistrelle day/ transitional roost and brown long-eared day/night transitional roost. This may be impacted by the cumulative impacts of the Order Scheme and wider Scheme Works.	Local	Low conservation status roosts supporting low numbers of two species of widespread bats within Greater Manchester.	In (structures only)	Confirmed bat roost in the existing bridge Spring Bank Lane (MVL3/09) has the potential to be directly and indirectly impacted by the Order Scheme, notably structural works and track lowering which includes temporary propping of abutments and associated temporary increase of disturbance.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
		One tree was identified with bat roost suitability.				<p>Evidence of likely roosting within Stalybridge and Scout Tunnels.</p> <p>Disturbance to roosting bats through increased vibration, light-spill and noise during the construction period.</p> <p>All structures within the Order Scheme are considered to offer negligible suitability for maternity. The structures are subject to regular increases in noise, artificial lighting, vibration and air-flow from passing trains including during</p>

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						the key maternity period. Whilst bats can become acclimatised to regular sources of potential disturbance, bats are usually very sensitive during the maternity season and may abandon their young if they are disturbed ¹² . Additionally, internal tunnel temperatures are expected to be low year-round and maternity roosts require relatively high mean temperatures ¹⁸ .

¹⁸ Shepherd, B., Stroud, J. (2009) Mitigation for roosts in buildings workshop national bat conference. Available at: <https://www.bsg-ecology.com/wp-content/uploads/2017/05/Mitigation-for-roosts-in-buildings-ps-,final.pdf> Accessed 13/08/2024.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						<p>Though PRFs with suitable depth or extension may be present, conditions are deemed sub-optimal. Maternity roosts are scoped out for further assessment.</p> <p>One tree was identified with bat roost suitability, determined as 'PRF-I'. The tree will be retained and will not be directly or indirectly impacted by the Order Scheme therefore is scoped out for further assessment.</p>

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
Bats – Roosting (Hibernation)	Within and adjacent to the Order Scheme	Likely common pipistrelle hibernation roost identified at both Stalybridge and Scout Tunnels. This may be impacted by the cumulative impacts of the Order Scheme and wider Scheme Works.	Local	Hibernation site is likely used by less than five individuals as a low number of calls were recorded over the hibernation period. Roost does not satisfy the SBI criteria, so unlikely to be of county value. Due to being a small hibernation roost, considered to be of local importance.	In	Evidence of likely common pipistrelle roosting within Stalybridge and Scout Tunnels. Disturbance to roosting bats through increased vibration, light-spill and noise during the construction period.
Bats - Foraging/ Commuting	Within and adjacent to the Order Scheme	Habitats including watercourses, grassland, scrub, hedgerows, woodland and treelines within and adjacent to Scheme elements.	Local	Low suitability of potential flight paths and foraging habitats over the Order Scheme. Due to the linear nature of the Order	In	Suitable habitat for bat foraging and commuting, including watercourses, grassland, scrub, hedgerows and woodland are

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
				Scheme, likely to be of at least local value.		present within and adjacent to the Order Scheme Area. Loss or degradation of these habitats could result in fragmentation, and indirect effects from increased lighting and disturbance may impact on bat behaviour.
Birds	Within and adjacent to the Order Scheme	Habitats including scrub, hedgerows, woodland and individual trees used by breeding birds within and adjacent to the Order Scheme.	Local	Low value breeding habitat within areas of relatively high baseline disturbance. Due to the linear nature of the Order Scheme, likely to be of at least local value.	In (breeding only)	De-vegetation works may result in damage or destruction of nests. Small areas of suitable habitat for wintering birds is present within the Order Scheme such as grasslands in the

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
						off-rail environment. The wider region outside of the Order Scheme boundary has higher suitability for wintering birds, notably due to lower baseline levels away from the live rail, and closer proximity to South Pennine Moors Phase SPA. Wintering birds are scoped out for further assessment.
Great crested newt	Within and adjacent to the Order Scheme	Suitable breeding, foraging and refuging habitat. No hibernacula was identified.	Local	Unlikely to support a good population of great crested newt considering habitat fragmentation	Out	Network Rail wish to proceed under a NatureSpace great crested newt mitigation licence.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
				from the railway and roads.		
Reptiles	Within and adjacent to the Order Scheme	Suitable commuting, foraging and refuging habitat present. No hibernacula was identified.	Local	Unlikely to regularly support a population of adder, slow worm, grass snake or common lizard. Due to the linear nature of the Order Scheme, likely to be local value.	In	Suitable habitat for reptile commuting, foraging, refuging and basking within the Order Scheme and as such there is a low risk of killing/ injury during construction.
Other priority species	Within and adjacent to the Order Scheme	Suitable habitat present for brown hare, common toad and/or hedgehog within the majority of the Order Scheme.	Local	Sparse distribution across the immediate area, restricted to particular sites or widespread but not considered for SBI selection criteria. Due to the linear nature of the Order	In	Habitat including grassland, scrub and woodland is suitable for brown hare, common toad and/or hedgehog and as such there is a low risk of killing/ injury during construction.

Ecological feature	Approximate Distance from Scheme Area	Description	Importance	Importance rationale	Scoped in/ out	Reason for scoping in/ out
				Scheme, likely to be local value.		
Priority Flora	Within and adjacent to the Order Scheme	No protected or priority species of plant were recorded within the Order Scheme.	Local	Unlikely to support a significant proportion of the Grater Manchester population of the species.	In	Flora may have been missed due to the time of year the habitat was surveyed. Some areas of the Order Scheme were inaccessible and have the potential to contain priority flora.

3.5 Future Baseline

- 3.5.1 Assuming continuation of existing land ownership and management regimes, the habitats within the Order Scheme are unlikely to change in type or ecological value and would remain as the current baseline.
- 3.5.2 The future baseline scenario within and adjacent to the Order Scheme shall include other elements of the wider TRU development works that will be delivered under permitted development rights. Such works would be primarily limited to the existing railway corridor, which is largely of negligible or low habitat value (modified grassland, other neutral grassland, scattered scrub and unsealed urban surface). It is therefore anticipated that such TRU development works would not result in any notable changes to the baseline ecological conditions reported within the proposed period of the implementation of the Order Scheme.
- 3.5.3 In addition, potentially relevant protected species which are transient in nature such as badgers and roosting bats could establish in new locations where they would impose new working constraints, due to a need to ensure compliance with the legislation protecting these species. Changes to watercourses or waterbodies are unlikely to occur in the proposed period of the construction of the Order Scheme unless management is to substantially enhance the watercourse.

3.6 Potential Effects

- 3.6.1 The appraisal of potential effects is based on the Order Scheme Area shown on Figures 1.1.1 to 1.1.6 in Volume 2 of the Environmental Report [NR14], which shows the approximate extent and layout of the Order Scheme for each relevant elements of the Order Scheme and by inference allows identification of which habitats would be retained and which would be affected.
- 3.6.2 The extent of the Order Scheme for all relevant elements that require planning permission is approximately 31.025 ha. The current assumption is that all non-operational land owned outside of Network Rail's landownership within the Order Scheme would be returned to the landowner and restored to its former condition.
- 3.6.3 Table 3-7 and Table show the area of each habitat type present within the deemed planning boundary for each relevant elements of the Order Scheme.
- 3.6.4 Impacts on the ecological features identified in Table 3-9 could result during the construction phase and during operation; a summary of the activities which could have an impact is provided below.

Construction Phase

- 3.6.5 Construction activities that have the potential to impact on the identified ecological features may include:
- Temporary and permanent vegetation clearance within the Order Scheme (loss, fragmentation and degradation);
 - Earthworks and movement;
 - Works to structures including demolition, dismantling and reconstruction;
 - Creation of temporary compounds, working areas and access routes;
 - Installation of new railway infrastructure and assets; and
 - Changes in lighting, noise, and vibration.

Operational Phase

- 3.6.6 Operational activities that have the potential to impact on ecological features may include:
- Direct or indirect impacts from the presence of new or changes to existing infrastructure and assets and changes in the operation of the railway including lighting, noise, vibration or visual effects;
 - Changes to the foraging, commuting and shelter behaviour of protected or priority species while habitats are restored to their previous type and condition.

Decommissioning Phase

- 3.6.7 Decommissioning activities that have the potential to impact on the identified ecological features may include:
- Earthworks and movement from the removal of temporary compounds and associated works areas;
 - Works to temporary structures including demolition and dismantling; and
 - Changes in lighting, noise and vibration.
- 3.6.8 The HRA (Volume 3, Appendix 6B of this Report [NR14]) does not assess the potential effects of decommissioning. It is assumed that any Likely Significant Effects will be screened out. However, sufficient

decommissioning detail is not yet available to draw this conclusion and it is recommended that the HRA is re-visited once final decommissioning design is known.

- 3.6.9 Table summarises the potential effects that could affect the ecological features identified in Table 3-11 without the implementation of appropriate mitigation measures.
- 3.6.10 Cumulative impacts for the Order Scheme are addressed within Chapter 4 of the Environmental Report.

Table 3-11 - Summary of the potential effects on ecological features

Ecological features	Potential effects
Construction	
Designated sites	
Huddersfield Narrow Canal SSSI Huddersfield Narrow Canal (North) SBI Huddersfield Narrow Canal (South) SBI Armit Road Lodge SBI Cliffs at Mossley SBI Grasscroft Pasture SBI	<p>Loss and degradation of designated sites: <u>Huddersfield Narrow Canal SSSI/ SBI</u> Accidental pollution events at Huddersfield Narrow Canal SSSI, North & South SBI: spills from machinery or construction materials.</p> <p><u>Armit Road Lodge SBI</u> The SBI will be used for access on foot only using an existing footpath. Small scale branch trimming for maintenance siding may be required. Vegetation loss would be temporary and branches will be cut in a way to allow re-growth.</p> <p><u>Cliffs at Mossley SBI</u> The SBI will be directly impacted with 0.58 ha of habitat loss within the SBI out of 5.39 total ha (approximately 11% of the total area of the SBI). The vegetation loss will be temporary and is concentrated on the eastern side of the SBI and therefore will not fragment the wider SBI.</p> <p><u>Grasscroft Pasture SBI</u> The SBI will be directly impacted with 0.22 ha of habitat loss within the SBI out of 4.05 total ha (approximately 5% of the total area of the SBI). The vegetation loss will be temporary and is concentrated on the eastern side of the SBI and therefore will not fragment the wider SBI.</p>

Ecological features	Potential effects
Priority Habitat	
Deciduous woodland Lowland heathland	0.056 ha of lowland heathland and 0.043 ha of deciduous woodland will be removed, contributing to loss and degradation of priority habitat.
Habitats	
Local value semi-natural habitats	Loss, fragmentation and degradation of local value semi-natural habitat.
Protected/priority species	
Badgers Bats (commuting and foraging) Birds (breeding) Reptiles Other priority species Priority flora	Killing and injury during vegetation clearance and construction activities. Damage/destruction of active bird nests. Temporary behaviour changes of animals affecting foraging, commuting and sheltering due to increased disturbance (human activity, noise, vibration and light-spill) and changes to the local area. Loss, fragmentation and degradation of habitat.
Bats (roosting)	Temporary or permanent loss of roost at Spring Bank Lane (MVL3/09) and likely present roosts within Stalybridge and Scout Tunnels when considering cumulative effects of the Order Scheme with the wider Scheme works subject to PD. Temporary disturbance of likely roost through deployment of artificial lighting and increase noise and vibration
Operation	
Designated sites	
Huddersfield Narrow Canal SSSI Huddersfield Narrow Canal (North) SBI Huddersfield Narrow Canal (South) SBI Armit Road Lodge SBI Cliffs at Mossley SBI Grasscroft Pasture SBI	De-vegetation will expose interior habitat to different environmental conditions such as increased wind and light. Disturbed ground near the Order Scheme may be colonized by undesirable species or INNPS. Management activities such as vegetation clearance for visibility would be more frequent. Pollution runoff from the Order Scheme

Ecological features	Potential effects
	contaminates adjacent habitats.
Priority Habitat	
Deciduous woodland Lowland heathland	De-vegetation will expose interior habitat to different environmental conditions such as increased wind and light. Disturbed ground near the Order Scheme may be colonized by undesirable species or INNPS. Management activities such as vegetation clearance for visibility would be more frequent. Pollution runoff from the Order Scheme contaminates adjacent habitats.
Habitats	
Local value semi-natural habitats	Increased footfall from the creation of a new public right of way causing increased disturbance and pollution through littering. De-vegetation will expose interior habitat to different environmental conditions such as increased wind and light. Disturbed ground near the Order Scheme may be colonized by undesirable species or INNPS. Management activities such as vegetation clearance for visibility would be more frequent. Pollution runoff from the Order Scheme contaminates adjacent habitats.
Protected/ priority species	
Badger Bats (commuting and foraging) Birds (breeding) Reptiles Other priority species	Behaviour changes on breeding, foraging and commuting animals due to new infrastructure and changes in lighting, noise, vibration or visual effects.
Bats (roosting)	Reduction in the availability and suitability of features for roosting bats due modifications to bridge structures and tunnels. Increased disturbance to roosts through noise, vibration and artificial lighting.
Priority flora	Loss of priority flora through de-vegetation

Ecological features	Potential effects
	and vehicle movement.
<i>Decommissioning</i>	
<i>Designated sites</i>	
Huddersfield Narrow Canal SSSI Huddersfield Narrow Canal (North) SBI Huddersfield Narrow Canal (South) SBI Armit Road Lodge SBI Cliffs at Mossley SBI Grasscroft Pasture SBI	Disturbed ground near the Order Scheme may be colonized by undesirable species or INNPS. Pollution runoff from the Order Scheme contaminates adjacent habitats.
<i>Priority Habitat</i>	
Deciduous woodland Lowland heathland	Disturbed ground near the Order Scheme may be colonized by undesirable species or INNPS. Pollution runoff from the Order Scheme contaminates adjacent habitats.
<i>Habitats</i>	
Local value semi-natural habitats	Disturbed ground near the Order Scheme may be colonized by undesirable species or INNPS. Pollution runoff from the Order Scheme contaminates adjacent habitats.
<i>Protected/ priority species</i>	
Badger Bats (commuting and foraging) Birds (breeding) Reptiles Other priority species	Increased mortality from increased traffic movements. Loss of secondary habitat such as refugia within laydown areas or compounds. Behaviour changes on breeding, foraging and commuting animals due to new infrastructure and changes in lighting, noise, vibration or visual effects.
Bats (roosting)	Increased disturbance to roosts through noise, vibration and artificial lighting. Removal of temporary structures.
Priority flora	Loss of priority flora through de-vegetation and vehicle movement.

4. MITIGATION AND CONSIDERATION OF CONTROL MEASURES

- 4.1.1 This section describes the mitigation measures that will be included to avoid or reduce any adverse effects on the identified ecological features.
- 4.1.2 The relevant works will be undertaken in accordance with legal requirements and good practice, and this is considered when assessing the effects of the potential impacts. The standard measures are summarised below and further detail on this is provided below:
- Implementation of good practice mitigation measures to reduce the risk of water pollution, noise, vibration, dust and light-spill. These are outlined in the Code of Construction Practice (CoCP) Part A [NR16] and through Network Rail's Environment and Social Minimum Requirements for Projects (NR/L2/ENV/015, Volume 3, Appendix 1A of this Report [NR14]);
 - Implementation of root protection areas of retained woodland, trees and hedgerows, in accordance with British Standards¹⁹, through an Arboricultural Method Statement – see Chapter 9 in Volume 1 of the Environmental Report [NR14] for further details;
 - Implementation of biosecurity mitigation measures to prevent the spread of INNPS. As described in section 4.4 of the CoCP Part A [NR17] these will be outlined in a Landscape and Ecological Management Plan (LEMP) for the relevant works elements of the Order Scheme that require planning permission. The relevant Network Rail guidance notes will be complied with in removing any invasive or injurious species as applicable, whether as part of the LEMP or in connection to works undertaken using Permitted Development Rights for associated temporary land use work areas;
 - Timing works to avoid the most sensitive periods for ecological features wherever possible, e.g. removing vegetation outside the nesting bird season and avoiding disturbance of potential shelter refugia during winter (reptiles and hedgehog);
 - Updating baseline data and the impact appraisal if conditions change or if ecological features not previously identified and assessed are discovered once works commence.
- 4.1.3 The principles of the mitigation hierarchy (see Annex B) have been implemented whereby the relevant elements of the Order Scheme have been designed to use areas of hardstanding, existing access roads and low value habitats (i.e. avoid an impact) where these are available.

¹⁹ British Standard BS5837:2012 'Trees in relation to design, demolition and construction – Recommendations' (British Standards Institution, 2012)

4.1.4 Mitigation measures will be:

- incorporated into the design (embedded mitigation);
- implemented through consenting or licensing required to ensure compliance with legislation;
- integrated into the construction management programmes or method statements (i.e. the CoCP);
- secured through a planning condition for a LEMP included with the Order application for the relevant elements of the Order Scheme that require planning permission; or
- managed via CoCP Part A and Network Rail commitments (as set out within NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]), included with the Order application for associated temporary land use areas.

4.2 Embedded Mitigation

4.2.1 Where reasonably practicable, environmental effects have been avoided through the development and adoption of a range of mitigation measures. Each mitigation measure for ecology is outlined below, with a reference number provided - for example EM1. Those reference numbers relate to Volume 1, Chapter 14 of the Environmental Report [NR14], which contains details of all proposed mitigation measures for the Order Scheme

Layout Design (EM1)

4.2.2 Where practical the layouts of the relevant elements of the Order Scheme have been designed to make use of habitats of low ecological value, rather than habitats of high value. Significant adverse effects on the integrity and connectivity of the habitats within the Order Scheme have been avoided due to maximising the retention of habitat along the railway embankments and compound locations.

4.2.3 Specific examples of avoidance of higher value habitats include:

- Plevins Compound: Retention of overhanging trees where feasible, specifically on the western edge where the trees maintain a 10 m plus buffer to Huddersfield Canal SSSI;
- Butterhouse Tunnel: the Order Scheme design was amended from being directly adjacent to Butterhouse Tunnel to agreement of a 30 m buffer area, as it was identified as having high suitability for roosting bats, including swarming, maternity and hibernation suitability. Mitigation to minimise potential disturbance to bats will be included within Scheme design;

- Printworks Office Compound²⁰: boundary trees in the north-west and east of the Order Scheme to be retained;
- Egmont Street: Trees to be retained at the boundary of the parking area, including the area adjacent Huddersfield Canal;
- Heron Lane Compound: In-channel works were proposed to widen access route which would have directly impacted the River Tame and could have impacted flora and fauna in and adjacent to the Order Scheme. This portion of the Order Scheme was removed and access works are limited to minor de-vegetation;
- Royal George Underbridge Compound: Trees at border of compound can be retained; and
- Sam Road Compound: De-vegetation will be minimised to avoid tree removal adjacent to Huddersfield Canal and residential buildings.
- A badger sett is located approximately 4 m east of the Order Scheme at Printworks Road. The following measures will be implemented to reduce the likelihood of direct or indirect impacts to badgers:
 - Where feasible, a 20 m exclusion zone will be demarked around any active badger sett entrances;
 - Works will comprise of temporary minor de-vegetation only and restricted to hand tools.
 - No groundworks or machinery will be used;
 - Works will be constrained to day-time only; and
 - An Ecological Clerk of Works will provide support during de-vegetation, comprising pre-works checks and ensuring no mammal paths or sett entrances are obscured.

Lighting Measures (EM2)

- 4.2.4 A CoCP Part B - Nuisance Management Plan, secured through planning condition, will be prepared for the relevant elements of the Order Scheme that require planning permission that will include best-practice measures for any additional lighting that is required to safely facilitate construction and future operational use, as described in section 3.4 of the CoCP Part A [NR16]. Measures regarding the lighting for associated temporary land use will be implemented through CoCP Part A and Network Rail commitments as set out in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]).
- 4.2.5 Any requirements for temporary construction and compound lighting will be designed to be directional and avoid illumination of adjacent natural habitats. This will be to minimise indirect disturbance effects to nocturnal wildlife such

²⁰ To be consented as part of the wider Printworks Compound Works

as bats and certain bird species that could use habitats for foraging and commuting. Residual light spill is considered unlikely to have an adverse effect on the use of habitats in the Order Scheme by bats, as these are already subject to a level of light disturbance from the existing lighting and these habitats are most likely to be used by bat species that are more tolerant of light disturbance, such as pipistrelles.

Noise Reduction (EM3)

- 4.2.6 A CoCP Part B - Noise and Vibration Management Plan will be prepared for the relevant elements of the Order Scheme that require planning permission that will include mitigation measures for reducing impacts from noise during construction, as described in in the CoCP. Measures regarding the noise for associated temporary land use will be implemented through CoCP Part A [NR16] and Network Rail commitments as set out in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]). These will help to minimise disturbance from noise to wildlife such as bats and birds that may be present. The Order Scheme currently experiences noise disturbance from existing railway operations and the largely urban areas present, so a notable increase in noise levels is not expected. Residual noise is considered unlikely to have an adverse effect on the use of habitats around the Order Scheme Areas by bats and birds, as these are already subject to a level of disturbance from the existing railway operations and will be habituated to that.

Surface Water Drainage and Pollution Prevention (EM4)

- 4.2.7 A Pollution Prevention and Incident Control Plan (PPICP) will be prepared for the relevant elements of the Order Scheme that require planning permission as part of the CoCP Part B, to be approved by the local planning authority as required by a planning condition, and will include mitigation measures for preventing pollution incidents during construction of the Order Scheme, including to control the generation of dust during construction activities. Pollution control measures will be implemented to avoid and minimise adverse effects of pollution and runoff on the adjacent water environment, as described in section 7 of the CoCP Part A [NR16].
- 4.2.8 The PPICP will describe measures that will be in place to deal with pollution incidents efficiently when and if they occur. The PPICP will require that in order to avoid potential pollution effects, all refuelling and servicing of vehicles will be carried out within a designated area with an impermeable base. To prevent spillages, refuelling will be carried out by pumping through a trigger delivery nozzle.
- 4.2.9 Fuel, oil and other potential contaminants will be stored within bunded tanks having capacity of 110% of the volume stored and only the minimum quantity required will be stored within the Order Scheme. The designated area will be maintained in a secure and clean manner. An adequate quantity of oil

absorbent material will be available and spillages cleared up immediately. All construction equipment will be maintained in good working order and checked regularly for spillages/ leaks. Measures for associated temporary land use will be implemented through CoCP Part A and Network Rail commitments as set out in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]).

Biosecurity Measures (EM5)

- 4.2.10 As described in section 4.4 of the CoCP Part A [NR16] the LEMP will include a section that identifies the presence of any invasive or injurious species and how they will be dealt with for the relevant elements of the Order Scheme that require planning permission. The presence of INNPS (Himalayan balsam, Japanese knotweed, rhododendron, buddleia (not on Schedule 9 of the WCA but considered invasive), montbretia and variegated yellow archangel) will need to be addressed prior to construction to ensure they are not spread beyond their current extent. Each INNPS will require targeted and specific management as they are present in areas where construction will occur so there is a risk that INNPS plant material could be transmitted off-site via staff, plant and materials, which is illegal under Schedule 9 of the WCA.
- 4.2.11 Relevant Network Rail guidance notes will be complied with in removing any invasive or injurious species as applicable. Mitigation measures for INNPS will be outlined and contractors will be responsible for implementing biosecurity measures and adherence to the INNPS Management Plan. The INNPS Management Plan will be produced including measures to be implemented during the proposed works which will cover such things as the demarcation of affected areas, the management of impacted soils through the use of track matting over affected areas, wearing of protective clothing, and removal and storage of arisings (e.g. stockpiling in an agreed location) prior to and during development. The cleaning/ disinfection of clothes and equipment prior to travel to another site will prevent plant materials from being transferred and propagating in other areas.

4.3 Additional Mitigation

SBI – Armit Road Lodge, Grasscroft pasture, Cliffs at Mossley and Huddersfield Canal (AM1)

- 4.3.1 The layouts of the relevant elements Order Scheme has been designed to follow the mitigation hierarchy and avoid SBIs where feasible. Where this is not possible, the Order Scheme aims to minimise impacts:
- Armit Road Lodge SBI: the Order Scheme design was refined to make use of an existing footpath through the SBI. The use of hand tools are specified to minimise the requirement for de-vegetation, notably scrub

removal for the diversion of an existing footpath and minimise disturbance which will be temporary in nature;

- Grasscroft Pastures SBI: Design of the new footpath to retain a buffer to the adjacent trees where feasible. De-vegetation is limited to a 4 m wide footpath;
- Cliffs at Mossley SBI: Proposed drainage micro-sited to reduce de-vegetation footprint; and
- Huddersfield Canal SBI: Pollution control measures will be implemented to avoid and minimise adverse effects of pollution and runoff on the adjacent water environment, as described in section 7 of the CoCP Part A [NR16] with detailed protection to follow in the PPICP Part B condition to be approved by the local authority.

- 4.3.2 Where areas of temporary de-vegetation have taken place within an SBI, habitat will be reinstated and enhanced where practical. Other enhancement measures will be targeted within the wider SBI in conjunction with habitat creation.

Priority Habitat – Deciduous Woodland and Lowland Heathland (AM2)

- 4.3.3 The layouts of the relevant elements of the Order Scheme have been designed to follow the mitigation hierarchy and avoid priority habitats where feasible. Network Rail's commitment to deliver 10% BNG will result in a habitat enhancement following the temporary loss.

Bat Mitigation (AM3)

Mitigation Strategy for Bat Roosts

- 4.3.4 A detailed mitigation strategy will be developed as part of the tunnels licence application as outlined in section 4.3.9, which will include (but not be restricted to) the following key principles:
- Pre-construction bat survey (between May and September for day/transitional roosting and November – March for hibernation roosting within year prior to construction) to be undertaken in accordance with current survey guidelines to reaffirm species and classify the bat roosting status as well as exact location of roost site;
 - Using the information from the pre-construction surveys, a mitigation strategy will be developed and the licence application and method statement will be prepared and submitted to Natural England;
 - All roosts are currently assessed as a low conservation value roost of a common and widespread species;

- During licensable works, a licensed bat ecologist would be present during the initial stages of the works in the vicinity of the roost location so that any PRF can be inspected using a torch and/ or endoscope prior to works commencing to confirm bats are absent. The supervising licensed ecologist would be present to remove and relocate any opportunistic bats present;
- If exclusion measures are required, these would be undertaken by a licensed ecologist in accordance with licence method statement during appropriate times of the year during suitable weather conditions;
- A Bat Toolbox Talk would be delivered to staff;
- A replacement, alternative roost site will be provided either as an integrated box within the new structure or mounted on the new structure, or a bat box on a nearby mature tree or standalone rocket bat box. This will be installed prior to exclusion and removal of the known roost to act as a receptor location for excluded bats. The number of replacement bat roost features (e.g. day/ transitional and hibernation bat boxes) exceed the baseline provision, delivering enhancements and ensuring compliance with any identified licensing requirements;
- Any newly installed lighting will not directly illuminate replacement roosting features.

4.3.5 It is a legal requirement to obtain a licence before commencement of any work that has potential to directly impact a bat roost or cause harm to bats.

4.3.6 As part of the consideration of the cumulative impacts of the Order scheme and other works associated with the Scheme as noted in Table 1-2 of Volume 1, Chapter 1 of this report, and in accordance with, NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]), a EPSM may also be required for the works subject to permitted development if they directly impact the common pipistrelle day/ transitional confirmed roost at Spring Bank Lane (MVL3/9) and the likely roosts identified within Stalybridge and Scout Tunnels. In this event, the Natural England pre-screening service will be contacted and Natural England will have the opportunity to review the licence prior to submission. If a WCA disturbance offence is likely but only in relation to low level disturbance impacts, a disturbance notification will be applied for and obtained from Natural England. If no offence is likely as only negligible disturbance is predicted, a Precautionary Method of Working (PMW) is deemed sufficient mitigation.

4.3.7 No other bat roosts have been confirmed in the Order Scheme Areas. The above approach and principles will be followed for any subsequent bat roosts identified during pre- construction surveys of structures and trees, adapting as necessary to the individual conditions of roost type and species of bat.

Habitat Demarcation for Trees and Hedgerows (AM4)

- 4.3.8 Protection of retained trees and hedgerows will be implemented to prevent accidental damage, through suitable tree protection in accordance with British Standard 5837:2012²¹. This may include fencing or other appropriate demarcation measures. The measures will be in accordance with those outlined in the Arboriculture Chapter (Chapter 8 in Volume 1 of the Environmental Report [NR14] and Figure 8.1.1 - Tree Protection Plan in Volume 2 of the Environmental Report [NR14]) and contained in the LEMP for relevant elements of the Order Scheme that require planning permission. The aims and objectives of the LEMP will be secured through the planning condition process. Protection of trees within associated temporary land use will be implemented through the CoCP Part A and Network Rail commitments set out within NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]).

Scheme Clearance and Preparation (AM5)

- 4.3.9 During vegetation clearance and preparation works, a watching brief will be undertaken by an appropriately trained ecologist during vegetation removal and disturbance of natural and artificial refugia materials that could provide shelter habitat for breeding birds, common reptile species, hedgehog, common toad, and brown hare to reduce the risk of killing and injury. Any strimming will be undertaken using a phased approach to reduce habitat to a low level so it can be checked by appropriately trained personnel for sheltering animals prior to full removal. Natural and man-made refugia items will be relocated where possible so there is no net loss of shelter habitat available. Requirements for watching brief activities will be outlined in the LEMP.
- 4.3.10 Removal of vegetation and refugia materials suitable for shelter by amphibians, reptiles and hedgehog will avoid periods of frost or temperatures below 5°C where practical because this could disturb hibernating animals. If unavoidable, a pre-works check would be undertaken and any common amphibian species, reptiles or hedgehog discovered will be moved to an area of suitable habitat outside the Order Scheme Area.
- 4.3.11 Pre-construction surveys will be completed prior to construction as follows to reaffirm conditions remain the same and that there are no changes required to the mitigation proposed:
- Badger surveys within Scheme Area, notably at Printworks Road and Blackrock Kennels to reaffirm the presence of main setts and to reaffirm the absence of setts;

21 British Standards Institution (2012) Trees in relation to design, demolition and construction – Recommendations, British Standard 5837:2012

- Dusk emergence surveys to be completed on the existing structures to reaffirm the status of roosting bats closer to works commencing and inform any requirements for licensing and mitigation:
 - Heyrod Hall Bridge (MVL3/07);
 - Spring Bank Lane Footbridge (MVL3/09)²²;
 - Manchester Road Footbridge (MVL3/10)²⁴;
 - Stamford Road Footbridge (MVL3/13);
 - Mossley Station Footbridge (MVL3/14);
 - New Earth Footbridge (MVL3/16);
 - Midge Hall Overbridge (MVL3/19);
 - Wrights Mill Overbridge (MVL3/20);
 - Charlotte Street Overbridge (MVL3/24);
 - Royal George Underbridge (MVL3/25);
 - Footway Underbridge (MVL3/26);
 - Oldham Road Overbridge (MVL3/28);
 - Den Quarry Underbridge (MVL3/30);
 - Uppermill Viaduct (MVL3/31).

4.3.12 The pre-construction bat surveys will be undertaken in the year prior to construction to allow for timescales for removal under licence, were a bat roost site to be identified. Where a roost site is identified, mitigation measures in principle i.e. under Natural England licence as set out in AM1 will then be followed.

Breeding Bird Mitigation (AM6)

4.3.13 Mitigation is required to meet legal requirements for breeding birds during construction clearance within Scheme Areas. All birds are protected while nest building and when nesting under the Wildlife and Countryside Act 1981 (as amended) (WCA), and it is an offence to destroy or damage an occupied bird nest. The following mitigation will be implemented:

- Where possible vegetation removal will be undertaken outside the core nesting season (i.e. avoiding 01 March to the 31 August). Checks for nesting bird species will also be undertaken during Scheme Area clearance and preparation works undertaken in the bird breeding season. Network Rail guidance recommends that checks for nesting

²² Now subject to separate planning permission

birds must be made at all times of the year when clearing vegetation due to the fact that certain species can nest all year round. A breeding bird and nest check form will be completed prior to removal of vegetation (Network Rail, 2019 and 2020a);

- If this is not possible then the works will be subject to supervision by appropriately trained personnel prior to removal who will check for bird nests and advise on any mitigation requirements to ensure legal compliance;
- A stand-off area (the size of which will vary depending on the bird species concerned and level of legal protection) will be maintained around any active bird nests found, to protect against potential impacts during works until young have fledged. If this cannot be achieved, then relevant works will need to be delayed until nesting activity is completed (as confirmed by the ecologist).

Ecology Tool Box Talks (AM7)

- 4.3.14 As part of the Order Scheme induction for staff, relevant information on the ecological features identified will be provided. This will encourage staff to be considerate to wildlife that may be using habitats adjacent to the Order Scheme Areas and to report any discoveries or incidents involving wildlife. In particular, staff will be informed of the potential to encounter wildlife during construction activities and will be requested to have due care and consideration when driving within the Order Scheme Area and completing construction activities. Environmental information will be displayed at welfare compounds that will remind staff about the key environmental issues.

4.4 Mitigation Summary

- 4.4.1 A summary of the potential effects and the incorporated mitigation measures are provided in Table 4-1, in addition to the confirmation of any notable residual effects.
- 4.4.2 The relevant elements of the Order Scheme have been sensitively designed and positioned with reference to the existing baseline conditions and potential pathways for impact (e.g. avoiding habitats of higher ecological value where possible). As a consequence of the implementation of measures outlined in sections 4.1 and 4.2, no notable adverse residual construction or operational effects are anticipated as a result of the relevant works.

Table 4-1 -Summary of potential effects, incorporated mitigation measures and likely residual effects at each relevant works elements of the Order Scheme

Ecological features	Potential effects	Mitigation measures	Likely residual effects
Construction			
Huddersfield Narrow Canal SSSI Huddersfield Narrow Canal (North) SBI Huddersfield Narrow Canal (South) SBI Armit Road Lodge SBI Cliffs at Mossley SBI Grasscroft Pasture SBI	Loss, fragmentation and degradation of habitats.	EM1 - Retention of habitats and minimising loss through design. EM2 - Minimising lighting and use of directional lighting. EM4 - Implementing pollution prevention measures. AM1 - SBI protection and enhancement AM4 - Habitat Demarcation for Trees and Hedgerows	None
Deciduous woodland Lowland heathland Priority Hedgerow Priority River	Loss, fragmentation and degradation of habitats.	EM1 - Retention of habitats and minimising loss through design. EM2 - Minimising lighting and use of directional lighting. EM4 - Implementing pollution prevention measures. AM2 – Priority habitat protection and enhancement AM4 - Habitat Demarcation for Trees and Hedgerows	None

Ecological features	Potential effects	Mitigation measures	Likely residual effects
Local value semi-natural habitats	Loss, fragmentation and degradation of Local value habitats.	EM1 - Retention of habitats and minimising loss through design. EM2 - Minimising lighting and use of directional lighting. EM4 - Implementing pollution prevention measures. AM4 - Habitat Demarcation for Trees and Hedgerows	None
Badger Bats (Foraging & Commuting Birds (breeding) Reptiles Other priority species	Killing and injury of protected/ priority species during vegetation clearance and construction activities. Temporary behavior changes of animals affecting foraging, commuting and sheltering due to increased disturbance (human activity)	EM1 - Retention of habitats and minimising loss through design. EM2 - Minimising lighting and use of directional lighting. EM3 - Noise reduction measures to be implemented. AM5 - Scheme Clearance and Preparation AM6 - Breeding Bird Mitigation AM7 - Ecology Tool Box Talk	None
Bats (Roosting)	Killing and injury of protected/ priority species (bats) during vegetation clearance and construction activities. Temporary behavior changes of animals affecting foraging, commuting and sheltering due to increased disturbance (human activity)	EM1 - Retention of habitats and minimising loss through design. EM2 - Minimising lighting and use of directional lighting. EM3 - Noise reduction measures to be implemented. AM3 - Bat Mitigation AM5 - Scheme clearance and preparation	None

Ecological features	Potential effects	Mitigation measures	Likely residual effects
Priority flora	Loss of priority flora during construction.	EM1 - Retention of habitats and minimising loss through design. EM4 - Implementing pollution prevention measures. AM1 – SBI protection and enhancement AM2 – Priority habitat protection and enhancement AM4 - Habitat Demarcation for Trees and Hedgerows	None
INNPS	Spread of INNPS during construction.	EM5 – biosecurity measures	None
Operation			
Huddersfield Narrow Canal SSSI Huddersfield Narrow Canal (North) SBI Huddersfield Narrow Canal (South) SBI Armit Road Lodge SBI Cliffs at Mossley SBI Grasscroft Pasture SBI	Loss, fragmentation and degradation of Local value habitats.	EM2 - Minimising lighting and use of directional lighting. EM4 - Implementing pollution prevention measures.	None
Deciduous woodland Lowland heathland	Loss, fragmentation and degradation of Local value habitats.	EM2 - Minimising lighting and use of directional lighting. EM4 - Implementing pollution prevention measures.	None
Local value semi-natural habitats	Loss, fragmentation and degradation of Local value	EM2 - Minimising lighting and use of directional lighting.	None

Ecological features	Potential effects	Mitigation measures	Likely residual effects
	habitats.	EM4 - Implementing pollution prevention measures	
Badger Bats (Foraging & Commuting) Birds (breeding) Reptiles Other priority species	Killing and injury of protected/ priority species during operation.	EM2 - Minimising lighting and use of directional lighting. EM3 - Noise reduction measures to be implemented. AM6 - Breeding Bird Mitigation AM7 - Ecology Tool Box Talks	None
Bats (Roosting)	Reduction in the availability and suitability of features for roosting bats due to modifications to bridge structures and tunnels. Increased disturbance to roosts through noise, vibration and artificial lighting.	EM2 - Minimising lighting and use of directional lighting. EM3 - Noise reduction measures to be implemented.	None
Priority flora	Loss of priority flora during operation.	EM1 - Retention of habitats and minimising loss through design. EM4 - Implementing pollution prevention measures. SM4 - Habitat Demarcation for Trees and Hedgerows	None
INNPS	Spread of INNPS during operation.	EM5 – Biosecurity measures	None
Decommissioning			
Huddersfield Narrow Canal	Loss, fragmentation and/or	EM2 - Minimising lighting and use of directional	None

Ecological features	Potential effects	Mitigation measures	Likely residual effects
SSSI Huddersfield Narrow Canal (North) SBI Huddersfield Narrow Canal (South) SBI Armit Road Lodge SBI Cliffs at Mossley SBI Grasscroft Pasture SBI	degradation of priority woodland habitat.	lighting. EM4 - Implementing pollution prevention measures.	
Deciduous woodland Lowland heathland	Loss, fragmentation and/or degradation of priority woodland habitat.	EM2 - Minimising lighting and use of directional lighting. EM4 - Implementing pollution prevention measures.	None
Local value semi-natural habitats	Loss, fragmentation and/or degradation of priority woodland habitat.	EM2 - Minimising lighting and use of directional lighting. EM4 - Implementing pollution prevention measures.	None
Badger Bats (Foraging & Commuting) Birds (breeding) Reptiles Other priority species	Increased mortality from increased traffic movements. Loss of secondary habitat such as refugia within laydown areas or compounds. Behaviour changes on breeding, foraging and commuting animals due to new infrastructure and changes in lighting, noise,	EM2 - Minimising lighting and use of directional lighting. EM3 - Noise reduction measures to be implemented. EM4 - Implementing pollution prevention measures.	None

Ecological features	Potential effects	Mitigation measures	Likely residual effects
	vibration or visual effects.		
Bats (Roosting)	Increased disturbance to roosts through noise, vibration and artificial lighting. Removal of temporary structures.	EM2 - Minimising lighting and use of directional lighting. EM3 - Noise reduction measures to be implemented. EM4 - Implementing pollution prevention measures.	None
Priority flora	Loss of priority flora during decommissioning	EM4 - Implementing pollution prevention measures. AM4 - Habitat Demarcation for Trees and Hedgerows	None
INNPS	Spread of INNPS during decommissioning	EM5 – Biosecurity measures	None

4.5 Biodiversity Compensation and Enhancement

Habitat Reinstatement

- 4.5.1 Where practicable, the relevant elements of the Order Scheme are using habitats of lower ecological value which are widely available in the wider landscape, rather than those of higher value. The area of permanent land acquisition required overall is relatively small and the temporary land use areas will be reinstated to their pre-works condition as far as possible, therefore any reduction in biodiversity within the Order Scheme will be minimal.

Habitat Compensation

- 4.5.2 Network Rail is committed to deliver 10% BNG for the overall TRU works, through compensation both within and outside the Order Scheme footprint. The commitment to achieving 10% gain in biodiversity units is outlined in the TRU Net Positive Biodiversity Strategy²³.
- 4.5.3 A Biodiversity Strategy and LEMP will be produced to cover elements that require planning permission that will set out the biodiversity enhancement proposals and the habitat management and monitoring proposed to deliver these. The aims and objectives of the Biodiversity Strategy and LEMP will be secured through a planning condition as described in the Order application document 'Request for deemed planning permission and statement of proposed conditions' [NR11].
- 4.5.4 Where planning permission is not required for associated temporary land use and works are being completed under permitted development rights, upon completion of the use of all land used temporarily, it will be restored to its pre-works activity condition as far as possible in accordance with the Outline Draft Mitigation Land Restoration Proposals (Figures 7.3.1 to 7.3.20 of Volume 2 of this Report [NR14]). Liaison with the relevant local authority and landowners will take place prior to the restoration proposals being implemented and each restoration proposal will be secured through a letter of environmental commitment.
- 4.5.5 In line with national and local planning policy, a summary of the key ecological enhancement measures proposed are as follows:
- Provide new native species planting typical of the surrounding local species and structure and implement an appropriate management regime;

²³ Network Rail (2020 Biodiversity Action Plan, available at <https://www.networkrail.co.uk/wp-content/uploads/2020/12/Network-Rail-Biodiversity-Action-Plan.pdf>, accessed 01/08/2025)

- Reinforce connectivity between existing habitat features of value, for example gapping up existing hedgerows and new planting to connect hedgerows and woodland blocks;
- Increase biodiversity value of the grassland habitats by planting flower-rich native grassland mixes that will be managed appropriately;
- Provide bat roosting, foraging and commuting habitat through the planting of native scrub and woodland habitats;
- Provide bird nesting, shelter and foraging habitat through the planting of native scrub and woodland habitats;
- Provision of wildlife boxes to provide shelter, nesting and roosting opportunities;
- Control the spread of INNPS through removal of known stands of Himalayan balsam and Japanese knotweed and treatment to prevent reoccurrence.

SBI Enhancement

4.5.6 The GMEU have stated during consultation that de-vegetation within SBIs should be compensated for within the same SBI as far as practical. This approach follows the Greater Manchester Sites of Biological Importance Selection Guidelines²⁴ in order to encourage the:

- Maintenance of the local integrity of the SBI;
- Preservation of local biodiversity by ensuring habitat functions are not displaced to ecologically dissimilar areas; and
- Supporting landscape connectivity and avoid fragmentation of habitats.

Enhancement through Licencing

4.5.7 As part of the consideration of the cumulative impacts of the Order scheme and other works associated with the Scheme as noted in Table 1-2 of Volume 1, Chapter 1 of this report, and in accordance with, NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]), a EPSM may also be required for the works subject to permitted development if they directly impact the common pipistrelle day/ transitional confirmed roost at Spring Bank Lane (MVL3/9) and the likely roosts identified within Stalybridge and Scout Tunnels. In this event, the Natural England pre-screening service will be contacted and Natural England will have the opportunity to review the licence prior to submission. If a WCA disturbance offence is likely but only in relation to low level disturbance impacts, a disturbance notification will be applied for and obtained from Natural England. If no offence is likely as only negligible

²⁴ Greater Manchester Ecology Unit (2016) version 2, "Greater Manchester Sites of Biological Importance Selection Guidelines", available at <https://www.tameside.gov.uk/ecologyunit/sbi/guidelines.pdf>, accessed 19/07/2025

disturbance is predicted, a Precautionary Method of Working (PMW) is deemed sufficient mitigation.

- 4.5.8 It is estimated that there would be an overall benefit to biodiversity following implementation of the habitat compensation and enhancement measures; proposed habitats will be more diverse and species-rich and connectivity between habitat features will be improved

5. SUMMARY

- 5.1.1 An appraisal of potential effects on the ecological features identified in the Order Scheme has been undertaken using desk study data and field survey results.
- 5.1.2 The Order Scheme has been sensitively designed and positioned with reference to the existing baseline conditions and potential pathways for impact (e.g. avoiding habitats of higher ecological value where possible). With the implementation of the embedded and additional mitigation measures outlined in section 4 - the 'Mitigation and Consideration of Control Measures' section, no significant adverse residual construction, operational, or decommission effects are anticipated as a result of the Order Scheme.
- 5.1.3 Proposals suitable to achieve benefits for biodiversity as a direct consequence of the elements will be described and demonstrated either within the LEMP that will be submitted to the relevant local authority for approval under a planning condition or through Network Rail's biodiversity commitments. Biodiversity enhancement measures are proposed that are reasonable and proportionate to the impacts, and that will enhance the existing ecology of the local area.
- 5.1.4 A summary of the mitigation measures to be implemented is provided in Table 4-1. Habitat enhancement measures will be detailed in the LEMP for elements of the Order Scheme that require planning permission. Where deemed planning is not required and upon completion of the use of any land temporarily used, it will be restored to its pre-works activity condition in consultation with the landowner. Liaison with each local authority and landowners will take place prior to the restoration proposals being implemented and the restoration proposals will be secured through a letter of environmental commitment.

ANNEX A – ECOLOGY LEGISLATION, PLANNING POLICY AND GUIDANCE

Legislation

Environment Act, 2021

The Environment Act was granted Royal Assent in November 2021 and was introduced to support the Government's overarching vision for leaving the environment in a better state for the next generation, including transposing elements of the UK Government's 25 Year Environment Plan into statute and confirming the UK's approach to environmental governance post-Brexit. Key provisions of what is now the Environment Act 2021 include: the creation of a new post-Brexit environmental watchdog (the Office for Environmental Protection); establishing an over-arching scrutiny framework for the environment and the setting of air quality targets including for fine particulate matter. BNG is now mandatory for most developments in England from 12 February 2024, under Schedule 14 of the Act, with all relevant developments required to achieve a minimum 10% gain in biodiversity units. However, statutory BNG is currently exempt for TWAOs.

Network Rail still honour the commitment to achieving 10% gain in biodiversity units as outlined in the TRU Net Positive Biodiversity Strategy²⁵, and will be secured by a planning condition. The TRU BNG assessment will be carried out to meet the objectives as stated in that Strategy.

The Conservation of Habitats & Species Regulations 2017 (as amended)

The Habitats Regulations consolidate all the various amendments made to the Conservation (Natural Habitats, c.) Regulations 1994 (as amended) in respect of England and Wales. The 1994 Regulations transposed Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive) into national law.

Recent changes to the legislation have been made to reflect the UK leaving the European Union (EU). The Secretary of State for the Environment, Food and Rural Affairs and Welsh Ministers have made changes to parts of the 2017 Regulations so that they operate effectively. Most of these changes involved transferring functions from the European Commission to the appropriate authorities in England and Wales. All other processes or terms in the 2017 Regulations remain unchanged and existing guidance is still relevant.

The Regulations place a duty on the Secretary of State to propose a list of sites that are important for either habitats or species (Special Areas of Conservation (SAC) and Special Protection Areas (SPA)). The amended Regulations have created a national site network on land and at sea, including both the inshore and offshore marine areas in the UK. The national site network includes existing and new SAC and SPA designated under these Regulations.

SAC and SPA in the UK no longer form part of the EU's Natura 2000 ecological network. Any references to Natura 2000 in the 2017 Regulations and in guidance now refers to the new national site network.

Natural Environment and Rural Communities (NERC) Act 2006

Section 41 (S41) of the Natural Environment and Rural Communities (NERC) Act requires the Secretary of State to publish a list of habitats and species that are of principal importance for the conservation of biodiversity in England; the list was drawn up in consultation with Natural England.

The S41 list is used to guide decision-makers such as public bodies, including local and regional authorities, in implementing their duty under Section 40 of the Act, to have regard to the conservation of biodiversity in England, when carrying out their normal functions.

Fifty-six habitats and 943 species of principal importance are included on the S41 list. These are the habitats and species in England that were identified as requiring action in the (now withdrawn) UK Biodiversity Action Plan (UK BAP) and continue to be regarded as conservation priorities in the subsequent UK Post-2010 Biodiversity Framework and Biodiversity 2020 Strategy.

Countryside and Rights of Way (CRoW) Act 2000

The Countryside and Rights of Way Act 2000 applies to England and Wales only. Part III of the Act deals specifically with wildlife protection and nature conservation.

The Act places a duty on Government Departments and the National Assembly for Wales to have regard for the conservation of biodiversity and maintain lists of species and habitats for which conservation steps should be taken or promoted, in accordance with the Convention on Biological Diversity.

Schedule 9 of the Act amends the SSSI provisions of the Wildlife and Countryside Act 1981, including increased powers for their protection and management of SSSI. Schedule 12 of the Act amends the species provisions of the Wildlife and Countryside Act 1981, strengthening the legal protection for threatened species.

The Hedgerow Regulations 1997

The intention of the Act is to protect important countryside hedges from destruction or damage. The Act does not apply where planning permission has been granted. If a scheme is not exempt or subject to a current planning permission then the landowner must serve a Hedgerow Removal Notice in writing on their local planning authority. The authority then determines whether or not the hedge is considered 'important' under the regulations, and if so, whether or not to issue a Hedgerow Retention Notice.

Protection of Badgers Act 1992

Badgers and their setts (burrows) are protected under the Badgers Act 1992. This makes it an offence to kill or take a badger, to cruelly ill-treat a badger, or to interfere with a badger sett, including disturbing a badger while it is occupying a sett.

Licences to permit otherwise prohibited actions can be granted under Section 10 of the Act for various purposes. This includes licences to interfere with a badger sett for the purpose of development.

Licences may be granted in order to close down setts, or parts of setts, prior to development or to permit activities close to a badger sett that might result in disturbance. A licence will be required if a sett is likely to be damaged or destroyed in the course of development or if the badger(s) occupying the sett will be disturbed.

Licences can be applied for at any time, but a licence for development will not normally be issued unless full planning permission has been granted. The licensed closure of setts is normally only permitted during July to November, inclusive.

Wildlife and Countryside Act 1981 (as amended)

The Wildlife and Countryside Act, 1981 (as amended) is the major domestic legislation for wildlife protection in the UK. The act contains four parts and 17 schedules, which cover:

- Part 1: Wildlife (includes protection of birds, animals and plants; and measures to prevent the establishment of non-native species which may be detrimental to native wildlife).
- Part 2: Nature conservation, the countryside and National Parks (including the designation of protected areas).
- Part 3: Public rights of way.
- Part 4: Miscellaneous provisions of the act.

Wild Birds

In summary, the Act makes it an offence to intentionally:

- 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, or
- take or destroy an egg of any wild bird.

Special penalties are available for offences related to birds listed on Schedule 1, for which there are additional offences of disturbing these birds at their nests, or their dependent young. The Secretary of State may also designate Areas of Special Protection (subject to exceptions) to provide further protection to birds. The Act also

prohibits certain methods of killing, injuring, or taking birds, restricts the sale and possession of captive bred birds, and sets standards for keeping birds in captivity.

Other Animals

The WCA makes it an offence (subject to exceptions) to intentionally kill, injure or take any wild animal listed on Schedule 5, and prohibits interference with places used for shelter or protection, or intentionally disturbing animals occupying such places. The Act also prohibits certain methods of killing, injuring, or taking wild animals.

Flora, Fungi and Lichens

The Act makes it an offence (subject to exceptions) to intentionally pick, uproot or destroy:

- any wild plant listed in Schedule 8, or
- unless an authorised person, to intentionally uproot any wild plant not included in Schedule 8,
- to sell, offer or expose for sale, or possess (for the purposes of trade), any live or dead wild plant included in Schedule 8, or any part of, or anything derived from, such a plant.

Non-Native Species

The Act contains measures for preventing the establishment and spread of non- native species that may be detrimental to native wildlife, prohibiting the release of animals and planting of plants listed in Schedule 9 in England and Wales

Planning policy and guidance

National Planning Policy 2024

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and how they should be applied by local planning authorities. Chapter 15: Conserving and Enhancing the Natural Environment outlines the requirement for planning decisions to contribute to and enhance the natural and local environment. This includes:

- Protecting and enhancing biodiversity and geodiversity;
- Minimising impacts on and providing net gains for biodiversity;
- Promoting the conservation, restoration, and enhancement of priority habitats and ecological networks; and
- Protecting sites of biodiversity importance, including statutory designated sites and irreplaceable habitats.

Local Planning Policy

The local planning policies relevant to biodiversity and the natural environment in Greater Manchester are set out in the Greater Manchester Five-Year Environment Plan 2025–2030.

The Environment Plan outlines the city-region’s strategic approach to achieving carbon neutrality by 2038 and addressing the biodiversity emergency declared in 2022. It establishes a framework for integrating nature recovery, climate resilience, and sustainable development into all planning and decision-making processes.

Key priorities include:

- Halting and reversing biodiversity loss by 2030, through habitat creation, restoration, and protection;
- Supporting the delivery of Local Nature Recovery Strategies across the region;
- Promoting nature-based solutions and green infrastructure in both urban and rural settings; and
- Ensuring that new development contributes to Biodiversity Net Gain and aligns with the region’s clean growth and climate adaptation goals.

The Environment Plan supports the implementation of NPPF at the local level, encouraging collaboration between local authorities, developers, and communities to deliver a nature-rich, low-carbon Greater Manchester. A summary of relevant local ecology related policy is provided in Table A-1. Table

Table A-1 - Relevant Local Policy Summary

Document	Purpose
Greater Manchester Local Nature Recovery Strategy (2025–2035) ²⁵	Sets out a statutory, evidence-based plan to halt and reverse biodiversity loss across the city-region. The strategy aims to create a resilient nature network by protecting, enhancing, and connecting habitats, improving access to nature, and embedding biodiversity into planning and development. Targets include increasing protected land from 11% to 15%, restoring 1,800 ha of wildlife-rich land, and expanding tree canopy cover from 16.5% to 18.5%.
Greater Manchester Biodiversity Net Gain (BNG) Guidance for Planners and Applicants (2024)	Provides a consistent framework for delivering mandatory 10% BNG under the Environment Act 2021. It outlines the role of the Greater Manchester Ecology Unit (GMEU), and how BNG aligns with local and national planning policy. Emphasizes meaningful ecological outcomes, not just metric compliance.
Our Plan for Nature – GMCA	A public-facing strategy that supports the Local Nature Recovery Strategy. It promotes collaborative action across communities, developers, and local authorities to create a greener Greater Manchester. It highlights the importance of access to nature, climate resilience, and the role of nature in health and wellbeing.

²⁵ Greater Manchester Combined Authority (2025) Greater Manchester's Local Nature Recovery Strategy: Our Plan for Nature Recovery [DRAFT]. Available at: Our plan for nature recovery - Greater Manchester Combined Authority. [Accessed: 14/07/2025].

Local Biodiversity Action Plan

The Greater Manchester Biodiversity Action plan²⁶ (GM BAP) aims to provide an overarching document across all ten districts in Greater Manchester. The Greater Manchester audit identified those species and habitats that are of local conservation importance and require action in order to conserve and protect them. Those habitats and species selected for the GM BAP were included for the following reasons:

- They are priority habitat or species within the UK BAP and occur in the Greater Manchester area;
- They are considered to be of conservation concern locally within Greater Manchester.

Action plans have been produced for habitats and as listed below.

Habitat action plans:

- Grasslands;
- Hedgerows;
- Lowland mosslands;
- Reedbeds and bittern;
- Ponds and lodges;
- Canals;
- Native woodlands;
- Uplands; and
- Urban managed greenspace.

Species action plans:

- Bats;
- Black redstart;
- Farmland Birds: currently no action plan available to download;
- Great crested newts;
- Hares;
- Native Black Poplar;
- Twite;

²⁶ Greater Manchester Biodiversity Project (2009) "Greater Manchester Biodiversity Action Plan", available at https://gmllrc.org/resources/downloads/gm_bap/introduction_gm_biodiversity_action_plan_2009.pdf, accessed 16/07/2025

- Water Vole;
- Willow tit.

Isolated parts of the Order Scheme are located within the GMEU Greater Manchester Nature Network which comprises of:

- Core local nature sites: sites that are already protected to some degree but are fragmented, isolated and poorly connected. Improvements in the condition and management of these sites will be prioritised; and
- Nature recovery opportunity areas: areas where there are opportunities to expand and better connect core local nature sites. The creation and restoration of habitat will be prioritised alongside other land uses.
- The Nature Network is underpinned by the draft Local Nature Recovery Strategy for Greater Manchester which provides an overview and description of the natural environment and current trends in the local wildlife and environment. The Nature Network does not provide any additional designations or protection to the land. The Nature Network aims to have a positive influence on the growth and development of the city-region helping planners and developers to understand and contribute towards nature recovery.

ANNEX B – METHODOLOGY AND LIMITATIONS

Desk based study

The scope of the desk study is to collate existing information available in the public domain on protected/ priority species, habitats and designated sites for nature conservation to provide contextual information for the scope of field surveys, to aid the evaluation of field survey results, and to provide supplementary information where complete field survey coverage may not be possible.

A desk-top study was undertaken in October 2024; this included a review of online resources and existing technical reports/ documents, and a data request from the Greater Manchester Local Record Centre (GMLRC). The desk study sources and search areas where relevant are summarised in Table B-1. The extent of a study area is dependent upon the nature, timing and scale of a scheme, as well as the site location and the surrounding landscape. These variables all contribute to what is referred to as the Zone of Influence (Zol), which is the area over which ecological features (designated sites, habitat and species) may be affected by biophysical changes because of the proposed works and associated activities.

Only data records dated between 2014 and 2024 (inclusive) are considered in the baseline; older records are considered to offer limited value in determining current species presence and distribution.

Table B-1 - Summary of desk study data sources and study areas

Data source	Data requested/ reviewed	Study Area from Scheme Area
MAGIC	Statutory designated sites for nature conservation Site of Special Scientific Interest (SSSI) Impact Risk Zones (Natural England, 2021)	5 km or sites with hydrological connectivity.
	Granted EPSM licences. Great crested newt class survey licence returns	2 km
	Irreplaceable and priority habitats	5 km or sites with hydrological connectivity.
Greater Manchester Local Record Centre (GMLRC)	Protected and priority species records dated between 2015 to 2025 (inclusive).	2 km
	Non-statutory designated sites for nature conservation	2 km
Greater Manchester Combined Authority (GMCA)	Greater Manchester Five-Year Environment Plan 2025–2030 (2024)	N/A
	All Our Trees – Greater Manchester’s Tree And Woodland Strategy (2021)	N/A
	Nature for All - A Local Nature Recovery	N/A

Data source	Data requested/ reviewed	Study Area from Scheme Area
	Strategy for Greater Manchester (2025)	
Existing Ecology Reports available for the Study Area	TransPennine Route Upgrade Work Package 2 – Stalybridge to Huddersfield Ecological Constraints Report Reference No: 151667-TSA-00-TRU-REP-W-EN-000924	N/A

For the purpose of this appraisal, the following definitions are used for protected/ priority species and habitats:

- **Protected species:** includes those listed under Schedules 1, 5 and 8 of the Wildlife and Countryside Act 1981 (as amended) and Schedules 2 and 5 of The Conservation of Habitats, Species Regulations 2017 (as amended) and the Protection of Badgers Act 1992.
- **Priority species/ habitats:** As set out in Box 1 on page 4 of the CIEEM (2017) Guidelines for Preliminary Ecological Appraisal, 2nd edition. Chartered Institute of Ecology and Environmental Management, Winchester, priority habitats and species include those listed as a national priority for conservation (i.e. a Habitat of Principle Importance or Species of Principle Importance in England under Section 41 of the Natural Environment and Rural Communities (NERC) Act 2006 (as amended); and/or local priority for conservation (e.g. in the local Biodiversity Action Plan (BAP)), International Union for the Conservation of Nature (IUCN) Red List or Amber List, Nationally Rare or Nationally Scarce, or endemic to a country or geographic location.

Field surveys

UK Habitat Classification (UKHab)

These surveys were completed between May 2024 and June 2025 by surveyors deemed competent per CIEEM's Competency Framework²⁷. Habitats and ecological features of interest were recorded following the standard guidance provided in the UK Habitat Classification version 2.0. The standard UKHab survey method was "extended" to record the presence or potential for protected priority and any invasive non-native plant species (INNPS) within the habitats present.

Habitat Condition Assessments were also carried out for each discrete habitat parcel identified within the Order Scheme Area plus 50 m buffer using the Biodiversity Metric 3.0 condition assessment sheets, which are used for BNG calculations. A list of criteria

²⁷ CIEEM *2019) Competency Framework, available at <https://cieem.net/wp-content/uploads/2019/02/Competency-Framework-2024-V7-Web.pdf>, accessed 24/07/2025

were checked and a pass/ fail assigned to each criteria for each habitat parcel with justifications.

During the survey, the following protected or priority species were considered:

Badger Surveys

Involves searching for signs of badger activity including setts, tracks, snuffle holes and latrines, following the methodology detailed in *Surveying for Badgers: Good Practise Guidelines*²⁸ and *Surveying Badgers*²⁹. Active setts are those which display signs indicating current use, as defined by Natural England, (2009)³⁰.

Camera trap monitoring was conducted on mammal hole that was identified as a potential badger sett during the extended UKHab walkover field survey. Monitoring was undertaken by two separate trail cameras between the period of 25 November – 19 December 2024.

Bat Surveys

Preliminary Roost Assessments

All structures to be impacted by the Order Scheme extent underwent a Preliminary Roost Assessment (PRA) in May 2024 – June 2025, from both on-rail and off-rail positions to provide surveyors with all vantage points required. All PRAs were carried out by a licensed member of staff using torches, binoculars and a recording form to inform what further surveys would be required.

Ground Level Tree Assessment

All trees to be impacted by the Order Scheme underwent a Ground Level Tree Assessment (GLTA) which is a detailed inspection of the exterior of the tree from the ground level to look for features that bats could use for roosting (PRFs). The aim of this survey is to determine the available roosting resource and the need for further survey and/or mitigation.

All PRAs and GLTAs were carried out by a qualified member of staff using torches, binoculars and a recording form to inform what further surveys would be required.

Bat surveys (*inspections using endoscopes and torches*)

Saddleworth viaduct (MVL3/31a) was inspected by an ecologist carrying a Natural England Class 2 survey licence using an endoscope to view inside a PRF.

Bat dusk emergence surveys

²⁸ Scottish Badgers (2018). *Surveying for Badgers: Good Practice Guidelines*. Version 1.

²⁹ Harris, S. Cresswell, P. and Jefferies, D. (1989). *Surveying Badgers*.

³⁰ Natural England (2009). *Guidance on 'Current Use' in the definition of a Badger Sett*.

Dusk emergence surveys have been completed between May and September 2024 on the following structures:

- Heyrod Hall Bridge (MVL3/07);
- Spring Bank Lane Footbridge (MVL3/09);
- Manchester Road Footbridge (MVL3/10);
- Stamford Road Footbridge (MVL3/13);
- Mossley Station Footbridge (MVL3/14);
- New Earth Footbridge (MVL3/16);
- Midge Hall Overbridge (MVL3/19);
- Wrights Mill Overbridge (MVL3/20);
- Charlotte Street Overbridge (MVL3/24);
- Royal George Underbridge (MVL3/25);
- Footway Underbridge (MVL3/26);
- Oldham Road Overbridge (MVL3/28);
- Den Quarry Underbridge (MVL3/30);
- Uppermill Viaduct (MVL3/31).

The bat roost suitability category of the feature (which are assigned High, Moderate, Low, or Negligible/ None suitability to support a bat roost) determines the number of further required surveys to determine likely absence of bats. This is in line with best practice guidelines (Collins, 2023) and outlined below:

- **High:** three survey visits May – September with at least two of the surveys between May and August;
- **Moderate:** two survey visits May – September with at least one of the surveys between May and August;
- **Low:** one survey visit May – August; and
- **Negligible/None:** No further survey required.

The surveys on High, Moderate and Low features comprised dusk emergence surveys where access and safety conditions allowed.

Dusk emergence surveys commenced approximately 15 minutes before sunset and continued for a further 90 minutes after sunset. Dawn re-entry surveys commenced 90 minutes to two hours before sunrise and ended until sunrise or until bats were no longer active.

Surveys were completed during suitable weather conditions, i.e. dry, minimal wind with sunset temperatures of 10°C or above and followed guidance on the start times and survey duration where access and safety conditions allowed.

The time, location, number, species and direction of flight were recorded for each bat pass (either echolocation heard or activity seen) encountered during each survey visit.

Data was collected during the surveys using Batloggers and Anabats (portable bat detectors) and was analysed using sound analysis software (Analook/ Kaleidoscope) to confirm the bat species recorded where this could not be confirmed in the field. Infra-red cameras were used during all surveys to aid in identifying emergencies.

Bat surveys were planned and overseen by an Ecologist holding a Natural England Level 2 Bat Survey Licence.

Automated/ Static Surveys of Stalybridge and Scout Tunnel

The rationale for the automated static detector surveys was set out in the TRU W2B – Proposed Tunnel Bat Survey Methodology³¹. Five static bat detectors were deployed at Scout tunnel and Stalybridge tunnel between July 2024 and March 2025. This comprised a static detector that was deployed at each portal of Scout and Stalybridge tunnels for the entire survey duration and an additional detector that was added to the air shaft within Stalybridge tunnel in November 2024 for the remaining duration.

The full spectrum automated static detectors used were Wildlife Acoustics Song Meter© (SM)⁴. From July 2024 to October 2024 the automated static bat detectors were set to commence recording at least 30 minutes before sunset and cease recording 30 minutes after sunrise, the period when bats are considered active during this time period. From November 2024 to March 2025 the static bat detectors were set to constantly record for the bat hibernation period.

Analysis of the sound files collected was undertaken using Analook and Kaleidoscope pro software. Automatic Identification was used as the first stage of analysis and then bat calls were subsequently subject to manual identification. Further analysis was then undertaken as set out in the TRU W2B – Proposed Tunnel Bat Survey Methodology⁹ where bat species scoped into assessment due to geographic range and roosting preferences were analysed by emergence range for the bat active period (July to October 2024). All occurrences of the selected species were analysed for the hibernation period (November 2024 to March 2025).

During the static deployment period, monthly visits were conducted over night under possession to maintain the statics, switching out batteries and SD cards and ensuring sound data was being collected. During these visits a Batlogger M2 was carried throughout the tunnels to record any bat activity and during the hibernation period (November 2024 to March 2025) temperature and humidity readings were taken at intervals within both tunnels at intervals.

³¹Technical Note - TRU W2B – Proposed Tunnel Bat Survey Methodology

Analysis of the static data has been undertaken in terms of bat ‘passes’. A pass is defined here as a distinct bat call with >2 seconds between the next call of the same species. If multiple species were recorded in a single recording, there would be one bat pass for each species recorded. The number of bat passes encountered cannot be used to determine numbers of individuals present, as there is no way to identify if several recordings could come from a single bat flying back and forth past the detector (e.g. repeated foraging passes) or several individual bats each flying past the detector once. Therefore, the number of bat passes by species is looked at to standardise the approach and determine the frequency a species is recorded at a location.

Social calls were not identified to species level when recorded in isolation and are therefore not included within the results. These comprised a very small proportion of the sound files identified as bats with the vast majority being assigned a species or genus.

Birds

A bird assessment undertaken during the extended UKHab walkover determined the potential of habitats within the survey area to support breeding, wintering or migrating birds, either individually priority species or assemblages of both common and rarer species. Birds can use a variety of different habitat types at different times of the year including woodland, scrub, scattered trees, grassland and arable therefore the survey area was assessed as to whether it provides habitats favoured by priority species or which may otherwise have value to birds.

Invertebrates

An invertebrate assessment undertaken during the extended UKHab walkover determined the potential of habitats within the survey area to support priority species of invertebrates. Features that were considered included the presence of uncommon habitats, certain plant food species and presence of deadwood.

Otter

An otter assessment involves identifying any suitable aquatic habitat and assessing the potential of watercourses and water bodies, and adjacent terrestrial habitat within the survey area to support otter and recording any field signs, following current guidance³². A range of factors are considered such as the availability of potential shelter, resting and breeding sites (e.g. suitable areas to create holts and suitable cover habitat) and foraging habitat (e.g. fish and amphibians).

Reptiles

A reptile assessment involves assessing the suitability of habitats and habitat features that may provide valuable foraging, breeding, basking and shelter for the four widespread species of reptile (adder, grass snake, common lizard and slow worm).

³² Chanin, P (2003). Monitoring the Otter *Lutra lutra*. Conserving Natura 2000 Rivers Monitoring Series No 10. English Nature, Peterborough.

Water Vole

A water vole assessment involves identifying any suitable aquatic habitat and assessing the potential of watercourses and water bodies within the survey area to support water vole and recording any field signs, following The Mammal Society guidance (Dean et al, 2016). A range of factors are considered such as the availability of potential shelter, resting and breeding sites (e.g. suitable areas to dig burrows and suitable cover habitat) and foraging habitat (e.g. herbaceous vegetation).

Other priority species

An assessment for other priority species undertaken during the extended UKHab walkover involves determining the potential of habitat within the survey area to support these species listed under Section 41 of the NERC Act (2006), such as hedgehog, brown hare or common toad.

Priority Flora

A priority flora assessment undertaken during the extended UKHab walkover involves recording protected or priority plant species within the survey area.

Invasive Non-Native Plant Species (INNPS)

An INNPS assessment involves recording evidence of the presence of invasive plants listed on Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) and subject to strict legal control.

Ecological Appraisal Approach

This ecological appraisal has been produced to identify the potential impacts of the Order Scheme on ecological features. This appraisal takes into consideration guidance published by CIEEM 'Guidelines for Ecological Impact Assessment in the UK and Ireland' (CIEEM, 2022).

It is not necessary in an assessment to address all habitats and species with potential to occur, and instead the focus should be on those that are 'relevant', referred to as ecological features. CIEEM guidance makes it clear that there is no need to 'carry out detailed assessment of [ecological] features that are sufficiently widespread, unthreatened and resilient to project impacts and will remain viable and sustainable'. This does not mean that efforts should not be made to safeguard wider biodiversity and requirements for this have been considered. National policy documents emphasise the need to achieve no net loss of biodiversity and enhancement of biodiversity.

Ecological features are usually designated sites, habitats, species assemblages/communities or populations or groups of protected or priority species. Features that are of no particular ecological importance in their own right, but that perform an ecological function relevant to the assessment of other receptors, may also need to

be considered e.g. habitats that provide buffers against adverse effects or that are of functional importance for the maintenance of species populations.

To support a focussed appraisal, there is a need to determine the scale at which the relevant ecological features identified through the desk studies and field surveys undertaken for the Order Scheme are of value. The value of each ecological feature has been defined with reference to the geographical level at which it matters. The frames of reference used for this appraisal and examples, based on CIEEM guidance are:

- International (generally this is within a European context, reflecting the general availability of good data to allow cross-comparison);
- National (Great Britain, but considering the potential for certain ecological features to be more priority (of higher value) in an England context relative to Great Britain as a whole);
- Regional: Greater Manchester Combined Authority;
- County: Greater Manchester;
- District: Oldham Metropolitan Borough Council and Tameside Metropolitan Borough Council;
- Local (ecological features that do not meet criteria for valuation at a District or higher level, but that have sufficient value to merit retention or mitigation); and
- Negligible (common and widespread features that have very low value at the site level and that do not require retention or mitigation at the relevant location to otherwise maintain a favourable nature conservation status, or to deliver wider relevant biodiversity objectives).

All ecological features of Local value and above have been taken forward to impact appraisal, where there is potential for direct or indirect impacts on those features. These are the 'relevant ecological features' for the purposes of this appraisal. Certain features with Negligible value may also be included in the appraisal where there is a risk of contravening legislation if mitigation is not implemented (e.g. in relation to nesting birds).

In line with the CIEEM guidelines, the terminology used within the appraisal draws a clear distinction between the terms 'impact' and 'effect'. These terms are defined as follows:

- Impact – actions resulting in a change or perturbation that, for the context of this appraisal, has the potential to affect an ecological feature; for example, tree felling activities leading to the removal of a tree used by roosting bats; and
- Effect – the outcome or consequence resulting from an impact, acting upon the conservation status or structure and function of an ecological feature;

for example, killing/ injury of bats and reducing the availability of breeding/ resting habitat as a result of the loss of a bat roost may lead to an adverse effect on the conservation status of the population concerned.

Where environmental effects that are significant are identified, measures to mitigate these effects would be proposed (where feasible) and the remaining residual effects would be identified.

Application of the mitigation hierarchy

The identification and specification of mitigation proposals in this appraisal has been undertaken with regard to the principles of the mitigation hierarchy as follows:

- Avoid ecological features where possible;
- Reduce (minimise) the magnitude of the potential impact e.g. through iterative design and/ or advance commitment to sensitive methods or timing of working (sometimes termed as embedded mitigation or mitigation by design);
- Mitigate the potential effect through the application of additional proven measures, such that the residual effect realised is reduced in magnitude (non- embedded mitigation); and
- Compensate for notable residual adverse effects, e.g. by providing suitable habitats elsewhere. Proposals should achieve appropriate compensation in a reasonable timeframe and be legally enforceable.

This hierarchy requires the highest level to be applied. Only where this cannot reasonably be adopted should lower levels be considered. Where it is reasonably practicable to do so then attempts have been made to avoid potential impacts. Where impacts cannot be avoided then efforts have been made to limit the magnitude of the potential impact and to mitigate the resultant effects through the provision of appropriate measures. Where effects cannot be mitigated to a level where they are not adverse then compensatory measures have been employed to (as far as is reasonably possible) offset any remaining adverse effects.

Limitations and assumptions

Desk Study

The aim of a desk study is to help characterise the baseline context of a scheme and provide valuable background information that may not be captured by field surveys alone. Information obtained through desk study is dependent upon records being submitted for the area of interest. As such, a lack of records does not necessarily mean that the species/ group of species does not occur in the study area. Likewise, the presence of records does not automatically mean that the species/ group of species still occurs within the area of interest or are relevant in the context of a scheme. This was addressed using a precautionary approach within the assessment.

UKHab surveys - Land access

Approximately 43% of the Order Scheme boundary could not be accessed due to access constraints. Within these areas, habitat polygons were determined using AtkinsRéalis Preliminary Habitat Identification Tool (PHIT).

This tool uses Ordnance Survey MasterMap (OSMM) data to assign habitat types, in accordance with the Statutory Biodiversity Metric which is translatable to UKHab using the Translation Tool within the Statutory Metric. It reads two key attributes embedded within the OSMM metadata, “descriptive term” and “style description” and uses these to generate two additional fields: one representing the broad habitat category and the other the specific habitat type, as defined by the Metric are read by the tool, and these attributes are used to add two additional fields to the data, one corresponding to the Statutory Biodiversity Metric broad habitat, and one corresponding to the Metric’s habitat type.

To determine the appropriate broad habitat and habitat type for each OSMM attribute, OSMM data is analysed from various locations across the UK. A sample of each attribute combination was compared with the associated aerial imagery for that location. Based on a combination of Google Earth and Google Street View data, habitat types were assigned in accordance with the Metric.

In parallel, the tool also leverages open-source datasets to conduct an ecological desk study. The outputs of the desk study have been reviewed against the outputs of the OSMM habitat classification and adjustments to the habitat type made as necessary.

PHIT covers area-based habitats only. It is not able to map linear features such as hedgerows or point features such as individual trees.

Professional ecologists reviewed the OSMM data against aerial images across the UK to assign a ‘best guess’ habitat type for each attribute combination. This classification process is subject to ongoing review and refinement as new data and insights become available. It is important to note that confidence in the assigned habitat types varies across broad habitat categories. For some broad metric habitats (rocky shore, lakes, sparsely vegetated land) the confidence in the specific metric habitat types selected is lower than for other broad habitats (grassland, woodland and forest, cropland). This is due to the inherent limitations of identifying fine-scale habitat characteristics specific habitat attributes of the habitat type and associated limitations of identifying such detail from topographical data and/ or aerial imagery. In contrast, higher confidence is associated with broad habitats such as grassland, woodland and forest, and cropland, where distinguishing features are more readily identifiable.

There is a chance that flora and signs of fauna have been missed due to the lack of access. This is not considered a significant constraint as all on-rail locations have been accessed where the potential impacts are greatest and, no high value habitats have not been accessed. Furthermore, prior to the commencement of the Order Scheme, surveys will be re-visited under specific mitigation “Scheme Clearance and Preparation (AM3)”. A second opportunity for access will be presented.

Therefore, the lack of access is not considered a significant constraint.

UKHab surveys - On-rail surveys

On-rail UKHab surveys were limited to night-time possessions, therefore all surveys had to be conducted at night. Therefore, visibility was partially restricted in comparison to day-time surveys. To overcome this constraint, surveyors carried high power torches to illuminate the vegetation. This was not considered a significant constraint as vegetation was still visible and the majority of on-rail habitat was non-complex with widespread grass, tree and shrub species which are relatively more easily identified.

UKHab surveys - Cryptic taxa

Cryptic taxa such as some species of plant, invertebrates and fungi, could not be adequately surveyed at the time of the survey. These groups require specialist survey, and survey windows are generally highly restrictive. However, when taking into account the desk study results, the nature of the habitats present within the Order Scheme and in the surrounding landscape, this is not considered to be a significant limitation.

UKHab surveys - Desk Study

The desk study reviewed the Ancient Trees Inventory; this provides records of ancient/veteran trees, but is not an exhaustive list, and other ancient/veteran trees may be present in the area. The walkover survey aimed to identify such features and as such this is not considered a constraint.

UKHab surveys - Seasonality and timing of surveys

Ecological surveys are limited by factors which affect the presence of plants and animals such as the time of year, migration patterns and behaviour. The ecological surveys undertaken to support this assessment have not therefore produced a complete list of plants and animals, and the absence of evidence of any particular species should not be taken as conclusive proof that the species is not present or that it will not be present in the future.

Approximately 14% of UKHab surveys were undertaken outside of the recommended survey time frame of April - October. Outside of this timeframe there is a higher chance that plant species are not visible to surveyors due to limited/no growth.

On-rail UKHab surveys were limited to night-time possessions, therefore all surveys had to be conducted at night. Therefore, visibility was partially restricted in comparison to day-time surveys. To overcome this constraint, surveyors carried high power torches to illuminate the vegetation. This was not considered a significant constraint as vegetation was still visible and the majority of on-rail habitat was non-complex with common grass, tree and shrub species which are relatively more easily identified.

This is not considered a significant limitation as at least one of each survey pair was considered capable per CIEEM's competency framework³³ and accredited with a FISC³⁴ score of Level 4 or higher. It is assumed that the majority of species were therefore identified. Furthermore, the rail environment predominantly comprises of widespread species which are relatively easier to identify to species level throughout the year in comparison to flowering plants or grasses.

Bats - PRAs

Land Access

There was no internal access for Standedge Canal Tunnel (MVL3/39a) and the external survey was carried out from 30m away using binoculars. This is not considered a significant limitation as no works subject to deemed planning are proposed for the tunnel interior.

Hibernation Assessment

Hibernation suitability could not be determined for the structures within the Order Scheme as this would have required endoscopic inspection of the PRF which wasn't achievable considering the location of the structures and associated PRFs over the railway and inability to work from height due to health and safety requirements.

It is assumed that some PRFs could be suitable for hibernation. Hibernation surveys could not be undertaken as this would require either:

Endoscopic inspection – unfeasible due to health and safety requirements as above; and/or

Automated/ static monitoring – detectors could not be left on rail due to minimum clearance distances between the structures and passing trains. It is assumed that the majority/all of the bat calls that would have been recorded would be due to commuting/foraging bats past the structure, rather than recording roosting activity.

Bats - Dusk Emergence Surveys and Hibernation Surveys

Land access

Both sides of two piers on Upper mill viaduct (MVL3/31) could not be directly surveyed for bat emergences. The limitation of land access meant that surveyors could not be positioned in a way to view PRFs. The following piers and orientations were impacted as a result:

- Pier C West;
- Pier C East;
- Pier G west; and

³³Chartered Institute of Ecology and Environmental Management (CIEEM) (2024) [Competency Framework | CIEEM](#)

³⁴ [Field Identification Skills Certificate – Botanical Society of Britain & Ireland](#)

- Pier G East

This is not considered a significant constraint as the viaduct was proportionately well covered by surveyors during surveys of the other piers. Bat activity was recorded and any potential flight lines coming from un-surveyed piers were noted. Any mitigation, if required, can be applied on a precautionary basis to cover any potential impacts from the proposed works.

Timings

Two structures with moderate potential for roosting bats; Manchester Road (MVL3/10) and Midge Hall (MVL3/19) were forced by access issues weather constraints into both surveys being in two weeks apart in September. The Bat Conservation Trust Best Practise Guidelines³⁵ state that, for sites with moderate and high suitability, a proportion of the surveys should be carried out between May and August (to detect maternity roosts if present). This is not considered a significant limitation as the features identified on these structures had been assessed as not suitable for maternity roosts.

Equipment – bat detectors

Bat detectors were used during the emergence surveys to record echolocation of bats that were flying within the vicinity of the surveyor. These records are used to identify bats to a species or genus (*Myotis* sp.) level. The bat detectors used were predominantly the Elekon Batlogger M model. In certain instances, Anabat Walkabout detectors were also used. The Bat Conservation Trust Best Practise Guidelines³⁶ state that the same model of detector should ideally be used for all surveys. This is not considered to be a significant limitation as the detectors used are both full spectrum detectors programmed to similar settings and considered suitable for recording bat activity.

The Batlogger failed to save the recordings on two occasions. At Mossley Station Footbridge (MVL3/14), the second surveyor was located on the opposite side of the structure and used a fully functioning Batlogger throughout the duration of the survey. The Batlogger was orientated in a direction that would encourage calls surrounding the bridge to be recorded. Any bat calls that were missed by the first surveyor were likely recorded. Therefore, this is not considered a significant limitation.

The second instance of Batlogger failure was during survey of New Earth Footbridge (MVL3/16) where both Batloggers were corrupted, unbeknownst to the surveyors at the time. Therefore, this survey has no analysed bat call data. No bat activity was recorded on the IR cameras throughout the duration of the survey. The footage was watched through in its entirety and underwent a separate QA process. Furthermore, very little activity was recorded during surveys carried out on structures in the

³⁵ Collins, J. ed., (2023). *Bat Surveys for Professional Ecologists Good Practice Guidelines*. 4th ed. [online] Bat Conservation Trust. Available at: <https://www.nhbs.com/bat-surveys-for-professional-ecologists-book>.

³⁶ Collins, J. ed., (2023). *Bat Surveys for Professional Ecologists Good Practice Guidelines*. 4th ed. [online] Bat Conservation Trust. Available at: <https://www.nhbs.com/bat-surveys-for-professional-ecologists-book>.

immediate area; Mossley Station Footbridge (MVL3/14), and Roughtown Road (MVL3/17). The bridge is also in an urban area and the features being surveyed had low suitability for roosting bats. Therefore, this is not considered a significant limitation.

Multiple structures are located off busy residential areas and adjacent to passing traffic. All structures were located over the live railway where trains passed intermittently throughout the surveys. Other high baseline noise was recorded at times, including live music and security announcements. High levels of noise were recorded in these areas relative to more rural structures. The background noise had the potential to mask bat calls which could have been missed during sound analysis. Surveys at the following structures were noted as having relatively high levels of baseline noise on a temporary basis:

- Spring Bank Lane (MVL3/09) (traffic);
- Manchester Road (MVL3/10) (traffic);
- Mossley Station Footbridge (MVL3/14) (traffic);
- Oldham Road (MVL3/28) (live music and passing trains); and
- Den Quarry Underbridge (MVL3/30) (loud announcements triggered from armadillo security system).

These traffic noise and live music issues were partly mitigated as surveys were undertaken at times when traffic levels were generally lower than peak times such as rush hours. Furthermore, bat activity was generally limited in the urban areas due to the lack of suitable roosting, foraging and commuting habitat. Therefore, background noise was not considered to be a significant limitation.

The loud announcements from the armadillo security system were disruptive and are likely to have partially masked any bats calls. However, the announcements lasted for only fifteen seconds per trigger which happened on four separate occasions throughout the surveys. Therefore, as the announcements and disruption were temporary, this is not considered to be a significant limitation.

Equipment – infra red cameras

There were 18 occasions where the cameras had poor visibility of the structures due to poor angles, local lighting and overhanging vegetation. This included:

- Heyrod Hall (MVL3/07) - Poor angle;
- Spring Bank Lane (MVL3/09) - Poor angle and vegetation;
- Manchester Road (MVL3/10)- Vegetation and car lights;
- Stamford Road (MVL3/13) - No view of south aspect, poor IR lamp coverage;
- Mossley Station Footbridge (MVL3/14) - Poor angles and road lighting;

- New Earth Footbridge (MVL3/16) - Poor angles and poor IR lamp coverage;
- Wrights Mill (MVL3/20) – Vegetation;
- Royal George (MVL3/25) - Poor lighting on north aspect, interference from car headlights;
- Footway UB (MVL3/26) - Inconsistent IR lamp coverage;
- Oldham Road (MVL3/28) - Disruption from train and station lighting;
- Uppermill Viaduct (MVL3/31)-Pier A East – Vegetation;
- Uppermill Viaduct (MVL3/31)-Pier A West – Vegetation;
- Uppermill Viaduct (MVL3/31)-Pier B West - Very dense vegetation;
- Uppermill Viaduct (MVL3/31)-Pier D West - Very dense vegetation;
- Uppermill Viaduct (MVL3/31)-Pier E East – Vegetation;
- Uppermill Viaduct (MVL3/31)-Pier E West – Vegetation;
- Uppermill Viaduct (MVL3/31)-Pier F East - Extremely dense vegetation; and
- Uppermill Viaduct (MVL3/31)-Pier F West - Extremely dense vegetation.

Due to positioning of vegetation and access arrangements it was not always possible to view every aspect of each structure. However, surveyors and cameras were positioned in the most optimal locations possible and were able to observe bats flying near the structure. In addition, where vegetation or access was severely limited, the view of potential features, surveyors and cameras were used on a one-to-one basis, so the surveyor was present and able to react to bat activity. In some instances, surveyors did not have direct sight of all potential roost features, they were able to monitor bat movements towards and away from the structure allowing them to determine whether bats were likely to be emerging. In addition, all footage captured by the infra-red cameras was reviewed in full. As such, the lack of optimal positioning for some surveys is not considered to be a significant limitation.

Multiple structures are located off busy residential areas and adjacent to passing traffic and street lighting which had the potential to impact the effectiveness of the camera. This was not considered to be a significant limitation as the footage was still clear enough to view any bats passing, and bat activity across most of these structures was limited.

Camera failure

The camera footage was corrupted and could not be fully reviewed on seven occasions:

- Heyrod Hall (MVL3/7) - Start of survey missed on northern aspect;

- Mossley Station Footbridge (MVL3/14)- Missing footage showing the southern aspect of the bridge;
- Roughtown Road (MVL3/17) - Missing footage from the sole camera;
- Charlotte Street (MVL3/24) - First half of survey missing covering southern aspect;
- Royal George (MVL3/25) - Last 20 mins of footage lost covering south aspect;
- Den Quarry Underbridge (MVL3/30) - 10 mins of footage lost from north aspect, southern aspect missing first 15 minutes of survey;
- Uppermill Viaduct (MVL3/31)- Pier A East (Survey 2)- Missing footage from the sole camera;

It is not considered a significant limitation where the camera recording has not captured the initial part of the survey. Up until approximately 30 minutes after dusk, the surveyors are able to view the structure without artificial light/infra-red and would therefore be able to see any emergences prior to this time. None of the structures were in a densely wooded area which would have contributed to poor visibility prior to 30 minutes after sunset. Furthermore, it is not expected that bats would emergence from their roosts until after dusk, therefore it is unlikely that an emergence would have been missed by the camera.

The surveys finished between 1.5 – 2 hours after sunset in order to capture the likely emergence times of species deemed to be present within the Order Scheme. The majority of bats recorded were *pipistrelle sp.* which generally would emerge from their roosts 7 – 43 minutes after sunset, prior to the time of camera failure. Therefore, it is not considered a significant limitation where the camera recording has not captured the end of the survey.

The missing footage at MVL3/24 was rectified by the second survey capturing the PRFs to be considered. Upon review of the full footage, supplemented by the bat sound analysis, bat activity was found to be low at this location and it is deemed unlikely that any roosting bats were missed. Therefore, it is not considered a significant limitation.

The missing footage at MVL3/14 and MVL3/17 is not considered a significant limitation as both structures were identified as having low suitability for roosting bats during the preliminary roost assessment. The PRFs present do not provide enough space, shelter and protection to be used on a regular basis or by a larger number of bats. Therefore, it was unlikely that a bat would have emerged from such PRFs and if so, the emergence would have likely been identified by the surveyor without the use of the camera footage.

Environmental Conditions

There were six instances where rain and wind impacted the survey:

- Uppermill Viaduct (MVL3/31)- Pier A East and West Survey 1 – Heavy rain from 20:12 to 20:22;
- Uppermill Viaduct (MVL3/31)- Pier B East and West Survey 1 – Heavy rain from 20:12 to 20:22. MVL3/31 - Pier F East and West Survey 1 - Intermittent light rain throughout and heavy rain from 20:15 to 20:20;
- Uppermill Viaduct (MVL3/31) - Pier D East and West Survey 2 – Light rain from 20:46 until the end of the survey;
- Uppermill Viaduct (MVL3/31) - Pier E East and West Survey 2 – Light rain from 20:46 until the end of the survey;
- Uppermill Viaduct (MVL3/31) - Pier D East and West Survey 3 – Brief light rain at 19:52 and cooler temperatures (10C);
- Uppermill Viaduct (MVL3/31) - Pier E West Survey 3 – Brief light rain at 19:52 and cooler temperatures (10C).

This is not considered a significant limitation as all surveys were conducted within the range of appropriate survey parameters as set out in the BCT Guidelines³⁷. Any periods of heavy rain were short in duration and sufficient time for bat activity and emergence was available within the survey window to still achieve a full survey.

Where structures were being surveyed in busy residential areas, passing traffic and street lighting impacted the effectiveness of the camera. This was not considered to be a significant limitation as the footage was still clear enough to view any bats passing, and bat activity across most of these structures was limited.

Sound analysis

Brown long-eared bats produce quiet calls that are directional and not always recorded or detected by the detectors. Due to the nature of these calls, these may not be identifiable during sound analysis. Therefore, brown long-eared bats are likely to have been under-recorded during surveys.

Surveyors are aware of these limitations and adjust survey methods accordingly for example, moving detectors closer to the structure if non-echolocating bats are observed and the use of IR cameras which can help with the identification of these species. Therefore, this is not considered a significant constraint.

It is not usually possible to identify calls from *Myotis* to species level using acoustic analysis alone. *Myotis* species are known to be present within the desk study area including Daubenton's and Natterers'. However, to reduce the significance of this

³⁷ Collins, J. (2016) Bat Surveys for Professional Ecologists: Good Practice Guidelines. 3rd edition. Bat Conservation Trust, London.

limitation, visual observation by surveyors and IR cameras was used during surveys in combination with analysis of acoustic recordings to distinguish species-specific behaviour, where possible. Where it was not possible to identify a bat call to species level, the genus is provided but this is not considered a significant constraint.

Equipment - Automated/ Static Bat Detectors

Kaleidoscope auto ID software was used as the first step in identification. The software identifies common and soprano pipistrelle to species level but does not identify Nathusius' pipistrelle. As only a 10% check of pipistrelle species auto ID was undertaken, there is a chance that a small number of calls from Nathusius' pipistrelle may have been mis-identified as common pipistrelle.

The auto ID does not differentiate between noctule, serotine and Leisler's (NSL). All sound files identified as NSL were manually verified by a capable surveyor but due to the limited records of Leisler's across the northwest and difficulty in distinguishing between noctule and Leisler's calls in some environments all NSL were assumed to be noctule within the static datasets. As a result, a small number of Leisler's bats may be misidentified as noctule. Movement of bats around the structure and comparison with footage from other cameras surveying the same structure was used to determine if there were any likely emergences. This is not considered an issue as the static detectors were deployed to help identify roosting bats within Scout and Stalybridge tunnels, without the purpose of identifying bat activity. NSL have been scoped out from using the tunnels for roosting as per the agreed Natural England proposed tunnel bat survey methodology³⁸

A high percentage of recordings in February 2024 by the automated detector in the air-vent of Stalybridge Tunnel (Stalybridge 3) identified as bat calls by the auto ID were metallic noise which may be due to work being undertaken on the rail/ in the tunnels during this time period. All bat calls during this time were further checked to confirm the correct identification.

Automated/ static bat detector deployment visits were limited to once per month night time possessions, which did not allow for any redeployments or maintenance of the statics in the interim period. This means that any corrupted data or malfunctions were unable to be addressed. This is not considered a significant limitation as data was recorded in each period (core bat activity period (August), transitional and hibernation) at each location and in most instances exceeded the minimum of five nights as stated in the BCT best practice guidelines³⁹.

³⁸ Technical note- TRU W2B – Proposed Tunnel Bat Survey Methodology

³⁹ Collins, J. ed., (2023). *Bat Surveys for Professional Ecologists Good Practice Guidelines*. 4th ed. [online] Bat Conservation Trust. Available at: <https://www.nhbs.com/bat-surveys-for-professional-ecologists-book>.

ANNEX C – ECOLOGY SURVEY DATA

Preliminary roost assessments of structures

Preliminary roost assessments (PRAs) were undertaken on structures within the Order Scheme. A summary of results is provided in Table C-1.

Table C-1 - Summary results from bat preliminary roost assessments of structures within

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
Stalybridge Tunnel Western Portal	Portal (Tunnel entrance) Bricks and stonework	Moderate	Survey Notes: Assessed May 2024 from the rail. Potential Roost Features: Crack in mortar present above drainpipe. 3 bats observed emerging from within the tunnel during the initial PRA. Further survey recommendations: Two dusk emergence surveys.
Stalybridge Tunnel Eastern Portal	Tunnel Bricks and stonework	Moderate	Survey Notes: Assessed May 2024 from the rail. Potential Roost Features: Gap under the top layer of stone and a crack in the centre of the span which could extend. 3 bats observed emerging from within the tunnel during the initial walkover. Further survey recommendations: Two dusk emergence surveys.
Stalybridge Tunnel Air Shaft	Air shaft Engineering brick, in good repair,	Moderate	Survey Notes: Assessed May 2024. Potential Roost Features: None observed and the shaft is open to the elements, assessed as moderate due to the hibernation potential within the tunnel. Further survey recommendations: Two dusk emergence surveys.
Printworks (MVL3/05)	Road bridge, well maintained.	Negligible	Survey Notes: Assessed May 2024 from the rail. Potential Roost Features: None observed. Further survey recommendations: None.
Footbridge (MVL3/06)	Metal footbridge with stone abutments	Negligible	Survey Notes: Assessed in April 2024 from off rail. Potential Roost Features: 10% ivy coverage on underside of east

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Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
			abutment. Further survey recommendations: None
Heyrod Hall (MVL3/07)	Stone arch bridge with rail underneath and road over the top	Low	Survey Notes: Assessed April 2024 through visual inspection with binoculars. Potential Roost Features: No PRFs visible from the vantage point, however a detailed inspection from the rail corridor is required. Further survey recommendations: One dusk emergence survey.
Footbridge (MVL3/08)	Concrete beam bridge with brick parapets and stone abutments carrying footpath over rail	Moderate	Survey Notes: Assessed in April 2024 through visual inspection with binoculars. Assessed in May 2024 from the rail. Potential Roost Features: Superficial cracks on south facing aspect and west support. Cracks on north aspect and east support appear to extend further. Hole in interior of west support is approximately 5 ft width and extends at least 1.5 ft back. Further survey recommendations: Two dusk emergence surveys.
Spring Bank Lane (MVL3/09)	Stone arch bridge with rail underneath and road over the top	Moderate	Survey Notes: Assessed in April 2024 through visual inspection with binoculars. Assessed in May 2024 from the rail. Potential Roost Features: 10-20% ivy cover on north west corner. Some superficial gaps in the mortar, gap in north aspect east support where the stone wall meets the stone lip (extends a few inches). Gaps in north eastern aspect between stone bricks (facing into adjacent habitat). Further survey recommendations: Two dusk emergence surveys.
Manchester Road (MVL3/010)	Stone arch bridge with rail over top and road underneath	Moderate	Survey Notes: Assessed in April 2024 from off rail. Assessed in May 2025 from the rail. Potential Roost Features: There are potential gaps between the stone work and high visibility signs on both sides of the bridge. (These are considered to be negligible suitability).

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
			<p>Drainage pipe on the south-west side, appeared dry and of clay construction, could offer suitability.</p> <p>There are cracks on the north-east abutment but these appear damp.</p> <p>There are gaps above the ring stones of the arch and the spandrel wall on the north-east side which could extent and provide moderate suitability cannot fully inspect with torchlight due to moving traffic under bridge.</p> <p>Under the bridge in the barrel, there are gaps between the ring stones and barrel that appear to extent but are very heavily disturbed by the noisy busy road and railway. These offer low suitability.</p> <p>The south-west side has gaps in the stonework above the high visibility sign.</p> <p>Both north-east and south-west sides, crevices where ring stones meet the spandrel wall and inner barrel offer up to moderate suitability.</p> <p>Further survey recommendations: Two dusk emergence surveys.</p>
Footbridge (MVL3/10a)	Steel pedestrian footbridge with brick abutments carrying a footpath over the railway.	Negligible	<p>Survey Notes: Assessed in April 2024 from off rail.</p> <p>Potential Roost Features: None observed.</p> <p>Further survey recommendations: None</p>
Scout Tunnel Southern Portal	Portal (Tunnel entrance) Block Stonework, All in good condition with no obvious gaps or cracks.	Negligible	<p>Survey Notes: Assessed in May 2024 from the rail.</p> <p>Potential Roost Features: None observed</p> <p>Further survey recommendations: None</p>
Scout Tunnel (MVL3/11)	Tunnel	High	<p>Survey Notes: Assessed in May 2024 from the rail.</p> <p>Potential Roost Features: A number cracks and cut-outs in tunnel walls, including some with extensive depths, provide ideal potential for bats.</p> <p>Throughout the barrel of the tunnel there is a range of suitable features. Most features are believed to be a mix of core and drainage</p>

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
			<p>holes as follows;</p> <p>Low drainage holes at approximately 1.5 m height, 5 cm x 5 cm, extending over a meter deep. Could torch extent and they are dry throughout. It is assumed there are approximately 25 within the tunnel;</p> <p>High drainage holes at approximately 3.5 m high, 5x5 cm, extending over a meter deep, limited view with torch but it is assumed there are approximately 40 throughout the tunnel;</p> <p>Core holes - 2-3 cm x 2-3 cm, extend 5-10 cm deep with varied heights. It is assumed there are approximately 30 throughout tunnel. Less suitability than the drainage holes;</p> <p>A medium height drainage hole at 2 m height, approximately 5x5 cm, doesn't extend as far as the other drainage holes (stone/ rubble blocking it approximately 30 cm into the extension). It is assumed there are approximately 5 within the tunnel.</p> <p>No particular order or frequency to the holes but they were present on both walls and ceiling throughout. Both western and eastern sides of the barrel have drainage and core holes, however, the eastern side has fewer overall than the western.</p> <p>No gaps in mortar observed at tunnel entrances all features identified were within the barrel. Some evidence of past repairs to stone facing where it meets barrel on southern side of tunnel entrance where a long crevice in the stone/ mortar had been filled in.</p> <p>The tunnel became damp with dripping water within the central portion but many crevices remained dry (at least internally) particularly core/ drainage holes.</p> <p>Cold temperature throughout the tunnel extent. Good hibernation suitability and day roost suitability. Likely too disturbed and cool in temperature to support maternity.</p> <p>Further survey recommendations Likely presence/likely absence surveys</p>
Scout Tunnel Northern Portal	Portal (Tunnel entrance) Block Stonework, all in good condition with no obvious gaps or	Negligible	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Potential Roost Features:</p> <p>None observed.</p> <p>Further survey recommendations:</p> <p>None.</p>

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Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
	cracks		
Abney Footbridge (MVL3/12)	Steel pedestrian footbridge with stone abutments over the railway.	Negligible	<p>Survey Notes: Assessed in May 2024 from off rail.</p> <p>Potential Roost Features: Gaps between metal parapet and stone abutments noted but these are too wide and exposed for bats</p> <p>Further survey recommendations: None</p>
Pipe Bridge (MVL3/12a)	Metal pipe	Negligible	<p>Survey Notes: Assessed in April 2024 from off rail.</p> <p>Potential Roost Features: None observed.</p> <p>Further survey recommendations: None</p>
Stamford Road (MVL3/13)	Concrete slab roadbridge over railway	Low	<p>Survey Notes: Assessed in May 2024 from the rail.</p> <p>Potential Roost Features: Superficial and non-extending gaps between concrete blocks. Gaps where span meets abutment were checked with pole camera, they appear to quickly narrow to wedge with no obvious suitability or crevice available for bats to use but whole extend was not torched and there were limitations with visibility</p> <p>Further survey recommendations: One dusk emergence survey.</p>
Mossley Station Footbridge (MVL3/14)	Steel frame pedestrian footbridge over railway	Low	<p>Survey Notes: Assessed in April 2024 from off rail.</p> <p>Potential Roost Features: Gaps in the stonework under the stairs off platform 2 by bridge abutment and wing walls and gaps under the bridge where the span meets the abutment. These were torched and could see the extent. Low suitability.</p> <p>High levels of disturbance by trains stopping directly underneath</p> <p>Further survey recommendations: One dusk emergence survey.</p>

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
Mill Lane (MVL3/15)	Stone arch bridge with rail over top and road underneath	Negligible	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Assessed in May 2025 from the rail.</p> <p>Potential Roost Features:</p> <p><u>Off rail:</u></p> <p>Gaps in the mortar of the wing walls and associated stone walls.</p> <p>Parapet stone had a series of holes which looked to be unlikely to extend more than a few inches and likely of extremely poor suitability for bats.</p> <p>As features couldn't be closely inspected it's unclear how far any crevices extend and suitability. But low is assumed due to likely dimensions and context.</p> <p>There are gaps in the wing walls between the mortar on the south-east side but these are unlikely to lead to a proper cavity, these could only offer some suitability for individual bats.</p> <p><u>On rail:</u></p> <p>The holes in the parapet stone were found to be negligible. No holes in the wing wall could be seen from the rail. Advise that features are negligible.</p> <p>Further survey recommendations:</p> <p>None</p>
New Earth Footbridge (MVL3/16)	Steel pedestrian footbridge with stone abutments over the railway.	Low	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail. Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>Some crevices possibly of use to bats.</p> <p>Slight gap observed between the bridge deck and the abutment.</p> <p>Gaps within the mortar where the abutment meets the wing wall.</p> <p>Cavities within the retaining wall between the rail and footpath.</p> <p>North abutment has negligible potential.</p> <p>Further survey recommendations:</p> <p>One dusk emergence survey.</p>
Roughtown Road (MVL3/17)	Stone arch bridge with rail underneath and road over the top	Low	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>Single feature under bridge arch where mortar is missing, 2cm x 2cm only extends a few</p>

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
			<p>inches suitable for individual bat. Cracks where the bridge joins the wing wall at the north-eastern aspect mostly cobwebbed but some extend 5-10 cm.</p> <p>Further survey recommendations: One dusk emergence survey.</p>
Stockport Road Level Crossing (MVL3/18)	Steel pedestrian footbridge with stone abutments over the railway.	Negligible	<p>Survey Notes: Assessed in April 2024 from off rail. Assessed in May 2024 from the rail.</p> <p>Potential Roost Features: Any features present were found to be non-extending and of negligible suitability.</p> <p>Further survey recommendations: None</p>
Midge Hall (MVL3/19)	Stone arch bridge with rail over top and farm track underneath	Moderate	<p>Survey Notes: Assessed in April 2024 from off rail. Assessed in May 2024 from the rail.</p> <p>Potential Roost Features: South-west corner has a gap that appears to extend into a cavity. North-west corner has a similar gap which could potentially have droppings outside it (or may be debris). Eastern side is well sealed generally. There are some gaps in the stonework but it is exposed and would get wet.</p> <p>Further survey recommendations: Two dusk emergence surveys.</p>
Wrights Mill (MVL3/20)	Stone arch bridge with rail underneath and road over the top	Moderate	<p>Survey Notes: Assessed in April 2024 from off rail. Assessed in May 2024 from the rail.</p> <p>Potential Roost Features: There are four large beam holes in the barrel that extend and could lead to further PRFs.</p> <p>Further survey recommendations: Two dusk emergence surveys</p>
Water Trough Pipe (MVL3/21)	Pipe bridge	Negligible	<p>Survey Notes: Assessed in May 2024 from on rail.</p> <p>Potential Roost Features: Some superficial cracks in the mortar, wet drain, unsuitable for use as a roost.</p> <p>Further survey recommendations: None</p>

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
Hobble Hole (MVL3/22)	Stone arch bridge with rail over top and footpath underneath	Negligible	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Potential Roost Features:</p> <p>Gaps in mortar in between stones in the parapet, they are exposed and will get wet. Shallow superficial gaps in stonework inspected with torchlight.</p> <p>Further survey recommendations:</p> <p>None</p>
Wrights (MVL3/23)	Stone arch bridge with rail underneath and footpath over the top	Negligible	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Assessed in May 2024 from on rail.</p> <p>Potential Roost Features:</p> <p>Stonework well sealed with some superficial cracks</p> <p>Further survey recommendations:</p> <p>None</p>
Charlotte Street (MVL3/24)	Concrete slab bridge carrying the railway over a road	Moderate	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Potential Roost Features:</p> <p>Gaps between concrete span and abutment could lead to expansion joints or voids.</p> <p>Gaps present between the upper and lower span blocks. Could be inspected with a MEWP or polecam but they have been assessed as precautionary moderate from ground level.</p> <p>Further survey recommendations:</p> <p>Two dusk emergence surveys</p>
Royal George (MVL3/25)	Steel frame bridge with stone abutments carrying the railway over a road	Moderate	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Potential Roost Features:</p> <p>Jackdaws are nesting in the gap between the span and the abutment so this area is largely unsuitable for roosting bats but the area cannot be fully inspected from ground level so there could be PRFs obscured from view.</p> <p>Gaps in mortar generally appear superficial when inspected with torchlight. On northern side, gaps in mortar between stonework are none-extending. Larger gap in stonework on this side on abutment is too exposed for bats.</p> <p>Gaps between the steel parapet and decorative stonework may extend into suitable cavities for bats. Moderate suitability assigned for these but surveyors couldn't determine how far the features potentially extend.</p>

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
			Further survey recommendations: Two dusk emergence surveys
Footway UB (MVL3/26)	Stone arch bridge with rail over top and footpath underneath	Moderate	<p>Survey Notes: Assessed in April 2024 from off rail.</p> <p>Potential Roost Features: Gaps in the retaining wall (not part of bridge structure) which appear to extend up to 30 cm. 18 drainage holes within the barrel of the bridge. Some of the drainage pipes have plastic so would be unsuitable for bats to access, however in some pipes the plastic has fallen away.</p> <p>On the NE wall, the second drainage pipe from the west has no plastic, as it cannot be thoroughly inspected by torch it has been assessed as precautionary moderate suitability.</p> <p>Further survey recommendations: Two dusk emergence surveys</p>
Oldham Road (MVL3/28)	Stone arch bridge with rail underneath and road over the top	Moderate	<p>Survey Notes: Assessed in April 2024 from off rail. Assessed in May 2024 from the rail.</p> <p>Potential Roost Features: Some mortar gaps and potential holes in the stonework of the bridge on external and in barrel.</p> <p>South east abutment has 3-4 areas of missing stonework.</p> <p>South west abutment has gaps within the mortar and a 3-4 potential holes.</p> <p>Barrel has multiple gaps extending approximately 1 foot deep.</p> <p>Further survey recommendations: Two dusk emergence surveys</p>
Wickers (MVL3/29)	Stone arch bridge with rail over top and footpath underneath	Negligible	<p>Survey Notes: Assessed in April 2024 from off rail.</p> <p>Potential Roost Features: None observed, shallow mortar gaps on the wing walls and abutments not suitable for bats either superficial, damp and filled with snails, or evidence of rodent use.</p> <p>Barrel of bridge extremely good condition with no mortar gaps</p> <p>Further survey recommendations:</p>

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
			None
Den Quarry Underbridge (MVL3/30)	Stone arch bridge with rail over top and footpath underneath	Moderate	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>North west abutment stonework in good condition but the connecting stone wall has crevices up to around 15 cm which are of low suitability and can be inspected via torchlight.</p> <p>South east abutment has some shallow gaps in the mortar up to low suitability.</p> <p>The main features offering suitability for bats are 7 core holes within the barrel. 1 is of negligible suitability with a stone blocking the entrance, 1 is in the roof of the barrel and is largely dry extending at least 20 cm potentially further. 4 other holes on north wall and one on south wall all fully inspectable from ground level with torchlight. Some were slightly damp but others seemed suitable for small numbers of bats.</p> <p>Further survey recommendations:</p> <p>Two dusk emergence surveys</p>
Uppermill Viaduct (MVL3/31)	Viaduct carrying rail over river, canal, roads and PROW	High	<p>Survey Notes:</p> <p>Assessed in April 2024.</p> <p>Potential Roost Features:</p> <p>Every pier had drainage pipes on the western and eastern aspects. The vast majority were dripping water but a small number appeared dry. There had been rain the day before the survey.</p> <p>Stonework largely in good condition. At the top of the piers there were occasional crevices in the mortar between the stonework and stone arch edges.</p> <p>Much of the structure wasn't fully visible for detailed PRA. Excellent commuting and foraging habitat. High suitability assumed.</p> <p>Further survey recommendations:</p> <p>Three dusk emergence surveys</p>

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Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
Butterhouse Lane Footbridge (MVL3/31a)	Steel frame bridge with stone abutments carrying the railway over a road	Negligible	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Potential Roost Features:</p> <p>A single crevice was assessed as negligibly suitable following an endoscopic inspection</p> <p>Further survey recommendations:</p> <p>None.</p>
Footbridge (MVL3/35)	Steel frame bridge with concrete abutments carrying footpath over the railway	Negligible	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Potential Roost Features:</p> <p>None observed.</p> <p>Further survey recommendations:</p> <p>None.</p>
Ward Lane (MVL3/36)	Metal span with brick infill. Stone abutments.	Negligible	<p>Survey Notes:</p> <p>Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>None observed</p> <p>Further survey recommendations:</p> <p>None</p>
Diggle Junction Signal Box	Signal box building. Brick building with upper half comprising PVC panelling and windows; pitched tiled roof.	Negligible	<p>Survey Notes:</p> <p>Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>None observed.</p> <p>Further survey recommendations:</p> <p>None</p>
Station Road (MVL3/39)	Steel framed bridge with stone abutments carrying road over railway	/Negligible	<p>Survey Notes:</p> <p>Assessed in July 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>The eastern most arch by the eastern abutment had three holes in the stonework at the top of the abutment which were exposed and predominantly offered suitability for nesting birds and low/ negligible suitability for bats.</p> <p>Western side of the pier has a crack in the mortar in the northern corner which extended 20 cm. Moss and nesting material were observed. Negligible suitability.</p> <p>The western most abutment had limited view from the other side of the railway but some shallow mortar gaps were observed which</p>

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
			<p>appeared to be fairly superficial but were unable to be closely inspected.</p> <p>The eastern pier had a single gap in the mortar at the south east corner which was heavily cobwebbed at the time of survey.</p> <p>All features negligible due to shallow nature, use by nesting birds, cobwebs and existing disturbance from passing train traffic.</p> <p>Further survey recommendations: None.</p>
Standedge Canal Tunnel (MVL3/39a)	Tunnel of stone and brick construction	Unknown	<p>Survey Notes: Assessed in April 2024 with view from road 30 m+ away. Very limited vantage.</p> <p>Potential Roost Features: Cannot see inside tunnels. Unable to assess suitably.</p> <p>Appears in good condition but there may be suitable crevices internally</p> <p>Further survey recommendations: Further PRA with internal access to the tunnel.</p>
Bywash (MVL3/39b)	Tunnel	Unknown	As per MVL3/39a).
Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
Stalybridge Tunnel Western Portal	Portal (Tunnel entrance) Bricks and stonework	Moderate	<p>Survey Notes: Assessed May 2024 from the rail.</p> <p>Potential Roost Features: Crack in mortar present above drainpipe. 3 bats observed emerging from within the tunnel during the initial PRA.</p> <p>Further survey recommendations: Two dusk emergence surveys.</p>
Stalybridge Tunnel Eastern Portal	Tunnel Bricks and stonework	Moderate	<p>Survey Notes: Assessed May 2024 from the rail.</p> <p>Potential Roost Features: Gap under the top layer of stone and a crack in the centre of the span which could extend. 3 bats observed emerging from within the tunnel during the initial walkover.</p> <p>Further survey recommendations:</p>

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Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
			Two dusk emergence surveys.
Stalybridge Tunnel Air Shaft	Air shaft Engineering brick, in good repair,	Moderate	Survey Notes: Assessed May 2024. Potential Roost Features: None observed and the shaft is open to the elements, assessed as moderate due to the hibernation potential within the tunnel. Further survey recommendations: Two dusk emergence surveys.
Printworks (MVL3/05)	Road bridge, well maintained.	Negligible	Survey Notes: Assessed May 2024 from the rail. Potential Roost Features: None observed. Further survey recommendations: None.
Footbridge (MVL3/06)	Metal footbridge with stone abutments	Negligible	Survey Notes: Assessed in April 2024 from off rail. Potential Roost Features: 10% ivy coverage on underside of east abutment. Further survey recommendations: None
Heyrod Hall (MVL3/07)	Stone arch bridge with rail underneath and road over the top	Low	Survey Notes: Assessed April 2024 through visual inspection with binoculars. Potential Roost Features: No PRFs visible from the vantage point, however a detailed inspection from the rail corridor is required. Further survey recommendations: One dusk emergence survey.
Footbridge (MVL3/08)	Concrete beam bridge with brick parapets and stone abutments carrying footpath over rail	Moderate	Survey Notes: Assessed in April 2024 through visual inspection with binoculars. Assessed in May 2024 from the rail. Potential Roost Features: Superficial cracks on south facing aspect and west support. Cracks on north aspect and east support appear to extend further. Hole in interior of west support is approximately 5 ft width and extends at least 1.5 ft back.

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			Further survey recommendations: Two dusk emergence surveys.
Spring Bank Lane (MVL3/09)	Stone arch bridge with rail underneath and road over the top	Moderate	<p>Survey Notes:</p> <p>Assessed in April 2024 through visual inspection with binoculars.</p> <p>Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>10-20% ivy cover on north west corner.</p> <p>Some superficial gaps in the mortar, gap in north aspect east support where the stone wall meets the stone lip (extends a few inches).</p> <p>Gaps in north eastern aspect between stone bricks (facing into adjacent habitat).</p> <p>Further survey recommendations:</p> <p>Two dusk emergence surveys.</p>
Manchester Road (MVL3/010)	Stone arch bridge with rail over top and road underneath	Moderate	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail. Assessed in May 2025 from the rail.</p> <p>Potential Roost Features:</p> <p>There are potential gaps between the stone work and high visibility signs on both sides of the bridge. (These are considered to be negligible suitability).</p> <p>Drainage pipe on the south-west side, appeared dry and of clay construction, could offer suitability.</p> <p>There are cracks on the north-east abutment but these appear damp.</p> <p>There are gaps above the ring stones of the arch and the spandrel wall on the north-east side which could extent and provide moderate suitability cannot fully inspect with torchlight due to moving traffic under bridge.</p> <p>Under the bridge in the barrel, there are gaps between the ring stones and barrel that appear to extent but are very heavily disturbed by the noisy busy road and railway. These offer low suitability.</p> <p>The south-west side has gaps in the stonework above the high visibility sign.</p> <p>Both north-east and south-west sides, crevices where ring stones meet the spandrel wall and inner barrel offer up to moderate suitability.</p> <p>Further survey recommendations:</p> <p>Two dusk emergence surveys.</p>

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
Footbridge (MVL3/10a)	Steel pedestrian footbridge with brick abutments carrying a footpath over the railway.	Negligible	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Potential Roost Features:</p> <p>None observed.</p> <p>Further survey recommendations:</p> <p>None</p>
Scout Tunnel Southern Portal	<p>Portal (Tunnel entrance)</p> <p>Block Stonework, All in good condition with no obvious gaps or cracks.</p>	Negligible	<p>Survey Notes:</p> <p>Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>None observed</p> <p>Further survey recommendations:</p> <p>None</p>
Scout Tunnel (MVL3/11)	Tunnel	High	<p>Survey Notes:</p> <p>Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>A number cracks and cut-outs in tunnel walls, including some with extensive depths, provide ideal potential for bats.</p> <p>Throughout the barrel of the tunnel there is a range of suitable features. Most features are believed to be a mix of core and drainage holes as follows;</p> <p>Low drainage holes at approximately 1.5 m height, 5 cm x 5 cm, extending over a meter deep. Could torch extent and they are dry throughout. It is assumed there are approximately 25 within the tunnel;</p> <p>High drainage holes at approximately 3.5 m high, 5x5 cm, extending over a meter deep, limited view with torch but it is assumed there are approximately 40 throughout the tunnel;</p> <p>Core holes - 2-3 cm x 2-3 cm, extend 5-10 cm deep with varied heights. It is assumed there are approximately 30 throughout tunnel. Less suitability than the drainage holes;</p> <p>A medium height drainage hole at 2 m height, approximately 5x5 cm, doesn't extend as far as the other drainage holes (stone/ rubble blocking it approximately 30 cm into the extension). It is assumed there are approximately 5 within the tunnel.</p> <p>No particular order or frequency to the holes but they were present on both walls and ceiling throughout. Both western and eastern sides of</p>

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
			<p>the barrel have drainage and core holes, however, the eastern side has fewer overall than the western.</p> <p>No gaps in mortar observed at tunnel entrances all features identified were within the barrel. Some evidence of past repairs to stone facing where it meets barrel on southern side of tunnel entrance where a long crevice in the stone/ mortar had been filled in.</p> <p>The tunnel became damp with dripping water within the central portion but many crevices remained dry (at least internally) particularly core/ drainage holes.</p> <p>Cold temperature throughout the tunnel extent. Good hibernation suitability and day roost suitability. Likely too disturbed and cool in temperature to support maternity.</p> <p>Further survey recommendations Likely presence/likely absence surveys</p>
Scout Tunnel Northern Portal	<p>Portal (Tunnel entrance)</p> <p>Block Stonework, all in good condition with no obvious gaps or cracks</p>	Negligible	<p>Survey Notes: Assessed in April 2024 from off rail.</p> <p>Potential Roost Features: None observed.</p> <p>Further survey recommendations: None.</p>
Abney Footbridge (MVL3/12)	Steel pedestrian footbridge with stone abutments over the railway.	Negligible	<p>Survey Notes: Assessed in May 2024 from off rail.</p> <p>Potential Roost Features: Gaps between metal parapet and stone abutments noted but these are too wide and exposed for bats</p> <p>Further survey recommendations: None</p>
Pipe Bridge (MVL3/12a)	Metal pipe	Negligible	<p>Survey Notes: Assessed in April 2024 from off rail.</p> <p>Potential Roost Features: None observed.</p> <p>Further survey recommendations: None</p>
Stamford Road (MVL3/13)	Concrete slab roadbridge over railway	Low	<p>Survey Notes: Assessed in May 2024 from the rail.</p> <p>Potential Roost Features: Superficial and non-extending gaps between</p>

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			concrete blocks. Gaps where span meets abutment were checked with polecam, they appear to quickly narrow to wedge with no obvious suitability or crevice available for bats to use but whole extent was not torched and there were limitations with visibility Further survey recommendations: One dusk emergence survey.
Mossley Station Footbridge (MVL3/14)	Steel frame pedestrian footbridge over railway	Low	Survey Notes: Assessed in April 2024 from off rail. Potential Roost Features: Gaps in the stonework under the stairs off platform 2 by bridge abutment and wing walls and gaps under the bridge where the span meets the abutment. These were torched and could see the extent. Low suitability. High levels of disturbance by trains stopping directly underneath Further survey recommendations: One dusk emergence survey.
Mill Lane (MVL3/15)	Stone arch bridge with rail over top and road underneath	Negligible	Survey Notes: Assessed in April 2024 from off rail. Assessed in May 2025 from the rail. Potential Roost Features: Off rail: Gaps in the mortar of the wing walls and associated stone walls. Parapet stone had a series of holes which looked to be unlikely to extend more than a few inches and likely of extremely poor suitability for bats. As features couldn't be closely inspected it's unclear how far any crevices extend and suitability. But low is assumed due to likely dimensions and context. There are gaps in the wing walls between the mortar on the south-east side but these are unlikely to lead to a proper cavity, these could only offer some suitability for individual bats. On rail: The holes in the parapet stone were found to be negligible. No holes in the wing wall could be seen from the rail. Advise that features are negligible. Further survey recommendations: None

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
New Earth Footbridge (MVL3/16)	Steel pedestrian footbridge with stone abutments over the railway.	Low	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail. Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>Some crevices possibly of use to bats.</p> <p>Slight gap observed between the bridge deck and the abutment.</p> <p>Gaps within the mortar where the abutment meets the wing wall.</p> <p>Cavities within the retaining wall between the rail and footpath.</p> <p>North abutment has negligible potential.</p> <p>Further survey recommendations:</p> <p>One dusk emergence survey.</p>
Roughtown Road (MVL3/17)	Stone arch bridge with rail underneath and road over the top	Low	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail. Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>Single feature under bridge arch where mortar is missing, 2cm x 2cm only extends a few inches suitable for individual bat. Cracks where the bridge joins the wing wall at the north-eastern aspect mostly cobwebbed but some extend 5-10 cm.</p> <p>Further survey recommendations:</p> <p>One dusk emergence survey.</p>
Stockport Road Level Crossing (MVL3/18)	Steel pedestrian footbridge with stone abutments over the railway.	Negligible	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail. Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>Any features present were found to be non-extending and of negligible suitability.</p> <p>Further survey recommendations:</p> <p>None</p>
Midge Hall (MVL3/19)	Stone arch bridge with rail over top and farm track underneath	Moderate	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail. Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>South-west corner has a gap that appears to extend into a cavity.</p> <p>North-west corner has a similar gap which could potentially have droppings outside it (or may be debris).</p> <p>Eastern side is well sealed generally. There are some gaps in the stonework but it is</p>

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			exposed and would get wet. Further survey recommendations: Two dusk emergence surveys.
Wrights Mill (MVL3/20)	Stone arch bridge with rail underneath and road over the top	Moderate	Survey Notes: Assessed in April 2024 from off rail. Assessed in May 2024 from the rail. Potential Roost Features: There are four large beam holes in the barrel that extend and could lead to further PRFs. Further survey recommendations: Two dusk emergence surveys
Water Trough Pipe (MVL3/21)	Pipe bridge	Negligible	Survey Notes: Assessed in May 2024 from on rail. Potential Roost Features: Some superficial cracks in the mortar, wet drain, unsuitable for use as a roost. Further survey recommendations: None
Hobble Hole (MVL3/22)	Stone arch bridge with rail over top and footpath underneath	Negligible	Survey Notes: Assessed in April 2024 from off rail. Potential Roost Features: Gaps in mortar in between stones in the parapet, they are exposed and will get wet. Shallow superficial gaps in stonework inspected with torchlight. Further survey recommendations: None
Wrights (MVL3/23)	Stone arch bridge with rail underneath and footpath over the top	Negligible	Survey Notes: Assessed in April 2024 from off rail. Assessed in May 2024 from on rail. Potential Roost Features: Stonework well sealed with some superficial cracks Further survey recommendations: None
Charlotte Street (MVL3/24)	Concrete slab bridge carrying the railway over a road	Moderate	Survey Notes: Assessed in April 2024 from off rail. Potential Roost Features: Gaps between concrete span and abutment could lead to expansion joints or voids. Gaps present between the upper and lower span blocks. Could be inspected with a MEWP

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
			or polecam but they have been assessed as precautionary moderate from ground level. Further survey recommendations: Two dusk emergence surveys
Royal George (MVL3/25)	Steel frame bridge with stone abutments carrying the railway over a road	Moderate	Survey Notes: Assessed in April 2024 from off rail. Potential Roost Features: Jackdaws are nesting in the gap between the span and the abutment so this area is largely unsuitable for roosting bats but the area cannot be fully inspected from ground level so there could be PRFs obscured from view. Gaps in mortar generally appear superficial when inspected with torchlight. On northern side, gaps in mortar between stonework are none-extending. Larger gap in stonework on this side on abutment is too exposed for bats. Gaps between the steel parapet and decorative stonework may extend into suitable cavities for bats. Moderate suitability assigned for these but surveyors couldn't determine how far the features potentially extend. Further survey recommendations: Two dusk emergence surveys
Footway UB (MVL3/26)	Stone arch bridge with rail over top and footpath underneath	Moderate	Survey Notes: Assessed in April 2024 from off rail. Potential Roost Features: Gaps in the retaining wall (not part of bridge structure) which appear to extend up to 30 cm. 18 drainage holes within the barrel of the bridge. Some of the drainage pipes have plastic so would be unsuitable for bats to access, however in some pipes the plastic has fallen away. On the NE wall, the second drainage pipe from the west has no plastic, as it cannot be thoroughly inspected by torch it has been assessed as precautionary moderate suitability. Further survey recommendations: Two dusk emergence surveys
Oldham Road (MVL3/28)	Stone arch bridge with rail underneath and road over the top	Moderate	Survey Notes: Assessed in April 2024 from off rail. Assessed in May 2024 from the rail. Potential Roost Features: Some mortar gaps and potential holes in the

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
			<p>stonework of the bridge on external and in barrel.</p> <p>South east abutment has 3-4 areas of missing stonework.</p> <p>South west abutment has gaps within the mortar and a 3-4 potential holes.</p> <p>Barrel has multiple gaps extending approximately 1 foot deep.</p> <p>Further survey recommendations:</p> <p>Two dusk emergence surveys</p>
Wickers (MVL3/29)	Stone arch bridge with rail over top and footpath underneath	Negligible	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Potential Roost Features:</p> <p>None observed, shallow mortar gaps on the wing walls and abutments not suitable for bats either superficial, damp and filled with snails, or evidence of rodent use.</p> <p>Barrel of bridge extremely good condition with no mortar gaps</p> <p>Further survey recommendations:</p> <p>None</p>
Den Quarry Underbridge (MVL3/30)	Stone arch bridge with rail over top and footpath underneath	Moderate	<p>Survey Notes:</p> <p>Assessed in April 2024 from off rail.</p> <p>Assessed in May 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>North west abutment stonework in good condition but the connecting stone wall has crevices up to around 15 cm which are of low suitability and can be inspected via torchlight.</p> <p>South east abutment has some shallow gaps in the mortar up to low suitability.</p> <p>The main features offering suitability for bats are 7 core holes within the barrel. 1 is of negligible suitability with a stone blocking the entrance, 1 is in the roof of the barrel and is largely dry extending at least 20 cm potentially further. 4 other holes on north wall and one on south wall all fully inspectable from ground level with torchlight. Some were slightly damp but others seemed suitable for small numbers of bats.</p> <p>Further survey recommendations:</p> <p>Two dusk emergence surveys</p>

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
Uppermill Viaduct (MVL3/31)	Viaduct carrying rail over river, canal, roads and PROW	High	<p>Survey Notes: Assessed in April 2024.</p> <p>Potential Roost Features: Every pier had drainage pipes on the western and eastern aspects. The vast majority were dripping water but a small number appeared dry. There had been rain the day before the survey.</p> <p>Stonework largely in good condition. At the top of the piers there were occasional crevices in the mortar between the stonework and stone arch edges.</p> <p>Much of the structure wasn't fully visible for detailed PRA. Excellent commuting and foraging habitat. High suitability assumed.</p> <p>Further survey recommendations: Three dusk emergence surveys</p>
Butterhouse Lane Footbridge (MVL3/31a)	Steel frame bridge with stone abutments carrying the railway over a road	Negligible	<p>Survey Notes: Assessed in April 2024 from off rail.</p> <p>Potential Roost Features: A single crevice was assessed as negligibly suitable following an endoscopic inspection</p> <p>Further survey recommendations: None.</p>
Footbridge (MVL3/35)	Steel frame bridge with concrete abutments carrying footpath over the railway	Negligible	<p>Survey Notes: Assessed in April 2024 from off rail.</p> <p>Potential Roost Features: None observed.</p> <p>Further survey recommendations: None.</p>
Ward Lane (MVL3/36)	Metal span with brick infill. Stone abutments.	Negligible	<p>Survey Notes: Assessed in May 2024 from the rail.</p> <p>Potential Roost Features: None observed</p> <p>Further survey recommendations: None</p>
Diggle Junction Signal Box	Signal box building. Brick building with upper half comprising PVC panelling and windows; pitched tiled	Negligible	<p>Survey Notes: Assessed in May 2024 from the rail.</p> <p>Potential Roost Features: None observed.</p> <p>Further survey recommendations: None</p>

Feature Ref	Feature Type	Bat Roost Suitability Rating	Notes
	roof.		
Station Road (MVL3/39)	Steel framed bridge with stone abutments carrying road over railway	/Negligible	<p>Survey Notes:</p> <p>Assessed in July 2024 from the rail.</p> <p>Potential Roost Features:</p> <p>The eastern most arch by the eastern abutment had three holes in the stonework at the top of the abutment which were exposed and predominantly offered suitability for nesting birds and low/ negligible suitability for bats.</p> <p>Western side of the pier has a crack in the mortar in the northern corner which extended 20 cm. Moss and nesting material were observed. Negligible suitability.</p> <p>The western most abutment had limited view from the other side of the railway but some shallow mortar gaps were observed which appeared to be fairly superficial but were unable to be closely inspected.</p> <p>The eastern pier had a single gap in the mortar at the south east corner which was heavily cobwebbed at the time of survey.</p> <p>All features negligible due to shallow nature, use by nesting birds, cobwebs and existing disturbance from passing train traffic.</p> <p>Further survey recommendations:</p> <p>None.</p>
Standedge Canal Tunnel (MVL3/39a)	Tunnel of stone and brick construction	Unknown	<p>Survey Notes:</p> <p>Assessed in April 2024 with view from road 30 m+ away. Very limited vantage.</p> <p>Potential Roost Features:</p> <p>Cannot see inside tunnels.</p> <p>Unable to assess suitably.</p> <p>Appears in good condition but there may be suitable crevices internally</p> <p>Further survey recommendations:</p> <p>Further PRA with internal access to the tunnel.</p>
Bywash (MVL3/39b)	Tunnel	Unknown	As per MVL3/39a).

Bat survey results from dusk surveys on bridge structures

Survey results from dusk emergence surveys on structures within the Order Scheme are provided from Table C-2 to Table C-25.

Table C-2 - Bat survey results from dusk survey on Heyrod Hall (MVL3/07)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
11/09/2024 – Dusk	Start Time: 19:18 End Time: 21:02 Sunset: 19:32	6-10 degrees, cold with a brief rain shower	First bat: Common pipistrelle at 20:03 (31 minutes after sunset). Common pipistrelle recordings continue until 20:26. Recorded activity also included one soprano pipistrelle pass (20:12) and one Myotis species (20:26). Bats could be observed foraging by the surveyors but not the IR cameras.	No confirmed roost.

Table C-3- Bat survey results from dusk survey on Spring Bank Lane (MVL3/09)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
03/09/2024 – Dusk	Start Time: 19:37 End Time: 21:22 Sunset: 19:52	15 degrees, overcast and dry.	First bat: Common pipistrelle at 19:59 (7 minutes after sunset). Common pipistrelle passes continue until 21:20. Soprano pipistrelle activity was recorded at 20:09. Myotis activity was recorded at 20:49. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.
17/09/2024 – Dusk	Start Time: 19:03 End Time: 20:48 Sunset: 19:18	14-18 degrees, clear and dry.	First bat: Soprano pipistrelle at 19:23 (5 minutes after sunset). Soprano pipistrelle activity continues until 20:08. Common pipistrelle activity was recorded from	Confirmed roost.

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
			<p>20:18 until the end of the survey at 20:48.</p> <p>IR footage shows emergence and re-entry at 19:52:20 then two further emergences at 19:53:32 and 19:53:47, the closest recordings to these times are of common pipistrelle.</p> <p>Bats could be observed foraging by the surveyors and the IR cameras.</p>	

Table C-4 - Bat survey results from dusk survey on Manchester Road (MVL3/10)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
04/09/2024 – Dusk	<p>Start Time: 19:34</p> <p>End Time: 21:19</p> <p>Sunset: 19:49</p>	13-15 degrees, dry and overcast.	<p>First bat: Common pipistrelle at 19:53 (4 minutes after sunset).</p> <p>Common pipistrelle activity continues until the survey ends at 21:19.</p> <p>Soprano pipistrelle activity was recorded between 20:23 and 21:04.</p> <p>Bats could be observed foraging by the IR cameras but not the surveyors at 20:13 and 21:12.</p>	No confirmed roost.
18/09/2024 – Dusk	<p>Start Time: 19:00</p> <p>End Time: 20:42</p> <p>Sunset: 19:15</p>	13-15 degrees, dry and clear.	<p>First bat: Common pipistrelle at 19:52 (37 minutes after sunset) seen flying over bridge and foraging east of the structure.</p> <p>Common and soprano pipistrelle activity continued until the end of the survey.</p> <p>No bat activity was captured by the IR cameras.</p>	No confirmed roost.

Table C-5 - Bat survey results from dusk survey on Stamford Road (MVL3/13)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
10/09/2024 – Dusk	Start Time: 19:25 End Time: 21:05 Sunset: 19:35	12-13 degrees, dry with scattered clouds.	No bat activity recorded on the detectors or cameras.	No confirmed roost.

Table C-6 - Bat survey results from dusk survey on Mossley Station Footbridge (MVL3/14)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
03/09/2024 – Dusk	Start Time: 19:37 End Time: 21:22 Sunset: 19:52	14-15 degrees, dry and overcast.	First bat: Common pipistrelle at 20:28 (36 minutes after sunset). Common pipistrelle activity was detected once more at 20:40 (not seen). Bats could be observed foraging above the structure at 20:28 by the surveyors and the IR cameras.	No confirmed roost.

Table C-7 - Bat survey results from dusk survey on New Earth Footbridge (MVL3/16)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
03/09/2024 – Dusk	Start Time: 19:37 End Time: 21:22 Sunset: 19:52	14-15 degrees, dry and overcast.	No bat activity recorded.	No confirmed roost.

Table C-8 - Bat survey results from dusk survey on Roughtown Road (MVL3/17)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
10/09/2024 – Dusk	Start Time: 19:20 End Time: 21:05 Sunset: 19:35	8-9 degrees, cold and dry with scattered clouds.	First bat: Common pipistrelle at 20:03 (28 minutes after sunset). Common pipistrelle activity continued until the end of the survey. No bat activity was seen by the surveyor or IR cameras.	No confirmed roost.

Table C-9 - Bat survey results from dusk survey on Midge Hall (MVL3/19)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
04/09/2024 – Dusk	Start Time: 19:34 End Time: 21:19 Sunset: 19:49	13-15 degrees, dry and overcast.	First bat: Common pipistrelle at 19:39 (10 minutes before sunset). Common pipistrelle activity continued until the end of the survey. Multiple common pipistrelle (up to three) were observed foraging under the bridge by the surveyors and the IR cameras from 20:06 until the end of the survey at 21:19.	No confirmed roost.
18/09/2024 – Dusk	Start Time: 19:25 End Time: 21:05 Sunset: 19:35	12-13 degrees, dry with scattered clouds.	First bat: Common pipistrelle at 19:34 (1 minute before sunset). Common pipistrelle activity continued until 20:39. Bats could be observed foraging under the bridge by the surveyors and the IR cameras	No confirmed roost.

Table C-10 - Bat survey results from dusk survey on Wrights Mill (MVL3/20)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
09/09/2024 – Dusk	Start Time: 19:22 End Time: 21:07 Sunset: 19:37	11 degrees, dry and overcast.	First bat: Common pipistrelle at 19:55 (18 minutes after sunset). Common pipistrelle activity continued until the end of the survey. Soprano pipistrelle activity was recorded at 20:25 and 20:29. Bats could be observed around the structure and nearby trees by the surveyors and the IR cameras.	No confirmed roost.

Table C-11 - Bat survey results from dusk survey on Charlotte Street (MVL3/24)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
05/09/2024 – Dusk	Start Time: 19:32 End Time: 21:17 Sunset: 19:47	15-16 degrees, breezy overcast and dry.	First bat: Common pipistrelle at 20:15 (28 minutes after sunset). Common pipistrelle activity continued until the end of the survey. Myotis activity was recorded 5 times between 19:50 and 20:38. Soprano pipistrelle activity was recorded twice at 19:58 and 20:24. Plecotus species activity was recorded at 20:41. Bats could be observed foraging under the bridge by the surveyors and the IR cameras.	No confirmed roost.
18/09/2024 – Dusk	Start Time: 19:15 End Time: 20:45 Sunset: 19:15	14-16 degrees clear and dry.	First bat: Common pipistrelle at 19:29 (14 minutes after sunset). Common pipistrelle activity continued until 20:50. Also recorded was occasional presence of soprano pipistrelle, brown long eared, and myotis species of bat. Bats could be observed foraging under the bridge by the surveyors and the IR cameras.	No confirmed roost.

Table C-12 - Bat survey results from dusk survey on Royal George (MVL3/25)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
05/09/2024 – Dusk	Start Time: 19:32 End Time: 21:17 Sunset: 19:47	15-16 degrees, gusty, dry, and overcast.	First bat: Common pipistrelle recorded at 19:58 (11 minutes after sunset). Common pipistrelle activity was recorded three more times with the last at 21:07. Bat activity was seen by surveyors with one flying west at 19:58 and foraging on the eastern side at 20:08.	No confirmed roost.
19/09/2024 – Dusk	Start Time: 18:58 End Time: 20:43 Sunset: 19:12	14-16 degrees, gusty and dry with clear skies	First bat: Soprano pipistrelle at 19:01 (11 minutes before sunset). Common and soprano pipistrelle activity continues until 20:38. No bat activity was seen by the surveyor or IR cameras.	No confirmed roost.

Table C-13 - Bat survey results from dusk survey on Footway UB (MVL3/26)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
05/09/2024 – Dusk	Start Time: 19:32 End Time: 21:17 Sunset: 19:47	17 degrees, gusty dry and overcast.	First bat: Common pipistrelle at 20:02 (15 minutes after sunset). Common pipistrelle activity continues until 21:11 with few passes in between. Bats could be observed foraging under the bridge by the surveyors at 20:39	No confirmed roost.
19/09/2024 – Dusk	Start Time: 18:58 End Time: 20:43 Sunset: 19:12	14-16 degrees, gusty and dry with clear skies	First bat: Common pipistrelle at 19:20 (8 minutes after sunset). Common pipistrelle activity continues until 20:43 when the survey	No confirmed roost.

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
			ends. Bats could be observed foraging by the surveyors and the IR cameras.	

Table C-14 - Bat survey results from dusk survey on Oldham Road (MVL3/28)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
19/09/2024 – Dusk	Start Time: 18:58 End Time: 20:43 Sunset:19:12	14-16 degrees, gusty and dry with clear skies	First bat: Common pipistrelle at 19:39 (27 minutes after sunset). Common pipistrelle activity was recorded until the end of the survey. No bat activity was seen by the surveyor or IR cameras.	No confirmed roost.

Table C-15 - Bat survey results from dusk survey on MVL3/30 (Den Quarry Underbridge)

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
09/09/2024 – Dusk	Start Time: 19:22 End Time: 21:07 Sunset: 19:37	11-12 degrees, dry and overcast.	First bat: Common pipistrelle at 19:58 (22 minutes after sunset). Common pipistrelle activity was recorded fifteen further times with the last at the end of the survey. Bats could be observed foraging by the IR cameras at 20:45 but not the surveyors.	No confirmed roost.

Table C-16 - Bat survey results from dusk survey on Uppermill Viaduct (MVL3/31) Pier A East

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
27/08//2024 – Dusk	Start Time: 19:54 End Time: 21:40 Sunset: 19:57	15-16 degrees, passing clouds and light rain at the start.	First bat: Common pipistrelle at 20:08 (11 minutes after sunset). Common pipistrelle activity continues until the end of the survey. Myotis activity was recorded 6 times between 20:15 and 21:09. Soprano pipistrelle activity was recorded twice at 20:10 and 20:21. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.
12/09/2024 – Dusk	Start Time: 19:15 End Time: 21:00 Sunset: 19:30	11 degrees, clear and dry.	First bat: Common pipistrelle at 19:31 (1 minute after sunset). Common pipistrelle activity continues until the end of the survey. Myotis activity was recorded 6 times between 19:45 and 20:58. Bats could be observed foraging by the surveyor.	No confirmed roost.

Table C-17 - Bat survey results from dusk survey on Uppermill Viaduct (MVL3/31) Pier A West

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
27/08/2024 – Dusk	Start Time: 19:54 End Time: 21:40 Sunset: 19:57	15-16 degrees, passing clouds and light rain at the start.	First bat: Common pipistrelle at 20:08 (11 minutes after sunset). Common pipistrelle activity continues until the end of the survey. Myotis activity was recorded 6 times between 20:15 and 21:09. Soprano pipistrelle activity was recorded twice at 20:10 and 20:21. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.
16/09/2024 – Dusk	Start Time: 19:05 End Time: 20:50 Sunset: 19:20	12 degrees, dry with scattered showers.	First bat: Common pipistrelle at 19:27 (7 minutes after sunset). Common pipistrelle activity continues until the end of the survey. Myotis activity was recorded 5 times between 19:55 and 20:02. Soprano pipistrelle activity was recorded 3 times between 19:34 and 19:36. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.

Table C-18 - Bat survey results from dusk survey on Uppermill Viaduct (MVL3/31) Pier B East

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
27/08/2024 – Dusk	Start Time: 19:54 End Time: 21:40 Sunset: 19:57	15-16 degrees, passing clouds and light rain at the start.	First bat: Common pipistrelle at 19:57 (at sunset). Common pipistrelle activity continues until the end of the survey. Myotis activity was recorded at 21:35. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.
12/09/2024 – Dusk	Start Time: 19:15 End Time: 21:00 Sunset: 19:30	11 degrees, clear and dry.	First bat: Common pipistrelle at 19:25 (5 minutes before sunset). Common pipistrelle activity continues until the end of the survey. Myotis activity was recorded for one minute each at 20:13 and 20:58. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.

Table C-19 - Bat survey results from dusk survey on Uppermill Viaduct (MVL3/31) Pier B West

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
27/08/2024 – Dusk	Start Time: 19:54 End Time: 21:40 Sunset: 19:57	15-16 degrees, passing clouds and light rain at the start.	First bat: Common pipistrelle at 19:57 (at sunset). Common pipistrelle activity continues until the end of the survey. Myotis species was recorded at 21:35. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
16/09/2024 – Dusk	Start Time: 19:05 End Time: 20:50 Sunset: 19:20	12 degrees, dry with scattered showers.	First bat: Common pipistrelle at 19:27 (7 minutes after sunset). Common pipistrelle activity continues until the end of the survey. Myotis species was recorded 5 times between 20:00 and 20:03. Bats could be observed foraging by the surveyors but not the IR cameras.	No confirmed roost.

Table C-20 - Bat survey results from dusk survey on Uppermill Viaduct (MVL3/31) Pier D East

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
14/08/2024 – Dusk	Start Time: 20:23 End Time: 22:08 Sunset: 20:38	12-15 degrees, dry with scattered clouds.	First bat: Common pipistrelle at 20:38 (at sunset). Common pipistrelle activity was recorded continuously until the end of the survey. Myotis species was recorded three times between 21:08 and 21:34. Soprano pipistrelle activity was recorded at 20:53. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.
10/09/2024 – Dusk	Start Time: 19:20 End Time: 21:05 Sunset: 19:35	8-9 degrees, cold and dry with scattered clouds.	First bat: Common pipistrelle at 19:45 (10 minutes after sunset). Common pipistrelle activity was recorded continuously until the end of the survey. Myotis species was	No confirmed roost.

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
			recorded 5 times between 20:26 and 21:01. Bats could be observed foraging by the surveyors and the IR cameras.	
24/09/2024 – Dusk	Start Time: 18:43 End Time: 20:28 Sunset: 18:58	10-11 degrees, cold and dry with clouds.	First bat: Common pipistrelle at 19:12 (14 minutes after sunset). Common pipistrelle activity was recorded continuously until the end of the survey. Myotis species was recorded at 19:33, 19:35 19:54 and 20:06. Nathusius' pipistrelle was recorded at 19:33. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.

Table C-21 - Bat survey results from dusk survey on Uppermill Viaduct (MVL3/31) Pier D West

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
14/08/2024 – Dusk	Start Time: 20:23 End Time: 22:08 Sunset: 20:38	12-15 degrees, dry with scattered clouds.	First bat: Common pipistrelle at 20:38 (at sunset). Common pipistrelle activity was recorded continuously until the end of the survey. Myotis species was recorded between 21:08 and 21:20 and 21:34. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
10/09/2024 – Dusk	Start Time: 19:20 End Time: 21:05 Sunset: 19:35	8-9 degrees, cold and dry with scattered clouds.	First bat: Common pipistrelle at 19:57 (22 minutes after sunset). Common pipistrelle activity was recorded continuously until the end of the survey. Myotis species was recorded at 20:00, 20:34, 20:42, and 21:01. Bats could be observed foraging by the surveyors but their movements were not picked up by the IR cameras.	No confirmed roost.
24/09/2024 – Dusk	Start Time: 18:43 End Time: 20:28 Sunset: 18:58	10-11 degrees, cold and dry with clouds.	First bat: Common pipistrelle at 19:12 (14 minutes after sunset). Common pipistrelle activity was recorded continuously until the end of the survey. Myotis species was recorded at 19:33, 19:35 19:54 and 20:06. Nathusius's pipistrelle was recorded at 19:33. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.

Table C-22 - Bat survey results from dusk survey on Uppermill Viaduct (MVL3/31) Pier E East

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
14/08/2024 – Dusk	Start Time: 20:23 End Time: 22:08 Sunset: 20:38	12-15 degrees, dry with scattered clouds.	First bat: Common pipistrelle at 20:39 (1 minute after sunset). Common pipistrelle activity was recorded continuously until the end of the survey. Myotis activity was recorded regularly between 21:01 and 21:21 then twice more at 21:35 and 21:47. Noctule activity	No confirmed roost.

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
			was recorded once at 22:06. Bats could be observed foraging by the surveyors and the IR cameras.	
10/09/2024 – Dusk	Start Time: 19:20 End Time: 21:05 Sunset: 19:35	8-9 degrees, cold and dry with scattered clouds.	First bat: Common pipistrelle at 19:45 (10 minutes after sunset). Common pipistrelle activity was recorded continuously until the end of the survey. Myotis species activity was recorded 6 times between 20:20 and 21:01. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.

Table C-23 - Bat survey results from dusk survey on Uppermill Viaduct (MVL3/31) Pier E West

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
14/08/2024 – Dusk	Start Time: 20:23 End Time: 22:08 Sunset: 20:38	12-15 degrees, dry with scattered clouds.	First bat: Common pipistrelle at 21:03 (25 minutes after sunset). Common pipistrelle activity was recorded regularly until the end of the survey. Myotis species activity was recorded twice at 21:17 and 21:59. Soprano pipistrelle was recorded once at 21:33. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
10/09/2024 – Dusk	Start Time: 19:20 End Time: 21:05 Sunset: 19:35	8-9 degrees, cold and dry with scattered clouds.	First bat: Common pipistrelle at 19:53 (18 minutes after sunset) Common pipistrelle activity was recorded regularly until the end of the survey. Myotis species activity was recorded at 20:12, 20:15 and three times at 20:47. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.
24/09/2024 – Dusk	Start Time: 18:43 End Time: 20:28 Sunset: 18:58	10-11 degrees, cold and dry with clouds.	First bat: Common pipistrelle at 19:22 (24 minutes after sunset). Common pipistrelle activity was recorded continuously until the end of the survey. Myotis species activity was recorded three times between 19:53 and 19:55. Plecotus species activity was recorded twice at 19:43 and 19:58. Bats could be observed foraging by the surveyors and the IR cameras.	No confirmed roost.

Table C-24 - Bat survey results from dusk survey on Uppermill Viaduct (MVL3/31) Pier F East

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
27/08/2024 – Dusk	Start Time: 19:54 End Time: 21:40 Sunset: 19:57	15-16 degrees, passing clouds and light rain at the start.	First bat: Common pipistrelle at 19:59 (2 minutes after sunset). Common pipistrelle activity was recorded continuously until 20:13. Soprano pipistrelle activity was recorded once at 20:00.	No confirmed roost.

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
			No bat activity was seen by the surveyor or IR cameras.	
16/09/2024 – Dusk	Start Time: 19:05 End Time: 20:50 Sunset: 19:20	12 degrees, dry with scattered showers.	First bat: Common pipistrelle at 19:31 (11 minutes after sunset). Common pipistrelle activity was recorded continuously until 20:35. Soprano pipistrelle activity was recorded once at 19:34. Bats could be observed foraging by the surveyors but not the IR cameras.	No confirmed roost.

Table C-25 - Bat survey results from dusk survey on Upper Mill Viaduct (MVL3/31) Pier F West

Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
27/08/2024 – Dusk	Start Time: 19:54 End Time: 21:40 Sunset: 19:57	15-16 degrees, passing clouds and light rain at the start.	First bat: Common pipistrelle at 19:54 (3 minutes before sunset). Common pipistrelle activity was recorded continuously until 22:38. Myotis species activity was recorded regularly between 20:27 and 20:58. Soprano pipistrelle activity was recorded once at 20:03. No bat activity was seen by the surveyor or IR cameras.	No confirmed roost.

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Survey dates	Start/ end time Sunset/ sunrise	Weather conditions	Summary survey results	Confirmed roost
16/09/2024 – Dusk	Start Time: 19:05 End Time: 20:50 Sunset: 19:20	12 degrees, dry with scattered showers.	First bat: Common pipistrelle at 19:31 (11 minutes after sunset). Common pipistrelle activity was recorded continuously until 20:35. Soprano pipistrelle activity was recorded once at 19:34. Bats could be observed foraging by the surveyors but not the IR cameras.	No confirmed roost.

For each dusk survey the darkest point of the footage was recorded and summarised in Table C-26 through to Table C-48 below.

Table C-26- Darkest point from dusk surveys on Heyrod Hall (MVL3/07)

Survey	Darkest point
11/09/2024 -North	

Survey	Darkest point
11/09/2024 -South	

Table C-27 - Darkest point from dusk surveys on Spring Bank Lane (MVL3/09)

Survey	Darkest point
03/09/2024 – North	
03/09/2024 – South	

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Survey	Darkest point
17/09/2024 – South	
17/09/2024 – North	

Table C-28- Darkest point from dusk surveys on Manchester Road (MVL3/10)

Survey dates	Darkest Point
04/09/2024 – South	
04/09/2024 – North	

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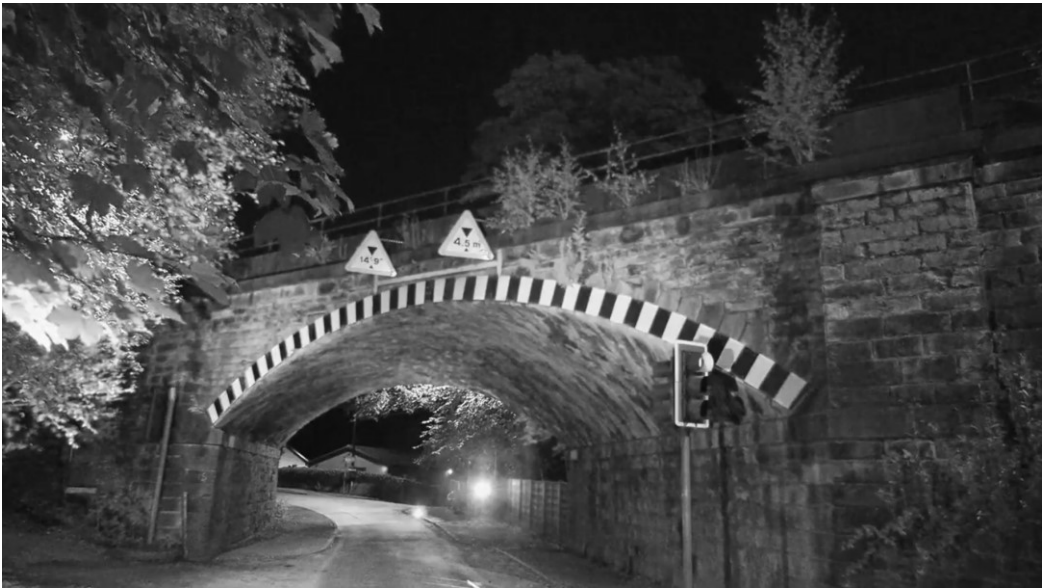
Survey dates	Darkest Point
18/09/2024 – South	
18/09/2024 – North	

Table C-29 - Darkest point from dusk surveys on Stamford Road (MVL3/13)

Survey dates	Darkest Point
10/09/2024 – North West	
10/09/2024 – North East	

Table C-30 - Darkest point from dusk surveys on Mossley Station Footbridge (MVL3/14)

Survey dates	Darkest Point
03/09/2024 – North West	 A nighttime photograph of Mossley Station Footbridge. The bridge is illuminated by several bright lights, creating a strong contrast with the dark surroundings. The bridge structure is visible, including the walkway and rail tracks. In the background, there are several buildings, including a large, multi-story building with many windows. The overall scene is dark, with the bridge lights providing the primary illumination.

Table C-31 - Darkest point from dusk surveys on New Earth Footbridge (MVL3/16)

Survey dates	Darkest Point
03/09/2024 – North	 A nighttime photograph of New Earth Footbridge. The image shows dense foliage in the foreground, with the bridge structure visible in the background. The bridge is illuminated by bright lights, creating a strong contrast with the dark surroundings. The overall scene is dark, with the bridge lights providing the primary illumination.

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Survey dates	Darkest Point
03/09/2024 South	

Table C-32- Darkest point from dusk surveys on Midge Hall (MVL3/19)

Survey dates	Darkest Point
04/09/2024 – East	
04/09/2024 – West	

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Survey dates	Darkest Point
18/09/2024 – East	
18/09/2024 – West	

Table C-33 - Darkest point from dusk surveys on Wrights Mill (MVL3/20)

Survey dates	Darkest point
09/09/2024 – North	
09/09/2024 – South	

Table C-34 - Darkest point from dusk surveys on Charlotte Street (MVL3/24)

Survey dates	Darkest Point
05/09/2024 – North	
18/09/2024 – South	

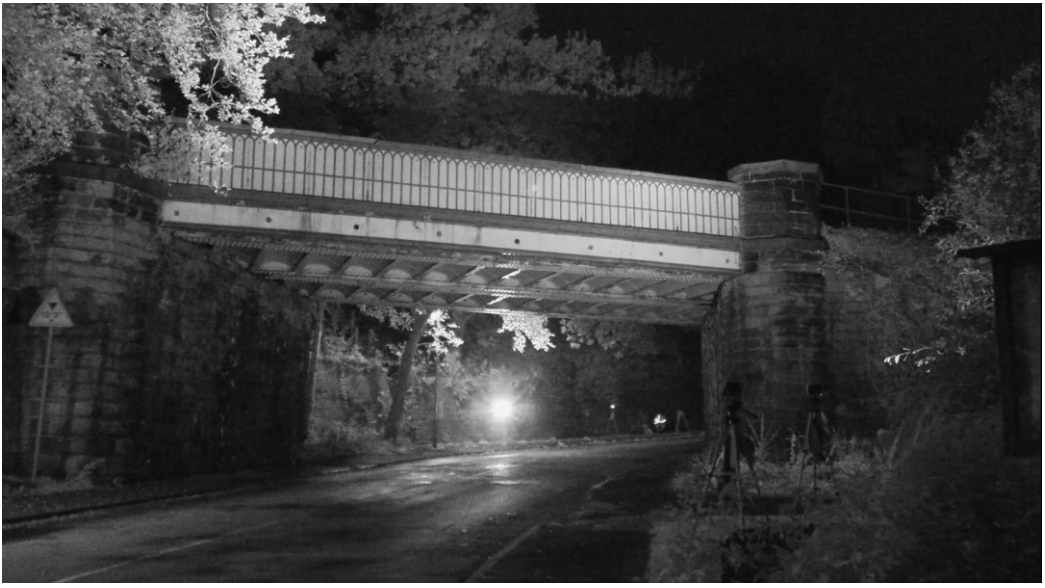
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Survey dates	Darkest Point
18/09/2024 – North	

Table C-35 - Darkest point from dusk surveys on Royal George (MVL3/25)

Survey dates	Darkest Point
05/09/2024 – North	

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Survey dates	Darkest Point
05/09/2024 – South	
19/09/2024 – North	

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Survey dates	Darkest Point
19/09/2024 – South	

Table C-36 - Darkest point from dusk surveys on Footway UB (MVL3/26)

Survey dates	Darkest point
05/09/2024 – East	

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Survey dates	Darkest point
05/09/2024 – North	 A black and white photograph showing a close-up of a stone wall. The wall is constructed from large, roughly-hewn stone blocks. It is heavily covered with ivy, with many vines hanging down from the top. The lighting is dramatic, with strong highlights on the ivy and deep shadows in the crevices of the stone.
19/09/2024 – West	 A black and white photograph of a stone tunnel entrance. The tunnel is built from large stone blocks and is covered in ivy. A person is standing in the middle of the tunnel, holding a light. The tunnel is dark, and the light from the person's flashlight illuminates the stone walls and the ivy. The entrance is framed by a wooden fence and some foliage.

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Survey dates	Darkest point
19/09/2024 – East	

Table C-37 - Darkest point from dusk surveys on Oldham Road (MVL3/28)

Survey dates	Darkest point
19/09/2024 – South	

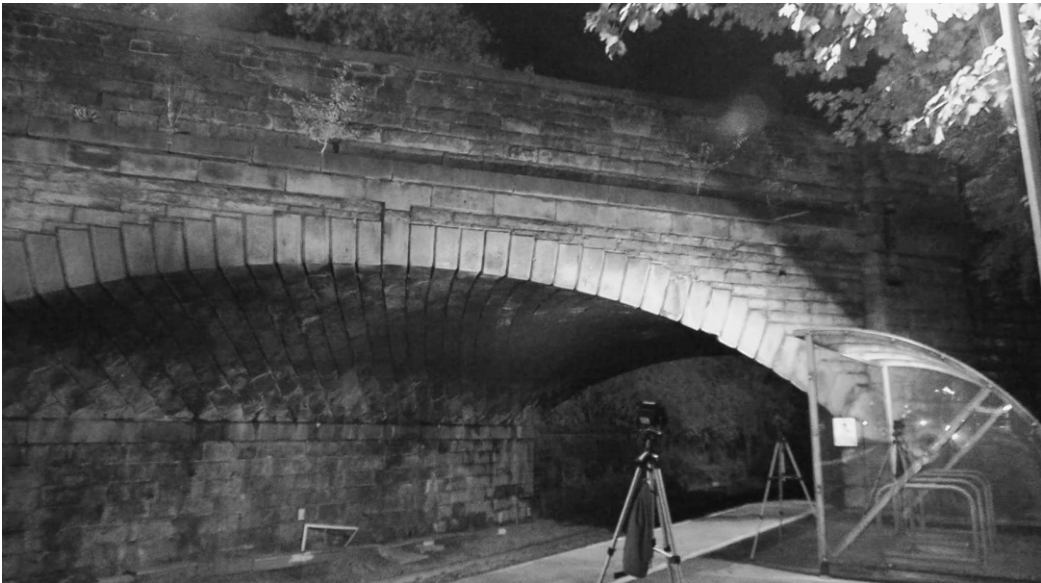
Survey dates	Darkest point
19/09/2024 – South east	

Table C-38 - Darkest point from dusk surveys on Den Quarry Underbridge (MVL3/30)

Survey dates	Darkest point
09/09/2024 – North	

Survey dates	Darkest point
09/09/2024 – South	

Table C-39 - Darkest point from dusk surveys on Uppermill Viaduct (MVL3/31) Pier A East

Survey dates	Darkest point
27/08//2024 – East	

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Survey dates	Darkest point
12/09/2024 – N/A	No Footage

Table C-40 - Darkest point from dusk surveys on Uppermill Viaduct (MVL3/31) Pier A West

Survey dates	Darkest point
27/08/2024 – West	

Survey dates	Darkest point
16/09/2024 – West	 A nighttime photograph showing a brick wall and dense vegetation. A bright light source is visible in the upper right corner, illuminating the scene.

Table C-41 - Darkest point from dusk surveys on Uppermill Viaduct (MVL3/31) Pier B East

Survey dates	Darkest point
27/08/2024 – East	 A nighttime photograph showing a brick wall and dense vegetation. A bright light source is visible in the upper right corner, illuminating the scene.

Survey dates	Darkest point
12/09/2024 – East	

Table C-42 - Darkest point from dusk surveys on Uppermill Viaduct (MVL3/31) Pier B West

Survey dates	Darkest point
27/08/2024 – West	

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Survey dates	Darkest point
16/09/2024 – West	

Table C-43 - Darkest point from dusk surveys on Uppermill Viaduct (MVL3/31) Pier D East

Survey dates	Darkest point
14/08/2024 – East	

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Survey dates	Darkest point
10/09/2024 – East	
24/09/2024 – East	

Table C-44 - Darkest point from dusk surveys on Uppermill Viaduct (MVL3/31) Pier D West

Survey dates	Darkest point
14/08/2024 – West	
10/09/2024 – West	

Survey dates	Darkest point
24/09/2024 – West	

Table C-45 - Darkest point from dusk surveys on Uppermill Viaduct (MVL3/31) Pier E East

Survey dates	Darkest point
14/08/2024 – East	

Survey dates	Darkest point
10/09/2024 – East	

Table C-46 - Darkest point from dusk surveys on MVL3/31 (Uppermill Viaduct) Pier E West

Survey dates	Darkest point
14/08/2024 – West	

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Survey dates	Darkest point
10/09/2024 – West	
24/09/2024 – West	

Table C-47- Darkest point from dusk surveys on Uppermill Viaduct (MVL3/31) Pier F East

Survey dates	Darkest point
27/08/2024 – East	
16/09/2024 – East	

Table C-48 - Darkest point from dusk surveys on Uppermill Viaduct (MVL3/31) Pier F West

Survey dates	Darkest point
27/08/2024 – West	
16/09/2024 – West	

Static survey data

Static survey data is summarised within Table C-49 to Table C-53

Table C-49 – Static detector survey locations and dates

Structure Reference	Grid Reference	Surrounding Habitat Type	Deployment Periods	Recording periods
Scout 1 (South Portal)	SD 97300 01238	Mixed scrub and bramble scrub.	August: 13/08/2024- 03/09/2024 Transitional: 03/09/2024- 29/09/2024 29/09/2024- 03/11/2024 Hibernation: 03/11/2024- 08/12/2024 08/12/2024- 12/01/2025 12/01/2025- 16/02/2025 16/02/2025- 16/03/2025	August: 13/08/24-14/08/24 Transitional: 03/09/24-08/09/24 29/09/24-28/10/24 Hibernation: 03/11/24-24/11/24 08/12/24- 26/12/24 12/01/25-01/02/25 16/02/25-06/03/25
Scout 2 (North Portal)	SD 97362 01403	Mixed scrub	August: 13/08/2024- 03/09/2024 Transitional: 03/09/2024- 29/09/2024 29/09/2024- 03/11/2024 Hibernation: 03/11/2024- 08/12/2024 08/12/2024- 12/01/2025 12/01/2025- 16/02/2025 16/02/2025- 16/03/2025	August: 12/08/24-19/08/24 Transitional: 03/09/24-20/09/24 29/09/24-31/10/24 Hibernation: 01/11/24-24/11/24 08/12/24-14/01/25

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Structure Reference	Grid Reference	Surrounding Habitat Type	Deployment Periods	Recording periods
Stalybridge 1 (South Portal)	SJ 96230 98739	Mixed scrub, bramble scrub, other woodland – broadleaved.	August: 13/08/2024-03/09/2024 Transitional: 03/09/2024-29/09/2024 29/09/2024-03/11/2024 Hibernation: 03/11/2024-08/12/2024 08/12/2024-12/01/2025 12/01/2025-16/02/2025 16/02/2025-16/03/2025	August: 13/08/25-31/08/25 Transitional: 03/09/24-27/10/24 Hibernation: 03/11/24-24/11/24 08/12/24-21/12/24 12/01/25-01/02/25 16/02/25-07/03/25
Stalybridge 2 (North Portal)	SJ 96758 98982	Mixed scrub, urban developed land, other woodland – broadleaved.	August: 13/08/2024-03/09/2024 Transitional: 03/09/2024-29/09/2024 29/09/2024-03/11/2024 Hibernation: 03/11/2024-08/12/2024 08/12/2024-12/01/2025 12/01/2025-16/02/2025 16/02/2025-16/03/2025	August: 12/08/25-31/08/25 Transitional: 01/09/24-31/10/24 Hibernation: 01/11/24-24/11/24 08/12/24-01/01/25 12/01/25-13/01/25 16/02/25-05/03/25
Stalybridge 3 (Air Shaft)	SJ 96484 98823	Mixed scrub parkland	August: N/A Transitional: N/A Hibernation: 03/11/2024-08/12/2024 08/12/2024-12/01/2025 12/01/2025-16/02/2025	August: N/A Transitional: N/A Hibernation: 03/11/24-17/11/24 08/12/24-12/12/24 12/01/25-21/01/25 16/02/25-02/03/25

Structure Reference	Grid Reference	Surrounding Habitat Type	Deployment Periods	Recording periods
			16/02/2025- 16/03/2025	

Table C-50 - Data collected by the static detectors in August

Detector	Species	Number of passes within emergence window
Scout 1	Myotis	1
	Common Pipistrelle	99
	Soprano Pipistrelle	4
Scout 2	Myotis	4
	Brown Long Eared	1
	Common Pipistrelle	616
	Soprano Pipistrelle	87
Stalybridge 1	Common Pipistrelle	1,542
	Soprano Pipistrelle	31
Stalybridge 2	Common Pipistrelle	1,332
	Soprano Pipistrelle	179

Table C-51 - Data collected by the static detectors during the transitional period September-October.

Detector	Species	Total
Scout 1	Myotis	2
	Brown Long-eared	5
	Common Pipistrelle	1,067
	Soprano Pipistrelle	85

Detector	Species	Total
Scout 2	Myotis	20
	Brown Long-eared	7
	Common Pipistrelle	2,106
	Soprano Pipistrelle	83
Stalybridge 1	Brown Long-eared	1
	Common Pipistrelle	930
	Soprano Pipistrelle	16
Stalybridge 2	Brown Long-eared	1
	Common Pipistrelle	1,142
	Soprano Pipistrelle	76

Table C-52 - Data collected by the static detectors during the hibernation period October-March.

Detector	Species	Number of passes
Scout 1	Common Pipistrelle	228
	Soprano Pipistrelle	4
Scout 2	Common Pipistrelle	136
Stalybridge 1	Common Pipistrelle	115
Stalybridge 2	Common Pipistrelle	38
	Soprano Pipistrelle	1
Stalybridge 3	Common Pipistrelle	4

Table C-53 - Temperature and humidity readings at the time of each deployment

Detector	Location	Temperature (°C)	Humidity (%)
November 2024			
Scout	North Portal (Scout 2 static location)	12	66
	Internal 1	12	67
	Internal 2	12	67
	South Portal (Scout 1 static location)	12	69
Stalybridge	South West Portal (Staly 1 static location)	12	71
	Internal 1	12	70

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Detector	Location	Temperature (°C)	Humidity (%)
	Air Vent	12	72
	Internal 2	12	72
	North East Portal (Staly 2 static location)	12	73
December 2024			
Scout	North Portal (Scout 2 static location)	6	67
	Internal 1	5	68
	Internal 2	5	69
	South Portal (Scout 1 static location)	5	70
Stalybridge	South West Portal (Staly 1 static location)	5	70
	Internal 1	5	70
	Air Vent	5	70
	Internal 2	5	70
	North East Portal (Staly 2 static location)	5	70
January 2025			
Scout	North Portal (Scout 2 static location)	3	61
	Internal 1	2	64
	Internal 2	2	64
	South Portal (Scout 1 static location)	2	65
Stalybridge	South West Portal (Staly 1 static location)	3	67
	Internal 1	4	68
	Air Vent	3	68
	Internal 2	4	69
	North East Portal (Staly 2 static location)	3	68
February 2025			
Scout	North Portal (Scout 2 static location)	6	55
	Internal 1	5	55
	Internal 2	5	55
	South Portal (Scout 1 static location)	5	58
Stalybridge	South West Portal (Staly 1 static location)	4	62

Detector	Location	Temperature (°C)	Humidity (%)
	Internal 1	4	64
	Air Vent	5	65
	Internal 2	4	65
	North East Portal (Staly 2 static location)	4	66
March 2025			
Scout	North Portal (Scout 2 static location)	5	53
	Internal 1	5	54
	Internal 2	5	54
	South Portal (Scout 1 static location)	4	55
Stalybridge	South West Portal (Staly 1 static location)	3	61
	Internal 1	3	63
	Air Vent	3	65
	Internal 2	3	64
	North East Portal (Staly 2 static location)	2	63

Background

The rationale behind the methodology due to access limitations and associated interpretation of results are described within Volume 3, Appendix 6C of this Report [NR14]. This approach has been formulated because traditional dusk emergence surveys were not possible due to access constraints. Therefore, an alternative roost likely presence/ likely absence survey methodology was formulated in conjunction with Natural England.

Discussion

Automated/ static detectors were deployed in order to identify likely roosting in Stalybridge and Scout Tunnels. Staly 1, Staly 2, Scout 1 and Scout 2 automated/ static detectors were deployed at each tunnel portal entrance from August 2024 – March 2025 to identify evidence of swarming, day/ transitional and hibernation roosting. Staly 3 was deployment was delayed until November 2024 – March 2025 due to initial access issues and was located in the middle of Stalybridge Tunnel adjacent to an air shaft.

Staly 1, Staly 2, Scout 1 and Scout 2 automated/ static detector deployment was constrained to vegetated verges outside of the tunnel portals to retain the clearance from the track due to the ongoing operating train service. Microphones were directed towards the portals as far as feasible, however, it is not possible to definitively state that any of the calls recorded at these portals were from bats using the tunnels rather

than foraging/ commuting within the rail verge at either end of the tunnels. There were instances where bat calls were recorded at either portal in quick succession which could suggest a bat commuting/ foraging through the tunnel. For example, on 11 October 2024, a single *Myotis* was recorded at 18:54 at Scout 1 and then a single *Myotis* was recorded at 18:57 at Scout 2. However, calls that might indicate instances of possible foraging/ commuting through the tunnel were infrequently captured and it cannot be conclusively determined if the same bat was recorded on separate automated/ static detectors and, if the tunnel was used by the bat for foraging/ commuting.

Staly 3 was located underneath an air shaft approximately 50 m in height at 20 m above ground level and is surrounded by scrub and trees on the exterior. A total of four bat calls were recorded during its deployment; all identified as common pipistrelle and within the hibernation period. It is considered highly unlikely that these calls were recorded from bats flying over the vent as more suitable commuting/ foraging habitat is located outside the tunnel at a lower level surrounding the air vent. It is assumed that the calls were therefore recorded within the tunnel. Furthermore, an automated/ static detector is unlikely to pick up conclusive pipistrelle calls over 50 m away due the echolocation dissipation. A precautionary approach has been taken, and small numbers of common pipistrelle are assumed to be hibernating within Stalybridge tunnel.

No internal static data is available for Scout Tunnel, therefore the interpretation of results are reliant on data gathered at portal entrances. Small numbers of common pipistrelle were recorded within the main hibernation period. It is therefore assumed that individual/ a small number of common pipistrelle are using Scout Tunnel as a hibernation roost.

Four soprano pipistrelle calls were recorded during the hibernation period. Of the four soprano calls recorded at Scout 1, three were recorded in March and one at the end of February and no calls were recorded at Scout 2. Due to the seasonality of these calls i.e. at the end of the main hibernation period/ start of transitional period, the detector is likely to have recorded soprano pipistrelle that are flying more frequently due to the raised temperatures. Furthermore, the low number of calls are within the parameters that soprano pipistrelle are expected to change roost features throughout this timeframe. It is therefore assumed that these calls recorded soprano pipistrelle commuting/ foraging outside of the tunnel, rather than being indicative of roosting within the tunnel.

Brown long-eared bats have very quiet echolocation calls and must be within 5 m to be detected⁴⁰. One particular brown long-eared call recorded at Staly 1 on 14 October 2024 was very distorted. Given minimal distance these calls can be detected by the automated/ static detector, it is likely the distortion was due to the bat echolocating within the tunnel. It is therefore assumed that the brown long-eared was roosting within Stalybridge tunnel.

⁴⁰ Russ J. (2012) *British Bat Calls A Guide to Species Identification*. Pelagic Publishing, Exeter.

Common pipistrelle, soprano pipistrelle and brown long-eared bats were recorded at both tunnels throughout the transitional period within the expected emergence times for each species. A portion of the calls recorded could be attributed to commuting/foraging behaviour due to echolocating representative of the bats moving at higher speed in a less cluttered environment (in comparison to the tunnel). However, multiple calls for common pipistrelle and brown long-eared were recorded with calls akin to flight in clutter, or, where conclusions could not be drawn about flight behaviour. A precautionary approach has therefore been taken and small numbers of common and widespread crevice-dwelling species, specifically common and soprano pipistrelle and brown long-eared bats have been assumed to be likely roosting in both Scout and Stalybridge Tunnels during the core bat activity period (May to August) and the transitional period (April and October).

Small numbers of Myotis and brown long-eared bats were recorded during the transitional period across both tunnels. These calls were spread throughout the deployment and it is not considered to be indicative of swarming where it would be expected that a large volume of calls would coincide with relative high temperatures. Pipistrelle species are not known to perform regular swarming behaviour.

Summary

The Proposed Tunnel Bat Survey Methodology in conjunction with sound analysis recorded and Ecologist best practise judgement concluded that the following bat roosts are likely present at both Stalybridge and Scout Tunnels:

- Common pipistrelle hibernation roost;
- Common pipistrelle day/transitional roost; and
- Brown long-eared day/transitional roost.