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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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LIST OF ABBREVIATIONS

Abbreviation	Full terminology
BNG	Biodiversity Net Gain
CoCP	Code of Construction Practice
CTMP	Construction Traffic Management Plan
DfT	Department for Transport
ER	Environment Report
EPSL	European Protected Species Licence
FRA	Flood Risk Assessment
GPDO	The Town and Country Planning (General Permitted Development) England Order 2015, as amended
INNPS	Invasive Non-Native Plant Species
LEMP	Landscape and Ecological Management Plan
MVL	Manchester Victoria and Huddersfield Line (structure location reference)
NMP	Nuisance management plan
NPPF	National Planning Policy Framework
NVMP	Noise and Vibration Management Plan
OLE	Overhead Line Equipment (for electrification of railway)
OMBC	Oldham Metropolitan Borough Council
PPICP	Pollution Prevention and Incident Control Plan
PRoW	Public Right of Way
RPA	Root Protection Area
RRAP	Road-rail Access Point

Abbreviation	Full terminology
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TMBC	Tameside Metropolitan Borough Council
TPO	Tree Preservation Order
TRU	Trans-Pennine Route Upgrade
TWAO	Transport and Works Act Order

TABLE OF DEFINITIONS

Term	Definition
Network Rail's operational land	The land within Network Rail's current ownership used for the purposes of operating and maintaining the railway.
The Deemed Planning Permission	The request to the Secretary of State for Transport under section 90(2A) of the Town and Country Planning Act 1990 that planning permission is deemed to be granted for the development sought to be authorised by the Order.
The Deemed Planning Permission boundary	The boundary of the Deemed Planning Permission (as shown on the Order planning drawings)
The Scheme	All of the works which form part of the Stalybridge to Diggle (Saddleworth) Enhancements Scheme, including all the works to be authorised by the Order and all works being undertaken under the GDPO.
The Scheme boundary	The red line boundary for all the works that comprise the Scheme, including all the works to be authorised by the Order and all works being undertaken under the GDPO.

Term	Definition
The Order Scheme	The elements of the Scheme which are authorised by the Order and, where required, the Deemed Planning Permission.
Order Scheme Area	The footprint of areas within the Order Scheme.
The Order Scheme boundary	The boundary for all the works that comprise the Order Scheme.
Order Scheme elements	The individual, specific components or elements of Order Scheme.
The Order	The Network Rail (Stalybridge to Diggle (Saddleworth) Enhancements) Order.

1. INTRODUCTION

1.1 Transpennine Route Upgrade

1.1.1 The Transpennine Route Upgrade (TRU) is a major, multi-billion pound programme of improvements to bring more frequent, faster, and greener trains across the Pennines between Manchester, Huddersfield, Leeds and York on a better, cleaner, more reliable railway. The Scheme will enable the existing line speed of up to 50-65 mph to increase up to 80 mph throughout, improving journey times for both passenger and freight journeys along the Transpennine Route.

1.1.2 TRU is a phased programme of works to address the existing overcrowding and congestion on the route attributable to the existing limited capacity and dated infrastructure. The project supports economic growth and "levelling up" opportunities across the north of England. The existing route carries a mix of fast express trains, local stopping services, and freight trains but has not seen significant investment for many years.

1.1.3 The TRU programme involves a variety of works including the electrification of the railway (installation of overhead line equipment (OLE) and associated infrastructure), removal, remodelling, and replacement of bridges and structures to accommodate OLE, track and signalling upgrades, and structural strengthening works. Where level crossings are affected by the improved services proposed, TRU also involves level crossing closures and, where necessary, their replacement by safer alternatives.

1.2 The proposed Network Rail (Stalybridge to Diggle (Saddleworth) Enhancements) Transport and Works Act Order

1.2.1 This Transport and Works Act Order (TWAO) application is relevant to the TRU programme for the works required between Stalybridge and the western portal of Standedge Tunnel in Diggle (Saddleworth).

1.2.2 The works elements proposed for the Scheme are summarised below:

- Installation of OLE, including portals and gantries as well as overhead cables to enable the electrification of the railway line.
- Track renewal.
- Vertical track alignment alterations to enable line speed improvements, along with minor track slews at certain locations including near Mossley Cottages.
- Construction of a new relocated station at Mossley and upgrades to Greenfield Station.
- Upgrades to the existing Stalybridge and Scout tunnels.

- Closure of the Moorgate Halt Level Crossing, with the provision of enhancement works to the existing footpath network.
- Closure of Stockport Road Level Crossing and the diversion of the existing PRow over that crossing.
- Reconstruction and modification of existing bridges to facilitate the electrification of the railway and the ability to operate larger freight containerisation on the railway.
- Provision of safety measures to enable the safe installation and operation of OLE on bridges, buildings and other structures at the required clearances. This includes the provision of railway protection works at Mossley Cottages.
- Temporary works for construction, including site compounds and access upgrades.
- Associated work including temporary and permanent utilities diversions, and drainage infrastructure.

1.2.3 Collectively the works summarised above form part of the TRU scheme known as the Stalybridge to Diggle (Saddleworth) Enhancements Order Scheme ('the Scheme'). Those elements of the Scheme that are the subject of the request for a Deemed Planning Permission direction are the focus of this Environmental Report. Not all of the works that comprise the Scheme as summarised above are to be authorised by the Order and the Deemed Planning Permission. Planning consent for some works that comprise the Scheme is already granted by virtue of the Permitted Development Rights which are conferred on Network Rail by the Town and Country Planning (General Permitted Development) (England) Order 2015 (as amended) ("GPDO") and/or other required consents such as listed building consent. Works that are subject of the request for a Deemed Planning Permission direction are known as the "the Order Scheme" collectively.

1.2.4 The Order Scheme boundary includes the individual element works boundaries of both the element areas subject to Deemed Planning Permission and all those associated temporary works (such as compounds, work sites, storage areas) where Permitted Development Rights do not apply and are therefore included in the Order.

1.2.5 The area of land required solely for the element areas of the Order Scheme will be referred to as 'the Order Scheme boundary'.

1.2.6 The Order will include a range of powers including:

- Acquisition of land (including the subsoil and airspace of land) and rights in land and the imposition of restrictive covenants;
- Temporary use of land;

- Authorisation of works;
- Deemed Planning Permission;
- Diversion or stopping up of public rights of way (PRoW) and highways;
- Environmental consents;
- Diversion of utilities;
- Closure of the level crossings; and
- Powers to alter public highways and to undertake street works.

1.3 Scope of Environmental Report

- 1.3.1 The Order Scheme consists of multiple work elements as defined within Table 1 of the Planning Statement **[NR15]**. This Environmental Report focuses only on the Order Scheme elements summarised in Table 1-1 below. As explained further in section 1.2.2, other elements of the Scheme either involve no development or are Permitted Development under the GPDO.
- 1.3.2 Mitigation and enhancement measures are proposed that aim to reduce impacts and adverse environmental effects.
- 1.3.3 This Report does not consider in detail the effects of elements which are either being carried out as Permitted Development or through planning permission obtained separately from the relevant local planning authority. However, consideration will be given to the cumulative effects of these additional elements with the Order Scheme. These elements, which are not included within the scope of this Report, are described in Table 1-2.
- 1.3.4 Volume 1 of this Report provides the summary chapters of each relevant environmental disciplines assessment of the Order Scheme and details the mitigation identified as required.
- 1.3.5 Figures 1.1.1 to 1.1.6 in Volume 2 – Figures of the Environmental Report **[NR14]** show the extent of the Order Scheme.
- 1.3.6 Volume 3 - Technical Appendices of the Environment Report **[NR14]** includes the wider technical assessments that been conducted to inform the mitigation included within this Volume.
- 1.3.7 Volume 4 – Additional Ecological Survey Data Addendum of the Environmental Report **[NR14]** includes additional Ecology survey data and recommendations related to Oaklands Road and Blackrock Sidings sites.
- 1.3.8 Further information regarding the purpose and content of the Report is provided in sections 1.5 and 1.7 below.

- 1.3.9 Table 1-1 below presents a summary of the Order Scheme considered in this Environment Report including works within both the Tameside and Oldham Metropolitan Borough Council Local Planning Authority areas.
- 1.3.10 Additionally, some interventions proposed as part of the Order Scheme will require listed building consent as they involve alterations to listed structures, which will be included in the Order Scheme. Interventions where this is the case are indicated in Table 1-1.

Table 1-1: Summary of Scheme Development Elements Included in the Environmental Report

Relevant Works Element	Description of Works authorised by the Order
Stalybridge Tunnel Temporary Ground Stabilisation Works	The provision of temporary ground stabilisation works within the existing Stalybridge Tunnel (MVL3/3), which will project beyond the tunnel walls, protective works (where required) to properties above the tunnel within the parameters provided by the Order, and diversion of a sewer which is partly on third party land adjacent to the tunnel.
Printworks Road Site Compounds, Access and Drainage Works	Construction of two temporary site compounds with associated earthworks at Printworks Road, north of Stalybridge Tunnel, with upgrades to the existing road access and upgraded drainage infrastructure.
Lineside Fencing Access from Wakefield Road Works	The creation of a new access point from Wakefield Road between Printworks Road and MVL3/6 Heyrod Road Footbridge to enable the installation of lineside fencing
Heyrod Hall Overbridge, Site Compound and Access Works	The reconstruction of the Grade II Listed Heyrod Hall overbridge (MVL3/7) and earthworks to create a suitable surface for an associated temporary storage site compound, as well as an upgraded access route from Printworks Road to serve the site compound.
Works to Footbridge off Springbank Lane	Minor refurbishment and parapet extensions in the form of replacement copers at the Grade II Listed footbridge off Springbank Lane (MVL3/8).
Wakefield Road Plant Access and Compound	Upgrade works to the existing vehicular access at Wakefield Road, and the creation of a compound area north of the Springbank Lane Overbridge (MVL3/9) and west of Mossley Wastewater

Relevant Works Element	Description of Works authorised by the Order
	Treatment Works.
Lower Beestow Drainage Works	Installation of drainage to the north on Lower Beestow, including localised resurfacing of PROW ref. MOS/117/710
Manchester Road Footbridge Reconstruction	The reconstruction of the Manchester Road Footbridge (MVL3/10A) is required to facilitate OLE installations underneath the bridge.
Scout Tunnel Temporary Ground Stabilisation Works	Works to Scout Tunnel, located south of Mossley Station, consisting of temporary ground stabilisation works which will extend into third party land, and protective works to properties above the tunnel within the parameters provided by the Order.
Scout Tunnel Site Compounds Works	Establishment of site compounds on third party land on either side of Scout Tunnel to support construction in the vicinity.
Scout East Ramp Works	Construction of a Road Rail Access Point with associated ramp and earthworks, including new access point onto Manchester Road in Mossley to the north of the Scout Tunnel Site Compounds Works.
Egmont Street Site Compound Works	Establishment of a site compound in an area of previously developed land to the north east of the Scout East Ramp Works.
Plevins Site Compound Works	Construction of a site compound, involving the substantial demolition of existing commercial buildings, at Plevins Mossley Depot, east of the Huddersfield Narrow Canal.
Mossley Cottages Works	Minor track slew and installation of a retaining wall opposite Mossley Cottages south of the existing Mossley Station. The installation of railway protection works (including anti trespass measures) at Mossley Cottages will also be installed.
Stamford Road Pipebridge Diversion Works	Works to divert the MVL3/12a utilities pipebridge into MVL3/13 Stamford Road Bridge, including highways excavation
Mossley Station Relocation - Construction of New Station Works and Site Compounds	Mossley Station is to be relocated approximately 300 metres north of the existing Mossley Station, on land which is currently vacant west of Manchester Road. The works will include station

Relevant Works Element	Description of Works authorised by the Order
	platforms, a new station building, footbridge and lift shafts, as well as temporary site compounds on either side of the relocated station site to serve construction. The works will also include a new road access layout, parking areas, new bus stops on Manchester Road and a new pedestrian and vehicular access route between the car park of the existing Mossley Station and the relocated station, as well as associated utilities works. A new pedestrian crossing will be constructed on Manchester Road, near the station entrance
New Earth Street Site Compound works	Establishment of a site compound on the western side of MVL3/16 New Earth Street Footbridge to support construction in the area
Roughtown Road Overbridge Works	Works to raise the parapets to 1.5 metres at the Grade II Listed Roughtown Road overbridge (MVL3/17)
Roughtown Road Footbridge Works	Reconstruction of the footbridge off Roughtown Road (MVL3/18), located 70 metres to the north of Roughtown Road overbridge (MVL3/17)
Heron Lane Site Compound Works and Stockport Road Level Crossing Diversion	Establishment of a site compound east of Heron Lane Underbridge to support the works in this area, including the closure of Stockport Road Level Crossing. The Stockport Road Level crossing located to the west of Heron Lane is to be closed, with the existing footpath and PRow to be diverted to the north via the Heron Lane underbridge MVL3/19.
Wright's Mill Overbridge Reconstruction	The reconstruction of the Grade II Listed Wright Mill overbridge (MVL3/20) to the east of the Midge Hill farm buildings. The Wright Mill Overbridge Reconstruction requires a satellite site compound adjacent to the structure.
Armit Road Site Compound	Construction of a site compound located away from NR land at Armit Road, and associated earthworks.
Wrights Overbridge Works	Demolition of the Grade II Listed Wrights overbridge (MVL3/23) which carries a Public Right of Way between Low Grove Lane and Mossley Road, including the diversion of the PRow

Relevant Works Element	Description of Works authorised by the Order
Royal George Underbridge and Site Compound Works	Reconstruction of the Grade II Listed Royal George Underbridge (MVL3/25) at Oaklands Road and establishment of a temporary site compound utilising the existing parking area for the Friezland Church Hall
Oaklands Road Site Compound Works	Earthworks, devegetation and resurfacing to establish a larger permanent maintenance facility compound area at Oaklands Road, including the widening of an existing vehicular access as well as the creation of a new second vehicular access from Oaklands Road. This permanent maintenance facility compound will be located to the north of the George Street Underbridge and south of the Shaw Hall Bank Road Footway (the 'Oaklands Road Permanent Maintenance Facility Works').
Shaw Hall Bank Road Footway Works	Bridge strengthening, as well as upgrades to handrails and ballast retention works on the approach to the Grade II Listed Bridge (MVL3/26)
Oldham Road Overbridge Reconstruction	Reconstruction of the Grade II Listed Oldham Road Overbridge (MVL3/28) adjacent to Greenfield Station with a reinforced concrete portal structure and approach containment, and widening to the low mileage side to improve the highways alignment and provide additional footway width.
Greenfield Site Compound Works	The establishment of site compounds on third party land between Oldham Road and Chapel Road to the north east of Oldham Road Bridge, and utilising the existing parking area at Saddleworth Rangers Rugby Club to the south of Greenfield Station.
Oldham Road Access and Drainage Works	Establishment of a construction access route utilising an existing ramp to the railway line at the junction between Oldham Road and Chapel Road. Creation of a construction access route and installation of drainage on third party land on the eastern side of Wade Lock off Oldham Road/High Street.
New Oldham Road Footbridge and Greenfield station Platform 2 Secondary Means of Escape Works	Construction of a new Oldham Road footbridge (MVL3/28A) adjacent to the existing Oldham Road overbridge

Relevant Works Element	Description of Works authorised by the Order
	(MVL3/28) and Greenfield Station, and a new secondary means of escape staircase from Greenfield Station Platform 2 to the proposed new footbridge.
Moorgate Halt Alternative Footpath and Site Compound Works	Works to upgrade the footpath between Oldham Road and Ladcastle Road, passing under MVL3/29 Wickens Underbridge, to provide an alternative footpath route following the closure of Moorgate Halt Level Crossing under the Order powers, as well as a site compound to the north west of Wickens Underbridge to support the works in the area
Den Lane Parking Area Works	Establishment of a permanent parking area to serve construction and railway operations to the south of Den Quarry Underbridge
Uppermill Viaduct Works	Works to the Grade II Listed Uppermill Viaduct (MVL3/31) including spandrel strengthening, installation of GRP handrails, and OLE portal attachments on the piers, as well as the establishment of temporary site compounds and access routes at the base of the viaduct.
Former Saddleworth Station Site Compound	Creation of a temporary site compound with access works at the former Saddleworth Station.
Former Butterhouse Tunnel Site Compound Works	Creation of a temporary site compound area at the former Butterhouse Tunnel to the south of Diggle.
Ravenstone Drive Footbridge Works	The raising of parapets to 1.5-1.7 metres and installation of infill panels with solid GRP screens at Ravenstone Drive Footbridge (MVL3/35).
Ward Lane Overbridge Reconstruction and Utilities Bridge Works	<p>The reconstruction of Ward Lane overbridge (MVL3/36) located north of the Ravenstone Drive footbridge (MVL3/35).</p> <p>A temporary utilities bridge is required during the reconstruction of Ward Lane Overbridge (MVL3/36), adjacent to the bridge alongside an associated site compound.</p>
Ward Lane Site Compound Works	Creation of temporary site compounds to the south-west, west, north-west and north-east of Ward Lane Overbridge to support construction in the area.

Relevant Works Element	Description of Works authorised by the Order
Diggle Road Overbridge and Utilities Bridge Works	Reconstruction of span 1 on the Diggle Road overbridge (MVL3/39) on Station Road in Diggle, approximately 90 metres south of Standedge Tunnel.
Standedge Canal Tunnel	Concrete saddling to the masonry arch to strengthen the canal tunnel structure (MVL3/39A) for construction traffic.
Standedge Tunnel Bywash Underbridge Replacement	Replacement of the existing Bywash underbridge (MVL3/39B) located adjacent to the Standedge Tunnel western portal, with a box culvert system.
Diggle Access and Diversion Works	Construction of a new access road and associated earthworks to provide a temporary diversion to the north east of Standedge Tunnel's western portal.
Diggle Site Compound Works	The establishment of temporary site compounds in Diggle to serve construction. This includes an existing parking area at Sam Road, with earthworks to provide an access to the railway line, and the expansion of an existing site compound area on the opposite side of the railway from the parking area.

1.3.11 Table 1-2 presents specific elements of the Scheme not directly assessed in the Environment Report as they benefit from Permitted Development Rights. However, these elements have been considered as part of the cumulative assessment as detailed in section 4.1.8.

Table 1-2: Elements of the Scheme that are not directly assessed in the Environmental Report

Scheme Element	Description
Springbank Lane Overbridge Works ¹	Works at the Grade II Listed Springbank Lane Overbridge (MVL3/9) to undertake the bridge strengthening, parapet raising and approach wall strengthening. This work will be subject to a separate listed building consent outside of the Order Scheme.
Manchester Road Underbridge and Drainage Works ¹	Installation of bridge strengthening, replacement handrails, minor repair works and fencing at the Grade II Listed Manchester Road Underbridge (MVL3/10), and installation of drainage to the north on Lower Beestow, including localised resurfacing of PRoW ref. MOS/117/710. This work will be subject to a

Scheme Element	Description
	separate listed building consent outside of the Order Scheme.
Abney Road Footbridge Works ¹	Installation of Chevaux de Frise and replacement handrails to staircase of Abney Road Footbridge (MVL3/12).
Existing Mossley Station Works ¹	Decommissioning of former station involving partial demolition of the station platforms and associated works.
Mossley Station Footbridge Works ¹	Mossley Station Footbridge (MVL3/14) to be demolished as part of the Station decommissioning works.
Mill Lane Underbridge Works ¹	Installation replacement handrails and ballast retention under Mill Lane Underbridge (MVL3/15).
New Earth Street Footbridge Works ¹	Raising of parapets to allow OLE to be installed under New Earth Street Footbridge (MVL3/16)
Midge Hall Underbridge Works ¹	Replacement handrails, spandrel strengthening and ballast retention works to Midge Hall Underbridge (MVL3/19)
Charlotte Street Bridge Works ¹	Existing handrails to be replaced on Charlotte Street Bridge (MVL3/24) Ballast retention and security fence to be upgraded.
Greenfield Station Works ¹	Demolition of station footbridge. New footbridge with lift shafts, platform extensions, alterations to station furniture and structures. Associated utilities, track and OLE works.

1.3.12 Other works to be undertaken, in reliance upon Permitted Development Rights pursuant to the GPDO, to electrify a railway include:

- Track upgrade works within Network Rail operational land, including track alignment alteration works and track lowering works.
- Physical works to decommission the Moorgate Halt and Stockport Road Level crossings.
- Minor works and boundary treatment to form PROW diversion routes associated with the closure of the Stockport Road Level Crossing and the demolition of MVL3/23 Wright's Overbridge.
- Installation of OLE structures and wiring, signalling equipment and other railway plant and equipment on Network Rail operational railway land.
- Installation of new GSMR Mast and substation adjacent to the Relocated Mossley Station, on Network Rail operational land.

¹ Works to be undertaken using Permitted Development Rights

- Upgrades to non-listed structures on Network Rail operational land, where the external appearance of the structure would not be materially altered. Likewise for structures which are located on third party land but within the Limits of Deviation of the relevant Railway Act.
- Decommissioning of Mossley Station (Existing) including demolition of platforms.
- Demolition of existing footbridges at the existing Mossley and Greenfield Stations.
- Improvement works to Greenfield Station including platform extensions, a new footbridge with lift shafts and alterations to station furniture and shelters.
- Temporary construction compounds on Network Rail operational railway land, or adjoining Network Rail operational land subject to certain exclusions including earthworks and access works.
- New and upgraded lineside fencing and walls on Network Rail operational land.

1.4 Environmental Impact Assessment Screening

- 1.4.1 Subject to certain exceptions, the Transport and Works (Applications and Objections Procedure) (England and Wales) Rules 2006 (the Application Rules) require the applicant for an Order to submit an Environmental Statement (ES) in relation to any proposed works that constitute a project of the type outlined in Annex I or Annex II of the Environmental Impact Assessment (EIA) Directive 2011/92/EU, as amended by Directive 2014/52/EU (the EIA Directive). An ES is not required for projects listed in Annex II if the Secretary of State notifies the applicant that an ES is not required because the project is unlikely to have a significant effect on the environment (i.e. a negative EIA screening decision is provided).
- 1.4.2 Under Rules 7(4) and 7(13) of the Application Rules, an EIA screening decision was sought from the Secretary of State in December 2023. The screening decision letter received from the Secretary of State dated 22nd March 2024 ("Screening Decision") confirmed that an EIA is not required for the Scheme. The Screening Decision letter makes reference to consultation responses received from Natural England, the Environment Agency, Historic England and Tameside Metropolitan Borough Council (TMBC) and Oldham Metropolitan Borough Council (OMBC).
- 1.4.3 Specifically, paragraph 6 of the Screening Decision letter [NR13] included a requirement to conduct a cumulative and combined effects assessment of the Order Scheme in relation to the works that do not require Deemed Planning Permission and other external projects. This assessment has been provided in section 4.1 of this Report.

1.5 Purpose of this Environmental Report

1.5.1 This Report includes the findings of an environmental appraisal as required following the Screening Decision letter [NR13], with technical note appendices provided in Volume 3 and additional information provided in Volume 4 that serve to address feedback from statutory bodies, in addition to other requirements regarding the environment. This Report presents consideration of the following 9 topics, with each topic being addressed for each relevant works element of the Order Scheme as applicable:

- Chapter 5 - Cultural Heritage and Archaeology;
- Chapter 6 - Ecology;
- Chapter 7 - Landscape and Visual;
- Chapter 8 - Arboriculture;
- Chapter 9 - Noise and Vibration;
- Chapter 10 - Traffic and Transport;
- Chapter 11 – Geoenvironment;
- Chapter 12 - Water environment; and
- Chapter 13 - Air Quality.

1.5.2 The following topics were considered as part of this appraisal; ecology; water environment; traffic and transport; landscape and visual; cultural heritage; geoenvironment; noise and vibration; and air quality. No technical studies have been undertaken for materials and waste, population and human health and climate change as no significant impacts were anticipated, and any impacts that were to arise in relation to these topics would be managed through Network Rail's Environment and Social Minimum Requirements for Projects – Design and Construction (NR/L2/ENV/015), which is included as Volume 3, Appendix 1A of this Report [NR14]. The rationale for the descoping of these topics is further detailed in the Screening Decision letter document [NR13].

1.5.3 For each environmental topic, consideration has been given to applicable legislation, policy and guidance, and an appraisal of impacts and effects undertaken for each relevant works element. Consideration of environmental topics in this way has helped to enable impact avoidance and mitigation measures to be incorporated into the Order Scheme design to minimise associated effects.

1.5.4 With respect to construction-related impacts and effects on the environment, a Code of Construction Practice (CoCP) will be prepared and the measures set out within this will be implemented to address relevant Order Scheme impacts, ensuring that works are appropriately managed and impacts and effects reduced where feasible.

1.5.5 The CoCP will be divided into two parts. Part A of the CoCP has already been prepared and is submitted with the Order [NR17] to establish general construction practice and principles and the general environmental management system for the Order Scheme. Part A of the CoCP will subsequently be supplemented by a suite of specialist plans, including any such documents that are required through the implementation of planning conditions as included in the Order application document 'Request for Deemed Planning Permission and Statement of Proposed Conditions' [NR11] that will form Part B of the CoCP. Part B of the CoCP will be subject to the approval of each local authority for the elements of the Order Scheme that require planning permission (refer to Table 1-1). The suite of plans (as described in section 3.2.58) forming Part B of the CoCP, such as the Noise and Vibration Management Plan, will include mitigation measures outlined in chapters of this Report, and where appropriate, have been cross-referenced to the Report itself. Further information regarding the CoCP is provided in section 3.2 below. Mitigation measures set out within the Report and CoCP also jointly addresses feedback from engagement with the statutory bodies (as summarised in section 4.2).

1.5.6 For the elements of the Scheme for which planning permission is not sought (refer to Table 1-2), environmental effects and mitigation are addressed through both the CoCP Part A [NR17] and Network Rail's Environment and Social Minimum Requirements for Projects – Design and Construction (NR/L2/ENV/015), which comprise a rigorous, effective and well established set of environmental standards and procedures that are required for and routinely implemented by Network Rail on its projects nationwide. This is included as Volume 3, Appendix 1A of this Report [NR14].

1.6 Legislation, Planning Policy, and Guidance

1.6.1 Network Rail has considered legislation, planning policy and guidance (such as technical assessment specifications as issued by the relevant professional body) to the extent they are relevant to the Order Scheme. These are summarised within each technical note appendix in Volume 3 of the Environmental Report as relevant to that topic.

1.6.2 Legislation and the planning process relevant to the Order is summarised in section 6 of the Planning Statement [NR12].

1.7 Structure and Content of the Report

1.7.1 The Report is presented in four volumes as follows:

- Volume 1: Environmental Report – Main Text
- Volume 2: Environmental Report – Figures
 - This volume is split into two documents. One contains the majority of figures relevant to the Order Scheme, and the

other contains figures relevant to the Landscape Chapter only.

- Volume 3: Environmental Report – Appendices
- Volume 4: Environmental Report – Additional Ecological Survey Data Addendum

1.7.2 Volume 1 is structured as follows:

- Chapter 1 – Introduction
- Chapter 2 – Description of the existing environment
- Chapter 3 – The Order Scheme
- Chapter 4 – The approach to the environmental report
- Chapters 5 – 14 – Summary of the content of the technical note appendices and mitigation, including;
 - Chapter 5 - Cultural Heritage and Archaeology;
 - Chapter 6 - Ecology;
 - Chapter 7 - Landscape and Visual;
 - Chapter 8 - Arboriculture;
 - Chapter 9 - Noise and Vibration;
 - Chapter 10 - Traffic and Transport;
 - Chapter 11 – Geoenvironment;
 - Chapter 12 - Water environment;
 - Chapter 13 - Air Quality;
 - Chapter 14 – Summary of Mitigation.

1.7.3 Volumes 2, 3, and 4, present plans, drawings, technical material and other supporting information referenced within Volume 1 - Main Text.

2. DESCRIPTION OF THE EXISTING ENVIRONMENT

2.1 Location of the Order Scheme

2.1.1 As shown on Figures 1.1.1 to 1.1.6 in Volume 2, the Order Scheme comprises discrete elements between Stalybridge and Diggle across the 11 km section of the Transpennine Route. Only the Order Scheme, as described in Table 1-1 are directly assessed in Chapters 5 to 13 of this Report. The footprint of the Order Scheme, comprising approximately 77 ha, is referred to as the 'Total Scheme Area'. The perimeter of each of the Order Scheme elements are bounded by a 'Order Scheme boundary'. Those works not subject to the Order as detailed in Table 1-2 and paragraph 1.3.10 are referenced or considered where required based on professional judgement, but generally remain unassessed for the purpose of this Report, given that they are PD pursuant to the GDPO. However, these PD elements have been considered as part of the cumulative assessment as detailed in section 4.1.8.

2.1.2 A high-level summary, for each environmental topic, of the existing baseline conditions within and near to the Order Scheme is provided in the following paragraphs.

Location and Land Use

2.1.3 Upon exiting Stalybridge Tunnel eastern portal the route of the Order Scheme follows the western bank of the River Tame passing through wooded countryside, the town of Mossley and the villages of Greenfield and Uppermill.

2.1.4 The topography of the area is characterised by a steep sided River Tame valley which the existing railway line follows. The villages in this area comprise predominantly residential areas with some light industrial use. Scattered, isolated industrial uses are also present across the area, with Huddersfield Narrow Canal and Dark Peak Site of Special Scientific Interest (SSSI) located between Stalybridge and Tollemache Arms lock (1.5km north of Mossley) running to the east of the existing railway line. The Canal crosses under the existing railway line in the north of the Order Scheme boundary at the Uppermill Viaduct.

2.1.5 Approximately 2 km north of Uppermill Viaduct is the village of Diggle on the urban-rural fringe. The Peak District Moors Special Protection Area (SPA) and South Pennine Moors Special Area of Conservation (SAC) (which include the Dark Peak SSSI sites) are located to the northeast of the existing railway line. To the north of the village of Diggle, the route of the Order Scheme enters Standedge Tunnel which is situated within the South Pennine Moors SAC, the Peak District Moors (South Pennine Moors Phase 1) SPA and the South Pennine Moors Phase 2 SPA.

Cultural Heritage

- 2.1.6 There are no UNESCO World Heritage Sites or National Trust properties affected by the Order Scheme works. There are also no Scheduled Monuments or Historic Battlefields in close proximity to the route of the Order Scheme.
- 2.1.7 Within the Order Scheme boundary there are:
- 11No. designated bridges, comprising overbridges (including road and footbridges) and under bridges, all of which are Grade II Listed.
 - 1No. designated viaduct, Uppermill Viaduct which is Grade II Listed.
 - 7No. designated tunnel portals, all of which are Grade II Listed. The extent of the Listing for each tunnel is confined to the tunnel portals only; the interior of the tunnels are not subject to designation.
- 2.1.8 There is a total of 3No. Conservation Areas across the route of the Order Scheme:
- Stalybridge Town Centre Conservation Area
 - Uppermill (Near Greenfield), Oldham Conservation Area
 - Marsden Tunnel End Conservation Area
- 2.1.9 Listed Buildings in closest proximity to the boundary of the Order Scheme include:
- 32 and 24 Green Hill Cottages (Grade II Listed) – approx. 20 m west of the Order Scheme boundary
 - Christchurch Vicarage (Grade II Listed) – circa 44 m due south of the Order Scheme boundary
 - Christchurch Friezland (Grade II Listed) – circa 36 m due south of the Order Scheme boundary
 - Wharf Cottage (Grade II Listed) – circa 65 m southeast of the Order Scheme boundary
 - Huddersfield Narrow Canal Halls Bridge and lock 20W (Grade II Listed) – approx. 75 m east of the Order Scheme boundary
 - Huddersfield Narrow Canal Moorgate Bridge (Grade II Listed) – approx. 85 m east of the Order Scheme boundary
 - Huddersfield Narrow Canal lock 22W, Dunge Booth Lock (Grade II Listed) – approx. 50 m due east of the Order Scheme boundary

- Huddersfield Narrow Canal lock 23, Lime Kiln Lock, Tailbridge and Aqueduct (Grade II Listed) – approx. 20 m due west of the Order Scheme boundary
- Huddersfield Narrow Canal milestone at SD 9990 0677 (Grade II Listed) – approx. 25 m northwest of the TRU programme of works boundary
- Huddersfield Narrow Canal bridge 69 (Grade II Listed) – circa 25 m northwest of the Order Scheme boundary
- Huddersfield Narrow Canal subway under canal after lock 30W (Grade II Listed) – circa 30 m northwest of the Order Scheme boundary
- Huddersfield Narrow Canal No. 66 bridge (Grade II Listed) – circa 60 m northwest of the Order Scheme boundary
- Huddersfield Narrow Canal lock adjacent to Ward Road bridge (Grade II Listed) – circa 60 m northwest of the Order Scheme boundary
- Toll Bar Cottage (Grade II Listed) – circa 57 m west of the Order Scheme boundary on Wakefield Road
- Holly Cottage (Grade II Listed) – approximately 35 m west of the Order Scheme boundary on Wakefield Road
- 14, 16 and 18 John Street (Grade II Listed) – approximately 75 m west of the Order Scheme boundary on John Street.

Ecology

- 2.1.10 There are 3No. international statutory nature conservation designations within the boundary of the Order Scheme:
- Peak District Moors (South Pennine Moors Phase 1) SPA;
 - South Pennine Moors Phase 2 SPA; and
 - South Pennine Moors SAC.
- 2.1.11 There are no other international statutory nature conservation designations within 2 km of the Order Scheme.
- 2.1.12 There are 8No. national statutory nature conservation designations within 2 km of the boundary of the Order Scheme:
- Dark Peak SSSI – Located approximately 1.2 km north east of the Scheme Boundary. The railway line passes under the SSSI via Standedge Tunnel;
 - South Pennine Moors SSSI – Located approximately 1.2 km north east of the Order Scheme boundary. The railway line passes under the SSSI via Standedge Tunnel;

- Ladcastle and Den Quarries SSSI (geological designation) – adjacent to the west of the Order Scheme boundary;
- Huddersfield Narrow Canal SSSI – 80 m to the east of the Order Scheme boundary;
- Brushes Valley Local Nature Reserve (LNR) – 765 m to the southeast of the TRU Scheme boundary;
- Castle Clough and Cowbury Dale LNR – 1147 m to the east of the Order Scheme boundary;
- Cowbury Dale LNR – 1160 m to the east of the Order Scheme boundary Knot Hill LNR – 1300m to the west of the Order Scheme boundary.

- 2.1.13 The primary reasons for these international and national ecological designations are: breeding birds, European dry heaths, blanket bogs, and old sessile oak woods with Ilex and Blechnum. Other qualifying features include Northern Atlantic wet heaths with Erica tetralix and transition mires and quaking bogs.
- 2.1.14 There are no areas of ancient woodland within 500 m of the Order Scheme boundary.
- 2.1.15 Adjacent to the west of the existing railway line for approximately 500 m prior to reaching the Scout Tunnel western portal is the Cliffs at Mossley, Greater Manchester Site of Biological Importance (SBI) (Grade B classification due to its woodland and grassland features). No direct impacts on the SBI are anticipated as the Order Scheme works will be carried out within the existing railway boundary at this location. Potential indirect impacts are not expected to be significant with the implementation of standard environmental control measures.
- 2.1.16 The relocated Mossley Station site is adjacent to a National Forestry Inventory area (deciduous woodland).
- 2.1.17 On the southern periphery of Greenfield, adjacent to the east of the existing railway line is Armit Road Lodge, Greater Manchester SBI (Grade C classification due to its ponds and small lodges). No direct impacts on the SBI are anticipated as the proposed works will be carried out within the existing railway boundary at this location. Potential indirect impacts are not expected to be significant with the implementation of standard environmental control measures.
- 2.1.18 The area immediately to the north and south of Greenfield Station and platforms is designated as part of the Green Corridor by Manchester City Council. The Green Corridor is a walking circuit made of 14 routes which goes around the City of Manchester and connects many of the City's parks, woodlands and open spaces.

Landscape and Arboriculture

- 2.1.19 The Order Scheme passes close to residential and commercial properties at several locations which would be potentially sensitive to proposed works. In accordance with best practice and current guidance (Landscape Institute and Institute of Environmental Management and Assessment, 2013) it is considered that it is highly unlikely that significant effects will be possible from further than 1 km from the edge of the TRU programme of works.
- 2.1.20 Outside of built-up areas, the existing railway line is located within the Green Belt. The Dark Peak Nature Improvement Area overlaps the boundary of the Order Scheme in the vicinity of Standedge Tunnel.
- 2.1.21 A 190 m stretch of woodland, on the east side of the existing railway line, adjacent to the track between Mill Lane underbridge and New Earth footbridge in Mossley is the subject of a Tree Preservation Order (TPO).

Noise and vibration

- 2.1.22 The Order Scheme passes within 50 m of residential and commercial properties at several locations and there are a number of properties located directly above Stalybridge and Scout Tunnels.
- 2.1.23 The Order Scheme does not pass through any Noise Important Areas (NIAs); however, a number of sensitive residential areas and NIAs are located within 500 m of the boundary of the Order Scheme. NIAs are identified as the 1% of the population that is affected by the highest noise levels from major roads or railways and are located according to the results of the strategic noise mapping. These areas are likely to be at the greatest risk of experiencing significant adverse impacts on health and quality of life.

Traffic and Transport

- 2.1.24 The Order Scheme is located in close proximity to the A635, B6175 and A670 roads that run approximately parallel to the railway line from Stalybridge Tunnel through to Standedge Tunnel. These roads benefit from excellent connectivity to the local bus network, including at Mossley station with multiple bus stops within a short distance along both Manchester Road and Stamford Road serving a variety of local bus services including 343 (Hyde to Oldham), 350 (Oldham to Ashton) and 356 (Ashton to Oldham) which have frequency of approximately 60-75 minutes. Additionally, in the Greenfield Station area, there are a number of bus stops located in the surrounding vicinity, including close to Shaw Bank Rd / A670 Road junction. The bus stops have full bus shelter. There is also a bus stop located on the Shaw Bank Road adjacent to Greenfield Station. These bus stops are served by the following buses; 84 – Uppermill – Every 30 minutes, 350 /356 – Oldham - every 30 minutes,

184 – Huddersfield Town Centre – Hourly, 356 – Ashton-under-Lyne – Hourly, 828 – Diggle – once a day.

- 2.1.25 Along the main roads mentioned above, there are no dedicated cycle routes.

Geoenvironment

- 2.1.26 There are the following historic landfills within 200 metres of the Order Scheme boundary:

- Glent Quarry, SK15 1BP, adjacent to the north of the Order Scheme boundary
- Egmont St / Bury Street, OL5 9NB, 45 m to the east of the Order Scheme boundary.
- Land off Egmont Street, 40m to the east of the Order Scheme boundary.
- Milton and Border Mills, Mossley, OL5 9GE, 75 m to the east of the Order Scheme boundary
- Woodend Mills, OL5 9BA, 95 m to the east of the Order Scheme boundary
- Midge Hill, OL5 0RB, 25m to the west of the Order Scheme boundary
- Mossley Holder Station, OL5 9GG, 180 m to the east of the Order Scheme boundary
- Land off Mossley Road, OL4 4HA, 100 m to the northwest of the Order Scheme boundary.
- Land at Shaw Hall Bank, OL3 7LE, 45 m to the south of the Order Scheme boundary
- Land at Frenches Dye Works, OL3 7AE, 70m to the southeast of the Order Scheme boundary
- School Street Reservoir, OL3 6HB, 160 m to the east of the Order Scheme boundary
- Stone Bottom Mills, OL3 5NN, 120 m to the north of the Order Scheme boundary
- Land off Huddersfield Road, OL3 5WG, 160 m to the west of the Order Scheme boundary.
- Land at Ward Lane, OL3 5LD, 95m to the west of the Order Scheme boundary
- Land at Warth Mills, Diggle, OL3 5PZ, 210 m southwest of the Standedge Tunnel western portal
- Tunnel End (Standedge), HD7 6NF (located adjacent to the south of the existing railway line)

- 2.1.27 The Ladcastle and Den Quarries Geological SSSI is situated between the existing railway line, located to the east, and Ladcastle Road, to the west. These quarries provide exposures of a sequence of cross-bedded thick sandstones formed in an ancient river delta during the Carboniferous Period.
- 2.1.28 Standedge Road Cutting is a geological SSSI that provides important exposures of one of the most complete sections through the Namurian Kinderscout Grit and intervening Butterly Marine Band. The sequence is comprised of thick sandstone beds separated by shale, clay and thin coal seams formed in a deltaic environment around 320 million years ago in the Carboniferous Period. The SSSI is located approximately 1.7 km to the northeast of the route and is not expected to be impacted by the works.
- 2.1.29 Standedge Road Cutting Geological SSSI, above the tunnel, is not expected to be impacted during the works.
- 2.1.30 Park Clough Geological SSSI is approximately 400 m north west of the Standedge Tunnel eastern portal. It comprises rock outcrops within a stream valley, which expose sandstone and shales of the Namurian series formed during the Carboniferous Period, about 320 million years ago.

Water Environment and Flood Risk

- 2.1.31 The River Tame (Main River) and Huddersfield Narrow Canal flow through the local area, located largely to the east of the route of the Order Scheme. They both pass beneath the existing railway line at Uppermill Viaduct, MVL3/31.
- 2.1.32 There are sections of the Order Scheme that are at risk from fluvial flooding and surface water flooding. There are areas of high and medium flood risk from rivers and tributaries in Mossley associated with the River Tame and Huddersfield Narrow Canal. There is a high to medium risk of surface water flooding on the approach to Scout Tunnel. There is also a risk of flooding from reservoirs within the northern most section of the Order Scheme near Standedge Tunnel. Brun Clough Reservoir is located above Standedge Tunnel; however, the tunnel itself is not at risk from fluvial flooding. Towards the western entrance of the tunnel, the existing railway line runs above Diggle Brook.
- 2.1.33 The route of the Order Scheme is not located within a groundwater Source Protection Zone (SPZ).

Air Quality

- 2.1.34 The Order Scheme does not lie within any AQMAs. The nearest AQMA to the Order Scheme is the Tameside AQMA, located at a distance of approximately 360m west of the Order Scheme boundary. Two major

approach roads (A106 and A635), which may carry construction or operational traffic for the Order Scheme, do extend into the Tameside AQMA.

3. THE ORDER SCHEME

3.1 Overview

- 3.1.1 As summarised in section 1.3 the Order Scheme consists of a number of discrete elements. This Report covers only the relevant works elements for which planning permission is sought and the associated temporary construction compounds and accesses required to deliver those elements that require planning permission (the Order Scheme) as detailed in Table 1-1.
- 3.1.2 The following sections provide a summary of each relevant works element of the Order Scheme.

3.2 The Relevant Works Elements of the Order Scheme

Stalybridge Tunnel temporary ground stabilisation works (MVL3/3)

- 3.2.1 The Stalybridge Tunnel (MVL3/3), approximately 600 m long, requires essential works including the provision of temporary ground stabilisation works to support the construction of the track lowering works; acquiring land rights for protective measures on properties above the tunnel; and rerouting a sewer located partially on adjacent third-party land. These works will extend beyond Network Rail's operational boundaries. The project is focused within the existing tunnel structure, with its western entrance situated roughly 350 m east of Stalybridge Station.

Wakefield Road Construction Access Works

- 3.2.2 A new access point is to be created from Wakefield Road to enable the installation of lineside fencing, at land between the Printworks Road Temporary Site Compounds and Heyrod Road Footbridge (MVL3/6). The new access will be on the south side of Wakefield Road, in proximity to a building to its north-east which is separated from the Site by trees, with another residential property located approximately 30 metres to the north.

Heyrod Hall Overbridge, Site Compound and Access Works (MVL3/7)

- 3.2.3 The Grade II listed Heyrod Hall overbridge (MVL3/7) is located between the A635 Wakefield Road and Printworks Road, on the southern side of the village of Heyrod. Access to the footbridge from Printworks Road is just north of the Stalybridge Power Station site. The pedestrian access to both sides of the bridge are under tree cover.
- 3.2.4 Electrical bonding lugs will also be installed on the bridge to maintain the electrical utilities that use the bridge, utilising an aluminium access tower. The parapet of the bridge will be raised to 1.5 m provide suitable OLE clearance. Access to the bridge will be via the Printworks Road Main Compound and a minor compound adjacent to the bridge itself at Heyrod Hall.

Works to Footbridge off Springbank Lane (MVL3/8)

- 3.2.5 The Grade II Listed Footbridge off Springbank Lane (MVL3/8) crosses between Wakefield Road on the western side and Springbank Lane on the eastern side, in the northern section of Heyrod. The land between the railway and the roads on either side is covered in trees and vegetation.
- 3.2.6 The existing flat-top copers are to be replaced by steeple copers to prevent sitting on the parapets. Refurbishment works to the bridge are also required, including the repointing of parapets and arches. In addition, the existing tie bars are to be replaced, and the cast iron girders are to be grit-blasted and repainted. Fencing is also to be installed to the west of the line to prevent unauthorised access to the embankment. Additionally, access to the structure shall primarily be taken from the rail utilising an access point at the Printworks Road Compound.

Manchester Road Footbridge and Lower Beestow Drainage Works

- 3.2.7 Manchester Road Footbridge (MVL3/10A) is located approximately 200 metres north of the Manchester Road Underbridge (MVL3/10). It provides a PROW (MOS/116/10) for pedestrian access from Manchester Road on its eastern side to Lower Beestow and several houses on the west. The footbridge currently includes a staircase to Manchester Road on its eastern side, adjacent to a stone wall which borders Manchester Road, and connects to the top of the railway embankment on the western side. The bridge is to be reconstructed to facilitate OLE installation.
- 3.2.8 The 'Lower Beestow Drainage Works' will be undertaken to the north of the private road Lower Beestow, including at PROW ref. MOS/117/710

Scout Tunnel Ground Stabilisation Works

- 3.2.9 The western portal of Scout Tunnel is a Grade II Listed structure, located approximately 520 metres north of Manchester Road Footbridge and about 35 metres north of the New Scout Mill industrial units. The tunnel itself extends for 180 metres, passing beneath a tennis court and the grounds of a residential property. The tunnel requires essential works which includes the provision of temporary ground stabilisation in the tunnel to support the construction of the track lowering works.
- 3.2.10 The Tunnel would require several compound areas at either side of the portals and on Manchester Road to include welfare facilities and to temporarily store spoil arising from the ground stabilisation works, prior to removal off site.

Mossley Cottages Works

- 3.2.11 Mossley Cottages are located on the southern side of the existing Mossley Station, from the southern end of Stamford Road Bridge (MVL3/13). The rear of the cottages lies directly adjacent to the railway

boundary along the eastern side for approximately 150 metres. There are gardens and a walkway serving the cottages which abut onto the railway line.

- 3.2.12 On the opposite side of the railway line at this location is an embankment which features some tree cover, with Old Brow Court and residential properties beyond.
- 3.2.13 Works in this area include moving the track to the west, away from, and adding railway protection measures at Mossley Cottages, which are to the south of the existing Mossley Station, including a new retaining wall on the western side of the railway.

Stamford Road Pipebridge Diversion Works (MVL3/12a and MVL3/13)

- 3.2.14 Stamford Road Pipe Bridge (MVL3/12a) is located on the south side of Mossley station and consists of a 380mm cast iron pipe parallel to a 250mm polyethylene clean water pipe. The superstructure is required to be removed due to its limited track clearance. The water service is proposed to be diverted through the western footpath of Stamford Road Bridge (MVL3/13) by splitting it into two mains. Following this, the pipe structure over the railway will be removed, with the pipe being cut and capped to prevent disruption to the wing walls during demolition.

Mossley Station Relocation Works

- 3.2.15 The existing Mossley Station is situated approximately 3.65 kilometres north-east of Stalybridge Station and will be decommissioned. These decommissioning works will involve the demolition of the station footbridge, partial demolition of the platforms, and realignment of the utilities infrastructure.
- 3.2.16 Mossley Station is to be relocated approximately 300 metres north of the existing station at Manchester Road. The relocated station will occupy space on both sides of the railway which is currently grassland with some vegetation.
- 3.2.17 The relocated Mossley station will include an accessible footbridge connecting platforms 1 and 2, providing step-free access to both. The design features 150 m platforms with secondary escape routes, a new station building, car parks, and a road-rail access point (RRAP) to support ongoing operations and maintenance of the railway.
- 3.2.18 The existing access onto Manchester Road will be widened to facilitate the access and egress of site vehicles during construction and to facilitate new bus stops and station entrance. This will require the demolition of a section of the existing retaining wall on Manchester Road. It is proposed to widen the access, primarily to the south of the existing gate, as there is a level difference between Manchester Road and the site compound.

- 3.2.19 The land required on the east will occupy an existing gap between the railway and Manchester Road, which is currently obscured from the view of the railway by a 3 to 6 metre high stone wall which borders Manchester Road. The relocated station will be accessed from Manchester Road and will lie opposite a row of residential properties which front onto Manchester Road. The land to the west slopes steeply upwards, limiting the site area available on the western side of the railway at this location which is potentially suitable for station development.

Roughtown Road Overbridge Works (MVL3/17)

- 3.2.20 The Grade II Listed Roughtown Road Overbridge (MVL3/17) carries the single lane Roughtown Road across the railway. It is one-way carrying traffic from Roughtown Road towards Manchester Road. The western bank is steep and covered in vegetation, with a property approximately 20 metres from the bridge. The east bank slopes downhill, with several properties taking access from Roughtown Road.
- 3.2.21 The existing flat-top copers are to be replaced by triangular steeple copers to reach a minimum height of 1.5m above the carriageway, preventing contact with the OLE and sitting on the parapets. Fencing shall also be stalled on the west side of the structure to prevent trespassing.
- 3.2.22 The bridge will be closed during the works. The pedestrian diversion route for those able to use stairs will be via Roughtown Footbridge (MVL3/18). The vehicular diversion, and for those unable to use stairs, will be via Mill Lane Underbridge (MVL3/15).

Roughtown Road Footbridge Works (MVL3/18)

- 3.2.23 The Footbridge off Roughtown Road (MVL3/18) is approximately 70 metres north-east of Roughtown Road Overbridge, carrying pedestrians over the railway from Roughtown Road to a private/unnamed road which joins with Foxwood Drive. The bridge is accessed from both sides by stairs due to the slope on both sides of the railway. There are two Grade II Listed cottages on the western side of the footbridge. The existing footbridge superstructure is to be reconstructed as it does not have sufficient headroom to accommodate installation of OLE.

Heron Lane Site Compound Works and Stockport Road Level Crossing Diversion

- 3.2.24 Stockport Road Level crossing is located approximately 1.5 kilometres north of the existing Mossley Station, with a PRoW passing over. It is surrounded to the east by vegetation with Heron Lane approximately 40 metres east. To the west is vegetation and an agricultural field on top of the railway embankment.
- 3.2.25 Stockport Road Level crossing and the length of footpath leading up to it is to be extinguished due to the increase in risk to members of the public

using the level crossing after the line speed alterations and installation of OLE. A new diversion route is to be created via the adjacent field, below Midge Hall Underbridge (MVL3/19) and along Heron Lane bridleway.

3.2.26 The proposed permanent works are therefore:

- Installation of 1.8m security fencing along NR land boundary, including to close off access points to existing level crossing.
- Installation of kissing gates at both ends of new section of PRow, installed along the line of the existing livestock fencing.
- Installation of footpath waymarking and suitable signage.

3.2.27 A site compound will be set up east of Midge Hall underbridge (MVL3/19) to facilitate the works in this location.

Wrights Mill Overbridge Reconstruction (MVL3/20)

3.2.28 The existing Grade II listed overbridge superstructure is to be reconstructed as it does not have sufficient headroom to accommodate installation of OLE. The parapets of the bridge will be clad with reconstituted stone masonry. Construction access will be taken primarily from rail, with equipment utilising the road-rail access point at Oaklands Road approximately 1.2km north of the structure. Site compound and welfare shall be situated in the nearby field to the east side of the rail corridor, accessed via Heron Lane. A section of Heron Lane is directly next to the River Tame, prior to works access, the retaining wall supporting the road is to be assessed and strengthened if required.

Wrights Overbridge Works (MVL3/23)

3.2.29 The Grade II Listed Wrights Overbridge carries a footpath over the railway, north of the properties on Low Grove Lane. On the north side of the railway, a PRow through a field provides access to Mossley Road.

3.2.30 The existing overbridge superstructure is to be removed as it does not have sufficient headroom to accommodate installation of OLE. The stone masonry arch bridge deck and abutments of Wrights Overbridge (MVL3/23) are to be broken out to 500mm below ground level. Embankment works are proposed on both sides of the railway including rock anchors, with the gradient and levels to tie in with the existing embankments either side of the existing structure as to avoid a local dip and potential drainage issue. Fencing works are proposed to tie in with lineside security along the route parallel to the tracks. The new PRow route is to be improved, including devegetation, removing existing obstacles such as broken fencing and discarded waste materials.

3.2.31 Construction access will be taken primarily from rail, with equipment utilising the road-rail access point at Oaklands Road approximately 600m

north of the structure. Site compound and welfare shall be situated in the nearby field to the east side of the rail corridor, accessed via Armit Road.

Royal George Underbridge Works (MVL3/25)

- 3.2.32 Due to the poor condition of the main girders, the bridge deck is to be reconstructed to achieve the required rating for the TRU proposals. It is proposed to replace the structure on the same alignment with two painted steel U-type decks in line with the Network Rail Standard Detail. The current structure has limited clearance; the width of the superstructure shall therefore be increased to accommodate compliant walkways. Concrete edge beams shall support a combined walkway/trough route based on the Network Rail Standard Walkway Detail. The south edge beam is to be deeper with a lower soffit to provide the same measured headroom as the north edge beam to prevent vehicles getting wedged below the bridge as the road falls.

The Shaw Hall Bank Road Footway Works

- 3.2.33 The grade II listed Shaw Hall Bank Road Footway (MVL3/26) provides access between Shaw Hall Bank Road on the south of the railway with Oaklands Road on the north, approximately 370 metres north-east of the Royal George Underbridge (MVL3/25). The footpath traverses up the hill from the south to the north. The bridge will be strengthened, as well as upgrades to handrails installed alongside ballast retention works on the approach to the bridge.

Oldham Road Overbridge Reconstruction (MVL3/28)

- 3.2.34 The Oldham Road Overbridge (MVL3/28) which passes over the railway is currently relatively narrow with inadequate footpaths on either side for pedestrians. The bridge also sits on a turn in the road, with poor highway sight lines across the bridge. Shaw Hall Bank Road joins with Oldham Road Overbridge on the south eastern side, at a tight junction with poor sight lines. Ladcastle Road is also at a junction with the bridge on its west side, whilst Shaw Hall Bank Road joins a junction with Oldham Road on the eastern side of the bridge. There is potential that these junctions will undergo works to change the highways alignment to provide safety improvements.
- 3.2.35 The existing overbridge superstructure is to be reconstructed as it does not have sufficient headroom to accommodate the required vertical clearance for electrification. There are works proposed at Greenfield Station (outside the scope of this element), which include removal of the existing station footbridge and construction of a new station footbridge at the western end of the station as detailed in Volume 1, Table 1-2 of this Report [NR14].
- 3.2.36 The car park of Saddleworth Rangers Rugby Club has been identified as a car parking area for these works and the proposed works to Greenfield

Station. This area is included as temporary land take for this order. During the main overbridge reconstruction works detailed in this section, and the main closure of Oldham Road, the road length between Shaw Hall Bank Road and the junction of Chapel Road has been identified as an additional compound in closer proximity to the works.

New Oldham Road Footbridge and Greenfield station Platform 2 Secondary Means of Escape Works

- 3.2.37 Construction of a new footbridge for Oldham Road (to be known as MVL3/28A) is proposed approximately 10 metres from Oldham Road overbridge (MVL3/28) on the south western side and would cross over the redeveloped station. Construction of this new bridge would take place in parallel with the Oldham Road Overbridge Reconstruction and installation of secondary means of escape for Platform of the Greenfield Station Upgrade.

Oldham Road Access and Drainage Works

- 3.2.38 As part of the Order Scheme, a new construction access route will be formalised utilising an existing ramp to the railway line at the junction between Oldham Road and Chapel Road to facilitate the creation of a construction access route and installation of drainage on third party land on the eastern side of Wade Lock off Oldham Road/High Street.

Moorgate Halt Alternative Footpath and Site Compound Works

- 3.2.39 As part of the Order Scheme, works are required to upgrade the footpath between Oldham Road and Ladcastle Road, passing under Wickens Underbridge (MVL3/29), to provide an alternative footpath route following the closure of Moorgate Halt Level Crossing under the Order, as well as a site compound to the north west of Wickens Underbridge to support the works in the area.

Den Lane Parking Area Works

- 3.2.40 A permanent parking area is to be developed off Den Lane, approximately halfway between the Den Quarry Underbridge (MVL3/30) to the north and the properties on Den Lane to the south. This area of land is between Den Lane on the east and the railway line on the west.

Uppermill Viaduct Works (MVL3/31)

- 3.2.41 The Grade II Listed Uppermill Viaduct (MVL3/31) carries the railway line over a valley, stretching for approximately 360 metres in length, and is approximately 1.55 kilometres north of Greenfield Station. It passes over several roads, including the A670 High Street. It is surrounded by trees and vegetation, with many trees reaching the height of the viaduct and the railway. The viaduct ends just south of the former Saddleworth railway station.

- 3.2.42 To enable the electrification of the up and down lines, OLE portals are required to be installed to the top of the viaduct. Due to the listed status and local significance of the viaduct, the additional OLE portal locations and details have been developed to reduce the visual impact where feasible. The brackets are to be installed one location at a time. A temporary working platform is to be set up at each location. A site compound shall be established at the existing RRAP on Oaklands Road, approximately 2km from MVL3/31.

Ravenstone Drive Footbridge Works (MVL3/35)

- 3.2.43 The existing mesh of the parapets on Ravenstone Drive Footbridge (MVL3/35) are to be removed and replaced with solid panels and affixed to the bridge. A mesh GRP extension will be installed to reach 1.7m height total in order to protect the public from electrification. This is continued down the stairs on the track side only.

Ward Lane Overbridge Reconstruction and Utilities Bridge Works (MVL3/36)

- 3.2.44 The existing overbridge superstructure is to be reconstructed as it does not have sufficient headroom to accommodate installation of OLE and is in poor condition. As a result of the bridge reconstruction to achieve minimum vertical clearance for OLE, the highway is to be lifted by 0.8m at its maximum point. The highway will tie in before the adjacent residential property on the west approach (access to the garden will still be required) but will require alignment modifications to the Grandpa Green's car park entrance. The highway alignment will also tie in before the footpath access steps on the east approach to avoid the need to reconstruct the steps.

Diggle Road Overbridge and Utilities Bridge Works (MVL3/39)

- 3.2.45 The Diggle Road Overbridge (MVL3/39), which carries Station Road over the railway, will undergo partial reconstruction. Located approximately 90 metres south of the Standedge Tunnel western portal, the bridge spans about 70 metres in length and comes within 1 metre of a residential property at its southeast corner. To the east, the road diverges into three routes: one leading south down Lee Side, another north along Boat Lane, and a third continuing east on an unnamed road. To the west, the bridge connects with Station Road heading south away from the site and Harrop Court Road heading north.
- 3.2.46 The superstructure of one span (over the railway) of the three-span overbridge is to be reconstructed as it does not have sufficient headroom to accommodate installation of OLE. The substructure will be retained as well as the entirety of superstructure of the other two spans. To facilitate construction a crane mat will potentially be installed either adjacent to Harrop Court Road or on the southern embankment.

Standedge Tunnel Bywash Underbridge Replacement (MVL3/39B).

- 3.2.47 The Standedge Tunnel Bywash Underbridge (MVL3/39B), located just south of the Standedge Tunnel's western portal, will be replaced with a box culvert system as part of the Standedge Tunnel Bywash Underbridge Replacement. This structure carries the Huddersfield Narrow Canal beneath the railway line, and the new system will maintain the existing watercourse flow. The Bywash underbridge is approximately 10.65 kilometres north of Stalybridge Station.

Diggle Access and Diversion Works

- 3.2.48 As a number of bridges in the Diggle Area are to be reconstructed, the southern end of Harrop Court Road is to be temporarily closed to accommodate the construction works. The works will temporarily prevent access to the residential properties and businesses along this route for approximately 12 months. As such, a temporary access road will be constructed between Harrop Court Lane and Boat Lane as a temporary diversion during these works.

Construction Compounds and Replacement Parking areas

- 3.2.49 As part of the Order Scheme, several site compounds are required to support the construction of the Order Scheme at several locations as shown on Figure 1.1.1 - 1.1.6 in Volume 2 of the Environmental Report [NR14]. These compounds are listed below:
- Printworks Road Site Compounds, including:
 - Printworks Road Main Compound
 - Printworks Road Office Compound
 - Heyrod Hall Site Compound
 - Wakefield Road Plant Access and Compound
 - Scout Tunnel Site Compounds, including:
 - Scout East Ramp
 - Scout East Access
 - Scout West Spoil Point
 - Scout West Ramp
 - Manchester Road Compound
 - Egmont Street Replacement Parking
 - Plevins Site Compound
 - New Earth Street Site Compound

- Armit Road Site Compound
- Oaklands Road Site Compound
- Greenfield Site Compounds, including:
 - Greenfield Compound
 - Greenfield Station Compound
 - Saddleworth Rangers Rugby Club (use of that site as a replacement parking area)
- Former Saddleworth Station Site Compound
- Former Butterhouse Tunnel Site Compound
- Ward Lane Site Compounds, including:
 - Grandpa Greene's Compounds 1 and 2
 - Ward Lane Satellite Compound
- Diggle Site Compounds, including
 - Diggle Main Compound
 - Sam Road Compound.

3.2.50 The siting of the Order Scheme compounds has taken into account the works and access requirements as well as any specific site constraints (e.g. land use and environmental constraints). General works that will be required to set up the Order Scheme compound sites include:

- marking-out of the site plus installation of preliminary temporary fencing (close boarded or Heras fencing);
- installation of boundary fencing and other fencing if required, such as solid hoardings;
- vegetation clearance;
- topsoil stripping (if necessary);
- earthworks, site levelling, drainage works (where necessary);
- installation of compound surfaces and vehicle access (where necessary);
- erection of welfare facilities/ office blocks etc.;
- establishment of car / vehicle parking spaces;
- installation of plant, materials and fuel storage facilities etc.; and
- provision of tower lights to be employed as necessary to provide safe working areas, particularly during winter months and also when night-time working is necessary.

- 3.2.51 The internal layout of compounds will be sensitively designed in regard to impact sources, potential impact pathways and receptors (e.g. avoiding a direct line-of-sight between generators or other static noise generating plant and residential properties by careful siting of office cabins).

On-Site Practices

- 3.2.52 This Report is supported by a CoCP Part A **[NR17]**. The CoCP describes the general mitigation measures to be adhered to in order to reduce impacts from activities during construction, including within compounds for all elements of the Order Scheme, including:

- construction traffic (including parking and access requirements);
- earthworks;
- noise and vibration;
- dust generation; and
- waste generation.

- 3.2.53 Further, specific details of these measures will be expanded upon in Part B of the CoCP, under a condition included in the 'Request for deemed planning permission and statement of proposed conditions' **[NR11]** applicable to the Deemed Planning Permission elements of the Order Scheme. Part B of the CoCP shall include a requirement for the following management plans and other documents to be prepared and submitted (collectively referred to as the CoCP Environment Plans - refer to section 14.2.11):

- An external communications programme.
- A Pollution Prevention and Incident Control Plan (PPICP).
- A Waste Management and Materials Plan.
- A Nuisance Management Plan (NMP) concerning dust, wheel wash measures, air pollution and temporary lighting.
- A Noise and Vibration Management Plan (NVMP) including a construction methodology assessment.

- 3.2.54 The CoCP Part B management plans and other documents will be submitted for conditional discharge to both Tameside and Oldham Councils pursuant to the Deemed Planning Permission. However, all Scheme works, both under Permitted Development Rights and the Order, will be undertaken utilising NR/L2/ENV/015 as the requirement that oversees Environmental Management across the Scheme. Environmental mitigation for associated temporary land use within the Order Scheme will be secured and delivered through compliance with CoCP Part A **[NR17]** and commitments set out within NR/L2/ENV/015. This document is included as Volume 3, Appendix 1A of this Report **[NR14]**.

- 3.2.55 Additionally, a Construction Traffic Management Plan (CTMP) will be produced to provide details of traffic management on the nearby public roads, such as appropriate signage, access and egress points, and details of any necessary temporary road closures, including for deliveries of overlarge loads (if required). Under a planning condition in the 'Request for deemed planning permission and statement of proposed conditions' [NR11] a CTMP requires to be submitted to and approved in writing by the relevant local planning authority.
- 3.2.56 Compounds will provide office space and welfare facilities. Processing and storage of materials will also take place at some sites if necessary. Staff will be encouraged to travel to the compounds via public transport, where this is possible for them. However, compounds may serve as a hub for staff from which they may be transported via a shuttle bus system to other compound(s) as necessary. Green Travel Plans to ensure that staff travel will be encouraged to travel as sustainably as possible will be produced as part of the CoCP/CTMP.
- 3.2.57 Standard working hours are defined as 08:00 to 18:00 Monday to Friday; 08:00 to 13:00 on Saturdays with 30 minutes either side for setting up and organising / cleaning the site. Standard working hours refer to all activities where construction does not interfere with or require a closure of the operating railway.
- 3.2.58 Network Rail reserves the right to conduct non-rail works outside the standard working hours should an extension of work hours be required to meet an "entry into service" deadline. This is most normally required when works must be completed in advance of other planned works under extended "possession" of the railway (possessions are normally closure of the railway such as- at night-time, weekends or bank holidays). In these circumstances, Network Rail would inform the relevant local authority(s) and residents as applicable, a minimum of 14 days in advance of the start of the extension of working hours.
- 3.2.59 Non-standard working hours, including night-time works will be required for works such as to bridge decks and spans as well as to tunnels. These works will be undertaken during a possession of the railway, which will be limited to 'routine' periods of non- or limited-operation of the railways, such as overnight, Bank Holiday weekends, or over the Christmas period. Work outside of standard working hours and if required, the extension of working hours, will be agreed with local authorities by exception.

4. THE APPROACH TO THE ENVIRONMENTAL REPORT

4.1 Overview

- 4.1.1 Each of the individual technical appendices to this Environment Report contained in Volume 3 [NR14] provides a detailed description of the appraisal methods adopted for that environmental discipline and these are summarised in Chapters 5 - 13. The development of the Order Scheme has followed good practice by integrating environmental considerations into the design process at all stages. Desk studies and baseline surveys have been undertaken to inform the consideration of environmental effects through this process, and to determine (and incorporate) how the avoidance or reduction of impacts and effects can best be achieved.
- 4.1.2 The content of the Report has been based on a number of related activities including:
- establishing baseline conditions;
 - a review of secondary information, previous environmental studies and publicly available information and databases;
 - physical surveys and monitoring undertaken within the Order Scheme area and the surrounding area;
 - desk studies;
 - ongoing consultation with statutory and non-statutory consultees as an integral element of the Order Scheme design and development process;
 - consideration of relevant local, regional and national planning, environment and related policies, guidelines and legislation;
 - consideration of technical standards and guidance to inform the methods and identification of effects; and
 - the professional judgement of technical specialists.
- 4.1.3 In most technical environmental aspects, the baseline has been established using the existing environmental conditions. Where appropriate, a modified baseline has been established by incorporating the changes that will arise as a result of the Permitted Development works associated with the TRU programme, such as the installation of OLE.
- 4.1.4 An appraisal of impacts and effects associated with each technical environmental aspect has been undertaken for each relevant works element of the Order Scheme as applicable, on the basis of the scale of the impact and the importance or sensitivity of the receptors.
- 4.1.5 Measures to mitigate effects have been proposed and integrated into the Order Scheme design, construction methodology, and on-site procedures

during construction and operation which are summarised in Chapter 14 of this Report.

4.1.6 The technical studies included in this Report have been informed by a high-level appraisal carried out to inform the design and development of the Order Scheme based on feedback from the Secretary of State in the EIA Screening Decision letter **[NR13]** and technical consultation with statutory and other consultees per the Consultation Report **[NR7]**. The rationale for including the specific technical studies is summarised in Table 4-1.

4.1.7 No technical study has been undertaken for materials and waste as potentially significant effects on materials and waste will be avoided through construction works being carried out in compliance with NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report **[NR14]**) and the CoCP Part B which will include a waste management and materials plan.

Table 4-1: Table of technical aspects included within the Environmental Report

Chapter	Technical Discipline	Rationale
5	Cultural Heritage and Archaeology	<p>The Order Scheme includes works on a number of listed structures. Consideration of this topic in the Report has identified suitable mitigation, which is a requirement for Network Rail standard NR/L2/ENV/015.</p> <p>There is the potential for unknown archaeology to be present within the Order Scheme area.</p> <p>Network Rail has committed by planning conditions as included in the 'Request for deemed planning permission and statement of proposed conditions' [NR11] to an archaeological Written Scheme of Investigation for the Order Scheme.</p>
6	Ecology	<p>Ecological features such as notable habitats and protected and notable species have been identified within the Order Scheme area, and the clearance of vegetation will be required.</p>

Chapter	Technical Discipline	Rationale
7	Landscape	The Order Scheme will create locally prominent above ground structures in an area characterised by steep terrain, proximate to residential properties and other receptors. The Order Scheme will also require clearance of vegetation.
8	Arboriculture	The Order Scheme will require clearance of vegetation, including mature trees and hedgerows.
9	Noise and Vibration	The Order Scheme is expected to generate highly localised, temporary noise impacts during construction, reflecting the scale and nature of construction required. Operational noise impacts are expected to be manageable with suitable mitigation.
10	Traffic and Transport	The Order Scheme will temporarily redirect existing traffic (including residential, business and agricultural). The Order Scheme will also create temporary construction traffic, logistics and worker traffic movements. A number of PRow will be temporarily and permanently affected by the Order Scheme.
11	Geo-environment	Evidence of contamination has been identified within the Order Scheme area. A Phase 1 geo-environmental study has been provided.
12	Water Environment	Some elements of the Order Scheme are located within Flood Zone 1. Most of the Order Scheme is located in EA Flood Zone 1 and hence there are a very low risk of fluvial flooding. However, some elements falls within Flood Zone 3.

Chapter	Technical Discipline	Rationale
		A Flood Risk Assessment has been provided.
13	Air Quality	The Order Scheme has the potential to generate highly localised, temporary Air Quality impacts during construction, reflecting the scale and nature of construction required.

Approach to the Appraisal of Cumulative and Combined Effects

- 4.1.8 Consideration has also been given to the potential for cumulative and combined impacts and effects to arise.

Combined (In-combination) effects

- 4.1.9 Consideration has been given to combined (or in-combination) effects, where different topic issues associated with a project (or projects) may act together to produce an effect that is greater or lesser than each might otherwise be when considered in isolation (for example, where visual and noise influences act together to produce a greater level of disturbance collectively compared to either if considered in isolation).
- 4.1.10 Combined effects are anticipated to be limited to activities during construction, notably combining to affect residential amenity and resulting in a nuisance that is potentially greater than each that caused by individual element parts. The Environmental Report has also considered in-combination effects from the Order Scheme linked to other works associated with the TRU Programme, in particular works to be undertaken using Permitted Development Rights. However, it is anticipated that with the implementation of suitable mitigation measures in accordance with NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]) and the adoption of the CoCP in the case of Order Scheme works, the potential for in-combination effects would be minimised.

Cumulative effects

- 4.1.11 Cumulative impacts and effects are those that accrue over time and space from a number of developments. They have the potential to arise where two or more projects are progressed within close enough distance to one another to lead to effects from each being experienced by the same receptor.
- 4.1.12 Through review of the TMBC and OMBC access planning portals (undertaken on the 11th September 2024 – refer to section 6 of Planning Statement document [NR15]) an initial assessment of the potential for cumulative effects to occur during the construction phase of the Order Scheme has been undertaken. This review has identified 13 proposed

developments adjacent to the relevant works elements. None of these have been considered by either Local Authority to exceed EIA screening thresholds.

- 4.1.13 A further review has also been undertaken for projects within 10 km of the relevant works area, listed on either the Planning Inspectorate's National Infrastructure Planning website or the National Highways website, as well as those considered under the Transport and Works Act. One scheme has been identified on the National Highways website, this being the A57 Link Roads Project to construct a new bypass at Mottram Moor, at their closest points being located 4.5 km south of the Printworks Main Compound. The environmental report for that scheme identifies significant adverse residual effects on nearby receptors relating to visual impacts, noise and vibration, cultural heritage, and population and human health. However, given the distance between the Order Scheme and the A57 Link Roads Project, there are not expected to be any potential cumulative impacts or effects.
- 4.1.14 Based on a review of the proposed developments within 250 m of the relevant works elements and considering their size and scale, there are not expected to be any potential cumulative impacts or effects.
- 4.1.15 The Order Scheme is part of the wider TRU Programme. A separate element of the TRU Programme– Standedge to Gledholt scheme (also referred to as W2C), lies adjacent to the Order Scheme boundary at Standedge Tunnel. Therefore, other works associated with TRU Programme will take place in proximity to the Order Scheme; these have been considered as part of the baseline for each assessment. Network Rail intend to request a Screening Opinion from the Secretary of State later in 2025 for the Standedge to Gledholt scheme, with a separate TWAO for that section of the programme to be prepared and submitted in 2026. If approved, construction on W2C could commence after 2030. There may be some spatial and temporal interfaces between the Order Scheme and the W2C project, which if arising would be considered and assessed in the TWAO deliverables for W2C once such issues were clarified.
- 4.1.16 In addition to the relevant works elements of the Order Scheme it is acknowledged that additional works are being undertaken using Permitted Development Rights as part of the wider TRU Scheme. Implementation of these works will likely be undertaken concurrently with the relevant works elements of the Order Scheme and therefore may give rise to cumulative impacts on in-combination effects both during the construction and operation phases of the Project.
- 4.1.17 As is standard practice on Network Rail schemes, all such potential impacts resulting from works being undertaken using Order powers, or using Permitted Development Rights would be managed in accordance with requirements detailed in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]).

- 4.1.18 Given the implementation of the above, no cumulative impacts are predicted from the proposed Scheme in combination with works to be undertaken using Permitted Development Rights.

4.2 Stakeholder Engagement and Consultation

- 4.2.1 Stakeholder and public engagement and consultation regarding the Order Scheme took place between February 2024 and October 2024. This engagement and consultation has been summarised in the Consultation Report [NR7] for the Order Scheme. Consultation and engagement involved relevant statutory authorities, landowners, tenants, lessees and occupiers of land within the Order Scheme Area, and the general public. This consultation and engagement took the form of an iterative process, involving the sharing of emerging designs and plans for the Order Scheme and requests for feedback regarding these designs, with the opportunity for this to inform the mitigation or design development.
- 4.2.2 This engagement and consultation has allowed for the collation of feedback in relation to the Order Scheme and for potential issues to be identified and mitigated where possible. Feedback has been considered by the TRU Project team and, where appropriate, allowed for issues to be mitigated or impacts reduced through amendments to the designs.
- 4.2.3 Consultee feedback relevant to the environmental topics is illustrated within the Consultation Report [NR7] and describes how the relevant consultee feedback has been addressed as part of the Order Scheme.
- 4.2.4 Further to this feedback, and as part of subsequent consultation with relevant stakeholders, a series of measures have been refined and developed to embed suitable mitigation for environmental and related impacts into the design and construction methodology of the Order Scheme as set out within Chapter 14 of this report [NR14].
- 4.2.5 Engagement and consultation with relevant parties, including statutory authorities and the public, will continue as the Scheme develops following submission of the Order.

5. HISTORIC ENVIRONMENT

5.1 Introduction

- 5.1.1 This chapter presents an appraisal of the impacts of the Order Scheme on the significance of heritage assets, and their associated settings, and appraises the Order Scheme's potential impacts (adverse and beneficial) on the historic environment. Embedded mitigation measures and the further additional mitigation, compensation and control measures that will be secured are also set out.
- 5.1.2 The National Planning Policy Framework (2024) defines the historic environment to comprise 'all aspects of the environment resulting from the interaction between people and places through time, including all surviving physical remains of past human activity, whether visible, buried or submerged, and landscaped and planted or managed flora' (MHCLG 2024).
- 5.1.3 There are 194 listed buildings on operational railway land within the Order Scheme Boundary. These comprise underbridges, overbridges, tunnel portals and a viaduct, which were constructed for the Huddersfield & Manchester Railway and the London and North Western Railway (LNWR) in the mid and late 19th century. Works are proposed to 10 of these structures as part of the Order Scheme and require listed building consent (LBC) to be obtained in parallel with the Order.² Heritage Statements have been prepared in support of the LBC applications which are submitted alongside the Order. These are presented in Volume 3 - Appendices of the Report, Appendix 5A – Heritage Statements [**NR14**] and comprise:
- Heyrod Hall Overbridge MVL3/7 (NHLE 1449242; grade II listed building);
 - Springbank Lane Footbridge MVL3/8 (NHLE 1452382; grade II listed building);
 - Roughtown Road Overbridge MVL3/17 (NHLE 1452405; grade II listed building);
 - Wright's Mill Overbridge MVL3/20 (NHLE 1452406; grade II listed building);
 - Wright's Overbridge MVL3/23 (NHLE 1452409; grade II listed building);
 - Royal George Underbridge MVL3/25 (NHLE 1451848; grade II listed building);

² Works requiring LBC

- Shaw Hall Bank Road Footway MVL3/26 (NHLE 1451852; grade II listed building);
- Oldham Road Overbridge MVL3/28 (NHLE 1451853; grade II listed building);
- Wickens Underbridge MVL3/29 (NHLE 1451854; grade II listed building); and
- Uppermill Viaduct MVL3/31 (NHLE 1068120; grade II listed building).³

5.1.4 In addition to the works proposed to these 10 structures, two further applications for LBC are being progressed outside the scope of the Order application. The applications for works proposed to Springbank Lane Overbridge (MVL3/9) and Manchester Road Overbridge (MVL3/10) have been accelerated in order to align with construction programme requirements. The works proposed to these two listed structures are discussed further in Section 5.11.

5.1.5 A Route-Widen Historic Environment Desk-based Assessment is presented in Volume 3 of this Report, Appendix 5B – HEDBA [NR14]. This assesses the known and potential archaeology, built heritage and historic landscape resource in order to identify the likely character, extent, quality and significance of the known or potential heritage resource in a local, regional, national or international context as appropriate. This considers potential impacts of the relevant works elements of the Order Scheme upon all non-designated heritage assets.

5.1.6 Historic environment and planning related legislation and policy is detailed in section 2 of the Route-Wide Historic Environment Desk-Based Assessment, presented at Appendix 5B in Volume 3 of this Report [NR14]. The relevant legislation and policies associated with the consideration of impacts to the historic environment are summarised below.

- **Ancient Monuments and Archaeological Areas Act 1979:** makes provision for the investigation, preservation and recording of matters of archaeological or historical interest and regulates operations or activities which may affect them.
- **Planning (Listed Buildings and Conservation Areas) Act 1990 (as amended):** sets out the principal statutory provisions that must be considered in the determination of any application affecting listed buildings and conservation areas. Section 66 requires special regard to be given to preserving or enhancing the building or its setting, as well as any architectural or historic features, including objects or structures

³ There is some variation in the naming of the listed structures along the route between Network Rail and the National Heritage List for England. For consistency with other Scheme documents, these are referred to using the Network Rail title and structure reference for the purpose of this assessment.

within its curtilage. Section 72 extends this duty to conservation areas, mandating that authorities pay particular attention to preserving or enhancing the character and appearance of these areas when making planning decisions.

- **National Planning Policy Framework (NPPF) (updated 2024):** Section 16 (MHCLG 2024a) and Annex 2 (MHCLG 2024b) set out planning policies regarding heritage assets, with particular emphasis given to the importance of assessing the significance of heritage assets that may be affected by development and that may experience a range of harms (from less than substantial to substantial) through alteration, destruction by development or development within their setting. Special attention is given to the need for a balanced judgement of the harms to, and significance of, non-designated assets, including those of demonstrably equivalent significance to ancient monuments.
- **Planning Practice Guidance (updated 2019):** provides further detail to the NPPF, including consideration of the term 'significance' in a heritage context and its importance to decision making, the assessment of setting and its relation to the heritage significance of an asset and harm that might be experienced by that asset, the assessment of substantial harm in relation to significance, and the consideration of public benefit from development weighed against such harm (MHCLG 2019).
- **Historic England Advice:** provides further emphasis on the importance of understanding the significance of heritage assets likely to be affected by a development (Advice Note 2, Historic England 2015), the setting of heritage assets and how heritage significance may be affected by development (Advice Note 3, Historic England 2017), and a recommended approach to describing heritage significance to inform design development and enable decision-making regarding the impact of proposals for change to heritage assets in line with NPPF requirements (Advice Note 12, Historic England 2019).
- **The Tameside Unitary Development Plan (UDP):** outlines land use planning policies, prioritising the conservation of the built environment, including townscapes, heritage assets and archaeological sites. It aims to preserve the character of conservation areas and listed buildings, and requires that proposed alterations, additions and new uses should not adversely affect their character and should harmonise with their surroundings. The plan also promotes sustainable development, enhancing transport infrastructure and reducing pollution, while safeguarding the borough's historical and architectural heritage. (Tameside Metropolitan District Borough Council (2004).
- **Oldham Metropolitan District Borough Council's Development Plan Document: Joint Core Strategy and Development Management Plan':** prioritises the protection, conservation, and

enhancement of heritage assets, including listed buildings, conservation areas, registered parks and gardens, and scheduled monuments. The plan guides development to preserve historic features and supports heritage-led regeneration while balancing community benefits against preservation. Proposals must align with national and local heritage policies to maintain the borough's historic character. (Oldham Metropolitan District Borough Council 2011).

- **Greater Manchester Combined Authority's Places for Everyone Joint Development Plan 2022 to 2039:** outlines the proactive management of the historic environment and heritage assets for their conservation, enhancement, and sustainability within Greater Manchester. The plan requires consideration to be given to ensuring that the significance of key elements of the historic environment, which contribute to Greater Manchester's distinctive identity and sense of place (including historic transport routes), is protected from harm. Development proposals affecting heritage assets and/or their settings will be considered, having regard to national planning policy. (Greater Manchester Combined Authority 2024).

5.2 Scope of Order Scheme Appraisal

- 5.2.1 As described in Chapters 3 and 4 of this report [NR14], this appraisal considers the impacts of the Order Scheme, resulting from both temporary and permanent works. It does not address impacts of the Order Scheme within Network Rail operational rail boundaries which are being delivered using Permitted Development Rights (PDR) (see section 5.11 below, and section 1.2 of the Planning Statement [NR15]). The design and implementation of Permitted Development elements of such works and mitigation of potential impacts on the Historic Environment resulting from these are addressed through NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]).

5.3 Methodology

Determining the baseline

- 5.3.1 The methodology of the appraisal, the archaeological context of the Order Scheme Boundary, and the impacts of the relevant works elements of the Order Scheme are detailed in Appendix 5B in Volume 3 of this Report [NR14]. A study area of 250 m around the Order Scheme Boundary was applied for this assessment based on best practice, other similar schemes and professional judgement. This is shown on Figures 5.1 to 5.9 in Volume 2 – Figures of this Report [NR14]. Baseline data was sourced from the National Heritage List for England (NHLE), the Greater Manchester Archaeological Advisory Service (GMAAS) Historic Environment Record (HER).
- 5.3.2 This report also draws upon information previously prepared for the TRU project on behalf of Network Rail. This includes reports prepared by Alan

Baxter and Associates Ltd, namely the '*Transpennine Route Statement of History and Significance: West of Leeds*' (Alan Baxter Associates 2017) and the '*Transpennine Route Upgrade Route-Wide Statement of Significance*' (Alan Baxter Associates 2019). Other documents consulted include the '*Transpennine Route Upgrade W2B Heritage Assessment Report*' (Network Rail 2021) and 'W2B Heritage Statements' in Appendix 5A in Volume 3 of this Report [NR14].

- 5.3.3 The baseline is described in detail in Appendix 5B Historic Environment Desk-Based Assessment and the location of known archaeological assets are shown on Figures 5.1.1 to 5.1.9 in Volume 2 - Figures of this Report [NR14].

Assessment of significance

- 5.3.4 Annex 2 of the NPPF defines significance (for heritage policy), as '*the value of a heritage asset to this and future generations because of its heritage interest*'. The NPPF identifies that heritage interest may be archaeological, architectural, artistic or historic. The NPPF also identifies that significance can be derived from the asset itself, and that the setting of an asset may contribute to its significance. An assessment of the significance of assets and their setting has been undertaken in consideration of guidance and good practice issued by Historic England. Historic Environment Good Practice Advice in Planning: 3 provides the basis of a methodology for the assessment of setting (Historic England 2017).
- 5.3.5 The significance of a heritage asset is guided by but not limited to any designated status the asset may hold, supported by the use of professional judgement. The significance of an asset is also judged upon a number of different factors including the special characteristics the assets might hold which can include evidential, historical, aesthetic, communal, archaeological, artistic and architectural values. This significance of a heritage asset is assessed primarily in accordance with the guidance set out in NPPF (MHCLG 2019; MHCLG 2024).
- 5.3.6 Each identified heritage asset can be assigned a level of significance in accordance with the criteria as set out in Table 5-1. Using professional judgement and the results of engagement and consultation, heritage assets are also assessed on an individual basis and regional variations and individual qualities are taken into account where applicable.
- 5.3.7 Assessment of the significance of heritage assets has been informed by the Design Manual for Roads and Bridges (DMRB) LA104 environment value methodology. Professional judgement has been applied in developing Table 5-1 against the criteria defined in LA104. The heritage examples of these categories and the unknown significance category have been established by professional knowledge and experience.

5.3.8 Assessment of the significance of heritage assets presented in this report has been undertaken using professional judgement guided by the criteria set out in Table 5-1 below:

Table 5-1: Criteria for determining the significance of heritage assets

Significance	Description	Heritage example
Very High	Very high importance and rarity, international scale, with very limited potential for substitution.	World Heritage Sites, or heritage assets recognised as being of international importance.
High	High importance and rarity, national scale and limited potential for substitution.	Grade I and II* Listed Buildings, Grade I and II* Registered Parks and Gardens, Scheduled Monuments, Protected Wreck Sites, Registered Historic Battlefields, Conservation Areas with notable concentrations of heritage assets, Grade II Listed Buildings of exceptional interest, and undesignated assets of national importance and/or rarity. Historic landscapes of national importance and/or rarity.
Medium	Medium or high importance and rarity, national or regional scale, limited potential for substitution	Grade II Listed Buildings, Grade II Registered Parks and Gardens, Conservation Areas and undesignated assets of national or regional importance. Historic landscapes of national or regional importance.
Low	Low or medium importance and rarity, local scale.	Locally Listed Buildings and undesignated heritage assets of local importance. Historic landscapes of local importance. Can also include degraded designated assets that no longer warrant designation.
Negligible	Very low importance and rarity, local scale.	Undesignated heritage assets of very low or limited importance. Can also include highly degraded designated assets that no longer warrant designation.
Unknown	<p>The importance of the asset has not been ascertained. This could include, or be related to:</p> <ul style="list-style-type: none"> • Potential archaeological sites for which there is little information • Assets for which the importance of the site cannot be determined based on current knowledge • Isolated findspots, place names or cropmarks identified on aerial photographs with no known information at present. • Heritage assets of unknown significance may include sites of potential national significance. 	

5.4 Setting of Heritage Assets

- 5.4.1 The setting of heritage assets has been considered, in accordance with Historic England's The Setting of Heritage Assets: Historic Environment Good Practice Advice in Planning Note 3 (Historic England 2017).

Assessment Assumptions and Limitations

- 5.4.2 The potential for previously unrecorded heritage assets, including buried archaeological remains, within the footprint of the Order Scheme has been considered in relation to known heritage assets in the vicinity of the Study Area and land use history within it.
- 5.4.3 No non-intrusive or intrusive archaeological investigations have been undertaken to inform the baseline. The sources identified above are considered sufficient to identify the potential for previously unrecorded heritage assets, including the potential for buried archaeological remains within the Order Scheme Boundary and the assessment of potential impacts.
- 5.4.4 It is noted that Order Scheme works will be subject to further, more detailed design once the Order has been determined, and prior to commencement of construction. Further assessment and review of any additional mitigation requirements will be undertaken post consent, informed by the assessment provided in this report (refer to 5.10 below).

5.5 Archaeological and Historical Background

- 5.5.1 The geology of the area between Stalybridge and Diggle is subdivided into three distinct geological groups: the Pennine Basin, the Pennine Lower Coal Measures and Kinderscout Grit. Towards the north of the Order Scheme, the land rises steeply to the west towards Saddleworth Moor. The Peak District and further elements of Saddleworth Moor are located east of the railway line. The underlying geology yields soils with low fertility, which limits the types of crops that can be grown, especially in stony and shallow areas, significantly influencing land use. The area features numerous springs in the hills that feed minor watercourses, some of which flow into the River Tame. All these factors have influenced the historic development of the area, particularly the rivers, as they allowed the construction of canals and water-powered mills, leading to industrial expansion.
- 5.5.2 Early evidence, though limited, points to the presence of hunter-gatherers during the Upper Palaeolithic and Mesolithic periods, with lithic finds recorded around Pule Hill. In the Neolithic period and Bronze Age, there was a shift towards more settled communities, marked by farming and field systems, the construction of burial cairns such as the one west of Hollingworthhall Moor, and burial sites including barrows, such as that on

Brown Hill. The strategic significance of the landscape continued into the Iron Age and Roman periods, with the establishment of hillforts, forts, and a network of roads, such as the road (Margary Road 712) between the Roman fortresses and towns at Chester and York. The medieval period saw slow expansion of settlement and farming, with a ringwork castle at Buckton Castle, estates at Heyrod Hall and Staley Hall, and small settlements such as Dobcross, Shaw Hall, Mossley and Stalybridge. The 19th century saw a boom in industrial development, driven by the expansion of railways and canals, which transformed the landscape.

- 5.5.3 The Huddersfield & Manchester Railway was built between 1846 and 1849 during the 'Railway Mania' period. It followed the route of the Huddersfield Narrow Canal through the challenging Pennine landscape, requiring major engineering feats such as the Standedge Tunnel. Engineered by A.S. Jee with support from Joseph Locke, the railway spurred industrial growth along its route, fostering the expansion of factories and housing in the Tame Valley. Acquired by the London and North Western Railway (LNWR) in 1847, the railway became a vital link between Manchester and West Yorkshire's textile and coal industries. As compared with other parts of the Transpennine Route, the line between Standedge Tunnel and Stalybridge saw minimal upgrades due to the difficult terrain that it traversed, remaining a two-track railway. To provide additional capacity, the Micklehurst Loop, completed in 1885, was constructed on the opposite side of the Tame Valley between Stalybridge and Diggle, providing capacity for both passenger and freight trains prior to its closure in the 1960s. The Huddersfield & Manchester Railway between Stalybridge and Standedge Tunnel now forms part of the broader Transpennine Route connecting York, Selby, and Manchester.
- 5.5.4 The landscape of the study area has been shaped by transportation and industrial development. The railway route intersects former estates, Victorian residential areas, and industrial complexes, while nearby features include regenerated woodland, pastureland, and areas of former quarries. The landscape now includes urban, suburban, and industrial areas interspersed with patches of woodland, extant and ruined historic structures. However, the area is now much less industrial than it was at the height of the mills in the 19th and earlier 20th century. Figures displaying varying historic landscape character are illustrated on Figures 5.2.1 to 5.2.9 in Volume 2 – Figures of this Report [NR14].
- 5.5.5 It is considered that the Order Scheme will not give rise to any impacts upon historic landscape character as the relevant works elements of the Order Scheme are relatively small in scale and relate directly to, and will form part of, the existing railway infrastructure.

5.6 Online Designated Heritage Assets

- 5.6.1 The assessment identifies 14 designated heritage assets located along the Transpennine Route between Stalybridge and the western portal of Standedge Tunnel, categorised as "online" structures, meaning that they

are located on the alignment of the Transpennine Route and within the Order Scheme boundary. These assets comprise:

- Overbridges (MVL3/7 (NHLE 1449242), MVL3/8 (NHLE 1452382), MVL3/9 (NHLE 1449241), MVL3/17 (NHLE 1452405), MVL3/20 (NHLE 1452406), MVL3/23 (NHLE 1452409), MVL3/28 (NHLE 1451853)).
- Underbridges (MVL3/10 (NHLE 1452392), MVL3/25 (NHLE 1451848), MVL3/26 (NHLE 1451852) and MVL3/29 (NHLE 1451854)).
- Tunnel portals (MVL3/11 (NHLE 1452399), and MVL3/41 (NHLE 1452141)).
- Uppermill Viaduct (NHLE 1068120).

5.6.2 All of the above-mentioned assets are designated as grade II listed buildings and are assessed to be of medium significance.

5.6.3 With the exception of the later additional tunnel portals at Standedge Tunnel (NHLE 1452141), these designated assets were designed by engineer Alfred Stanistreet Jee between 1845 and 1849 for the Huddersfield & Manchester Railway. Jee's cohesive design approach is evident across these structures, with consistent design and detailing, as can be seen in the treatment of segmental and semi-circular arches, rusticated stonework, and decorative details employed on the bridges. The consistent high quality of the design, detailing and construction across these structures provides an understanding of the wider trends and engineering achievement which characterise both the Huddersfield & Manchester Railway and the Heroic Age of railway building (1841 – 1850) more generally.

5.6.4 Heyrod Hall Overbridge (MVL3/7), Springbank Lane Overbridge (MVL3/9), Roughtown Road Overbridge (MVL3/17), Wright's Mill Overbridge (MVL3/20) and Wright's Bridge (MVL3/23) form a group of arched masonry bridges which share a common design language. These bridges have segmental arches with rusticated, v-jointed voussoirs and slightly advanced keystones, springing from ashlar impost bands. The bridges have quarry-faced masonry abutments with raked buttresses, with a stone stringcourse over the arch and parapets above which terminate in pilasters to the approach walls. A slight outlier to this group is Wickens Underbridge (MVL3/29), which utilises the same design language as the overbridges, though employing a barrel rather than segmental arch and an ashlar block parapet.

5.6.5 Manchester Road Underbridge (MVL3/10), Shaw Hall Bank Road Footway (MVL3/26) and Oldham Road Overbridge (MVL3/28) form a group of skew arch bridges, united by their consistent architectural treatment. All three structures have segmental arches, springing from tooled impost bands. The arches are detailed with projecting keystone and V-jointed rusticated voussoirs keyed into the coursing of the spandrels. The arch spans are flanked by pilasters which extend through

the parapets. Similar to the preceding group of bridges, coursed masonry parapets are employed for the overbridges, and ashlar block parapets for the underbridges.

- 5.6.6 Springbank Lane Footbridge (MVL3/8) and Royal George Bridge (MVL3/25) both have jack-arched decks supported on cast iron beams and result from reconstruction in the late 19th century. The design of these structures is idiosyncratic compared with other structures along the route. Now with blue engineering brick parapets erected during replacement of the deck, Springbank Lane Footbridge (MVL3/8) retains well detailed approaches with impost bands, pyramidal capped pillars and large circular gateposts, accessed from a stepped footpath. Royal George Underbridge (MVL3/25), in contrast, is detailed with semi-octagonal piers, rising to resemble small turrets at deck level, with gothic arcaded balustrades. Although of different architectural style and construction, both these structures also demonstrate the quality of architectural detailing and workmanship seen on the designated masonry bridges designed by Jee.
- 5.6.7 Uppermill Viaduct (MVL3/31) is located in the village of Uppermill and comprises a 23-arched span structure with narrow deck, carrying the two tracks of the Transpennine Route. The viaduct carries the railway over the River Tame, Huddersfield Narrow Canal and three roads, on tall slender piers raised high above the valley floor. Similarly to Jee's other structures on the Huddersfield & Manchester Railway, the viaduct is well detailed with semi-circular arches with rusticated V-channelled voussoirs springing from ashlar impost bands, stringcourse and parapets. Wider skew spans articulated by flat pilasters carry the viaduct over Den Road, the Huddersfield Narrow Canal and High Street (A670), responding to the local topography. Views of the viaduct along Den Lane and High Street, and particularly its relationship with the canal and the grade II listed Lock 23 and tailbridge No.75 (NHLE 1356719) contribute to its significance.
- 5.6.8 The group of designated assets designed by A.S. Jee form a coherent group resulting from construction for a single historic route, providing an insight into mid-19th-century railway engineering. They are representative of the broader trends in the development of railway construction during the Heroic Age of railway building (1841-1850). Whilst constructed to serve as part of the Huddersfield & Manchester Railway, the architectural quality of these structures elevates their design above the purely functional. The assets have experienced minimal alterations, preserving their integrity and enhancing their group value, especially as they continue to be part of an operational railway line. Beyond the W2B Route section, other related structures designed by Jee include several listed viaducts and overbridges, further emphasising the cohesive design approach demonstrated in railway structures across the region.
- 5.6.9 The works proposed to online designated assets can broadly be categorised as five different types of intervention, namely:

- Removal;
- Reconstruction;
- Electrical protection works;
- Strengthening; and
- OLE attachment.

5.6.10 The Order Scheme has been shaped by an iterative and robust design development process to fully explore design options to facilitate the installation of safety compliant OLE along the route whilst minimising impacts upon the listed structures. The design development process for the works to each of the listed buildings is presented in the relevant heritage statement included in Volume 3 - Appendices of the Report, Appendix 5A [NR14]. Key measures which were adopted to minimise the need for intervention into designated structures included:

- The adoption of a scheme-specific pantograph which enables the use of reduced overhead line wire height under structures;
- Slewing and lowering of track under listed overbridges where possible; and
- Use of a risk-assessment based approach for electrical protection works enabling increase in parapet height to be minimised as far as possible.

Removal: Wright's Overbridge MVL3/23

5.6.11 Wright's Overbridge does not have sufficient clearance for the installation of OLE, necessitating intervention for delivery of the Order Scheme. A detailed programme of optioneering and design development has been undertaken, informed by rigorous exploration of available options, multi-disciplinary review and engagement with heritage consultees. This explored a range of options including track lowering, bridge jacking, bridge reconstruction and bridge removal.

5.6.12 Whilst track lowering was initially identified as the preferred option, potentially enabling the retention of the listed structure, further design development identified this to be unfeasible due to the requirement to achieve a track lower of at least 470mm below current ground level. Reappraisal of the optioneering for this structure was then undertaken, informed by information including:

- The requirement to have special regard for the preservation of the listed building under the Planning (Listed Buildings & Conservation Areas) Act 1990;
- Input from the construction contractor regarding the deliverability of reconstruction at this isolated location;

- A costing exercise comparing the whole life costs of demolition versus reconstruction of the structure;
 - Consideration given to the options of track lowering, reconstruction and removal of Wright's Bridge (MVL3/23), in terms of financial cost, whole life costs, value for money, and impact on the railway network; and
 - A survey of pedestrian use of the bridge to understand the public benefit currently derived from the structure and the potential impact of rerouting the public right away from Wright's Bridge.
- 5.6.13 Based on consideration of this more detailed information, track lower was confirmed to be unfeasible from an engineering and cost perspective.
- 5.6.14 Bridge reconstruction was recognised to result in the reconstruction of the majority of the structure, retaining a small amount of historic fabric as part of a reconstructed bridge and the continued legibility of a historic access route across the railway in this location. Bridge removal would result in the complete removal of the structure. Both options would result in substantial harm to the listed building. However the issues of site-specific topography constraining potential construction methodologies, the demonstrated limited use of the structure with potential for a viable alternative public right of way to be provided, and high whole life cost of reconstruction outweighed the minor benefit of retaining a small portion of historic fabric in-situ. Considered on balance, removal of the bridge was therefore identified to be the preferred option in this location and to enable delivery of the Order Scheme overall.
- 5.6.15 The removal of Wright's Overbridge (MVL3/23) would result in the total loss of the structure and its significance. This would remove a historic bridge that is part of the physical infrastructure associated with the Heroic Age (1841-50) of railway construction and would detract from the historic character and group value that this structure contributes to as part of the Transpennine railway line. The proposals would result in substantial harm to the listed building. This intervention presents the highest level of harm to the significance of a heritage asset on route section W2B. However, on balance the demolition of the bridge was identified to deliver substantial public benefits which would outweigh this harm (Volume 3 - Appendices of the Report, Appendix 5A) [NR14]. Refer to section 7 of the Planning Statement [NR15] where this is considered further.

Reconstruction: Heyrod Hall Overbridge (MVL3/7), Wright's Mill Overbridge (MVL3/20), Royal George Underbridge (MVL3/25) and Oldham Road Overbridge (MVL3/28)

Overbridges

- 5.6.16 There is currently insufficient clearance for installation of OLE under the grade II listed structures of Heyrod Hall Overbridge (MVL3/7), Wright's Mill Overbridge (MVL3/20) and Oldham Road Overbridge (MVL3/28) necessitating intervention for delivery of the Order Scheme.

5.6.17 Detailed optioneering was undertaken for these structures, examining the potential for track lowering and bridge jacking to enable electrification of the line and retention of the bridges. These options were, however, discounted due to factors including the difficulty of delivery at these constrained sites, significant cost and extensive disruption to the railway network from construction works. Reconstruction was therefore identified as the preferred option for these three bridges.

5.6.18 A consistent approach to reconstruction of the three overbridges has been developed which responds to the architectural form of the bridges, enables the use of a standardised approach to design and construction which is deliverable at these constrained sites, minimises risks to construction staff and minimises track possession times, reducing disruption to the rail network as far as possible. In summary this would comprise:

- Removal of the existing deck, parapet and arch span of the existing bridges, minimising the extent of demolition as far as possible. Any historic masonry suitable for reuse would be retained for reuse;
- Reconstruction of the bridge using a flat filler beam span deck⁴ and concrete riser units which would be supported on the retained masonry abutments. The riser units and external parapets would be clad in natural stone, precast into their fabric;
- Cladding of the interior of the parapets facing the public highway on Heyrod Hall Overbridge (MVL3/7) and Wright's Mill Overbridge (MVL3/20) with stone reclaimed from historic railway bridges along the route to match the existing coursing pattern and height as far as possible. This would be undertaken after the new bridge decks have been installed, minimising the possession time required for reconstruction works;
- The parapets for Oldham Road Overbridge (MVL3/28) would comprise concrete L-units, with natural stone pre-cast into the interior and exterior elevations. This difference in construction methodology is proposed in order to minimise the duration of road closure on this busy trunk road;
- Installation of natural stone triangular steeple copers across the bridge parapets to prevent the risk of members of the public coming into contact with OLE; and
- Attachment of OLE bridge arms to the soffit of the reconstructed bridge decks, facilitating the electrification of the railway.

5.6.19 Reconstruction would result in the loss of the majority of Heyrod Hall Overbridge (MVL3/7), Wright's Mill Overbridge (MVL3/20) and Oldham

⁴ A filler beam deck consists of a concrete slab with longitudinal reinforced steel beams, with deck cast in situ. This form of construction accommodates site geography, minimises the required lift weights, maximises the extent of works that can be undertaken off-site, and standardises the beam design between sites.

Road Overbridge (MVL3/28), with the extent of retained fabric confined to the lower portions of the abutments and pilasters at each end of the bridge parapets.

- 5.6.20 Mitigation through design has been embedded into the redesign proposals at all three bridges. Masonry cladding will be used extensively to limit the visibility of concrete structural elements and to ensure natural stone is maintained as the dominant construction material. Masonry from the spans proposed to be demolished will be salvaged for reuse as cladding as far as reasonably practicable. Features of the existing bridges such as string courses and pilasters would also be referenced in the design of the new spans. Finally, the common approach taken to the design for the reconstruction of each of the three structures would provide a coherent design approach. It would provide a visible reference to the new phase of railway upgrade taking place in the 21st century, comprising the next chapter in the story of the railway's development and improvement.
- 5.6.21 In addition to this embedded design mitigation, additional public benefit in terms of improved highway safety would be realised at Oldham Road Overbridge (MVL3/28). The form of the reconstruction includes a separate footbridge, improving pedestrian safety, and improving the experience of members of the public crossing the railway. Visibility at highway junctions adjacent to Oldham Road Overbridge (MVL3/28) is also improved by the slight reconfiguration of approaches to the bridge, reducing the collision risk at a site with a history of road accidents and bridge strikes.
- 5.6.22 The reconstruction of Heyrod Hall Overbridge (MVL3/7), Wright's Mill Overbridge (MVL3/20) and Oldham Road Overbridge (MVL3/28) would result in substantial harm to all three listed buildings.

Underbridges

- 5.6.23 Royal George Underbridge (MVL3/25) has been assessed to be in poor condition and would not currently be capable of withstanding the additional strain which would be imposed by the increase in line speed and train loading integral to the Order Scheme. Investigative surveys uncovered critical elements normally obscured by ballast, revealing significant corrosion of girder webs, flanges, rivets and steel angles.
- 5.6.24 Options for strengthening the existing structure were considered and subsequently discounted due to a range of site-specific constraints, including:
- Strengthening proposals would be based on the known condition of the steel girders. It is not feasible to survey all parts of the structure due to the major disruption it would cause to the railway and the fact that ends of the girders are built into the abutments (and therefore obscured from view). There is a risk that condition could be worse in areas not

inspected, requiring redesign during construction with major implications for deliverability of works;

- Re-bolting would be required through existing rivet holes. The poor condition of these rivets raises buildability concerns. Heavily corroded rivets would be difficult to remove, and may result in further deterioration of the steel plate surrounding the rivets, potentially necessitating further remedial work;
- Limited clearance to accommodate strengthening without fouling the required gauge for freight trains; and
- The design life of this option would remain uncertain, due to the risk of ongoing deterioration of steel girders with particular risks where the ends of existing girders are built into the bridge abutments, restricting access to inspect and undertake remedial works if required. There would remain a potential requirement for deck reconstruction in the future due to the potential for significant risks to safety.

5.6.25 Reconstruction of the underbridge was therefore identified as the preferred option. This option would bring considerable benefits in terms of certainty of design life, deliverability under tight time constraints and potentially limiting future public spending compared to the cost of strengthening and eventually reconstructing the bridge with retained corroding steelwork. Whilst reconstruction would result in significant alteration of the listed bridge, it was found to represent the most deliverable solution. This took into account the constrained nature of the site; the aims of the Order Scheme; minimising disruption to the railway network and enabling retention of historic fabric as far as possible.

5.6.26 The design proposed for the reconstructed deck seeks to comply with the relevant Network Rail safety standards, including the requirement to provide critical safety areas for operatives working on the railway, while integrating the new and historic fabric as sensitively as possible. It is proposed to replicate the form of the visually prominent elements of the removed fabric as closely as possible. This includes replicating the gothic arcaded design of the existing cast iron parapets (which are in poor condition and brittle) with painted steel panels, and semi-octagonal pilasters echoing the design of the distinctive existing fabric. The key safety requirement for a walkway requires the deck to be widened by c. 1.65 m, meaning the depth of the pilasters will be altered. However, care has been taken to ensure the geometric form of the abutments is carried up to parapet level. The use of natural stone cladding, tooled to replicate the existing finish, is proposed to replicate the existing materiality of the bridge.

5.6.27 The reconstruction of Royal George Underbridge (MVL3/25) would result in substantial harm to the listed building.

**Electrical protection works: Springbank Lane Footbridge (MVL3/8),
and Roughtown Road Overbridge (MVL3/17)**

- 5.6.28 Design optioneering undertaken for development of the Order Scheme found sufficient clearance for installation of OLE to be present under the listed structures of Springbank Lane Footbridge (MVL3/8) and Roughtown Road Overbridge (MVL3/17).
- 5.6.29 At both bridges, the existing parapets do not meet the minimum height required by Network Rail standards to protect users and the public from the risk of contact with OLE. It is therefore necessary to undertake minor intervention into the listed structures to raise the parapets. The proposed height of the raised parapets has been reduced from the standard NR requirement for 1.8 m to 1.5 m based on the findings of site-specific risk assessments, reducing the impact on the form and appearance of the structures. It is proposed to install anti-sitting steeple copers at both bridges to achieve the required height and profile to dissuade members of the public from sitting or walking along the parapets. At Springbank Lane Footbridge (MVL3/8) and Roughtown Road Overbridge (MVL3/17), the existing coping stones would be removed to enable installation of the proposed steeple copers, resulting in limited loss of historic fabric.
- 5.6.30 At Springbank Lane Footbridge (ML3/8), a cast iron beam and jack arch bridge, it is proposed to install steeple copers of natural stone, ensuring that the proposed alterations are sensitive to the architectural and historic significance of the bridge. Structural assessment has identified that Roughtown Road Overbridge (MVL3/17) cannot accommodate the additional loading from natural stone steeple copers. This necessitated optioneering to identify an alternative lighter weight material for the copers which would be sensitive the appearance of the historic structures. Following consultation with heritage stakeholders, it is proposed to install lightweight concrete copers, colour matched to the fabric of the structures. Minor repairs are also proposed at Springbank Lane Footbridge (MVL3/8) which would maintain the structure in good condition.
- 5.6.31 It is proposed to attach OLE brackets to the arch barrel of Roughtown Road Overbridge (MVL3/17). This would result in a localised physical impact on the fabric of the bridge, limited to its soffit and would not be visible from the bridge deck or adjacent roads.
- 5.6.32 To facilitate track lowering, construction of a retaining wall is required between Springbank Lane Footbridge (MVL3/8) and Springbank Lane Overbridge (MVL3/9). It is proposed that parallel flange channels be fixed to the north elevation of the Springbank Lane Footbridge (MVL3/8). This would allow the retaining wall to terminate at each of the bridges using a minimal number of fixings into their fabric, avoiding the need for piling directly adjacent to the listed structures. This would result in a localised physical impact on the fabric of these bridges, limited to the discrete

areas of the lineside elevations with limited visibility from the area surrounding the bridge.

- 5.6.33 Whilst resulting in minor alterations of Springbank Lane Footbridge (MVL3/8) and Roughtown Road Overbridge (MVL3/17), these works would have limited impact on the significance of the structures. The form and architectural features of the bridges and the quality of their detailing and construction would be maintained, which are key aspects of the assets' significance. Whilst the use of coloured concrete copers Roughtown Road Overbridge (MVL3/17) would introduce modern materials into the historic structure, this is necessary to comply with safety standards and ensure the structural integrity of the bridge during electrification. The use of coloured concrete is proposed in order to aid their integration with the historic structures and reduce their visual impact as far as possible.
- 5.6.34 The proposed works would have a low impact on these assets of medium significance, resulting in less than substantial harm at the lower end of the scale. The proposed alterations would facilitate ongoing access across an electrified railway which complies with the relevant safety standards and is considered, a public benefit which is considered to outweigh the less than substantial harm to significance arising from the proposed works at these structures. Refer to section 7 of the Planning Statement [NR15] where this is considered further.

Strengthening: Shaw Hall Bank Road Footway (MVL3/26) and Wickens Underbridge (MVL3/29)

- 5.6.35 The increase in the speed and train loading as a result of the Order Scheme would require the strengthening of two listed under bridges. These comprise Shaw Hall Bank Road Footway (MVL3/26) and Wickens Underbridge (MVL3/29).
- 5.6.36 The proposals for these structures have been developed to minimise intervention into the historic structures and alteration of their appearance as far as possible, whilst mitigating the impact of increased line speed and heavier trains. In summary these comprise:
- At Shaw Hall Bank Road Footway (MVL3/26) and Wickens Underbridge (MVL3/29), the installation of precast reinforced 'L' units the inside of the underbridge parapets, extending across the bridge deck to be joined by a concrete stitch in the centre to strengthen the structure. Grout infill would be put in place between the 'L' units and the bridge parapets.
 - Increase in ballast depth across the structures.
 - Realignment of the railway track over Shaw Hall Bank Road Footway (MVL3/26) and Wickens Underbridge (MVL3/29).

- Replacement of the existing modern handrails on Wickens Underbridge (MVL3/29) with Glass Reinforced Plastic (GRP) fixtures of similar design to achieve the required parapet height and reduce risks from electrification of the line.

5.6.37 The strengthening works outlined above would result in permanent minor alterations to Shaw Hall Bank Road Footway (MVL3/26) and Wickens Underbridge (MVL3/29). However, with the exception of the addition of low GRP ballast retention angles behind the stone parapets, these would only be visible from track level. The replacement of the modern handrails with GRP fixtures of similar design on Wickens Underbridge (MVL3/29) would also require minor physical intervention into the historic structure. These interventions would result in only slight physical impacts to the historic fabric and would not affect their historic or architectural interest.

5.6.38 The Order Scheme would have a very limited physical and visual impact upon the medium significance assets of Shaw Hall Bank Road Footway (MVL3/26) and Wickens Underbridge (MVL3/29). This would result in less than substantial harm at the lower end of the scale to all three structures. The proposed alterations would facilitate the safe operation of an electrified railway, ensuring these listed bridges remaining and in use as part of the active railway network. Refer to section 7 of the Planning Statement [NR15] where this is considered further. This less than substantial harm would be outweighed by the public benefits that accrue from enabling the TRU to be achieved.

OLE attachment: Uppermill Viaduct (MVL3/31)

5.6.39 To deliver electrification of the Transpennine Route it is necessary to install OLE across Uppermill Viaduct (MVL3/31). Due to the length and curve of the viaduct and the required distance between OLE portals, it is necessary to install multiple portals across the structure.

5.6.40 Optioneering identified that, due to the narrow width of the viaduct deck and the requirement to achieve sufficient clearance between the track and the OLE, it is necessary to affix the OLE portals to the exterior of the viaduct. The siting of the portals and design of the portal brackets was then determined based upon consideration of a range of factors including the form and architecture of the viaduct, its prominence within its setting and the structural requirements for the OLE portals.

5.6.41 The Order Scheme proposes installation of seven OLE portals along Uppermill Viaduct (MVL3/31), attached to the structure by brackets fixed to the spandrel walls. This would necessitate holes to be drilled for insertion of anchors into the concrete saddle and attachment of the bracket steelwork on to these anchors. The portals are proposed to be irregularly spaced along the viaduct above piers 5, 8, 11, 14, 17, 20 and 25 in response to its architectural rhythm and key views of the structure.

- 5.6.42 The Order Scheme would result in some minor physical intervention into the structure but would not impact any architectural features of the viaduct or the historic pattern plates present on the spandrel walls.
- 5.6.43 The addition of the OLE portals would result in alteration of the viaduct's appearance. However, due to the considered and sensitive approach to design, the proposed works would have limited impact on the significance of the viaduct. The siting of the OLE portals set back from Den Lane, Huddersfield Narrow Canal and High Street (A670), by a single, narrower span to either side would respond to the architectural form of the viaduct and minimise intrusion from the OLE portals in key views of the structure along these routes. The architectural features, form and massing of the viaduct would continue to be appreciable following the installation of the OLE portals, maintaining the aesthetic value of the listed building. The key relationship of the viaduct with the Huddersfield Narrow Canal and particularly the grade II listed lock 23 and tailbridge No.75 (NHLE 1356719) which is spanned by the viaduct, would be maintained, preserving understanding of the close historic connection between the Huddersfield & Manchester Railway and the Huddersfield Narrow Canal.
- 5.6.44 The Order Scheme would result in a low level of less than substantial harm to Uppermill Viaduct (MVL3/31).

Impact on group value

- 5.6.45 The Order Scheme would impact on the group value of the Online Designated Heritage Assets designed by A.S. Jee for the Huddersfield & Manchester Railway on the Transpennine Route. A total of 19 such structures designated as listed buildings are present along the Transpennine route.⁵ Taken as a whole these structures each make a contribution to the significance of the others.
- 5.6.46 An impact on the group value of these structures would arise from:
- The proposed removal of one listed overbridge (MVL3/23);
 - The proposed reconstruction of four overbridges (MVL3/7, MVL3/20, MVL3/25, MVL3/28); and
 - The alteration of five listed structures (MVL3/8, MVL3/17, MVL3/26, MVL3/29, MVL3/31).
- 5.6.47 The removal and proposed reconstructions would result in the cessation of the contribution made by five structures to the group value of the 19 bridges designed by A.S. Jee for the Huddersfield & Manchester Railway. Given that the masonry structures within this group derive a degree of significance from their shared historical associations and architectural

⁵ In addition to the 12 listed bridges designed by A.S. Jee on Route Section W2B, a further seven bridges survive elsewhere on the Transpennine Route. Refer to the heritage statements presented at Volume 3 - Appendices of the Report [NR14], Appendix 5A for further information about these structures.

form, the significance of each of the remaining 14 structures would be slightly diminished by the proposed works.

- 5.6.48 Within this wider group there are smaller groups of more closely related structures. Heyrod Hall Overbridge (MVL3/7), Springbank Lane Overbridge (MVL3/9), Roughtown Road Overbridge (MVL3/17) and Wright's Overbridge (MVL3/23) are of particularly similar architectural form. The demolition of one and reconstruction of two of this group would lessen the degree to which group value contributes to the significance of the remaining two structures. Similarly, the group of remaining skew arched bridges (MVL3/10, MVL3/26, MVL3/82, MVL3/94) would be diminished by the reconstruction of Oldham Road Overbridge (MVL3/28).
- 5.6.49 The minor alterations proposed to the seven other listed structures as part of the Order Scheme would not have an appreciable impact on wider group value of the A.S. Jee designed structures. These remaining A.S. Jee structures would be retained and continue to derive significance from their group value.
- 5.6.50 The Order Scheme would adversely impact the group value of these designated structures. However it should be noted that masonry railway bridges across the historic Huddersfield & Manchester Railway route date from a period of railway development when thousands of similar structures were erected and are therefore considered to be of regional interest rather than substantial national interest (Alan Baxter Associates, 2019, 37). The Order Scheme would impact the group value of the 19 identified designated A.S. Jee structures, with the significance of each of the remaining bridges being slightly diminished, amounting to a level of harm towards the middle of the scale of less than substantial harm.
- 5.6.51 The individual impacts and ensuing level of harm are listed in Table 5-2:

Table 5-2: Assessment of impacts to online designated assets

Listing	Asset	Name	Proposed Works	Level of Harm
1449242	MVL3/7	Heyrod Hall Overbridge	Removal of existing masonry deck, reconstruction using a filler beam span finished with masonry cladding	Substantial
1452382	MVL3/8	Springbank Lane Footbridge	Replacement of copers with natural stone steeple copers and minor repairs. Attachment of PFC channel for retaining wall.	Less than substantial
1452405	MVL3/17	Roughtown Road Overbridge	Installation of coloured concrete	Less than substantial

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Listing	Asset	Name	Proposed Works	Level of Harm
			steeple copers and attachment of OLE bridge arm to arch barrel	
1452406	MVL3/20	Wright's Mill Overbridge	Removal of existing masonry deck, reconstruction using a filler beam span finished with masonry cladding	Substantial
1452409	MVL3/23	Wright's Overbridge	Demolition	Substantial
1451848	MVL3/25	Royal George Underbridge	Removal of existing metallic deck and parapet, alteration of abutments, reconstruction using steel U-decks and concrete abutments finished with masonry cladding	Substantial
1451852	MVL3/26	Shaw Hall Bank Road Footway	Installation of new reinforced concrete strengthening and GRP handrails	Less than substantial
1451853	MVL3/28	Oldham Road Overbridge	Removal of existing masonry deck, reconstruction using a concrete beam span finished with masonry cladding, construction of separate footbridge with ramped access	Substantial
1451854	MVL3/29	Wickens Underbridge	Installation of new reinforced concrete strengthening and GRP handrails	Less than substantial
1068120	MVL3/31	Uppermill Viaduct	Alterations to the structure comprising the addition of seven OLE portals onto the listed viaduct	Less than substantial

5.7 Online Non-designated Heritage Assets

- 5.7.1 A total of 24 online non-designated heritage assets are present along within the Order Scheme boundary. These comprise overbridges, underbridges, footbridges, tunnel portals, pipe bridges and a signal box. These assets result from construction for the Huddersfield & Manchester Railway or LNWR in the mid- and late-19th century. These assets have previously been subject to alteration or reconstruction, such as strengthening or deck replacement, reducing their historic and architectural value. Depending on their level of survival and integrity, these assets have been assessed to be of low or negligible significance.
- 5.7.2 Impacts are predicted on six non-designated online structures, as detailed in Table 5-3 below.

Table 5-3: Predicted impacts on online non-designated heritage assets

Asset	Name	Significance	Proposed Works	Level of Harm
MVL3/10A	Manchester Road Footbridge	Low	Reconstruction	Substantial harm
MVL3/12A	Stamford Road Pipebridge	Negligible	Demolition	Substantial harm
MVL3/18	Roughtown Road Footbridge	Negligible	Reconstruction	Substantial harm
MVL3/36	Ward Lane Overbridge	Negligible	Reconstruction	Substantial harm
MVL3/39	Station Road Overbridge	Negligible	Reconstruction of one span	Less than substantial harm
MVL3/39a	Standedge Canal Tunnel	Low	Concrete saddling to masonry arch	Less than substantial harm

- 5.7.3 The Order Scheme will result in the demolition of one online non-designated heritage asset and the reconstruction of four of online non-designated assets. Whilst this will result in substantial harm to these assets, with the exception of Manchester Road Footbridge (MVL3/10A), these comprise much altered structures of negligible significance. Given their negligible significance, the loss of these structures will have limited impact on the understanding and appreciation of the heritage of the Huddersfield & Manchester Railway.
- 5.7.4 The reconstruction of Wrights Mill Overbridge (MVL3/20) would impact the settings of the non-designated assets of Midge Hall Underbridge (MVL3/19; low significance) and the Water Trough (MVL3/21; negligible significance), detracting to a limited extent the legibility of the historic railway in relation to these assets.

5.8 Offline Designated Heritage Assets

- 5.8.1 The historic environment baseline identifies 121 listed buildings (120 grade II, one grade II*) and eight conservation areas within the 250 m study area. All identified offline listed buildings within the study area date from the post-medieval period, primarily the 18th and 19th centuries. These include a range of industrial buildings such as factories and workshops, as well as domestic, religious and civic buildings, canals, roads and railways infrastructure. These buildings reflect the development of the study area through the post-medieval period and particularly during the high points of Victorian industrialisation.
- 5.8.2 A key group of assets within the study area relate to Huddersfield Narrow Canal. The canal was constructed in the late 18th century under the engineer Benjamin Outram to provide a transport link across the Pennines from Huddersfield to Ashton-under-Lyne. The canal and Transpennine Route enjoy a close historic relationship, with the railway constructed to follow the route of the canal prior to its purchase by the LNWR in the late 1840s. Along the canal there are numerous listed structures including locks, bridges, tunnels, milestones and an aqueduct which are of historic and architectural significance in their own right and hold group value as elements of the Huddersfield Narrow Canal. The canal forms a key element in the Uppermill and Royal George Conservation Areas which contributes to the understanding of their historic development and forms a key contributing factor to their character and appearance.
- 5.8.3 Temporary noise and visual intrusion from construction works may impact the setting of a small number of designated assets (refer to Figures 5.1.1 to 5.1.9) within the study area comprising
- 7, 9, 11 and 11a, Midge Hill (grade II listed, NHLE 1162827);
 - Summerhill Cottage (grade II listed, NHLE 1068042);
 - 32 and 34 Greenhill Cottages (grade II listed, NHLE 1356440);
 - Christ Church Vicarage (grade II listed, NHLE 1309579);
 - Christ Church, Friezland (grade II listed, NHLE 1356701);
 - Huddersfield Narrow Canal, Lock no 23 (Lime Kiln Lock and adjoining tailbridge No 75 and Aqueduct No 74 (grade II listed, NHLE (1356719);
 - Huddersfield Narrow Canal No. 69 Bridge (grade II listed, NHLE 1309242);
 - Huddersfield Narrow Canal No. 66 Bridge (grade II listed, NHLE 1067433);
 - Huddersfield Narrow Canal Lock adjacent to Ward Road Bridge (grade II listed, NHLE 1253530); and
 - Ivy Cottage (grade II listed, NHLE 1309447).

- 5.8.4 These impacts would be minor and short term, ceasing at the end of construction.
- 5.8.5 The reconstruction of Wright's Mill Overbridge (MVL3/20) would result in minor change to the setting of the 7, 9, 11 and 11A Midge Hill (grade II listed building, NHLE 1162827). However due to limited intervisibility between these structures and the role of the reconstructed bridge in maintaining the pedestrian / bridleway route along Midge Hill this would not have an appreciable impact on the listed building.
- 5.8.6 Minor change to the setting of Christ Church (grade II listed building, NHLE 1356701) would result from reconstruction of Royal George Underbridge (MVL3/25). The church and bridge contribute to each other's setting due to their contemporaneity, physical and visual inter-relationship and shared use of gothic detailing. The reconstruction of Royal George Underbridge (MVL3/25) to reinstate key aspects of the bridge's form and gothic parapets, will maintain legibility of this relationship and the continued contribution of Royal George Underbridge to the setting of the Church, resulting in less than substantial harm at the lower end of the scale.
- 5.8.7 The addition of OLE across Uppermill Viaduct (MVL3/31) will be visible in views of Lock 23 and tailbridge No.75 (NHLE 1356719) along the Huddersfield Narrow Canal. However, this would not form a prominent or intrusive element due to the considerable height of the viaduct deck above the canal lock and the siting of OLE portals to be set back from the skew span over the canal, limiting their visibility. This would not detract from understanding of the historic relationship between the canal and railway, and would result in less than substantial harm at the lower end of the scale.
- 5.8.8 The eight conservation areas within the study area (refer to Figures 5.2.1 to 5.2.9) cover the historic core of settlements. Of these, impacts are predicted on two assets:
- Uppermill (DGM3166, CA12), designated a conservation area in 1977, encompasses the historic core of the settlement. The significance of the conservation area stems from its large number of well-preserved buildings and spaces that reflect the growth of Uppermill as an industrial settlement during the 19th century. The Order Scheme extends into the south of the conservation area adjacent to Wickens Underbridge (MVL3/29) and in the area of Oldham Road and to the north of the conservation area around Uppermill Viaduct (MVL3/31).
 - Digglea (DGM3172, CA01), designated a conservation area in 1972, is a traditional Pennine moorland settlement. Buildings, mostly 18th-century gritstone structures with slate roofs, show evidence of earlier origins and a history tied to farming and the handloom textile industry. The area features irregular rooflines, narrow roadways, and open

spaces with mature trees. The Order Scheme would lie adjacent to the conservation area along its western Boundary.

5.8.9 Noise and visual intrusion from construction works would temporarily impact these assets or their settings, ceasing at the end of construction.

5.8.10 The addition of OLE portals to Uppermill Viaduct (MVL3/31) will alter the appearance of viaduct, a landmark structure within Uppermill Conservation Area, to a limited extent. The extent of this impact would, however, be limited due to the considered placement of the portals to maintain key views along the Huddersfield Narrow Canal, Den Lane and High Street (A670). The landmark status of the viaduct within the conservation area would be maintained, as would understanding of the role of the railway in the development of the settlement and its inter-relationship with the canal. Its significance would remain wholly appreciable in the conservation area and as would the contribution that the viaduct makes to the character and appearance of the conservation area. This would result in less than substantial harm at the lower end of the scale.

5.8.11 The reconstruction of Station Road Overbridge (MVL3/39) would not result in any appreciable change to the setting of Diggle Conservation Area, resulting in a negligible impact to the conservation area.

5.9 Offline Non-designated Heritage Assets

5.9.1 Within the 250 m study area the historic environment baseline identifies 201 offline non-designated heritage assets (refer to Figure 5.3.1 to 5.3.9) comprising historic buildings, monuments, places and findspots.

5.9.2 Five archaeological findspots that have been removed or destroyed are recorded within the study area. While these are no longer extant in their original location, they do suggest the potential for undiscovered archaeological remains in the wider area.

5.9.3 Most of these non-designated offline assets are of post-medieval date. These assets are of low and negligible significance and include:

- Non-designated buried archaeological remains, particularly associated with railway and canal infrastructure;
- Non-designated buried archaeological remains associated with earlier periods;
- Industrial heritage remains related to non-designated structures associated with the railway, canal, mills and associated housing, leisure, religious and institutional facilities; and
- Non-designated structures, generally of post medieval date.

5.9.4 Sources of impact during the construction stage of the Order Scheme are likely to include:

- Site clearance and vegetation removal;
- Ground reduction for site preparation, remediation, and construction compounds;
- Removal of walls and gateways to enable vehicle entrance and turning;
- Alteration or demolition of railway bridges;
- Construction of new foundations for compounds;
- Enabling works for the provision/diversion of utilities and services;
- Intrusive activities intended for drainage or flood alleviation; and
- Groundworks for car parking areas.

5.9.5 These activities have the potential to result in the local removal or truncation of previously recorded and/or unrecorded assets of, at most, local archaeological and historic interest.

5.9.6 The potential for survival of archaeological remains has been identified in some offline areas within the Order Scheme Boundary. These areas are planned for uses including compounds, laydown areas, access routes, road and PRoW upgrades, works areas and areas of drainage and utility works. The survival and condition of any potential archaeological remains depends on factors including the depth of remains and the extent of any previous ground truncation caused by previous development. These areas are considered in detail in Appendix 5B of the Historic Environment Desk-based Assessment in Volume 3 of this Report [NR14].

5.9.7 Proposals for these offline areas is still in development, and therefore potential impacts upon archaeological deposits, if present, cannot currently be determined.

5.9.8 The setting of heritage assets, particularly historic structures and landscapes could be temporarily affected by increased traffic, noise, dust, vibration, and light emissions. These changes would be most appreciable in more rural areas. Such changes would result in temporary and reversible adverse impacts.

5.9.9 Operational impacts are expected to be minimal once construction is completed. Any archaeological remains affected by construction will have been recorded and removed, with no significant impacts anticipated on the setting or significance of the remaining heritage assets.

5.9.10 Temporary noise and visual intrusion from construction works may result in temporary impacts to non-designated heritage assets around the Order Scheme, however will cease at the end of the construction phase. No permanent impacts on the settings of offline non-designated assets have been identified during operation of the Order Scheme.

5.9.11 No permanent impacts are predicted on offline non-designated assets from operation of the Order Scheme.

5.10 Historic Environment Mitigation and Consideration of Control Measures

5.10.1 A robust process of optioneering and design development has been undertaken to avoid or reduce the potential for impacts on listed railway bridges and other structures (including Uppermill Viaduct) on within the Order Scheme boundary. This was undertaken in consultation with Historic England and the local planning authorities (LPAs). This process included:

- The adoption of a scheme-specific pantograph which enables the use of reduced overhead line wire height under structures;
- Alterations of track alignment (track slew) and lowering of track under listed overbridges in preference to structure demolition where possible; and
- Use of a risk-assessment based approach for electrical protection works enabling increase in parapet height to be minimised as far as possible.

Embedded Mitigation

5.10.2 Embedded mitigation has been incorporated into the proposed works to the listed railway bridges and assessed as an integral part of the design proposals. These measures include:

- The use of natural stone cladding for reconstructed masonry structures (MVL3/7, MVL3/20, MVL3/25, MVL3/28), reflecting the materiality of historic structures along the Transpennine Route.
- Retention and reuse of stone for reuse on the parapet interiors of reconstructed masonry bridges (MVL3/7 and MVL3/20) where feasible.
- The common approach taken to design of masonry bridge reconstructions, providing a coherent approach and a visible reference to the new phase of design upgrades to the Transpennine Route in the 21st century.
- Reference to architectural features of the existing historic masonry structures in the design of proposed reconstructed overbridges including stringcourses and pilasters, and sensitive design of cladding to aid integration with retained fabric.
- The incorporation of measures such as gothic arcading to the new bridge parapets, reinstatement of the semi-octagonal piers and feature course, and use of stone cladding on proposed reconstruction of Royal George Underbridge (MVL3/25) to respond to the historic form and design of the structure.
- The use of natural stone copers where possible for reconstructed structures and electrical protection works (MVL3/7, MVL3/8, MVL3/20, MVL3/25 and MVL3/28).

Additional Mitigation

- 5.10.3 In addition to these design measures, toolbox talks to disseminate best practice for reducing potential impacts in relation to listed railway structures and non-designated heritage assets would also be delivered during construction of the works, for example to help avoid accidental damage.
- 5.10.4 Full details of these measures are set out for listed structures in Appendix 5A in Volume 3 of this Report [NR14].
- 5.10.5 Historic building recording in accordance with guidance published by Historic England (2016) is recommended to be undertaken for online designated and non-designated structures as set out in Table 5-4 below. This would provide a permanent documentary record of the structures in their current condition which would be submitted to the Greater Manchester Historic Environment Record.

Table 5-4: Proposed programme of historic building recording for online designated and non-designated heritage assets

Reference	Asset	Name	Designation	Historic Building Record
1449242	MVL3/7	Heyrod Hall Overbridge	Grade II listed building	Level 3
1452382	MVL3/8	Springbank Footbridge	Grade II listed building	Level 1
N/A	MVL10A	Unnamed Footbridge	None	Level 1
1452405	MVL3/17	Roughtown Road Overbridge	Grade II listed building	Level 1
1452406	MVL3/20	Wright's Mill Overbridge	Grade II listed building	Level 3
1452409	MVL3/23	Wright's Overbridge	Grade II listed building	Level 3
1451848	MVL3/25	Royal George Underbridge	Grade II listed building	Level 3
1451852	MVL3/26	Shaw Hall Bank Road Footway	Grade II listed building	Level 1
1451853	MVL3/28	Oldham Road Overbridge	Grade II listed building	Level 3
1451854	MVL3/29	Wickens Underbridge	Grade II listed building	Level 1
1068120	MVL3/31	Uppermill Viaduct	Grade II listed building	Level 1

- 5.10.6 Permanent heritage interpretation relating to the history of the Transpennine Route is also proposed to be installed adjacent to Oldham Road Underbridge (MVL3/28) and Greenfield Station, the content and design of which will be determined in consultation with heritage stakeholders.
- 5.10.7 A summary of archaeological potential and heritage significance within the Order Scheme Boundary, but outside of Network Rail's operational Boundary is set out in Table 5-5 below with anticipated mitigation works.
- 5.10.8 Archaeological mitigation for the Order elements of the Order Scheme will be secured through section 5 of the Code of Construction Practice (CoCP) Part B and a planning condition included in the 'Request for Deemed Planning Permission and Statement of Proposed Conditions' [NR11]. This mitigation will include a programme of archaeological work, as outlined in Table 5-5 below, alongside construction controls to protect areas of archaeological potential from accidental damage during construction and procedures for addressing unexpected discoveries.
- 5.10.9 Archaeological mitigation for works subject to PDR will be undertaken in accordance with requirements included in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]).
- 5.10.10 The proposed planning condition for Archaeology is set out in the 'Request for Deemed Planning Permission and statement of proposed conditions' [NR11].
- 5.10.11 As the design progresses, consultation with each LPA's archaeological advisor and Greater Manchester Archaeological Advisory Service (GMAAS) will inform the scope of archaeological work and appropriate construction controls. Works in archaeologically sensitive areas will only proceed following approval of a construction methodology and, where necessary, a Written Scheme of Investigation (WSI) agreed with the relevant LPA as outlined in the preceding paragraph. A public engagement framework for archaeology and heritage will also be developed as part of these works, enabling public engagement with and dissemination of information about the history and archaeology of the TransPennine Route.

Table 5-5: Summary of archaeological potential and heritage significance of offline Scheme areas and likely mitigation works

Offline area of potential impact	Archaeological potential	Anticipated mitigation works
Printworks Work Main Compound	Relatively steep slope, medieval or post-medieval farming. Low potential for significant archaeological remains.	Depending on impacts, historic building recording and a staged programme of archaeological investigation may be required.
Printworks Office Compound	Ruins and buried remains of the medieval Souracre Farm, Woodfield. High potential for archaeological remains of low or medium significance.	Depending on impacts, historic building recording and a staged programme of archaeological investigation may be required.
Heyrod Hall Compound	Archaeological remains relating to the development of Heyrod Hall in the medieval and post medieval period. Moderate potential for archaeological remains of low or medium significance.	Depending on impacts, a staged programme of archaeological investigation may be required.
Wakefield Road Compound	Former railway sidings. Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.
Scout Tunnel Site Compounds: Scout West Ramp and Laydown areas	Scout West Laydown: low potential for significant archaeological remains. Scout West Ramp: Low potential for archaeological remains of low or medium significance, associated with C18th and C19th Scout Mill.	Scout West Laydown area: No archaeological mitigation works anticipated. Scout West Ramp Site: Depending on impacts, a staged programme of archaeological investigation may be required.
Manchester Road: Scout West Spoil Hold Site	Moderate potential for archaeological remains of demolished terraced housing of low significance. Low potential for archaeological remains of low or medium significance, associated with C18th and C19th Scout Mill, such as mill leats (artificial watercourse ancillary to the function of the mill).	Depending on impacts, a staged programme of archaeological investigation may be required.
Scout East Ramp Works	Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.

Offline area of potential impact	Archaeological potential	Anticipated mitigation works
Plevins Site Compound Works	Site was formerly used as Micklehurst Goods Station on the 'Micklehurst Loop', c. 1881-1966. The Goods Warehouse remains extant.	Depending on impacts, historic building recording and a staged programme of archaeological investigation may be required.
Egmont Street Compound	Buried remains of the C19th Albert Mill may survive beneath areas of modern hardstanding. Moderate potential for archaeological remains of low or medium significance.	Depending on impacts, a staged programme of archaeological investigation may be required.
Relocated Mossley Station West Site Compound	Formerly former railway sidings, signal posts, and allotment gardens. Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.
Mossley Station Relocation Works (Mossley Station Compound)	Formerly a railway siding with a coal depot. Non-listed ashlar gateposts and wall. Low potential for significant archaeological remains.	Historic building recording of surfaces, gateposts of Boundary wall. Depending on impacts, a staged programme of archaeological investigation may be required.
New Earth Street Compound	Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.
Roughtown Road Overbridge (MVL3/17) Works	Low potential for significant archaeological remains.	Roughtown Road Railway Overbridge (MVL3/17) will be protected via construction controls set out in the CoCP No archaeological mitigation works anticipated.
Heron Lane Site Compound and Stockport Road Level Crossing and PRow Diversion	Low potential for archaeological remains of low significance.	No archaeological mitigation works anticipated.
Armit Road Site Compound	Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.
Stockport Road Level Crossing Diversion	Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.
Royal George Underbridge (MVL3/25) and Compound Works	Former location of C19th Sunday School. Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.

Offline area of potential impact	Archaeological potential	Anticipated mitigation works
Oaklands Road Site Compound Works	Former railway sidings. Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.
Greenfield Compounds Works	Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.
Wickens Underbridge MVL3/29 Laydown Area & PRow Upgrade	Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.
Former Saddleworth Station Site Compound	Previously used as a quarry. Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.
Brownhill Lane Access	Nearside of Brown Hill Bronze Age barrow (1096.1.0) and 19th century quarrying. Low to moderate potential for prehistoric archaeology of low to medium significance, associated with Bronze Age or later burials	Depending on impacts, a staged programme of archaeological investigation may be required.
Old Railway Tunnel Compound, Saddleworth (Butterhouse Tunnel)	Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.
Ward Lane Satellite Compounds	Low potential for significant buried archaeological remains.	No archaeological mitigation works anticipated.
Grandpa Green Compounds 1 & 2	Low potential for significant archaeological remains.	No archaeological mitigation works anticipated.
Diggle Compounds	Low potential for significant buried archaeological remains. Strengthening of south end of the Standedge Canal tunnel would not result in any alteration to the fabric of the portal.	No archaeological mitigation works anticipated.

- 5.10.12 The additional mitigation measures set out above do not diminish impacts on affected heritage assets, and should be taken into consideration in the overall planning balance of the Order Scheme.

5.11 Cumulative and in-combination impacts

- 5.11.1 In addition to the relevant works elements of the Order Scheme it is acknowledged that additional works are being undertaken using PDRs and additional LBCs as part of the wider Scheme. Implementation of these works will likely be undertaken concurrently with the relevant works elements of the Order Scheme and therefore may give rise to cumulative impacts both during the construction and operation phases of the Order Scheme.

Works undertaken using PDRs

- 5.11.2 Relevant works being undertaken using PDRs as described in Chapter 1 of the Environment Report [NR14] which have the potential to have a cumulative impact on the historic environment include:
- Installation of Overhead Line Equipment (OLE) within Network Rail's operational Boundary⁶;
 - Works to the existing Mossley Station including removal of the platform shelters and existing footbridge;
 - Upgrades to Greenfield Station;
 - Works to non-designated bridges (MVL3/12, MVL3/12A, MVL3/13, MVL3/14, MVL3/15, MVL3/19, MVL3/22, MVL3/24 and MVL3/27A).
 - Other temporary works for construction, including site compounds, site clearance, demolitions and access upgrades subject to PDRs which would be undertaken in accordance with NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]).
- 5.11.3 These works have the potential to impact on heritage assets as a result of:
- Impacts to the setting of designated and non-designated heritage assets due to the presence of OLE or other works;
 - Physical impacts on historic bridges and stations resulting in harm to the significance of these non-designated heritage assets; and
 - The truncation or removal of non-designated archaeological remains as a result of compound establishment and access upgrades.
- 5.11.4 As is standard practice on Network Rail schemes, potential impacts on heritage assets resulting from PDR works would be managed in

⁶ No impacts to heritage assets have been identified as a result of OLE works outside Network Rail's operational boundary.

accordance with the requirements included in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]). This would include the preparation of a heritage assessment as part of the management plans in consultation with the relevant local and statutory authorities, and the undertaking of the works to avoid disturbance of archaeological remains and historic buildings.

- 5.11.5 No cumulative impacts are predicted on the historic environment from the Order Scheme in combination with works to be undertaken using PDR or from nearby consented and reasonably foreseeable schemes.

Works subject to additional LBCs

- 5.11.6 The implementation of the Order Scheme requires works to Springbank Lane Overbridge (MVL3/9) and Manchester Road Underbridge (MVL3/10). These works are programmed to commenced in advance of the Order being made, as such separate applications for LBC will be submitted to TMBC. Although not part of the Order Scheme, for the sake of completeness, these works are described below.
- 5.11.7 At Springbank Lane Overbridge (MVL3/9) these works comprise the attachment of anti-sitting coloured concrete steeple copers on top of existing coping stones, attachment of OLE bridge arm, attachment of a parallel flange channel to the south elevation of the bridge, and minor repairs. At Manchester Road Underbridge (MVL3/10) the works comprise the installation of precast concrete strengthening units, the securing of individual ashlar stone parapet blocks using grouted dowels to counteract lateral forces of heavier and faster trains, the replacement of existing modern handrail, and minor repairs to the arch barrel.
- 5.11.8 The limited degree of less than substantial harm arising from the works to Springbank Lane Overbridge (MVL3/9) and Manchester Road Underbridge (MVL3/10) will be managed via the LBC process separate to the Order application. Extensive and ongoing consultation has taken place with TMBC and Historic England, with mitigation embedded in the design of the Scheme and secured via the imposition of conditions attached to the LBC.
- 5.11.9 By virtue of the limited anticipated impact arising from the proposed works on the significance of the bridges, it is considered that there would be very limited cumulative impact to the historic environment arising from a very minor change to the group value of listed bridges (Heyrod Hall Overbridge (MVL3/7), Springbank Lane Overbridge (MVL3/9), Roughtown Road Overbridge (MVL3/17) and Wright's Overbridge (MVL3/23) which are of particularly similar architectural form) arising from the addition of coloured concrete steeple copers slightly altering the way in which the original design intent is experienced. No other cumulative impacts are expected to arise from the works covered by the two LBC applications being progressed outside of the Order Scheme.

5.12 Summary and conclusions

- 5.12.1 Within a 250 m study area around the Order Scheme, a total of 143 designated heritage assets and 225 non-designated heritage assets are present. These relate principally to the industrial development of the area around Stalybridge, Mossley and Diggle from the late 18th / early 19th century onwards. Of these assets, the group of online designated historic railway bridges and Uppermill Viaduct (MVL3/7, MVL3/8, MVL3/17, MVL3/20, MVL3/23, MVL3/25, MVL3/26, MVL3/28, MVL3/29 and MVL3/31) will be physically impacted by the Order Scheme.
- 5.12.2 Measures to mitigate these impacts have been embedded into the design of the Order Scheme. These include:
- Robust optioneering to identify design solutions which minimise impacts upon the designated railway bridges as far as possible;
 - The consistent approach taken to design of masonry bridge reconstructions, providing a coherent approach and a visible reference to the new phase of design upgrade of the historic railway;
 - The use of natural and reclaimed stone cladding to aid integration of reconstruction bridges with retained historic fabric;
 - Reference to architectural features of the existing historic structures in the design of proposed reconstructed bridges; and
 - The reduction of minimum required parapet heights as far as possible (in comparison to the usual requirements) through a risk-assessment based approach to design, minimising the visual impact of electrical protection works.
- 5.12.3 The Order Scheme would result in the following impacts to these assets:
- Demolition of one grade II listed overbridge (MVL3/23) resulting in substantial harm to the asset;
 - Reconstruction of four grade II listed bridges (MVL3/7, MVL3/20, MVL3/25, MVL3/28), resulting in substantial harm to these assets; and
 - Minor alteration of a further seven grade II listed bridges (MVL3/8, MVL3/17, MVL3/26, MVL3/29 and MVL3/31), resulting in less than substantial harm to these assets.
- 5.12.4 Non-designated heritage assets within the Order Scheme Boundary include non-designated historic railway structures which have been assessed to be of low and negligible significance. Within offline areas of the Order Scheme, the potential for archaeological remains to be present has been identified relating to medieval and post medieval farming, Heyrod Estate, and post medieval activity including mills and railway infrastructure.

- 5.12.5 The Order Scheme will result in physical impacts to six online non-designated assets of low and negligible significance, and impacts on the setting of two further online non-designated assets of low and negligible significance.
- 5.12.6 Impacts on setting resulting in less than substantial harm at the lower end of the scale are predicted for three offline grade II listed buildings.
- 5.12.7 In relation to conservation areas, less than substantial harm at the lower end of the scale is predicted for Uppermill Conservation Area as a result of the Order Scheme, whilst a negligible impact is predicted on Diggle Conservation Area.
- 5.12.8 No permanent impacts are predicted on offline non-designated heritage assets.
- 5.12.9 Impacts on archaeological remains will be offset through a programme of archaeological mitigation, targeted to areas of archaeological potential defined in 5.10 above. The location and scope of mitigation will be defined in consultation with the LPA's archaeological advisors when construction methodologies are available, and managed through the CoCP Part B and a planning condition attached to the 'Request for Deemed Planning Permission and statement of proposed conditions' **[NR11]**.
- 5.12.10 The phased programme of mitigation, whilst providing a permanent record of heritage assets and archaeological remains which would be lost as a result of the construction of the Order Scheme, would not diminish the impact of the Order Scheme.
- 5.12.11 Public heritage benefit will be delivered from the Order Scheme through the provision of permanent heritage interpretation relating to the history of the Transpennine Route proposed to be installed at Greenfield Station, and the development of a public engagement framework for archaeology and heritage. These works will enable public engagement with and dissemination of information about the history and archaeology of the surrounding area.

6. ECOLOGY

6.1 Introduction

- 6.1.1 This Chapter summarises an appraisal of impacts and effects upon ecological features, and proposed mitigation to eliminate or minimise such effects. Full details relating to impacts and effects arising from the Order Scheme are reported in Volume 3, Appendix 6A – Ecology Technical Appendix of this report [NR14], as well as survey methodologies and full survey data. This chapter is also supported by Figures 6.1 to 6.46 in Volume 2 of this report [NR14]). As a result of additional ecology surveys undertaken, an Ecology addendum has been provided as Volume 4 of this report [NR14].
- 6.1.2 This appraisal has generally followed the Chartered Institute of Ecology and Environmental Management's (CIEEM) Guidelines for Ecological Impact Assessment⁷.
- 6.1.3 Full details relating to planning, legislation, and national and local policy context regarding ecology is provided in Volume 3, Appendix 6A of this report [NR14]. Key legislation, policies and guidance relating to ecology are as follows:
- 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;
 - 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 Council (Oldham Council, 2024);

⁷ CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland. Terrestrial, Freshwater, Coastal and Marine. Version 1.3. CIEEM, Winchester

- Oldham Local Development Framework: Development Plan Document – Joint Core Strategy and Development Management Policies. (Oldham council, 2011);
- Saved Unitary Development Plan policies (Oldham Council, 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 Council (Tameside Metropolitan Borough Council, 2004);
- Tameside Unitary Development plan (Tameside Metropolitan Borough Council, 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).
- Greater Manchester Local Nature Recovery Strategy (2025)

6.2 Appraisal of Impacts and Effects

- 6.2.1 The full methodology of the appraisal of impacts and effects, the full ecological baseline of the Order Scheme, and methodology for desk study and field surveys undertaken are provided in Volume 3, Appendix 6A of this report [NR14]. Suitable study areas and Zones of Influence (Zol) were established for all ecological features in line with CIEEM guidelines.
- 6.2.2 Desk study resources utilised to inform the appraisal included Defra’s MAGIC website, The Woodland Trust’s Ancient Tree Inventory, and local biological records provided by Greater Manchester Local Records Centre (GMLRC).
- 6.2.3 Field surveys were conducted to supplement desk study information, including habitat survey (utilising UKHab Classification⁸ (UKHab) survey methodology), habitat condition assessment, and bat surveys to determine presence/ likely absence of roosting bats within structures.
- 6.2.4 A full summary of ecological features that may be affected during construction, operation and decommissioning is provided in Volume 3,

⁸ UKHAB Ltd (2023). Habitat Classification v2.0. [online] Available at: <https://ukhab.org/register/>.

Appendix 6A – Ecology Technical Appendix of this report [NR14]. Additionally, Volume 4 - Additional Ecological Survey Data Addendum of the Environmental Report [NR14] supports this appendix by providing additional summary information relating to areas of the Order Scheme that were accessed after the primary survey.

- 6.2.5 Four internationally statutory designated sites for nature conservation were identified within the study area of the Order Scheme comprising Peak District Moors (South Pennine Moors Phase 1) Special Protection Area (SPA), South Pennine Moors Special Area of Conservation (SAC), South Pennine Moors Phase 2 SPA and Rochdale Canal SAC. Seven nationally important designated sites for nature conservation were identified, one of which is located within the Order Scheme Boundary; Huddersfield Narrow Canal Site of Special Scientific Interest (SSSI).
- 6.2.6 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.
- 6.2.7 Six ancient or veteran trees and fourteen priority habitats, both within the study area during desk study and within the Order Scheme during field surveys, were recorded within the Zol of the Order Scheme. Of these, deciduous woodland and lowland heathland are present within the Order Scheme Boundary. The field surveys identified sixteen different area-based and seven linear-based habitat types within the Order Scheme Boundary. Suitable habitats are present for foraging and commuting wildlife plus badger sett creation, bat roosting, otter holt creation, water vole burrowing, breeding birds nesting, great crested newt breeding, reptile refuging, white-clawed crayfish refuging, other priority species refuging and priority plants. Therefore, there is a risk of direct harm, killing/destruction, fragmentation and disturbance of species and their habitats. There is significant presence of invasive non-native plant species (INNPS) throughout the Scheme including Japanese knotweed, Himalayan balsam, rhododendron, cotoneaster, montbretia, variegated yellow archangel, Japanese rose, buddleia, and cherry laurel.

6.3 Mitigation and Consideration of Control Measures

- 6.3.1 To mitigate impacts upon specific species and for specific works elements of the Scheme, further mitigation will be implemented as detailed in Appendix 6A of this Report. To summarise embedded (EM) and additional (AM) mitigation:
- Layout Design (EM1) - The layouts of the Order Scheme have been designed to make use of habitats of low ecological value where practicable. Additionally, a 30m vegetation buffer will be maintained from the disused tunnel portal at the Former Butterhouse Tunnel Site Compound to avoid potential impacts on roosting bats;

- Lighting Measures (EM2) - A Code of Construction Practice (CoCP) Part B Nuisance Management Plan will include best-practice measures for any additional lighting (Preparation and agreement of Part B of the CoCP is the subject of a planning condition as described in the Order application document 'Request for deemed planning permission and statement of proposed conditions' [NR11]).
- Noise Reduction (EM3) - A CoCP Part B Noise and Vibration Management Plan will include mitigation measures for reducing impacts from noise during construction;
- Surface Water Drainage and Pollution Prevention (EM4) - A Pollution Prevention and Incident Control Plan (PPICP) and Nuisance Management Plan (NMP) will include mitigation measures for preventing pollution incidents during construction of the Order Scheme; and
- Biosecurity Measures (EM5) – AN INNPS Management Plan will be produced documenting the presence of INNPS to ensure they are not spready beyond their current extent.
- SBI (AM1) – The Order Scheme has been designed to follow the mitigation hierarchy and avoid impacts to SBIs where feasible;
- Priority Habitat (AM2) - The Order Scheme has been designed to follow the mitigation hierarchy and avoid impacts to priority habitat where feasible;
- Bat Mitigation (AM3) - A detailed mitigation strategy will be developed as part of the works;
- Habitat Demarcation for Trees and Hedgerows (AM4) - Protection of retained trees and hedgerows will be implemented in accordance with British Standard 5837:2012;
- Scheme Clearance and Preparation (AM5) - 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;
- Breeding Bird Mitigation (AM6) - 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 site clearance and preparation works undertaken in the bird breeding season; and
- Ecology Tool Box Talks (AM7) - 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 Boundary.

- 6.3.2 Volume 4 – Additional Ecological Survey Data Addendum of this Report [NR14] details additional mitigation measures required following subsequent ecology surveys.
- 6.3.3 As a result of this mitigation, no notable adverse residual construction or operational ecological effects are anticipated as a result of the Order Scheme.
- 6.3.4 For associated temporary works elements of the Scheme that fall under permitted development rights, land for temporary use will be restored to pre-works conditions as far as reasonably practicable. Those elements of the Scheme undertaken using permitted development rights – both on their own and cumulatively or in combination with the Order Scheme – will be managed via the CoCP Part A and in accordance with Network Rail's Environment and Social Minimum Requirements for Projects – Design and Construction (NR/L2/ENV/015) (Volume 3, Appendix 1A of this Report [NR14]).
- 6.3.5 Where available, the relevant works components of the Order Scheme are using habitats of lower ecological value and those that are widely available in the wider landscape. The Order Scheme will be undertaken in accordance with the Network Rail/ TRU Net Positive Biodiversity Strategy which stipulates that 10% BNG be implemented (to be delivered across TRU as per the project-wide TRU Net Positive Biodiversity Strategy). A Biodiversity Strategy and Landscape and Ecological Management Plan (LEMP) will be produced to cover the relevant works 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 the LEMP will both be secured through planning conditions in the 'Request for deemed planning permission and statement of proposed conditions' [NR11].
- 6.3.6 The Greater Manchester Ecology Unit (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 Guidelines 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.
- 6.3.7 Additionally, in consideration of the potential cumulative impacts of the Order Scheme and in accordance with NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]), a license will also be acquired for the

works subject to Permitted Development at Spingbank Lane Overbridge (MVL3/9) and within Stalybridge and Scout Tunnels at the appropriate time. The wider Scheme would apply Natural England's Licensing Policy 4 at Stalybridge and Scout Tunnels. The number of replacement bat roost features (e.g. day/ transitional and hibernation bat boxes) will be decided in liaison with Natural England in lieu of the licence application. Further to this, additional bat boxes will be installed to provide enhancement for roosting bats. Monitoring requirements will be agreed within licence conditions to ensure the longevity of the availability of potential roost features.

7. LANDSCAPE AND VISUAL AMENITY

7.1 Introduction

7.1.1 This appraisal identifies and evaluates the potential magnitude of impacts (change) on landscape character and visual receptors (all people) that may arise as a result of the proposed Order Scheme. Embedded and other proposed mitigation measures that will be required are also set out. A Landscape and Visual Technical Note providing a more detailed appraisal of the landscape and visual amenity impacts of the Order Scheme is included in Volume 3 of this Report, Appendix 7A – Landscape Technical Appendix [NR14]. The scope used in the Technical Note has been developed in accordance with the guidance set out in GLIVA3⁹, the most recent guidelines published by the Landscape Institute. In accordance with this guidance, this non-statutory report is referred to as an ‘appraisal’ rather than an ‘Assessment’ and no reference is made to the level of ‘significance of effect’.

7.1.2 The overarching planning legislation and policy framework concerning landscape and visual amenity are detailed in section 1 of the Planning Statement [NR15]. In summary, the relevant legislation and policies associated with landscape and visual impacts include:

- The National Planning Policy Framework (NPPF) (December 2024) supports sustainable development in economic, environmental, and social progress. Notable chapters related to landscape include Chapter 12, which focuses on well-designed places that respect local character and landscape context, and Chapter 15, which emphasises the protection of valued landscapes, ecosystem services, and the enhancement of woodlands.
- Chapter 15 (paragraphs 187–190) states planning decisions should protect and enhance valued landscapes, recognising the intrinsic character and beauty of the countryside (paragraph 187). Plans are expected to take a strategic approach to maintaining and enhancing habitat networks and green infrastructure, and to plan for the enhancement of natural capital at a catchment or landscape scale (paragraph 188). Great weight is given to conserving landscape and scenic beauty in National Parks, the Broads, and National Landscapes (formerly Areas of Outstanding Natural Beauty (AONBs), with strict controls on major development in these areas (paragraphs 189–190).

⁹ [Guidelines for Landscape and Visual Impact Assessment \(GLVIA3\) - Landscape Institute](#)

- In line with the NPPF Chapter 12 (paragraphs 131–141), development should be visually attractive, sympathetic to local character, and contribute to a strong sense of place. The framework supports high-quality, landscape-led development that reflects local identity and community aspirations.
- The NPPF outlines Green Belt policy in section 13 (paragraphs 142 to 160) to prevent urban sprawl, ensuring land remains open and undeveloped. Key characteristics of Green Belt areas are openness and permanence, which help maintain rural character and restrict urban expansion, supporting sustainable development and environmental preservation.
- The Places for Everyone (PfE) Joint Development Plan (2024)¹⁰, covering nine Greater Manchester authorities until 2039, focuses on sustainable development and environmental protection. Key policies include JP-Strat13, which promotes green infrastructure and biodiversity for climate resilience; JP-G2, requiring contributions to the green infrastructure network; JP-G7, mandating the protection and replacement of trees at a 2:1 ratio; and JP-P1, promoting high-quality design and climate-adaptive features in development.
- The Oldham Core Strategy and Development Management DPD (2011)¹¹ and saved UDP policies (2006) guide local planning. Key policies include Policy 9, which promotes high-quality design and placemaking; Saved Policy 22, which protects Other Protected Open Land for its local distinctiveness and landscape value; Policy 1.10, which safeguards biodiversity and geodiversity; and Policy 1.11, which supports the conservation of heritage assets and local identity through sensitive design.
- The Tameside Unitary Development Plan (UDP, 2004; partially saved 2007) guides planning decisions with key policies focused on nature conservation (Policy N1), safeguarding protected open land (Policy OL6), and conserving the historic environment (Policy C1). These policies aim to protect ecological sites, preserve landscape character, and enhance built heritage through thoughtful development.
- Railway High-Level Output Specification (HLOS-CP7) (2024–2029): Sets strategic objectives for railway infrastructure, including maintenance and renewal, under the Railways Act.

7.1.3 This appraisal has also been informed by the following technical guidance:

¹⁰ [Places For Everyone - Greater Manchester Combined Authority](#)

¹¹ [Joint Core Strategy and Development Management Policies Development Plan Documents \(DPDs\) | Joint Core Strategy and Development Management Policies Development Plan Documents \(DPDs\) | Oldham Council](#)

- Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3)
- TGN 06/19 Visual Representation of Development Proposals¹²
- TGN 02/21 Assessing Landscape Value Outside National Designations¹³.

7.2 Appraisal of Impacts

- 7.2.1 The methodology for the appraisal is detailed in section 3, and the landscape character and visual context of the Order Scheme are also discussed in section 3, Appendix 7A Volume 3 of this Report [NR14]. Additionally, the impacts of the relevant elements of the Order Scheme are outlined in section 5 of Appendix 7A in Volume 3 of this Report [NR14].
- 7.2.2 A high-level qualitative appraisal has been conducted to evaluate the likely impacts on various receptors resulting from the relevant elements of the Order Scheme. Additionally, initial proposals for mitigation have been developed. This appraisal considers a "worst-case" scenario, assuming there are likely substantial changes to views or to the landscape. These changes might stem from modifications or the addition of features or elements that are inconsistent with or contrast with the baseline, generally seen as adverse. Works resulting from the Order Scheme are evaluated on a site-specific basis.
- 7.2.3 The context of the site and the study area for each relevant element of the Order Scheme are illustrated in Figures 7.1.1 to 7.1.6 in Volume 2 – Figures of this Environmental Report [NR14]. Baseline data were sourced from Ordnance Survey (OS) mapping, local authority landscape character assessments, and Natural England's national character mapping. Representative viewpoints were identified by a Chartered Landscape Architect and were provided to OMBC and TMBC local authorities during the consultation process for their consideration, as detailed in the Consultation Report [NR7].
- 7.2.4 The study areas are situated within three distinct National Character Areas (NCAs) as identified by Natural England. These include NCA 54, known as the Manchester Pennine Fringe; NCA 36, referred to as the Southern Pennines; and NCA 51, known as the Dark Peak. In the appraisal conclusion, it has been determined that due to the extensive scale of these NCAs compared to the more localised nature of the Order Scheme's work elements, the proposed activities are not likely to have significant impacts

¹² [Visualisation of development - Landscape Institute](#)

¹³ [TGN 02-21: Assessing landscape value outside national designations - Landscape Institute](#)

at the NCA level. Consequently, these NCAs will not be considered further in this appraisal.

- 7.2.5 At a regional level, the study area spans several landscape character areas (LCAs), each exhibiting distinct characteristics and a medium sensitivity to change. The Greater Manchester Landscape Character and Sensitivity Assessment (2018)¹⁴ describes Matley and Mottram Dark Peak Foothills (LCA 33), part of the Pennine Foothills landscape character types (LCT), which features steep pastoral slopes, gritstone walls, and clough woodlands, with a rural character influenced by urban encroachment. The River Tame (LCA 36), within the Incised Urban Fringe Valleys LCT, is defined by wooded valley sides, historic mill infrastructure, and green corridors supporting biodiversity and recreation. The Shore Edge to Dove Stones Reservoir (LCA 30), part of the Open Moorlands and Enclosed Upland Fringes LCT, offers elevated moorland with strong visual links to the Peak District and high scenic quality. Within the Peak District National Park, the Dark Peak – Western Fringe (LCT: Valley Pastures with Industry)¹⁵ presents a settled, low-lying valley landscape with pastoral fields, mill heritage, and dispersed stone-built settlements, contributing to a strong rural and historic character.
- 7.2.6 The Oldham Local Landscape Character Study 2009 identifies character areas, notably LCA 4: Tame Settled Valley, which includes two types. Type 4a – Rural Valley Sides features steep slopes, ancient woodlands, and gritstone walls, offering high scenic value but medium sensitivity. Type 4b – Urban Settlement has linear settlements with historic mills and rural views, also showcasing high value and medium sensitivity despite infrastructure influences. Local-level LCAs have not been prepared for the Tameside Council area.
- 7.2.7 Landscape character areas are illustrated in Figures 7.2.1 to 7.2.3 of Volume 2 of this Report **[NR14]**.
- 7.2.8 Seventy-two viewpoints were selected for visual appraisal in consultation with Tameside and Oldham local planning authorities, as shown in Figures 7.4.1 to 7.4.6 and described in Volume 3, Appendix 7A, Table 4-6 **[NR14]**. These viewpoints represent a variety of receptors from different distances and directions, in relation to the proposed Order Scheme. Careful placement of the viewpoint locations minimised foreground clutter and ensured unobstructed views, representing views, representing likely experiences for receptors, with similar impacts grouped together in some areas. Outputs from the site photography are shown in Figures 7.5.1 to 7.5.76 **[NR14]**.

¹⁴ Greater Manchester Landscape Character and Sensitivity Report prepared by LUC in August 2018

¹⁵ Landscape Strategy: Peak District National Park 2019 update to the original 2009 Landscape Strategy and Action Plan

- 7.2.9 Construction activities may lead to temporary, localised impacts such as increased noise, movement, and visual disruption due to compounds, machinery, and vegetation clearance. These impacts are likely to affect nearby receptors, including residents, pedestrians, PRow and road users. Good construction practices will be adopted, such as hoardings and site management will be implemented. Tree protection will be guided by an Arboricultural Method Statement (AMS) and Tree Protection Plan, updated during detailed design. This will be secured via a planning condition included in the 'Request for deemed planning permission and statement of proposed conditions' [NR11].
- 7.2.10 Following completion of construction works, the Order Scheme may result in permanent changes to the landscape through the introduction of new structures, fencing, and planting. These impacts are expected to be limited in extent, with landscape and visual impacts confined to the immediate surroundings. Final mitigation and enhancement measures will be confirmed at the detailed design stage. This will be confirmed in the LEMP via a planning condition in the 'Request for deemed planning permission and statement of proposed conditions' [NR11]
- 7.2.11 Visual impacts will primarily affect receptors in close proximity to temporary and permanent structures. Landscape impacts relate to the removal of features such as woodland and changes to perceptual qualities like tranquillity. Despite temporary disruption from compounds, haul roads, and lighting, the defining landscape characteristics will remain unchanged, and adverse landscape and visual impacts will be avoided or mitigated where possible. This appraisal is detailed further in Table 5-3 of Appendix 7A in Volume 3 of this Report [NR14].
- 7.2.12 In summation, after the completion of construction works, most visual impacts are assessed as Neutral, with views returning to baseline conditions due to the removal of temporary features. Small adverse impacts remain at viewpoints associated with Heyrod Hall (MVL3/07) and The Old Railway Tunnel Compound site due to minor vegetation loss, where mitigation planting will take longer to reestablish.
- 7.2.13 Small adverse impacts are more widespread from permanent tree removal and visible infrastructure at sites such as Plevins Compound and Oaklands Road Compounds. The most notable residual impact is at the relocated Mossley Station, where nearby receptors will be subject to a medium adverse impact due to new infrastructure and loss of mature vegetation, altering the local landscape character. The full appraisal is detailed further in Table 5-3 of Appendix 7A in Volume 3 of this Report [NR14].
- 7.2.14 The proposed Order Scheme will have short-term, localised, and reversible landscape impacts during construction, primarily due to vegetation clearance and temporary infrastructure. However, these impacts are expected to be negligible to minor adverse during construction and neutral

to negligible during operation, due to mitigation measures and the temporary nature of the impacts. Overall, no significant residual landscape impacts are anticipated, as the Order Scheme is well-integrated within the existing landscape framework, ensuring no long-term harm to the character, quality, or function of the identified LCAs and LCTs.

7.3 Mitigation and Consideration of Control Measures

7.3.1 Landscape mitigation is primarily concerned with mitigating the likely significant adverse impacts of the Order Scheme on landscape and visual receptors. Measures to mitigate non-significant adverse impact on landscape and visual receptors have been included where appropriate to minimise the overall impact. Landscape mitigation also concerns integrating the proposed Order Scheme into the surrounding landscape and enhancing biodiversity.

7.3.2 A high level of optioneering and design development (refer to Design and Access Statement [NR16]) has been carried out to identify suitable designs for all relevant works elements of the Order Scheme, considering local planning policies and published landscape character assessments, to minimise visual and landscape impacts, including reducing the loss of trees and woodland through the mitigation hierarchy. Additionally, embedded mitigation relating to the retention of trees as detailed in section 6 of Volume 3, Appendix 6A of this report has been incorporated into the designs wherever possible, including minimisation of devegetation at the boundaries of compounds and other worksites across the Order Scheme (see Figures 7.3.1 to 7.3.20 of Volume 2 of this Report [NR14]), which will help preserve the existing landscape character and visual amenity where possible, as described in Volume 1, Chapter 14 and section 6 of Appendix 7A in Volume 3 of this Report [NR14].

Embedded Mitigation (Construction)

7.3.3 Embedded landscape and visual mitigation measures applied to mitigate impacts during the construction phase include:

- The construction programme would be kept to the minimum practicable time to reduce the duration of any landscape and visual impacts;
- Areas would not be cleared for construction until as close as possible to the works commencing;
- As far as practicable, construction plant and materials storage areas would be appropriately sited to minimise their landscape and visual impact;
- Construction sites would be kept tidy (e.g. free of litter and debris);

- Work during hours of darkness would be directed to minimise light pollution/glare. Lighting levels would be kept to the minimum necessary for security and safety;
- Construction would be managed such that the loss of any existing woodland, trees, shrubs and hedgerows, including within proposed construction compounds, is minimised;
- Root Protection Areas (RPAs) would be identified for trees being retained. Where this is not possible, the details of each tree would be required to determine an appropriate course of action.
- All existing trees and shrubs not affected by the construction of the permanent works would be fenced off with a suitable type of temporary fencing in accordance with BS5837: Trees in Relation to Design, Demolition and Construction. Fencing would extend to the drip line of the tree canopies (unless otherwise agreed by an arboricultural advisor) and would be erected prior to any construction activities in that area and shall remain for the entire period of construction in that area.
- Topsoiling, reseeding and planting would be undertaken as soon as practicable after sections of work are complete

Embedded Mitigation (Operation)

7.3.4 Embedded mitigation measures applied to mitigate landscape and visual impacts during operation would include:

- Mitigation tree, hedge, and shrub planting would be provided to replace lost vegetation, as specified in the LEMP (refer to section 7.3.6 below);
- The building and lighting design of the relocated Mossley Station will be considerate of the surrounding area in accordance with the measures outlined in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]);
- Replacement tree planting would be provided to align with the focus on no net loss;
- Species-rich and amenity grassland would cover areas of bare earth created during construction and integrate the Order Scheme into the landscape;
- Planting proposals would use predominantly native species present in the surrounding landscape in order to aid the integration of the Order Scheme into the landscape character, and
- Feathered and Light Standard trees would be incorporated into woodland planted mixes to ensure variance in height, contributing to a more natural aesthetic and a greater degree of screening whilst planting is established.

Additional Mitigation

- 7.3.5 Additional mitigation measures applied to mitigate landscape and visual impacts during operation would include:
- Increasing the variety of trees and shrubs in adjacent tree belts to enhance resilience against pests, diseases, and climate change.
 - Establishing native mixed broadleaf woodlands to improve visual amenity and landscape.
 - Ensuring the implementation, maintenance, and ongoing management of the mitigation measures to maintain their effectiveness over time.
- 7.3.6 These strategies aim to minimise adverse effects on the landscape and views, while promoting biodiversity where possible in the area. Further mitigation will be achieved through preparation of a Landscape and Ecological Management Plan (LEMP), which will be secured via a planning condition included in the 'Request for deemed planning permission and statement of proposed conditions' [NR11]. These measures will be integrated into construction management programmes and method statements in accordance with the Code of Construction Practice (CoCP) Part A [NR17], including adherence to NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]).
- 7.3.7 The LEMP will detail both hard and soft landscaping efforts, specifying locations for landscaping to compensate for the loss of mature vegetation, provide habitat connectivity, and seamlessly integrate the Order Scheme elements into the surrounding landscape. It will also consider opportunities for advanced landscaping works (such as planting prior to construction) where practicable in agreement with the relevant local authorities.
- 7.3.8 Additionally, the LEMP will also outline the aims and objectives of the Biodiversity Strategy and will be secured through a planning condition included in the 'Request for deemed planning permission and statement of proposed conditions' [NR11].
- 7.3.9 Cumulative impacts from both the Order Scheme and wider Scheme elements have been considered. For associated temporary works elements, the requirements detailed in NR/L2/ENV/015 will be adhered to (Volume 3, Appendix 1A of this Report [NR14]). For temporary works to be undertaken using Permitted Development Rights, land will be restored to its original condition as far as possible, with outline draft land restoration proposals secured through a letter of environmental commitment, after discussions with the relevant local authority and landowners. Standard impact avoidance measures and additional mitigation for works elements are outlined in section 6 of Appendix 7A in Volume 3 of this Report [NR14].

8. ARBORICULTURE

8.1 Introduction

- 8.1.1 This chapter provides a summary of the arboricultural impacts and discusses the mitigation likely to be required to facilitate the Order Scheme.
- 8.1.2 An Arboricultural Impact Assessment (Environment Report Volume 3 Technical Appendices, Appendix 8A – Arboricultural Technical Appendix) and associated Tree Protection Plans (Figures 8.1.1 to 8.1.20 in the Environment Report Volume 2 Figures) **[NR14]** have been prepared to quantify the impacts on trees and hedgerows from the Order Scheme.
- 8.1.3 The overarching legislation and policies which have been taken into account for arboriculture are as follows:
- Environmental Protection Act 1990;
 - Planning Practice Guidance, 2019;
 - Relevant British Standards (BS) including BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations;
 - National Planning Policy Framework, 2024; and
 - Local Policies:
 - Places for Everyone Joint Development Plan, 2024 (Greater Manchester);
 - Joint Core Strategy and Development Management Policies, 2011 (Oldham Metropolitan Borough Council)
 - Unitary Development Plan, 2004 (Tameside Metropolitan Borough Council).

8.2 Appraisal of Impacts and Effects

- 8.2.1 The relevant policies and guidelines for assessing tree impact are outlined in the aforementioned national and local statutes, standards and frameworks. These documents and policies consistently emphasize the need to minimize impacts to trees arising from construction works.
- 8.2.2 The arboricultural deliverables for the Order Scheme have been produced in accordance with BS5837:2012 Trees in Relation to Design, Demolition and Construction – Recommendations. This standard does not set explicit parameters for measuring the sensitivity of an arboricultural resource; nor does it assess the magnitude of impact of a scheme on trees (other than by providing a record of the number or area of trees that would need to be

removed to facilitate the development as presented at time of submission). Rather, the British Standard provides parameters which enable the Arboriculturist to assess the quality of all the trees and other arboricultural features that may be affected by the Order Scheme that is proposed.

- 8.2.3 A ground level, non-intrusive assessment has been undertaken where access was permitted. Where trees have not been surveyed as part of ground-level walked assessments, this is due to the trees being within areas not readily accessible or due to Site access limitations. No trackside surveys were undertaken as trees within Network Rail's operational boundaries are excluded from the Order Scheme. The tree data in these areas, where within or adjacent to the Site, have been estimated using available imagery and supplementary information taken from points of safety. These trees were largely recorded as groups, in line with the BS5837 guidance on what constitutes a 'group' of trees. Therefore, an outline of the groups along the tracksides were plotted using available aerial imagery to capture the combined crown extents of the groups, meaning the use of exact measurements was not required.
- 8.2.4 The tree survey data has been plotted onto Tree Protection Plans (TPPs) shown on Figures 8.1.1 to 8.1.20 of Volume 2 of this document **[NR14]** to show individual trees, groups, woodlands and hedgerows recorded within the site extents. The trees have been illustrated in line with their BS classifications as either A (high quality), B (moderate quality), C (low quality) or U (unclassified – poor) categories in accordance with the BS5837:2012.
- 8.2.5 The trees have been plotted showing their crown extents (polygons for groups/woodlands following their outer crown extents of the edge trees) and stems. The crowns have been coloured in accordance with their BS Category and the trees/groups have another dashed outline generally beyond their crowns defining a root protection area.
- 8.2.6 At present 934 arboricultural features were recorded as part of the survey, of which 16 no. were classified Category A; 289 no. as Category B; 608 no. as Category C and 21 no. as Category U.
- 8.2.7 The trees categorised under BS criteria as being 'Category A' are trees "of high quality with an estimated remaining life expectancy of at least 40 years". All the classified individual high quality trees were prominent mature trees growing adjacent to the railway corridor. These trees included mature common oak, lime and beech specimens.
- 8.2.8 The trees categorised under BS criteria as being Category B' are trees "of moderate quality with an estimated remaining life expectancy of at least 20 years". These trees were a mixture of species including ash, beech, oak and sycamore, forming part of formal and informal groups, and occasional sporadic trees growing on or close to the boundaries of the Site.

- 8.2.9 Trees categorised under BS criteria as being 'Category C' are trees "of low quality with an estimated remaining life expectancy of at least 10 years or young trees with a stem diameter below 150mm". These trees generally were generally part of formal and informal groups.
- 8.2.10 Trees categorised under BS criteria as being 'Category U' are trees "in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years" – and recommended for removal where deemed to be posing an unacceptable risk to adjacent people or property.
- 8.2.11 No irreplaceable habitats were recorded within the Site extents during the desk study, including ancient woodland or veteran trees identified within the Ancient Tree Inventory managed by the Woodland Trust.
- 8.2.12 No veteran trees were recorded by the Arboriculturists' during the site surveys.
- 8.2.13 A search for priority habitats found 30 parcels of deciduous woodland within the Site extents.
- 8.2.14 Tameside Metropolitan Borough Council and Oldham Metropolitan Borough Council have provided mapping and associated Tree Preservation Order (TPO) references of those trees within and adjacent to the Site extents as illustrated on the TPPs. This data has been used to confirm those TPOs and trees in conservation areas potentially impacted upon by the Order Scheme. The impacts on TPOs and trees on Conservation Areas have been quantified and the data included within Table 4-2 within Appendix 8A of this Report **[NR14]**. However, it must be noted that there may be a discrepancy between the recorded tree and the specific TPO based on the supplied mapping and being able to corroborate the two data sets.
- 8.2.15 These impacts will need to be confirmed on site with the Principal Contractor and the details confirmed within a Final Arboricultural Method Statement secured as part of the Landscape and Ecological Management Plan (LEMP) production at detailed design. Landscape and ecology will be appropriately protected through the application of a comprehensive LEMP. The LEMP is intended to be the subject of a planning condition and applies to the Order Scheme that require planning permission, as described in the 'Request for deemed planning permission and statement of proposed conditions' **[NR11]**.
- 8.2.16 Certain works that are being undertaken using Permitted Development Rights on operational rail land have exemptions to cover Network Rail operations where these may impact TPOs or trees within a Conservation Area.

- 8.2.17 In order to determine the impacts and the indicative extents of de-vegetation, available drawings of proposed works and annotated sketches of proposals/de-vegetation were overlaid onto the TPPs. The trees within these zones have been shown for removal – refer to Figures 8.1.1 to 8.1.20 in Volume 2 of this Report [NR14]. Furthermore, specific areas of proposals/de-vegetation/tree removal have been clarified by liaison with the Project Team and Principal Contractor. In some cases, a reasonable judgement has been made by the Arboriculturist in establishing removals based on existing site conditions that may influence root morphology/spread and how the Order Scheme would encroach into previously undisturbed soft surfaces adjacent to trees.
- 8.2.18 At present no high-quality groups/woodland shall be lost. An area of approx. 2.29 ha of moderate quality trees are proposed to be lost and 3.8 ha of low-quality trees lost. Additionally, one high-quality tree has been indicatively identified for removal. There may be TPOs lost to the Order Scheme. The loss of trees will be unavoidable and will be limited where possible. Network Rail will make all practicable effort to minimise tree and vegetation removal in relation to the delivery of the Order Scheme and the relevant works elements that require planning permission. Where tree removal is unavoidable, this shall be mitigated through implementation of a detailed LEMP that is intended to mitigate landscape and also ecological effects. The commitment to a BNG of 10% safeguards mitigation for any unavoidable tree removal.
- 8.2.19 The proposed tree removals are based on areas of loss to permit the construction of the Order Scheme. At present the losses include moderate and low-quality trees. The specific tree removals are detailed in the survey schedule within Volume 3, Appendix 8A of this Report [NR14]. The loss of low-quality trees should not hinder the development as their useful remaining life expectancies are limited, or they are relatively young specimens whose removals can be offset with mitigation planting. The impacts of the tree loss on ecological or landscape receptors are outlined in Chapter 6 – Ecology, and Chapter 7 - Landscape and Visual of this Report.

8.3 Mitigation and Consideration of Control Measures

- 8.3.1 In addition to the relevant works elements of the Order Scheme it is acknowledged that additional works will be consented using Permitted Development Rights to be undertaken as part of the Scheme. Construction of these works will likely be undertaken concurrently with the Order Scheme and therefore may give rise to cumulative effects both during the construction and operational phases of the Scheme.
- 8.3.2 The potential effects of the design, construction, and operation of the works being undertaken under Permitted Development Rights will be managed in accordance with the requirements detailed in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]). All Scheme works - both pursuant to

the Deemed Planning Permission and pursuant to Permitted Development Rights - will be undertaken utilising NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]) as the requirements that oversees Environmental Management across the entire Scheme. Additional mitigation regarding the Order Scheme works will be secured via adherence to the control measures outlined with the CoCP Part A [NR17] and the relevant management plans proposed as part of the CoCP Part B.

- 8.3.3 All existing trees to be retained and areas of trees proposed for removal are illustrated within Figures 8.1.1 to 8.1.20 in Volume 2 of this Report [NR14]. captured within the survey schedule within Appendix B of the Arboricultural Impact Assessment within Volume 3, Appendix 8A of this Report [NR14].
- 8.3.4 The tree removals are to be reviewed as the detailed design progresses with the retention of additional trees identified where feasible. The losses will be confirmed on site via a walkover with the Principal Contractor and with an arboriculturist prior to the commencement of works and the details confirmed within a Final Arboricultural Method Statement (AMS) secured as part of the LEMP production at detailed design.
- 8.3.5 The locations of site accommodation, temporary buildings and areas used for storage of materials are to be located outside of the constraints of retained trees as defined within the TPPs, which will in turn be confirmed by the LEMP.
- 8.3.6 The primary mitigation is the provision of tree protective barriers to be provided by the appointed contractor to ensure the protection of retained tree stock. The locations of the protective barriers would need to be confirmed as part of the Final AMS production secured as part of the LEMP.
- 8.3.7 The Code of Construction Practice (CoCP) Part A [NR17] requires trees and vegetation that can be retained to be protected as per BS5837. That requires confirmation of trees and / or root structure which are not affected by any elements of the relevant works, whether permanent or temporary. That will also require identification and specific protection measures that may be required for trees or root structures that are adjacent to any relevant works and can be retained. These requirements will be secured through a planning condition, as set out in the 'Request for deemed planning permission and statement of proposed conditions [NR11]. The aim of that condition is to ensure that all relevant protection for trees will be in place in advance of any Order Scheme works.
- 8.3.8 The requirements for tree protection measures shall be included within Work Package Plans (WPPs) and Task Briefing Sheets (TBSs) produced by the appointed Principal Contractor as part of the planning of construction activities. All pre-commencement briefings will ensure all members of staff working or visiting the area of site being worked upon are aware of the

individual responsibilities regarding trees and the tree protection measures required to be in place to continue construction.

- 8.3.9 In the approval of WPPs and TBSs the reviewer shall make sure any protection of trees has been considered within the area and seek confirmation with either the supervising Arboriculturist or Ecological Clerk of Works (ECoW) if further clarification is required.
- 8.3.10 The pre-commencement site briefings shall be attended by the construction manager or suitable delegate. They shall raise awareness with the relevant parties of the trees within the working extents and confirm the requirements for tree related information to be included within induction material and daily briefings to members of staff working or visiting that area of the Order Scheme.
- 8.3.11 The method of removal shall be informed by the site constraints.
- 8.3.12 The requirements for facilitation pruning operations are to be confirmed prior to construction and covered within the pre-commencement site meetings for each phase of the works.
- 8.3.13 The ability to retain further trees than those currently proposed shall be kept under review as part of construction planning.
- 8.3.14 All tree works are to be undertaken in line with current recommendations in accordance with BS3998:2010 Tree Work – Recommendations and comply with the current Arboriculture and Forestry Advisory Group (AFAG) or applicable Forestry Industry Safety Accord (FISA) advice published by the Health and Safety Executive (HSE) or FISA.
- 8.3.15 Tree works are to be planned to ensure protection of people, property and wildlife. The tree works contractor shall provide access routes for approval by the main contractor. These shall take into account the retention of trees and use existing access tracks or hard surfaces to reduce the need for further tree removals or other potential impacts. The tree works contractor will be required to submit a risk assessment and method statement for review by the Appointed Principal Contractor or Arboriculturist prior to commencing works on Site.

9. NOISE AND VIBRATION

9.1 Introduction

- 9.1.1 A Noise and Vibration Technical Appendix (Volume 3, Appendix 10A of this Report [NR14]) and Baseline Survey Report (Volume 3, Appendix 10B of this Report [NR14]) has been prepared for the potential noise and vibration effects associated with the Order Scheme.
- 9.1.2 This chapter provides a summary of the appraisal and discusses the mitigation and control of the noise and vibration-related impacts and effects.
- 9.1.3 To appraise potential noise and vibration effects, the overarching legislation and policies for noise and vibration are set out as follows:
- The Control of Pollution Act, 1974;
 - Environmental Protection Act, 1990;
 - Planning Practice Guidance, 2019;
 - British Standards (BS);
 - National Planning Policy Framework, 2024;
 - Noise Policy Statement England, 2010; and
 - Local Policies:
 - Places for Everyone Joint Development Plan 2024 (Greater Manchester);
 - Joint Core Strategy and Development Management Policies 2024 (Oldham Metropolitan Borough Council), and
 - Unitary Development Plan 2007 (Tameside Metropolitan Borough Council)

9.2 Appraisal of Impacts and Effects

- 9.2.1 The relevant policies and guidelines for assessing noise impacts are outlined in the aforementioned national and local frameworks in section 1.1.3. These policies consistently emphasise the need to minimise noise and vibration impacts and to avoid major adverse effects.
- 9.2.2 Operational noise impacts from trains travelling at speed and idling are likely to be similar to, or lower than, the current situation due to the introduction of electric trains. Any future increase of rail movements for the Order Scheme is assumed to be classified as permitted intensification of the operational railway, and therefore this is not included in the Order. Therefore, the operational noise and vibration impact from rail movements has been scoped out of the assessment of impacts and effects and the appraisal will focus on the impacts and effects of construction noise and

vibration on nearby potential sensitive receptors. Ground-borne noise from operational trains within tunnels has been assessed by Arup¹⁶ and track design recommendations have been incorporated in the ES4 design, which will be monitored post-completion. Further information on this is included in Volume 3, Appendix 9A, Noise and Vibration Technical Appendix [NR14].

- 9.2.3 Construction noise impact depends on/is determined by the existing noise environment (e.g. construction activities on a quieter baseline will have a greater impact than on a noisier baseline). As such, baseline noise monitoring was undertaken at three locations where there is a comparatively quieter baseline associated with the relocated Mossley Station Works and are reported in the Noise and Vibration Technical Appendix (Volume 3, Appendix 9A). No baseline vibration surveys were undertaken as any vibration appraisal, if required, will be based on the anticipated vibration levels from relevant construction works (regardless of existing baseline vibration levels).
- 9.2.4 The most affected noise sensitive receptors (NSRs) have been identified based on the proximity to the Order Scheme boundary. The receptors that have the potential to be severely affected by the Order Scheme have been highlighted and listed in section 3.2 in the Noise and Vibration Technical Appendix (Volume 3 Appendix 9A of this Report).
- 9.2.5 The Control of Pollution Act 1974 (CoPA) sets out the framework for the legislative control of construction noise and vibration on any given site. It also sets out the principle of 'best practicable means' (as defined in section 72 of the Act) and how that should be applied to construction activity noise. The Act refers to approved Codes of Practice, which include British Standards 5228 Part 1 and Part 2 (Code of Practice for Noise and Vibration Control on Construction and Open Sites), as being relevant for the purposes of determining the 'best practicable means'.
- 9.2.6 There will be a number of potential sources of construction noise along the route of the Order Scheme. The nature and duration of the works varies, with a combination of long-term and short-term stationary works, and short-term linear works (which would be short-term in any one location), which will have a bearing on the proposed mitigation. Long-term construction activities are those that may affect any one receptor for at least ten days in any 15 consecutive days, or 40 days in any consecutive six months, based on the guidance of British Standard 5228 Part 1.
- 9.2.7 A more detailed construction methodology and programme will be developed in due course by the contractors to be appointed by Network Rail, following the guidance in British Standard 5228 Part 1 and Part 2. This information will be used to confirm the findings of this current assessment

¹⁶ Arup. (2023) *Groundborne noise and trackform assessment for Stalybridge & Scout tunnels*. Manchester.

and will also inform the Noise and Vibration Management Plan (NVMP) which will be included within the CoCP Part B. Nevertheless, it is likely that for NSRs (noise and vibration sensitive receptors) close to the working areas that some impacts would arise without mitigation measures being implemented.

- 9.2.8 The operation of the new Mossley Station may have an adverse impact on the nearby receptors without mitigation. Potential impacts may be caused by the public address system, and fixed mechanical plant. The impact of fixed mechanical plant will be assessed in accordance with BS 4142:2014 Methods for Rating and Assessing Industrial and Commercial Sound and other relevant guidance at the detailed design stage. That assessment will be undertaken to ensure that the relevant standards and requirements are achieved.

9.3 Mitigation and Consideration of Control Measures

- 9.3.1 Further details of the assessment and mitigation measures are included in Volume 3, Appendix 9A and 9B of this Report [NR14].

Construction Phase

- 9.3.2 Construction noise and vibration mitigation for the Order Scheme will be incorporated into the relevant management plans as included in the Code of Construction Practice (CoCP) Part B. The CoCP Part B will comprise a series of standalone reports and delivery plans (collectively referred to as 'the CoCP Environment Plans'), one of which will be a Noise and Vibration Management Plan (NVMP). The NVMP will be secured through the implementation of a planning condition as included in the 'Request for Deemed Planning Permission and Statement of Proposed Conditions' [NR11]. Noise and vibration impacts will be assessed and mitigated via the NVMP, to be prepared, submitted to and agreed with both of the relevant local planning authorities to minimise the impact from proposed construction works. Construction works will be managed in compliance with the NVMP, as outlined below. The NVMP will outline mitigation measures and the requirements for any noise insulation and temporary rehousing.
- 9.3.3 Site-specific measures to mitigate the localised and temporary construction phase noise and vibration impacts and effects will be implemented during the works to minimise the disturbance and disruption experienced by local receptors, particularly with respect to works during the night, as outlined in section 1.3.4 to 1.3.12.
- 9.3.4 Construction contractors are required to follow good construction practices as outlined in BS 5228-1 and BS 5228-2 to control noise and vibration, respectively.

- 9.3.5 BS 5228-1 and BS 5228-2 have Approved Code of Practice status (in England) under the powers conferred by sections 71(1)(b), (2) and (3) of the Control of Pollution Act (CoPA) 1974, as enacted under The Control of Noise (Code of Practice for Construction and Open Sites) (England) Order 2015. Compliance with the best practice noise and vibration requirements stated therein is a statutory obligation under CoPA.
- 9.3.6 The CoCP Part B will include a requirement to provide an “external communication programme” including letter drops to local receptors such as residential properties, commercial and community facilities. Arrangements for submitting and dealing with complaints will be publicised, aligned to Network Rail’s existing well established complaints procedure¹⁷ including receiving, and resolving complaints. Establishing and maintaining good relations with people living and working in the vicinity of construction works are of paramount importance. Early establishment and maintenance of these relations throughout the carrying out of construction works will go some way towards allaying people’s concerns. Good relations and effective communications will be developed by keeping people informed of progress and by treating complaints fairly and expeditiously.
- 9.3.7 Local residents will be informed of the commencement and likely duration of the construction work activities through a letter drop. The letter will include a contact telephone number for the Network Rail helpline which is monitored 24 hours a day. In line with good practice the helpline team will be briefed on the in advance of works.
- 9.3.8 Where reasonably practicable, plant and/or methods of work causing severe levels of vibration at NSRs will be replaced by other less intrusive plant and/or methods of working. For example, rotary bored piling produces significantly less vibration than percussive or vibratory piling.
- 9.3.9 With regards to percussive or vibratory piling, the level of vibration generated at a receptor is proportional to the energy of the input of the equipment into the pile per blow/cycle. Reducing the energy input would therefore reduce the level of vibration at nearby NSRs. However, the trade-off is that the duration for driving the piles to the required depth would be extended, which may cause a greater overall impact in terms of both vibration and noise. This may require consideration on a site-by-site basis.
- 9.3.10 Continuous noise and vibration monitoring will be carried out at the buildings potentially most affected by the Order Scheme. These buildings are situated above the Stalybridge Tunnel and Scout Tunnel . Monitoring will be carried out during the works associated by the main works contractor. This monitoring will be conducted to ensure that vibration resulting from works within the tunnels are kept to a reasonable level and

¹⁷ [Making a complaint - Network Rail](#)

not adversely affecting properties above the tunnels. Additionally, vibration levels may be monitored on a case-by-case basis at locations during vibration generating activities where there is the potential for cosmetic building damage (i.e. vibration levels >12.5 mm/s PPV (Peak Particle Velocity)). Cosmetic building damage would amount to the initiation or extension of cracks in plasterwork etc, rather than the onset of structural distress. Where predicted vibration level is greater than 12.5 mm/s PPV, dilapidation surveys will be offered to residents before and after the vibration activities. Trigger levels will be set such that works will stop should severe levels of vibration occur. Works would only commence once Best Practicable Means (BPM) to reduce the level of vibration have been applied. In the unlikely event that damage is considered to have been caused by the construction works associated with the Scheme, these would be rectified by Network Rail.

- 9.3.11 There will be some limited increases in traffic levels due to construction traffic plus local / temporary diversions resulting temporary localised increases in noise and vibration. Temporary traffic diversions and traffic routes will be managed in accordance with good practice following the CoCP Part B and a CTMP (Construction Transport Management Plan) and in discussions with each relevant local authority.

Operational Phase

- 9.3.12 At the new Mossley Station, it is considered that fixed plant noise will be adequately controlled to suitable levels with standard mitigation measures, such as plant selection, placement, orientation and screening, although further assessments in accordance with BS 4142 would be required at detailed design stage. Consideration will be given to reducing the impacts of noise from the Public Address (PA) systems at nearby NSRs as far as practical whilst providing adequate coverage, in line with the requirements of Network Rail in terms of safety and speech intelligibility. The mitigation measures will include the specification of the system in terms of loudspeaker location, directivity and orientation. Electronic visual information displays may also be incorporated but these will typically complement the PA system and not as a replacement. Further assessment will be undertaken at detailed design stage.

9.4 Cumulative effects

Construction Phase

- 9.4.1 In addition to the relevant works elements of the Order Scheme it is acknowledged that additional works will be undertaken using Permitted Development Rights (PDRs) at the same time as the Order Scheme. Mitigation associated with temporary land use areas or works being undertaken using PDR will be identified and delivered in compliance with

Network Rail guidance set out within Managing Environmental and Social Impacts of Noise and Vibration (NR/L2/ENV/121) and NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]) which includes a requirement for the contractor to prepare a Noise and Vibration Risk Assessment.

- 9.4.2 Construction of these PDR works will likely be undertaken concurrently with the Order Scheme and therefore may give rise to cumulative effects both during the construction and operational phases of the Scheme. There are potential intra-project cumulative construction noise and/or vibration effects due to the multiple construction activities associated with the Scheme.
- 9.4.3 Typically, construction noise impacts at individual receptors will be dominated by the closest, or noisiest activity. However, potential cumulative noise impacts will be assessed once the works programme is confirmed. BPM will be employed to reduce intra-project cumulative noise and vibration impacts to As Low as Reasonably Practicable (ALARP) levels in accordance with NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]).
- 9.4.4 While there may be potential cumulative effects at NSR due to the various sources of operational noise, including rail noise, road noise (due to road realignments and/or minor changes in road traffic flows due to the Scheme), plant noise, and PA system noise these will be managed in accordance with section 6.6 of NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]) requiring the Designer / Contractor to conduct a Noise and Vibration Risk Assessment (NVRA) and to design and implement measures to control noise and vibration emissions using BPM to levels ALARP.
- 9.4.5 At the new Mossley Station, it is considered that fixed plant noise will be adequately controlled to suitable levels with standard mitigation measures, such as plant selection, placement, orientation and screening. Further as

10. TRAFFIC AND TRANSPORT

10.1 Introduction

- 10.1.1 This chapter describes the forecast traffic and transport related impacts and the consequential effects on transport users arising from the Order Scheme.
- 10.1.2 The Order Scheme is forecast to deliver modernisation and efficiencies to this section of the railway between Stalybridge and Standedge Tunnel and therefore the level of rail movements (passenger and freight) between various origins and destinations through the Order Scheme are expected to increase. Although passenger usage may increase in the future, increased usage of the railway is considered a permitted intensification and is therefore excluded from this appraisal. Should passenger usage increase and result in an increase of highway movements to/from stations on the route, it would also result in forecast decreases in highway movements on the wider network as users transferred from car to the improved rail service. This potential change in traffic flows due to the operation of the Order Scheme is unlikely to be of significance in terms of the operation of the highway network and is not within the scope of this transport assessment.
- 10.1.3 Therefore, the main focus of this Chapter relates to the potential impacts associated with the construction of the Order Scheme, although high level consideration is given to any permanent changes still present during the operational phase of the Order Scheme. The effects on traffic and transport have been assessed both qualitatively and quantitatively, based on existing baseline and forecast future traffic conditions.
- 10.1.4 This chapter also discussed the mitigation likely to be required and consideration of control measures. This chapter is supported by further, more detailed assessments, namely Volume 3, Appendix 10A – Traffic and Transport Technical Appendix of this Report [NR14]. This document is informed by a Transport Statement and Framework Construction Travel Plan (Volume 3, Appendices 10B and 10C, respectively).

10.2 Assessment Methodology

- 10.2.1 The assessment scope, key assumptions, traffic surveys and limitations of the traffic and transport assessment are set out in Volume 3, Appendix 10A – Traffic and Transport Technical Appendix of this Report [NR14]. A Transport Statement is also provided to inform that note, in Volume 3, Appendix 10B. These documents are also supported by a Framework Construction Worker Travel Plan provided in Volume 3, Appendix 10C.

- 10.2.2 A qualitative and quantitative approach has been undertaken to appraise the potential impacts of the Order Scheme based on guidance set out within the Institute of Environmental Management and Assessment 2023 (IEMA) guidelines: Environmental Assessment of Traffic and Movement¹⁸.
- 10.2.3 The air quality and noise effects of the changes in traffic flows due to the Order Scheme are excluded from the Traffic and Transport Chapter, because these topics are covered separately in within Volume 1, Chapters 13 and 9 of the Volume 1 of this Report [NR14], respectively.
- 10.2.4 The Order Scheme will result in new / permanent changes to a number of bridges structures, public rights of ways (PRoW) and stations (Mossley and Greenfield), and although these permanent changes are expected to result in negligible impacts to the traffic and transport network, consideration is given to these when reviewing the operational phase of the Order Scheme.
- 10.2.5 Therefore, key considerations during the construction / operational phases of the Order Scheme include:

Construction

- Likely construction traffic routes and levels to / from compounds and relevant works elements.
- Access/ egress points for construction compounds.
- Location and type of traffic management required to facilitate various relevant work elements.
- Temporary changes to bus services.
- Closures / diversion routes to highway network and / or PRoW to facilitate various relevant work elements.

Operational

- Permanent changes to the highway network including new / upgraded bridge structures and PRoW
 - Permanent changes to Mossley and Greenfield Stations.
- 10.2.6 Mossley Station is to be relocated approximately 300m to the north of the current station, and the access to and from the main station car park will be modified. The number of parking spaces proposed for the new Mossley station is 86 (including 5 accessible bays and 1 electric vehicle charging point), in comparison to 56 spaces which serve the existing station. That modest increase to parking provision is not expected to significantly change

¹⁸ <https://www.iema.net/resources/blogs/2023/07/12/iema-guidance-ea-of-traffic-and-movement/>

the level of traffic to / from the station in comparison to baseline conditions as detailed in Appendix 10A of this Report [NR14].

- 10.2.7 Works linked with improving access to and from new Mossley Station include the re-siting of bus stops and the provision of a new puffin crossing (“the crossing”) on Manchester Road. The crossing is proposed following discussions with TMBC in their role as highway authority, which is required to provide a safe crossing point in this location for pedestrians to access the new station. Traffic and access arrangements in this area will be subject to a range of other modifications to serve the new station including a new vehicular access point from Manchester Rd and relocation of bus stops on Manchester Road.
- 10.2.8 In order to facilitate these works which are needed to provide safer pedestrian routes, parking restrictions are proposed to be introduced on Manchester Road, which will result in the loss of parking on the public highway. As a result of the loss of parking on the public highway, TMBC are proposing to introduce a residential parking zone on Manchester Road between Mill Lane and Queen Street.
- 10.2.9 Similarly, Greenfield Station will be improved as part of the wider Scheme, however that will be consented using Permitted Development Rights (PDR) (refer to section 1.3.10 of Volume 1, Chapter 1 of this Report for a list of the PDR works [NR14]). The location and access arrangements to Greenfield Station will be unchanged and the level of traffic to/ from the station will not significantly change in comparison to baseline conditions.
- 10.2.10 The Order Scheme will also result in permanent changes to bridges which will result in minor operational road safety improvements.
- 10.2.11 In order to define the scale and extent of an assessment of Traffic and Transport, the IEMA guidelines¹⁹ recommend a screening process. The guidelines recommend two thresholds that would normally apply before the environmental effects of increases in traffic need to be considered in more detail on a specific link (traffic route):
- **Rule 1:** Include highway links where traffic flows will increase by more than 30% (or the number of Heavy Goods Vehicles (HGVs) will increase by more than 30%).
 - **Rule 2:** Include any other specifically sensitive areas where traffic flows will increase by 10% or more.
- 10.2.12 Therefore, where the construction or operational phases of a project result in increases to baseline traffic volumes (daily two-way traffic flows) which are greater than rule 1 or 2, their associated effects have been considered.

¹⁹ <https://www.iema.net/resources/blogs/2023/07/12/iema-guidance-ea-of-traffic-and-movement/>

- 10.2.13 Traffic routes where the Order Scheme is likely to result in changes in traffic volumes are identified within the Traffic and Transport Technical Note included in Volume 3, Appendix 10A of this Report [NR14]. Effects are considered to either be significant or not significant:
- If changes in baseline traffic volumes as a result of the Order Scheme are less than Rule 1 and 2, their effects are not considered significant.
 - Where changes exceed Rule 1 or 2, traffic and transport effects need to consider several additional factors to determine significance, including changes in traffic volumes, increases in journey times, road safety and type of traffic route.
 - Where there is a combination of substantial impacts (i.e. substantial increase in traffic volumes and journey times or substantial increase in traffic volumes along routes with accident clusters) the Order Scheme's effects are considered significant.
- 10.2.14 The Study Area to be considered as part of this assessment is shown within Volume 2, Figure 10.3.1 of the Report [NR14]. The Study Area is based on currently known information on the Construction Phase and how compounds will interact with relevant work elements locations. It is also based on key diversionary routes that could be required during key road closures and traffic management phases, as well as PRow affected by the Order Scheme. The Study Area includes the core construction routes, main diversionary routes during key road closures/ traffic management phases, as well as PRow affected by the Order Scheme. Refer to Volume 3, Appendix 10A of this Report [NR14] for further details which provides further information on construction/diversionary routes.
- 10.2.15 The core construction routes are based on the current understanding of the construction works and how the compounds will interact with the relevant work locations and work elements. From the core construction routes, construction traffic will then utilise other routes on the local road network to reach various work sites and compounds.
- 10.2.16 During the construction phase there will be a requirement for road diversions when certain road closures / traffic management arrangements are in place. Although traffic management, road closures and diversionary requirements are yet to be finalised and agreed with the Local Highway Authorities via a Construction Traffic Management Plan (CTMP) that will be delivered by way of a planning condition included in the Request for Deemed Planning and Statement of Proposed Conditions [NR11], four main diversionary routes (Mossley Road, B6175, Dobcross New Road, Chew Valley Road) have been considered as part of this assessment.

10.2.17 The Study Area therefore covers:

- The highway network identified as the 'core construction route' anticipated to be utilised by construction vehicles generated by the Order Scheme where they may be significantly impacted the Order Scheme (i.e. triggers Rule 1 or 2).
- Temporary diversionary routes which could be utilised during the construction phase of the Order Scheme when lane/ road closures are in place.
- Areas where Temporary TROs could be in place during the construction phase of the Order Scheme – for example to suspend bus stops or car parking.
- Permanent changes to stations, bridges or PRoW which will be present during the operational phase of the Order Scheme.

10.2.18 Relevant consultation responses regarding traffic and transport issues from Oldham District Council (ODC) and Tameside Metropolitan Borough Council (TMBC) are included at within the Consultation Report [NR7].

10.3 Relevant Legislation, Policy and Guidance

10.3.1 A summary of the relevant national, regional and local legislation, policy and guidance for traffic and transport impact are set out below:

National Level

- **National Policy Framework (NPPF) (Dec 2024):** Emphasizes integrating transport considerations into planning to mitigate environmental impacts, promotion of sustainable transport options, and improvements to air quality. Development should focus on sustainable locations and only be refused on highways grounds if impacts are severe.
- **National Policy Statement for National Networks (NPSNN) (2024):** The NPSNN, designated by Parliament on 24 May 2024, provides guidance regarding how decisions will be made relating to development consent orders for nationally significant infrastructure projects (NSIP) on the road and rail networks in England. The Scheme Development is to be consented via a Transport and Works Act Order (TWAO) and is not a nationally significant infrastructure project (NSIP), however while it is not directly relevant, it may be a material consideration, to be considered on a case by case basis.
- **National Design Guide (2021):** Promotes high-quality, sustainable design in new developments, enhancing community cohesion and well-being.

- **The UK Climate Change Act (2008):** Targets net zero carbon emissions by 2050, with local councils committed to reducing emissions and integrating climate considerations into decision-making.
- **Railway High-Level Output Specification (HLOS-CP7):** Outlines objectives for railway infrastructure, focusing on economic growth, connectivity, environmental sustainability, and safety.
- **Network North: Transforming British Transport (2023):** This document seeks to enhance connectivity and transport infrastructure in the North of England, confirming the delivery of Northern Powerhouse Rail (NPR)

Regional Level

- **Greater Manchester Combined Authority Places for Everyone (2024):** A development plan for Greater Manchester focusing on sustainable movement, improving connectivity, and promoting a low-carbon region.
- **Integrated Rail Plan for the North & Midlands (2022):** A 30-year strategy to modernize key rail lines, improve capacity and efficiency, and enhance passenger services

Local Level

- **Oldham Metropolitan Borough Council:** Policies focus on sustainable development, accessible transport choices, and improving local transport infrastructure. Key Documents include:
 - Joint Core Strategy and Development Management Policies DPD (2011)
 - Saved policies of the Unitary Development Plan (2006)
- **Tameside Metropolitan Borough Council:** Preparing a Homes, Spaces, Place plan (2025) aligning with national policy, focusing on integrated transportation strategies and ensuring accessibility and safety in development schemes. The Tameside Unitary Development Plan (2004), contains the Council's land use planning policies. It is the main document which is used to determine planning applications for development in the borough.

10.4 Appraisal of Impacts and Effects

- 10.4.1 To provide an existing baseline against which to assess the impact of construction, a programme of traffic / transport related surveys was undertaken by a third-party survey company during three rounds of surveys:

- Round 1: September 2024
- Round 2: September 2024
- Round 3: June 2025

10.4.2 The surveys consisted of:

- Automated Traffic Counts (ATCs): 23 locations
- Non-Motorised User Surveys (NMUs): 6 locations
- Manual Classified Counts (MCCs): 15 locations
- Off-street Car parking surveys: 4 locations
- On-street Car parking surveys: 5 locations

10.4.3 Further details and plans showing the location of these surveys is provided within Volume 3, Appendix 10A of this Report and Appendix 10B: Transport Statement [NR14]. Surveys were collected in line with Design Manual for Roads and Bridges (DMRB), Transport Analysis Group (TAG) Unit M1.2 (Department for Transport (DfT), 2020. Neutral periods are defined as Monday to Thursday from March through to and including September (excluding August) and avoiding bank holidays. For the non-motorised user surveys, consideration was taken of weather conditions with data collected on a number of days and representative values taken from those days with the better weather conditions. The location and type of surveys were shared and agreed with Oldham and Tameside Borough Councils before the surveys were undertaken.

10.4.4 Surveys were utilised to establish the existing baseline conditions within the Study Area for 2024/2025. This assessment is based on the Assumption that construction works will conclude in 2033. However, based on the current understanding of construction activities, peak construction traffic movements could occur in 2029. Therefore, this assessment considers changes in baseline traffic volumes resulting from the Order Scheme in a future year of 2029. Further information on the construction programme is outlined in Chapter 3 of this Report [NR14].

10.4.5 The future baseline traffic volumes for 2029 have been derived by factoring 2024/2025 baseline traffic volumes up to 2029 using the Department for Transport's national traffic forecasting tool, Trip End Model Presentation Program (TEMPO). Peak Daily construction traffic movements have then been compared again the baseline 2029 traffic volumes along key traffic routes. Traffic Growth factors along with future baseline traffic flows and construction traffic flows along key routes is set out in Volume 3, Appendix 10A of this Report [NR14].

- 10.4.6 Although traffic and transport related environmental effects are assessed against daily traffic volumes, further consideration to peak periods is provided within the Transport Statement included in Volume 3, Appendix 10B [NR14].
- 10.4.7 A review of the Order Scheme's impact on traffic volumes within the Study Area highlighted that three links could potentially exceed the thresholds set by Rule 1 or Rule 2:
- traffic flows increase by more than 30% (or heavy goods vehicle (HGV) flows increase by more than 30%); or
 - any other specifically sensitive areas (such as schools, hospitals etc.) are included where traffic flows are predicted to increase by 10% or more.
- 10.4.8 The three routes are:
- Printworks Road: 20% increase in All Vehicles, 47% Increase in HGVs
 - Cheshire Street: 18% increase in All Vehicles, 27% Increase in HGVs
 - Sam Road: 6% increase in All Vehicles, 52% Increase in HGVs
- 10.4.9 However, upon further review, the temporary impacts on Printworks Road are not considered significant for the following reasons:
- The proposed number of additional heavy vehicles on Printworks Road daily would be 8 two-way vehicles, the high percentage change is due to low ambient baseline HGV volumes. The additional 8 two-way heavy vehicles daily will have a negligible effect on traffic congestion and delay. Furthermore, the increase would be temporary and occur over a short distance, between Wakefield Road and Printworks compound (30-40m).
 - Printworks Road between its junction with Wakefield Road and Printworks compound is not considered a sensitive area (it is a short rural section of road with no residential buildings, school, hospitals, play parks etc).
 - A review of accident data did not highlight any existing accident clusters along Printworks Road.
- 10.4.10 Although the percentage change in total vehicles (18%) on Cheshire Street could potentially exceed rule 2 if that were to be considered a sensitive area, upon further review, the impacts on Cheshire Street are not considered significant as there is no combination of substantial impacts (i.e. substantial increase in traffic volumes and journey times or substantial increase in traffic volumes along routes with accident clusters):
- There are no accident clusters along Cheshire Street.

- The daily change in total vehicle numbers is likely to result in marginal changes in hourly vehicle movements, increase of c14 two-way movements.
- The additional vehicle movements along Cheshire Street will not significantly increase journey times along it.

10.4.11 Although Sam Road is considered a 'sensitive' route (Diggle School is located on Sam Road), upon further review, the impacts on Sam Road are not considered significant for the following reasons:

- The actual number of additional heavy vehicles on Sam Road would be 21 two-way vehicles over a day, whilst the high percentage increase (52%) is due to low ambient baseline HGV volumes of 40 two-way daily vehicles. The additional 21 two-way heavy vehicles daily will have a negligible effect on traffic congestion and delay.
- The daily change in total vehicle numbers of 79 two-way daily vehicles is less than Rule 2 threshold (10% change compared to future baseline). Assuming the vehicle movements were condensed over a 12 hour period, this would equate to c7 two-way vehicle movements per hour. The potential additional traffic movements hourly is not expected to have a significant effect on journey times, delay or congestion.
- A review of accident data did not highlight any existing accident clusters along Sam Road.

10.4.12 It should be noted that there will be changes in baseline traffic along localised routes (between core route and compounds) over short distances to facilitate construction traffic access into compounds. However, localised impacts between the core construction route and compounds will be considered further within the CTMP and appropriately managed and mitigated to ensure impacts are temporary and not significant. The CTMP is to be included via a planning condition in the Request for Deemed Planning and Statement of Proposed Conditions' [NR11].

10.4.13 During the Order Scheme works there will be a requirement for road diversions when certain road closures/ traffic management are in place.

10.4.14 Traffic management, road closures and diversionary requirements are subject to further, more detailed design and confirmation. These will be implemented via Traffic Regulation Orders (TROs) and agreed with the Local Highway Authorities. The TROs will also be reflected within the CTMP which will be delivered by way of a planning condition in the 'Request for Deemed Planning Permission and Statement of Proposed Conditions' [NR11]. Nevertheless, this assessment has considered four potential main diversionary routes (Mossley Road, B6175, Dobcross New Road, Chew Valley Road).

- 10.4.15 The impacts of these routes will be temporary in nature, and where possible, scheduled to limit the impact on the local highway network and general public. It is acknowledged that there will be increases to baseline traffic along diversionary routes when road closures or diversions are in place which will have an adverse effect in relation to traffic delay or congestion for motorised users along these routes. However, as part of the CTMP, these will be quantified and appropriately mitigated to ensure impacts are temporary and not significant.
- 10.4.16 It is expected that road users will redistribute or seek alternative routes during the construction phase and as such, the forecast increase in traffic volumes may be overstated along these routes. Impacts from additional traffic is confined to those routes identified for (a) a construction traffic route either to access a site or a compound or (b) a diversion route for traffic affected by a road closure.
- 10.4.17 In addition, to ensure there are no underlying highway safety issues in proximity to Study Area and key construction routes, STATS 19 personal injury collision (PIC) data from the past five years (2019-2023) was analysed to identify whether there are any existing accident problems on the routes identified for construction traffic or for a diversion route. This analysis showed that there are 8 accident clusters within the Study Area. A cluster is identified as more than 3 accidents occurring within a 30m distances within the five year period. For further details see Volume 3, Appendix 10A of this Report **[NR14]**.
- 10.4.18 A review of the accident clusters within the Study Area highlighted that the majority of these clusters include between 3-5 accidents over a 5 year period. Given the temporary increase in the level of daily traffic predicted along the core construction route, it is unlikely that this would exacerbate an existing accident issues at these locations.
- 10.4.19 There will be a requirement to introduce temporary Traffic Management and Traffic Regulation Orders (TROs) to facilitate the construction phase of the Order Scheme and to safely manage and control the movement of people and traffic through the Study Area. This includes the potential temporary and phased suspension of approximately 19 bus stops (served by a total of 14 different services).
- 10.4.20 Not all of these bus stops will be suspended all at once and this will not occur at the same time to ensure suitable alternative bus stops and services are available. The CTMP will further consider the suspension of public transport services during the construction phase and set out management and mitigation measures which will be agreed with the relevant high authority and / or public transport providers to ensure impacts on the transport network are not significant.

- 10.4.21 Additionally, the Order will seek powers to enable Network Rail to implement TROs subject to approval from the relevant Highway Authority.
- 10.4.22 In addition, as part of the temporary TRO's there may be temporary and phased requirements to suspend certain areas of on-street parking within the Study Area and a number of off-street car parks. This could potentially result in the temporary suspension of 749 on-street spaces and 263 off-street car parking space over the extents of and course of the construction works.
- 10.4.23 Works will be phased and temporary and therefore not all of these spaces will be removed in the same time period. Furthermore, sites at Egmont Street and Saddleworth Rangers have been identified as temporary parking locations for residents and businesses affected by the parking suspensions (refer to Volume 2, Figures 1.1.1 to 1.1.6 of this Report for the location of temporary parking [NR14]). In addition, the CTMP will further consider the displacement of car parking during the construction phase and set out management and mitigation measures which will be agreed with the highway authorities to ensure impacts on the transport network are minimised.
- 10.4.24 Over the course of the construction phase, there are approximately 20 PRow which will be impacted and require temporary diversion. Impacts on PRow will be phased and for the vast majority, will be temporary diversions or closures only. Only some of these existing PRow are suitable for those with mobility impairments given that part of the routes includes steps. Whilst every effort will be made to provide alternative fully accessible routes for each of these temporary closures, only three will have stepless routes (see Volume 3, Appendix 10A of this Report [NR14]).
- 10.4.25 The vast majority of the proposed PRow diversions will result in minor, temporary increase in journey times, of between 3 mins and 15 mins (100 m and 1200 m), although there will be 4 temporary diversions which will result in longer diversions of more than 15 mins (more than 1200 metres). These include:
- Spring Bank Lane (stepless route) (MVL3/9)
 - Charlotte Street (MVL3/24)
 - Subway (MVL3/32)
 - Diggle Road (MVL3/39).
- 10.4.26 As such, these routes which experience additional, temporary journey times of more than 15 minutes are considered to experience significant adverse effects.

- 10.4.27 There will be three permanent diversions to PRoW; these are Stockport Road Level Crossing, Wrights Overbridge (MVL3/23) and Moorgate Halt Level Crossing.
- 10.4.28 At Stockport Road Level Crossing (which is NMU only – no vehicular traffic), a section of the PRoW is proposed to be permanently closed, and a permanent PRoW diversion constructed to replace the existing route running north via the Heron Lane underbridge (MVL3/19) from Midge Hall underbridge to the Stockport Road Level Crossing. There will be no impacts during the construction phase of the new footpath as the existing level crossing is due to remain open and operational during this period. Once the new path is completed, the existing path and associated level crossing will be closed. That replacement route will permanently increase the pedestrian time of travelling to / from Heron Lane by 200 metres or adding 2 minutes to each journey - which is not considered to be significant.
- 10.4.29 Wrights Overbridge (MVL3/23), which carries a PRoW between Low Grove Lane and Mossley Road is to be demolished and the PRoW permanently diverted. A new section of PRoW will be provided as shown in the Planning Direction Drawings **[NR12]**. In the permanent scenario, the proposed PRoW diversionary route associated with this bridge will not result in additional journey time and the route will be improved through de-vegetation, removal of existing obstacles as well as minor surfacing works. This will result in a permanent slight positive effect on non-motorised users along this route. During construction, where possible, this diversion route will be utilised and although there may be occasions that an alternative longer route may be in operation (via the adjacent Hobbie Hole underbridge (MVL3/22), the impacts during construction at this PRoW will result in temporary significant adverse effects in relation pedestrian journey times.
- 10.4.30 The existing Moorgate Halt Level Crossing connects Dark Lane and Ladcastle Road on the west of the railway with Moorgate Street and Den Lane on the east. It is approximately 200 metres north of the Wickens Underbridge and will be closed. The PRoW which it carries will be extinguished. The PRoW which passes under Wickens Underbridge will be upgraded to make it safer for pedestrians to cross the railway following the removal of the level crossing. That replacement route will permanently increase the pedestrian time of travelling to/from Wickens underbridge by 200 metres or adding 2 minutes to each journey - which is not considered to be significant.
- 10.4.31 The proposed relocation of Mossley Station and improvements around Greenfield Station are expected to have negligible effects on traffic, with minimal changes in vehicle volumes compared to current conditions. Bridge modifications for rail upgrades will also result in only marginal changes to road layouts, with no significant impact on traffic flow or access.

10.4.32 Therefore, for the Order Scheme overall, both during the construction and operational phases, its impacts and effects are not considered significant.

10.5 Mitigation and Consideration of Control Measures

Construction

10.5.1 The movement of construction traffic through the Study Area along the core construction routes is not expected to result in significant adverse effects on traffic and transport during construction. Whilst there could be times where significant adverse effects may occur locally (roads between core routes and compounds) or as a result of diversions or traffic management, these will be temporary and phased to mitigate and limit their impacts. Therefore, additional mitigation measures are recommended during construction to minimise risk and as part of best-practice and established measures. Potential additional mitigation measures during the construction phase are summarised below:

- HGV routing, as far as reasonably practicable, will be along the strategic road network and using designated routes.
- Provision of temporary alternatives to maintain connectivity for PRow closed during construction, as far as reasonably practicable, to reduce loss of amenity.
- Phasing of Traffic Management and TROs to mitigate impacts.
- Providing on-site welfare facilities to reduce travel by site workers.
- A Construction Traffic Management Plan (to be submitted under the Code of Construction Practice (CoCP) Part B, to be secured via a planning condition included in the 'Request for Deemed Planning Permission and Statement of Proposed Conditions' [NR11]). The CTMP will be prepared in close collaboration with, and to be approved by the local authorities. The CTMP will apply only to the Order Scheme. As a minimum, it will include:
 - Temporary and permanent road closures and diversions as identified in the Order.
 - Construction traffic routes including access and egress from the main trunk roads and also at site level.
 - Imposed time restrictions on use and any lorry routes which may be prohibited.
 - Controls to minimise tracking of mud and rubble by construction traffic from the Site.
 - Temporary traffic control measures as may be required.
 - Means of monitoring construction Heavy Goods Vehicle (HGV) compliance with the agreed traffic routes.

- Site specific controls in consideration of the potential for nuisance (noise and vibration, mud and dust) as part of the NVMP and NMP.
 - Prohibition of parking of any construction site vehicles under the control of the principal contractor along public roads
- A Construction Worker Travel Plan for the Order Scheme will be prepared to promote sustainable travel to/from compounds and relevant work locations during construction. The Travel Plan will include:
 - Its aims and objectives – i.e. reducing the level of workforce commuting by private car, especially sole occupancy car travel.
 - Measures to achieve the aims and objectives – i.e. travel options to and from compounds, identifying main compound hubs from which construction staff will be bussed to other work locations etc.
 - Action Plan – when measures will be in place and who is responsible for their delivery.
 - Monitoring and Coordination – provision of details on key points of contacts who will take overall responsibility for its successful delivery.
- Audits and / or performance of monitoring of construction traffic to ensure that agreed traffic routes are being used.
- A Nuisance Management Plan (NMP) and Noise and Vibration Management Plan (NVMP) to be submitted under the CoCP Part B. These plans will be secured via planning conditions included in the ‘Deemed Planning Permission and Statement of Proposed Conditions’ [NR11]. Those documents will clearly provide information showing how nuisance from construction delivery traffic on local residents and businesses will be avoided, e.g. wheel wash facilities, organising mechanical road sweepers, covering of HGV deliveries.

Operation

- 10.5.2 The appraisal has not identified any substantial adverse impacts that require mitigation due to operation of the proposed Scheme. New / additional vehicular trips generated by the Order Scheme be minimal in comparison to the existing situation. All PRow impacted are to be satisfactorily diverted or permanently reinstated on realigned routes to ensure no loss pedestrian access routes.
- 10.5.3 Therefore, the Order Scheme’s traffic and transport environmental effects during the operational phase are not considered to be significant and no further mitigation is considered necessary.

10.6 Cumulative Effects

- 10.6.1 In addition to the Order Scheme it is acknowledged that additional works using Permitted Development Rights (PDRs) will be undertaken as part of the Scheme. In relation to traffic and transport, construction of these works will likely be undertaken concurrently with the Order Scheme and therefore may give rise to cumulative effects during the construction phase of the Project.
- 10.6.2 Relevant works being undertaken under PDRs for Traffic and Transport are indicated in Table 1-2 (Volume 1, Chapter 1 of this Report [NR14]) and include compounds and worksites, construction traffic and traffic management.
- 10.6.3 The potential effects of the design, construction and operation of the works being undertaken by PDRs will be managed in accordance with the relevant clauses included within NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]), in particular the requirement to prepare a CTMP.
- 10.6.4 With the implementation of the mitigation measures outlined in this section, it is not expected that the works carried out under PDR will give rise to any significant effects. This applies both to the PDR works considered independently and to any potential cumulative or in-combination impacts of the Scheme in association with activities authorised under the Order Scheme.

11. GEO-ENVIRONMENT

11.1 Introduction

11.1.1 This Geo-environmental Chapter presents an appraisal of the predicted geo-environmental impacts and consequential effects of the Order Scheme (as described in Table 1-1 of Chapter 1 in Volume 1 of the Environmental Report [NR14].

11.1.2 The purpose of this Chapter is to:

- Summarise relevant legislation, policy and guidance;
- Describe the baseline environmental conditions in relation to ground conditions, and identify the potential effects on the geo-environmental conditions that may arise as a result of the Order Scheme; and
- Identify suitable mitigation for these potential effects of the Order Scheme.

11.1.3 A series of related, more detailed technical appendices are presented in Volume 3 of the Environmental Report [NR14], which are covered in the baseline conditions of the Order Scheme (Technical Appendix 11A), including:

- Appendices 11A.1 – 11A.22 – Baseline reports for key elements of the Order Scheme.

11.1.4 The following legislation has informed the geo-environmental appraisal:

- The Water Framework Directive (2000/60/EC)²⁰;
- The Groundwater Directive (2006/118/EC)²¹;
- The Environment Liability Directive (2004/35/EC)²²;
- The Dangerous Substances Directive (2006/11/EC) as amended²³;
- Part 2A of the Environmental Protection Act 1990²⁴;

²⁰ European Commission 2000, Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy

²¹ European Commission 2006, Directive 2006/118/EC of the European Parliament and of the Council of 12 December 2006 on the protection of groundwater against pollution and deterioration

²² European Commission 2004, Directive 2004/35/CE of the European Parliament and of the Council of 21 April 2004 on environmental liability with regard to the prevention and remedying of environmental damage

²³ European Commission, 2006 Directive 2006/11/EC of the European Parliament and of the Council of 15 February 2006 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community

²⁴ DEFRA 2012, Environmental Protection Act 1990: Part 2A, Contaminated Land Statutory Guidance

- The Environment Act 2021²⁵;
- The Water Act 2003²⁶;
- The Water Act 2014²⁷;
- The Water Resources Act 1991 (as amended)²⁸;
- Anti-Pollution Works Regulations 1999 (as amended)²⁹;
- The Environmental Permitting (England and Wales) Regulations 2016 (as amended)³⁰;
- The Environmental Damage (Prevention and Remediation) (England) Regulations 2015 (as amended)³¹;
- Building Regulations (2010)³²;
- The Contaminated Land (England) Regulations 2006 (as amended)³³;
- The Contaminated Land (England) (Amendment) Regulations 2012³⁴;
- Hazardous Waste (England and Wales) Regulations 2005 (as amended)³⁵ **Invalid source specified.**;
- Waste Framework Directive 2008³⁶; and
- The Waste (England and Wales) Regulations 2011 (as amended)³⁷.

²⁵ HMSO 2021, The Environment Act

²⁶ HMSO 2003, The Water Act

²⁷ HMSO 2014, The Water Act

²⁸ HMSO 1991, The Water Resources Act (as amended)

²⁹ HMSO 1999, Anti-Pollution Works Regulations (as amended)

³⁰ HMSO, 2016 The Environmental Permitting (England and Wales) Regulations (as amended)

³¹ HMSO 2015, The Environmental Damage (Prevention and Remediation) (England) Regulations (as amended)

³² HMSO 2010, The Building Regulations

³³ HMSO 2006, The Contaminated Land (England) Regulations (as amended)

³⁴ HMSO 2012, The Contaminated Land (England) (Amendment) Regulations

³⁵ HMSO 2005, The Hazardous Waste (England and Wales) Regulations (as amended)

³⁶ European Commission 2008, Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives

³⁷ HMSO 2011, The Waste (England and Wales) Regulations (as amended)

11.1.5 The National Planning Policy Framework (NPPF)³⁸ has informed this appraisal:

- The NPPF sets out the government's planning policies for England and how these are expected to be applied. The NPPF contains policies relevant to the geology and soils assessment. The NPPF considers ground conditions and pollution, including the need for adequate site investigation, suitability in the context of ground conditions, land instability and contamination, and proposals for mitigation. This requires that land cannot be classified as contaminated post remediation as defined under the Environmental Protection Act EPA 1990 Part IIA. Paragraph 197 of the NPPF notes that the responsibility for safe development is with the developer and/or landowner if a site is affected by land instability or contamination. The importance of minimising the effects of pollution and adverse impacts from the proposed development on health, living conditions, the natural environment and sensitivity of the site is also noted in paragraph 198 of the NPPF.

11.1.6 Oldham Metropolitan Borough Council and Tameside Metropolitan Borough Council set out local policies that have informed the appraisal of impacts to the geo-environmental conditions, including:

- The Joint Core Strategy and Development Management Policies Development Plan Documents³⁹ adopted by Oldham Metropolitan Borough Council has informed the geo-environmental appraisal:
- Policy LE3 – 'developments must not significantly worsen local air quality or negatively impact human health, local amenities, or the natural environment. All projects should be designed and managed to avoid unacceptable effects on air quality, thereby protecting the well-being of residents and preserving environmental standards'.

11.1.7 The following policy from Tameside Metropolitan Borough Council⁴⁰ has informed the geo-environmental appraisal:

- Policy 1.10 – 'Protecting and Enhancing the Natural Environment' aims to safeguard the natural environment, countryside character, and biodiversity of the Borough by prioritising nature conservation in decision-making.

11.1.8 The following guidance documents have informed the appraisal of impacts to the geo-environmental conditions:

³⁸ Ministry of Housing, Communities and Local Government 2024, National Planning Policy Framework.

³⁹ Oldham Council 2021, Joint Core Strategy and Development Management Policies

⁴⁰ Tameside Metropolitan Borough Council 2004, The Tameside Unitary Development Plan

- Environment Agency guidance on Land Contamination Risk Management (LCRM)⁴¹;
- Construction Industry Research and Information Associated publication Research & Development (R&D) Publication 66, National House Building Council (NHBC)/ Environment Agency/ Chartered Institute of Environmental Health (CIEH) 2008⁴²;
- CL:AIRE Definition of Waste: Development Industry Code of Practice, 2011⁴³; and
- British Standard (BS) 10175:2011+A2:2017. Investigation of potentially contaminated sites. Code of Practice. 2017⁴⁴.

11.2 Appraisal of Impacts and Effects

11.2.1 The Phase 1 desk studies sought to identify potential contamination issues from current and historical land uses, which may be related to onsite and offsite sources.

11.2.2 The baseline Phase 1 desk studies relating to each relevant work package of the Order Scheme and surrounding areas are provided in Volume 3 - Appendix 11 of this Report [NR14]. An initial conceptual site model (“CSM”) has been developed based on the available information. An initial CSM describes the relationship between potential sources of contamination (resulting from both on- and off-site historical and current activities) and receptors to the potential contamination. As part of the initial CSM development and standard practice, three elements are identified and assessed:

- Source of contamination and associated contaminants;
- Receptors to that contamination – human beings, controlled waters (surface water/groundwater), ecological systems and property/services; and
- Pathways between the sources and receptors.

11.2.3 Where all three elements are present or are likely to be present, they are described as potential contaminant linkages (“PCLs”), which can then be subject to the risk assessment and risk management process⁴⁵.

⁴¹ Environment Agency 2025, Land Contamination: Risk Management (LCRM)

⁴² NHBC and Environment Agency 2008, Guidance for the Safe Development of Housing on Land Affected by Contamination R&D66: Volume 1

⁴³ CL:AIRE 2011, The Definition of Waste: Development Industry Code of Practice

⁴⁴ British Standard 10175:2011+A2 2017, Investigation of Potentially Contaminated Sites - Code of Practice (BSI)

⁴⁵ [LCRM: Stage 1 risk assessment - GOV.UK](#)

- 11.2.4 Using information from the Phase 1 desk studies, Table 11-1 presents a geo-environmental summary of the baseline conditions for each relevant work package of the Order Scheme. Appendix 11A should be read in full to understand the details associated with each site. As can be seen, the majority of sites have moderate/low or low risks, and these are not deemed to require additional investigation based on the data reviewed. Any sites where a moderate risk has been identified will require additional investigation to be undertaken prior to construction to better characterise the risk and decide on whether specific mitigation measures may be required. All sites are subject to general mitigation measures, which are detailed in section 1.3.
- 11.2.5 Given the coal mining legacy present in the area of the Order Scheme, there is the potential for the Scheme to interact with shallow coal mine workings or coal seams. Hazards relating to coal mining may include ground instability or mine gas migration. Details of where work packages of the Order Scheme and surrounding areas are present in Coal Mining Development High-Risk Areas, as defined by the Mining Remediation Authority, are presented in Appendix 11A.
- 11.2.6 As described in Chapter 1, the Order Scheme Boundary relates to the relevant works elements of the Order Scheme and the areas of permanent land acquisition and temporary land use required to facilitate these (such as compounds, work sites and storage areas).

Table 11-1: Summary of baseline geo-environmental information for each site/primary intervention

Site /Intervention	Initial Risk Profile Moderate (M); Moderate to Low (M/L); Low (L)							Additional Intrusive Work Requirements
	On-site Human Health	On-site Property	Off-site Human Health	Off -site Property and Services	Groundwater Controlled Waters	Surface Water Controlled Waters	Offsite sources	
Printworks Site Compounds	M/L Constructio n workers Future users of the site	M/L Compound related facilities	M/L Residents and occupiers of commercial/ industrial premises, users of public open spaces.	M/L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer	M/L River Tame Huddersfield Narrow Canal west section Unnamed watercourses	M/L to L Risks to all onsite receptors	No further works recommended
Heyrod Hall Overbridge (MVL3/07) And Site Compound Works	M/L Constructio n workers Future users of the site	M/L Compound related facilities	M/L Residents and occupiers of commercial/ industrial premises, users of public open spaces.	M/L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer	M/L River Tame Huddersfield Narrow Canal west section	M/L to L Risks to all onsite receptors	No further works recommended
Manchester Road Footbridge Works (MVL3/10A)	M (asbestos) to L Constructio n workers Future users of the site	M/L to L Footbridge	M/L to L Residents and occupiers of commercial/ industrial premises, users of public open spaces.	M/L to L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer	M/L River Tame Huddersfield Narrow Canal west section	M/L to L Risks to all on site receptors	Based on the potential presence of asbestos in Made Ground, that is associated with potential former building

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Site /Intervention	Initial Risk Profile Moderate (M); Moderate to Low (M/L); Low (L)							Additional Intrusive Work Requirements
	On-site Human Health	On-site Property	Off-site Human Health	Off -site Property and Services	Groundwater Controlled Waters	Surface Water Controlled Waters	Offsite sources	
								demolition, additional ground investigation, during the detailed design stage, is required to substantiate or discount this potential risk.
Scout West Laydown Area And Ramp Access (as part of Scout Compounds works)	M/L to L Constructio n workers Future users of the site	M/L to L Compound related facilities	M/L to L Residents and occupiers of commercial/ind ustrial premises, users of public open spaces.	M/L to L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer Superficial secondary A aquifer Superficial secondary (Undifferentiate d) aquifer	L River Tame Unnamed watercourses Huddersfield Narrow Canal west section	M/L to L Risks to all on site receptors	No further works recommended
Plevins Site Compound	M (asbestos) to M/L Constructio n workers	M/L Compound related facilities	M/L Residents and occupiers of commercial/ industrial premises,	M/L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer Superficial secondary	M/L River Tame Huddersfield Narrow Canal west section	M/L to L Risks to all onsite receptors	Based on the potential presence of asbestos in Made Ground, that is

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Site /Intervention	Initial Risk Profile Moderate (M); Moderate to Low (M/L); Low (L)							Additional Intrusive Work Requirements
	On-site Human Health	On-site Property	Off-site Human Health	Off -site Property and Services	Groundwater Controlled Waters	Surface Water Controlled Waters	Offsite sources	
	and future users		users of public open spaces.		(Undifferentiate d) aquifer	Unnamed watercourses		associated with potential former building demolitions, additional ground investigation, during the detailed design stage, is required to substantiate or discount this potential risk.
Scout East Access (as part of Scout Compounds works)	M/L to L Constructio n workers Future users of the site	M/L to L Compound related facilities	M/L to L Residents and occupiers of commercial/ind ustrial premises, users of public open space.	M/L to L Commercial businesses and residential properties.	M/L Bedrock secondary A aquifer Superficial secondary A aquifer	L River Tame (Source to Chew Brook) Unnamed watercourses	M/L Risks to all onsite receptors	No further works recommended
Scout East Laydown Area And Ramp Access (as part of Scout Compounds works)	M (asbestos) to M/L Constructio n workers	M/L Compound related facilities	M/L Residents and occupiers of commercial/ind ustrial premises,	M/L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer	M/L Unnamed watercourses River Tame	M/L to L Risks to all onsite receptors	Based on the potential presence of asbestos in Made Ground, that is

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Site /Intervention	Initial Risk Profile Moderate (M); Moderate to Low (M/L); Low (L)							Additional Intrusive Work Requirements
	On-site Human Health	On-site Property	Off-site Human Health	Off -site Property and Services	Groundwater Controlled Waters	Surface Water Controlled Waters	Offsite sources	
	Future users of the site		users of public open space		Superficial secondary A aquifer	Huddersfield Narrow Canal west section		associated with potential former building demolitions, additional ground investigation, during the detailed design stage, is required to substantiate or discount this potential risk.
Roughtown Road Footbridge Works (MVL3/18)	M/L to L Constructio n workers Future users of the site	M/L to L Overbridge	M/L to L Residents and occupiers of commercial/ind ustrial premises, users of public open space	M/L to L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer	M/L River Tame Huddersfield Narrow Canal west section	M/L tor L Risks to all onsite receptors	No further works recommended
Relocated Mossley Station Works	M (asbestos and gas) to M/L Constructio n workers	M (gas) to M/L Station facilities	M/L Residents and occupiers of commercial/ind ustrial premises,	M/L Commercial businesses and residential properties.	M/L Bedrock secondary A aquifer	M/L River Tame Huddersfield Narrow Canal west section	M/L to L Risks to all onsite receptors	Based on the potential presence of asbestos in Made Ground, that is

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Site /Intervention	Initial Risk Profile Moderate (M); Moderate to Low (M/L); Low (L)							Additional Intrusive Work Requirements
	On-site Human Health	On-site Property	Off-site Human Health	Off -site Property and Services	Groundwater Controlled Waters	Surface Water Controlled Waters	Offsite sources	
	Future users of the site		users of public open space					associated with potential former building demolitions, as well as the potential for ground gas accumulation in proposed lift shafts, additional ground investigation, during the detailed design stage, is required to substantiate or discount this potential risk.
Roughtown Road Overbridge Works (MVL3/17)	M (asbestos) to L Constructio n workers Future users of the site	M/L to L Access route Overbridge	M/L to L Residents and occupiers of commercial/ind ustrial premises, users of public open space.	M/L to L Commercial businesses and residential properties.	M/L Bedrock secondary A aquifer	M/L River Tame Huddersfield Narrow Canal west section	M/L to L Risks to all onsite receptors	Based on the potential presence of asbestos in Made Ground, that is associated with potential former building

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Site /Intervention	Initial Risk Profile Moderate (M); Moderate to Low (M/L); Low (L)							Additional Intrusive Work Requirements
	On-site Human Health	On-site Property	Off-site Human Health	Off -site Property and Services	Groundwater Controlled Waters	Surface Water Controlled Waters	Offsite sources	
								demolitions, additional ground investigation, during the detailed design stage, is required to substantiate or discount this potential risk.
Heron Lane Site Compound and Wrights Mill Overbridge (MVL3/20) Reconstruction Works	M (asbestos and contact with soils) to M/L Construction workers Future users of the site	M/L Compound related facilities Overbridge	M/L Residents and occupiers of commercial/industrial premises, users of public open space	M/L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer Secondary A superficial aquifer Secondary (Undifferentiated) superficial aquifer	M/L River Tame Huddersfield Narrow Canal west section	M/L to L Risks to all onsite receptors	Based on the potential presence of asbestos in Made Ground, that is associated with potential former building demolitions and potential previous landfill on-site, additional ground investigation, during the detailed design

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Site /Intervention	Initial Risk Profile Moderate (M); Moderate to Low (M/L); Low (L)							Additional Intrusive Work Requirements
	On-site Human Health	On-site Property	Off-site Human Health	Off -site Property and Services	Groundwater Controlled Waters	Surface Water Controlled Waters	Offsite sources	
								stage, is required to substantiate or discount this potential risk.
Armit Road Site Compound	M (asbestos) to M/L Construction workers Future users of the site	M/L Compound related facilities Access road	M/L Residents and occupiers of commercial/ industrial premises, users of public open space	M/L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer Secondary A superficial aquifer Secondary (Undifferentiated) superficial aquifer	M/L Unnamed watercourses Huddersfield Narrow Canal west section River Tame	M/L to L Risks to all onsite receptors	Based on the potential presence of asbestos in Made Ground, that is associated with potential former building demolitions, additional ground investigation, during the detail design stage, is required to substantiate or discount this potential risk.
Oaklands Road Site Compound and Greenfield Site	M (asbestos) to M/L	M/L Compound related facilities	M/L Residents and occupiers of	M/L Commercial businesses and	M/L	M/L River Tame	M/L to L	Based on the potential presence of

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Site /Intervention	Initial Risk Profile Moderate (M); Moderate to Low (M/L); Low (L)							Additional Intrusive Work Requirements
	On-site Human Health	On-site Property	Off-site Human Health	Off -site Property and Services	Groundwater Controlled Waters	Surface Water Controlled Waters	Offsite sources	
Compound Works Including Bridge Works (MVL3/27B and MVL3/28)	Construction workers Future users of the site		commercial/industrial premises, users of public open space	residential properties	Bedrock secondary A aquifer Superficial secondary A aquifer Superficial secondary (Undifferentiated) aquifer	Huddersfield Narrow Canal west section Unnamed watercourses	Risks to all onsite receptors	asbestos in Made Ground, that is associated with potential former building demolitions, additional ground investigation, during the detail design stage, is required to substantiate or discount this potential risk.
Oldham Road Access and Drainage Works	M/L to L Construction workers Future users of the site	L No onsite properties	L Residents and occupiers of commercial/industrial premises, users of public open space	L Commercial businesses and residential properties	L Bedrock secondary A aquifer	L Huddersfield Narrow Canal west section River Tame Unnamed watercourses	M/L to L Risks to all onsite receptors	No further works recommended
Wickens Underbridge	M/L to L Construction workers	L Public footpath	L Residents and occupiers of	L Commercial businesses and	L	L	M/L to L	No further works recommended

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Site /Intervention	Initial Risk Profile Moderate (M); Moderate to Low (M/L); Low (L)							Additional Intrusive Work Requirements
	On-site Human Health	On-site Property	Off-site Human Health	Off -site Property and Services	Groundwater Controlled Waters	Surface Water Controlled Waters	Offsite sources	
(MVL3/29) PRoW Upgrade Works	Future users of the site		commercial/ind ustrial premises, users of public open space	residential properties	Bedrock secondary A aquifer Superficial secondary A aquifer Superficial secondary (Undifferentiate d) aquifer	Huddersfield Narrow Canal west section River Tame Unnamed watercourses	Risks to all onsite receptors	
Uppermill Viaduct Works	M/L to L Constructio n workers Future users of the site	M/L to L Access road	M/L to L Residents and occupiers of commercial/ind ustrial premises, users of public open space	M/L to L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer Superficial secondary A aquifer	M/L River Tame Huddersfield Narrow Canal west section	M/L to L Risks to all onsite receptors	No further works recommended
Former Saddleworth Station Site Compound Works	M/L to L Constructio n workers Future users of the site	M/L to L No property or services on-site	M/L to L Residents and occupiers of commercial/ind ustrial premises, users of public open space	M/L to L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer Superficial secondary A aquifer Superficial secondary	M/L River Tane Huddersfield Narrow Canal west section Diggle Brook	M/L to L Risks to all onsite receptors	No further works recommended

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Site /Intervention	Initial Risk Profile Moderate (M); Moderate to Low (M/L); Low (L)							Additional Intrusive Work Requirements
	On-site Human Health	On-site Property	Off-site Human Health	Off -site Property and Services	Groundwater Controlled Waters	Surface Water Controlled Waters	Offsite sources	
					(Undifferentiated) aquifer			
Diggle Rail Hub Compound Works (as part of Diggle Compounds works)	M (asbestos) to M/L Construction workers Future users of the site	M/L Compound related facilities	M/L Residents and occupiers of commercial/industrial premises, users of public open space	M/L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer Superficial secondary A aquifer	M/L River Tame Huddersfield Narrow Canal summit section	M/L to L Risks to all on-site sources	Based on the potential presence of asbestos in Made Ground, that is associated with potential former building demolitions, additional ground investigation, during the detailed design stage, is required to substantiate or discount this potential risk.
Grandpa Greene's Compounds (as part of Ward Lane Compounds works)	M/L Construction workers Future users of the site	M/L Compound related facilities	M/L Residents and occupiers of commercial/ industrial premises,	M/L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer	M/L River Tame Huddersfield Narrow Canal summit section	M/L to L Risks to all on-site sources	No further works recommended

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Site /Intervention	Initial Risk Profile Moderate (M); Moderate to Low (M/L); Low (L)							Additional Intrusive Work Requirements
	On-site Human Health	On-site Property	Off-site Human Health	Off -site Property and Services	Groundwater Controlled Waters	Surface Water Controlled Waters	Offsite sources	
			users of public open space					
Sam Road Compound (as part of Diggle Compounds works)	M (asbestos) to L Constructio n workers Future users of the site	M/L to L Compound related facilities	M/L to L Residents and occupiers of commercial/ industrial premises, users of public open space	M/L to L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer Superficial secondary A aquifer	M/L Huddersfield Narrow Canal summit section Diggle Brook Unnamed watercourse	M/L to L Risks to all on- site sources	Based on the potential presence of asbestos in Made Ground, that is associated with potential former building demolitions, additional ground investigation, during the detailed designs stage, is required to substantiate or discount this potential risk.
Diggle Access and Diversion Route	M/L to L Constructio n workers Future users of the site	M/L to L No property or services found on site	M/L to L Residents and occupiers of commercial/ind ustrial premises,	M/L to L Commercial businesses and residential properties	M/L Bedrock secondary A aquifer	M/L Huddersfield Narrow Canal summit section River Tame	M/L to L Risks to all on- site sources	No further works recommended

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Site /Intervention	Initial Risk Profile Moderate (M); Moderate to Low (M/L); Low (L)							Additional Intrusive Work Requirements
	On-site Human Health	On-site Property	Off-site Human Health	Off -site Property and Services	Groundwater Controlled Waters	Surface Water Controlled Waters	Offsite sources	
			users of public open space			Unnamed watercourse		

11.3 Mitigation and Consideration of Control Measures for all sites

- 11.3.1 In addition to the works that fall under the Order Scheme (per Table 11-1 in the previous section), certain additional works comprising the Scheme will also be undertaken using Permitted Development Rights. A list of these sites is included in Table 1-2 in Volume 1, Chapter 1 of this Report [NR14].
- 11.3.2 The potential effects of the design, construction and operation of the Scheme works – both pursuant to Permitted Development Rights and pursuant to the Deemed Planning Permission - will be managed in accordance with the requirements included in Network Rail's Environment and Social Minimum Requirements for Projects – Design and Construction (NR/L2/ENV/015) (Volume 3, Appendix 1A of this Report [NR14]). That document sets out Network Rail's minimum requirements for the management of environment and social risks and opportunities to mitigate the potential effects of the design and construction of the Scheme works.
- 11.3.3 As identified in Table 11-1, some sites may require further work to reduce the current uncertainty on the risk profile posed by potential ground contamination (this will comprise ground investigation, and risk assessment). However, a range of generic practices, activities and potential risks (and associated mitigations) have been presented below, and these will be applied on all sites, where applicable. These mitigation measures will be secured via the CoCP Part B, or through other specified means, within the relevant management plans to be secured by planning condition as set out in the 'Request for Deemed Planning Permission and statement of proposed conditions' [NR11]:
- **Mitigation of risks to construction workers via compliance with Network Rail health and safety requirements:** Standard good practice health and safety measures will be implemented including a site-specific risk assessment and the use of personal protective equipment ('PPE') to mitigate the potential risks from contamination (via dermal, inhalation, or ingestion pathways) to workers during the construction phase.
 - **Aggressive ground conditions** (soils or groundwater containing chemicals that may attack buried structures) via design and appropriate GI/SI so that design appropriately addresses any site-specific issues: To mitigate the impacts to development infrastructure from contamination in soil and groundwater, where structures are being placed in the ground, conditions will be assessed to test for aggressive ground conditions. If required the design of concrete and service pipes will be tailored to mitigate against aggressive ground conditions.
 - **Management of soils:** If there is potential for material to be excavated (for example removal of ballast; or excavation work associated with construction or operation, including installation of services), soil and/or rock materials arising from construction activities will be sampled, tested

and assessed with the aim of re-use either at the originating site or at a suitable receiving site in accordance with the CL:AIRE Definition of Waste Development Industry Code of Practice ('DoWCoP')⁴³ and a waste management and materials plan. It is likely that an appropriate re-use criteria will need to be devised to ensure the re-use of materials is in line with the DoWCoP suitability for use requirement. Any materials that do not meet the suitable for re-use criteria and that require disposal off-site will be sampled, tested, assessed and characterised in line with BS EN 14899:2005⁴⁶. Network Rail has specific procedures in place for the handling of used ballast (Used Ballast and Excavation Waste Handling NR/L3/ENV/044) which should be considered when handling excavated ballast on-site.

- **Piling:** If piled foundations are required and contamination is identified, a piling risk assessment will be carried out during the detailed design stage in accordance with the Environment Agency Guidance, "Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention"⁴⁷, with the appropriate mitigation implemented through the CoCP Part B Pollution Prevention and Incident Control Plan (PPICP) and a Waste Management and Materials Plan (WMMP). Piling may also need to consider the presence of former coal mine workings.
- **Dust generation:** Dust generation will be kept to a minimum and this will be required to be in compliance with the CoCP Part B PPICP and a Nuisance Management Plan, once produced and submitted to the relevant local authorities for their approval. Compliance with the CoCP Part B will also mitigate the potential risk to controlled waters. Dust generation will also be kept to a minimum in compliance with general best practice, as outlined in, for example, "Environmental Good Practice on Site", 5th Edition, CIRIA Publication C811⁴⁸.
- **Confined space risk via Network Rail health and safety requirements:** Entry into excavations or any other enclosed space on a construction site will comply with confined space legislation and be assessed prior to entry. Before construction works start, a health and safety risk assessment will be carried out in accordance with current health and safety regulations. Appropriate mitigation measures will be implemented during the course of construction. Potential ground gas generation associated with Made Ground and potential shallow coal mine workings will also be mitigated through compliance with confined space legislation.

⁴⁶ British Standard 14899:2005, Characterisation of waste – sampling of waste materials

⁴⁷ CL:AIRE 2025, Piling and Penetrative Ground Improvement Methods on Land Affected by Contamination: Guidance on Pollution Prevention

⁴⁸ CIRIA 2023, "Environmental Good Practice on Site", 5th Edition, CIRIA Publication C811

- **Mitigation of risks to future users of the site:** Risks may be present in the longer term from contamination, in particular dusts generated from impacted Made Ground (where asbestos or heavy metals may be present). To mitigate dermal, inhalation, or ingestion pathways, hardstanding should be kept in place and maintained. Separately, although unlikely, if risk is identified from inhalation of gases or vapours in subsurface structures (e.g., lift shafts)/above ground structures, bespoke mitigation measures (which may include remediation work) will be required.
- **Dewatering activities:** Where dewatering activities are required within excavations and exceed 20 m³/day, then Network Rail will apply for a water abstraction licence.
- **Coal Mining:** A coal mining risk assessment will be undertaken to inform the detailed design of those areas of the Scheme that are located in a Development High Risk Area in order to identify the remedial measures required, which is standard practice in former coal mining areas.

11.3.4 If unexpected contamination is identified, further ground investigation to determine its extent (and accompanying risk assessment) will be required. If risk is identified, and remediation strategies are required, the Designer/Contractor shall conduct an options appraisal and the relevant local authority will be consulted to agree a remediation strategy. A copy of the remediation strategy and any verification reports will be provided to the relevant local authority to discharge the relevant planning conditions. Any required remediation must be carried out in accordance with the approved remediation strategy, with evidence collated for inclusion in a verification report to demonstrate the remediation has been completed.

12. WATER ENVIRONMENT

12.1 Introduction

- 12.1.1 This chapter presents an appraisal of the impacts of the Order Scheme (as set out in Table 1-1 of Chapter 1 in Volume 1 of this Report [NR14]) in relation to the water environment. Potential impacts to the water environment include flood risk, surface water (water quality and hydromorphology), and groundwater (quantity and quality). A series of related, more detailed technical appendices are presented in Volume 3 of the Environmental Report [NR14], which includes the Water Framework Directive (WFD) Screening (Technical Appendix 12A), Flood Risk Assessment (FRA) (Technical Appendix 12B) and Surface Water Assessment (Technical Appendix 12C).
- 12.1.2 This chapter focuses on flood risk, surface water quality, and groundwater. It also provides details of mitigation requirements and consideration of control measures.
- 12.1.3 As the Order Scheme is collectively over 1 ha in area, a site-specific FRA is required, which is provided in Volume 3 - Technical Appendix 12B FRA. The site-specific FRA outlines the findings of flood risk to and from the Order Scheme and, where necessary, an appraisal of possible mitigation measures to prevent or reduce flood risk. The key findings of the FRA are summarised below (further details can be found in Volume 3 - Technical Appendix 12B FRA).
- 12.1.4 Various national and local planning policies and supporting documents have been considered and reviewed for the Order Scheme in relation to flood risk:
- National Planning Policy Framework (NPPF)⁴⁹.
 - Flood Risk and Coastal Change Planning Policy Guidance (FRCC-PPG)⁵⁰.
 - Places for Everyone Joint Development Plan⁵¹.
 - Greater Manchester Strategic Flood Risk Management Framework (SFRMF)⁵².
 - Greater Manchester Level 1 Strategic Flood Risk Assessment (SFRA)⁵³.

⁴⁹ [National Planning Policy Framework - GOV.UK](#) (2024)

⁵⁰ [Flood risk and coastal change - GOV.UK](#) (2022)

⁵¹ [Places for Everyone Joint Development plan Plan.docx](#) (2024)

⁵² [Greater Manchester Strategic Flood Risk Management Framework \(SFRMF\)](#) (2019)

⁵³ [Greater Manchester Level 1 Strategic Flood Risk Assessment \(SFRA\)](#) (2019)

- Greater Manchester Level 2 SFRA^{54,55}.
- 12.1.5 The surface water assessment is based on the Order Scheme described in Chapter 1 of this Environmental Report. Surface water quality and surface water hydromorphology are considered in further detail in Volume 3 - Technical Appendix 12C, and the conclusions are summarised below. The assessment in this chapter contains information on the regulatory/policy framework that applies to water, defines the relevant study area (refer to Figure 12A.3.1 and Figure 12C 3.1 in Volume 2 of the Environmental Report [NR14]), describes baseline conditions, and identifies potentially affected receptors and their importance. It goes on to recommend mitigation measures and assess the magnitude of impacts and the significance of effects of the Order Scheme.
- 12.1.6 The following national, regional, and local policies, legislation, and guidance have been considered for the Order Scheme in relation to surface water quality:
- Water Environment (Water Framework Directive) (England and Wales) Regulations (2017);
 - Antipollution Works Regulations (1999);
 - Environment Act (1995);
 - Environmental Damage (Prevention and Remediation) Regulations (2015);
 - Water Industry Act 1991(Amendment) (England and Wales) Regulations (2009);
 - The Control of Pollution (Oil Storage) (England) Regulations (2001);
 - The Environment Act (2021)
 - North West River Basin District Management Plan (2022).
- 12.1.7 A Water Framework Directive assessment has been undertaken and is presented in Technical Appendix 12A. In line with the Water Environment (Water Framework Directive) (England and Wales) Regulations (2017), the assessment considers whether the Order Scheme has the potential to cause deterioration to the ecological status or ecological potential of nearby surface water and groundwater bodies. It also considers the biological, physico-chemical and hydromorphological qualities of a surface water body. The assessment considers potential impacts to groundwater quality and quantity as a result of the Order Scheme.

⁵⁴ [Manchester City, Salford City and Trafford Councils Level 2 Hybrid SFRA.pdf](#) (2011)

⁵⁵ [Supporting and Background Evidence Documents - Greater Manchester Combined Authority](#) (2021)

12.2 Appraisal of Impacts and Effects

12.2.1 Volume 2 Figures of this Report [NR14] provides relevant hydrological background information on the Order Scheme:

- Figure 12A 3.1 WFD surface water bodies within the zone of influence (“Zol”) of the Order Scheme.
- Figure 12A 3.2 Pond/lake features within the Zol of the Order Scheme.
- Figure 12A 3.3 Groundwater bodies within the Zol of the Order Scheme.
- Figure 12A 4.1 Watercourses and lake/pond features scoped in for further assessment as part of the Order Scheme.
- Figure 12A 5.1 Superficial geology and bedrock geology of Zol of the Order Scheme.
- Figure 12A 5.2 Groundwater Dependent Terrestrial Ecosystems (GWDTEs) within the Zol of the Order Scheme.
- Figures 12B.3.3.1 to 12B.3.3.6 Watercourses and the topographic terrain in the context of the Order Scheme.
- Figure 12B.3.4.1 to 12B.3.4.6 Flood Map for Planning in the context of the Order Scheme.
- Figures 12B.3.4.7 to 12B.3.4.12 Risk of Flooding from River and the Sea in the context of the Order Scheme.
- Figures 12B.3.4.13 to 12B.3.4.18 Risk of Flooding from Surface Water in the context of the Order Scheme.
- Figures 12B.3.4.19 to 12B.3.4.24 Risk of Flooding from Reservoirs in the context of the Order Scheme.
- Figure 12C. 3.1 Surface Water Bodies within the Zol for the Order Scheme.
- Figure 12C. 4.1 Scoped in Ordinary Watercourses and Ponds for the Order Scheme.

Risk of Flooding from Rivers

12.2.2 The majority of the Order Scheme is not at risk of fluvial flooding from main rivers, as they are primarily located within Flood Zone 1 and outside the fluvial flood extent of the Environment Agency Risk of Flooding from Rivers & Sea map, except for the following seven sites that falls within Flood Zone 2 and/or 3 and the high-risk fluvial flood extent:

- Temporary land take for Scout West Compound⁵⁶ – falls within Flood Zones 2 and 3. Refer to Figure 12B.4.3 in Volume 2 of the Environmental Report [NR14].
- Temporary land take for Egmont Street Replacement Carpark, and temporary rights of access of Egmont Street road to Plevins Site Compound Works – falls within Flood Zones 2 and 3. Refer to Figure 12B.4.3 in Volume 2 of the Environmental Report [NR14].
- Temporary land take from Heron Lane road to Heron Lane Site Compound - falls within Flood Zones 2 and 3. Refer to Figure 12B.4.4 in Volume 2 of the Environmental Report [NR14].
- Temporary land take for Armit Road Site Compound – falls within Flood Zone 2. Refer to Figure 12B.4.4 in Volume 2 of the Environmental Report [NR14].
- Temporary land take of Saddleworth Rangers Replacement Carpark – falls within Flood Zone 2. Refer to Figure 12B.4.4 in Volume 2 of the Environmental Report [NR14]. Refer to Figure 12B.4.4 in Volume 2 of the Environmental Report [NR14].
- Temporary land take adjacent to High Street road for Uppermill Viaduct (MVL3/31) and Site Compound Works – falls within Flood Zone 2. Refer to Figure 12B.4.5 in Volume 2 of the Environmental Report [NR14].
- Temporary land take for access to Diggle Welfare, Rail hub and Office Compound – falls within Flood Zones 2 and 3. Refer to Figure 12B.4.6 in Volume 2 of the Environmental Report [NR14].

12.2.3 In accordance with the NPPF, the following two tests are required for high flood risk sites:

- Sequential Test – directs new development to areas with lower flood risk by identifying potential sites with lower flood risk for relocation. The Sequential Test is required for the seven sites listed above, as they fall within Flood Zone 2 and/or 3, classed as ‘major development’, and not within sites allocated for development in the Local Plan (as detailed in the ‘Places for Everyone Joint Development Plan’ section).
Suitable land along the route is extremely limited due to topographical constraints, existing land use, and operational requirements. Multiple reviews have been undertaken to refine the location, size, and layout of work sites to minimise environmental impacts, including flood risk. Where feasible, sites have been located outside Flood Zones 2 and 3, with preference given to lower-risk where operationally viable. However, in some cases, avoidance is not possible due to the linear nature of the railway corridor, the need for proximity to specific worksites, and the lack of alternative accessible land.

⁵⁶ Consented as part of the Scout Tunnel Site Compounds Works

Flood risk has been carefully balanced against the practical and logistical needs of delivering the Order Scheme. As the Order Scheme cannot be relocated or substituted elsewhere, an Exception Test is required in line with the NPPF.

- Exception Test – if the Sequential Test does not find suitable lower flood-risk sites for relocation, the development must pass the Exception Test to be allowed on the flood-risk sites. The Exception Test is designed to allow appropriate and safe development to proceed in scenarios where the Sequential Test has been passed, i.e. where it has been shown that suitable sites at lower risk of flooding are not available.

12.2.4 The Exception Test is required for the following four of the seven sites listed above, as they fall within Flood Zone 3, as well as 2, and are classed as 'essential infrastructure' (see 'Flood Risk Vulnerability and Flood Zone Compatibility' table in Volume 3 - Technical Appendix 12B FRA):

- Temporary land take for Scout West Compound;
- Temporary land take for Egmont Street Replacement Carpark, and temporary right of access of Egmont Street road to Plevins Site Compound Works;
- Temporary land take of Heron Lane road to Heron Lane Site Compound; and
- Temporary land take for access to Diggle Welfare, Rail hub and Office Compound.

12.2.5 The following three of the seven sites listed above do not require an Exception Test, as they fall within Flood Zone 2 and are classed as 'essential infrastructure':

- Temporary land take for Armit Road Site Compound.
- Temporary land take of Saddleworth Rangers Replacement Carpark.
- Temporary land take adjacent to High Street road for Uppermill Viaduct (MVL3/31) and Site Compound Works.

12.2.6 The Order Scheme works are already considered to meet the two criteria of the Exception Test:

- Wider sustainability benefits – the development forms part of the TransPennine Route Upgrade in line national objectives on 'levelling up' the north of England. The development is expected to deliver sustainability and associated economic benefits to the wider community by supporting a cleaner mode of transport on a regional scale. This benefit is considered to outweigh the negligible flood risk impact identified in this FRA.
- Safety and flood risk management – the proposed rail infrastructure improvement will remain safe for use throughout its operational

lifetime, taking into account the vulnerability of its users. It will not increase flood risk elsewhere and, where feasible, may contribute to reducing flood risk. This reflects the requirements of the 'Weather Resilience and Climate Change Adaptation' section in Network Rail's Environment and Social Minimum Requirements for Projects – Design and Construction (NR/L2/ENV/015).

- 12.2.7 The review provided above, based on the requirements of the NPPF Sequential Test and the Exception text, confirms that the relevant tests are passed (including the seven high-risk sites listed above that fall within Flood Zone 2 and/or 3).

Risk of Flooding from Ordinary Watercourses and Surface Water Flooding

- 12.2.8 The risk of surface water flooding across the Order Scheme varies between low, medium, and high. Much of the Order Scheme involves upgrading existing infrastructure along the existing TransPennine Route. There are only three new permanent works, which will require mitigation measures to minimise surface water flood risk, being:
- Mossley Station Relocation Works – will be constructed on elevated platforms above ground level, making it less susceptible to surface water flooding. A new permanent drainage system will be implemented during the operational phase to mitigate flood risk. Refer to Figure 12B.4.15 in Volume 2 of the Environmental Report [NR14].
 - Greenfield Station Platform 2 Secondary Means of Escape Works (as part of Greenfield Station Redevelopment Works) – will be constructed on elevated platforms above ground level, making it less susceptible to surface water flooding. A new permanent drainage system will be implemented during the operation phase to mitigate flood risk. Refer to Figure 12B.4.16 in Volume 2 of the Environmental Report [NR14].
 - New Oldham Road Footbridge (proposed MVL3/27B) – is a structured asset located above ground level, making it less susceptible to surface water flooding. Refer to Figure 12B.4.16 in Volume 2 of the Environmental Report [NR14].
- 12.2.9 Nevertheless, any potential surface water flood risk to the Order Scheme will be covered by adhering to guidance, such as surface water management measures outlined in the Pollution Prevention and Incident Control Plan (PPICP) which forms part of the Code of Construction Practice (CoCP) Part B, Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site Guide (C811D), Network Rail's requirements are contained in and the CoCP Part A [NR17].

Risk of Flooding from Groundwater

- 12.2.10 The risk of groundwater flooding across the Order Scheme is considered low. This is based on the area's hydrogeological characteristics, findings

from the Groundsure assessments (which indicated negligible to low risk where conducted), and historical flood records. For more information, please see Volume 3, Appendix 11A of this Report **[NR14]**.

- 12.2.11 Even in the rare event that groundwater flooding does occur, it is unlikely to pose a significant risk, as groundwater typically rises slowly above ground level and is generally of insufficient volume to cause widespread and consequential flood damage.
- 12.2.12 While groundwater flood risk should not typically prevent development, it is crucial to ensure that the Order Scheme is not placed at unnecessary risk or exacerbate existing flood risk. The Order Scheme will involve minimal below-ground construction that could alter subsurface flow regimes.
- 12.2.13 Where below-ground work is necessary, it will be designed to withstand hydrostatic pressure and prevent groundwater ingress, ensuring it is not vulnerable to groundwater flooding. The depth of the underlying aquifers is expected to be greater than that of any proposed below-ground elements, and there are no proposals to discharge into the ground. Moreover, the Order Scheme will be covered by mitigation measures to prevent any increase in groundwater flood risk in the surrounding area. Any potential groundwater emergence at the surface will be appropriately managed through the surface water management measures outlined in the PPICP, which forms part of the CoCP Part B.
- 12.2.14 Given the low groundwater flood risk of the Order Scheme, no additional flood risk mitigation measures are required beyond the surface water management measures outlined in the PPICP which forms part of the CoCP Part B, CIRIA Environmental Good Practice on Site Guide (C811D) and requirements included in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report **[NR14]**).

Risk of Flooding from Artificial Sources (Reservoirs, Canals, Sewers)

- 12.2.15 Although sections of the Order Scheme fall within the reservoir flood extent (refer to Figure 12B.4.19 to 12B.4.24 in Volume 2 of the Environmental Report **[NR14]**), the potential risk of reservoir flooding is considered low. This is because reservoir failure is very unlikely based on historical flood records and regular inspections, surveys, and maintenance by the operating authorities. Reservoirs in the UK have an excellent safety record.
- 12.2.16 The potential risk of canal flooding across the Order Scheme is considered low based on historical flood records, the location outside the Canal Hazard Zones, and canals being strongly controlled waterways with regulated water levels.

Risk of Flooding Elsewhere

12.2.17 The potential impact of the Order Scheme on the surrounding area's flood risk is considered low due to the following:

- Fluvial flood risk – the Order Scheme are mainly in Flood Zone 1 and outside the fluvial flood extent of the Environment Agency Risk of Flooding from Rivers and Sea map. For sites in Flood Zone 2 and/or 3, protective provisions will be in place to prevent increased fluvial flood risk in the surrounding area, including flood mechanisms or floodplain storage. Refer to Figure 12B.3.4.1 to 12B.3.4.6 in Volume 2 of the Environmental Report [NR14].
- Surface water flood risk – the Order Scheme primarily involves upgrading the existing infrastructure along the Existing Transpennine Route, so there is no change to flood mechanisms or floodplain storage. Although three works of the Order Scheme – Mossley Station Relocation, Greenfield Station Platform 2 Secondary Means of Escape Works (as part of Greenfield Station Redevelopment Works), and New Oldham Road Footbridge (proposed MVL3/27B) (refer to Figure 12B.4.15 and 12B.4.16, respectively, in Volume 2 of the Environmental Report [NR14]) – entails constructing new assets rather than upgrades to infrastructure, the overall change in impermeable area is minimal and not considered significant enough to displace floodplain storage or increase the risk of surface water flooding in the surrounding area. Moreover, mitigation measures will be in place to prevent increased surface water flood risk in the surrounding area.
- Groundwater flood risk – the Order Scheme involve minimal below-ground construction that could alter subsurface flow regimes. Additionally, the depth of the underlying aquifers is expected to be greater than that of any proposed below-ground elements, and there are no proposals to discharge into the ground.
- Reservoir flood risk – the Order Scheme will not significantly alter overland flow paths, displace floodplain storage, or increase runoff volume enough to overwhelm nearby reservoirs (refer to Figure 12B.3.4.19 to 12B.3.4.24 in Volume 2 of the Environmental Report [NR14]). In addition, the Order Scheme will be designed with adequate drainage systems to effectively manage stormwater and to minimise its impact on flood risk in the surrounding area, including reservoirs.
- Canals flood risk – although elements of the Order Scheme are near the Huddersfield Narrow Canal, with some sites on low-level ground directly adjacent to the canal, the risk of canal flooding is overall low. This is because the development is not within the Huddersfield Narrow Canal Modelled Hazard Zone (refer to Appendix G in Volume 3 12B FRA of the Environmental Report [NR14]), and canals are artificial waterways with

strongly controlled water flow, making them less prone to flooding than natural watercourses during storm events.

- 12.2.18 For the reasons outlined above, the Order Scheme will not exacerbate flood risk on the surrounding area. Therefore, no further flood risk mitigation measures are required.

Consents, Permits, and Approvals

Flood Risk Activity Permit (FRAP) and Land Drainage Consent

- 12.2.19 FRAPs and land drainage consent are regulatory requirements in England, governed by the Environmental Agency and Lead Local Flood Authority (LLFA), respectively. These permits are required for certain works in, over, under, or near main rivers, flood defences, and ordinary watercourses. Failure to obtain permits constitutes a breach of UK environmental legislation that can lead to consequences, including financial penalties and legal proceedings.
- 12.2.20 The Order Scheme would, if granted, provide Network Rail with Deemed Planning Permission as described in the 'Request for deemed planning permission and statement of proposed conditions' [NR11] for works in, over, under, or near main rivers, flood defences, and ordinary watercourses. However, this does not override environmental legislation; rather, it streamlines the process by replacing certain permitting requirements with protective provisions. These provisions ensure that the Environment Agency (EA) remains engaged in the process, requiring submission of detailed designs and allowing for consultation and agreement.
- 12.2.21 So while formal permits such as FRAPs may not be required, the EA retains the right to review and respond to proposals, with the Order stipulating that agreement cannot be unreasonably withheld. In practice, this means the same level of scrutiny and environmental rigour is applied, but through a mechanism that de-risks delivery and provides certainty for the Order Scheme. Should any FRAPs eventually be required, these will be prepared in advance by the contractor/designer prior to the relevant works.

Canal and River Trust Approval

- 12.2.22 The Canal and River Trust advised that any development located adjacent to or near a canal will require consultation and, in some cases, formal approval. This applies to any works on, near, under, or over canals where there is potential to affect the structural integrity of the canal or towpath, interfere with navigation or maintenance access, or impact water levels or drainage patterns.

- 12.2.23 In addition, the Canal and River Trust defines specific "notified areas" around canals that they must be consulted on for proposed developments. These areas vary depending on the scale of the development:
- A 150 m buffer applies for major developments.
 - A 50 m buffer applies for minor and household developments but can extend to 75 or 150 m where there are assets such as reservoirs, tunnels, cuttings, and embankments.
- 12.2.24 The Order, if granted, would provide Network Rail with the Deemed Planning Permission as described in the 'Request for deemed planning permission and statement of proposed conditions' [NR11] for works on, near, under, or over canals. However, this does not remove the need for engagement with the Canal & River Trust. Under the Order's protective provisions, Network Rail must submit detailed designs and seek the Trust's approval. While formal approval is not required, the Trust retains the right to review and respond to proposals, with the Order stipulating that agreement cannot be unreasonably withheld.
- 12.2.25 Engagement arrangements with the Trust will be reviewed and clarified by the designer/contractor prior to the start of construction for each applicable work elements, ensuring continued collaboration and oversight.

Surface water assessment

- 12.2.26 The findings from the surface water assessment are based on the information available at the point of outline design and the outcomes may change following further design works.
- 12.2.27 The surface water assessment concluded that there is potential for the works to have direct impacts to the surface water quality and hydromorphology of the following watercourses (Refer to Figure 12C.4.1 in Volume 2 of the Environmental Report [NR14]):
- Diggle Brook
 - River Tame
 - Huddersfield Narrow Canal
 - Unnamed watercourses located near Standedge Tunnel
 - OW 7
 - OW 13
 - OW 14.
- 12.2.28 These impacts are associated various work elements associated with the Order Scheme including:

- Reconstruction of the existing Wrights Overbridge superstructure (MVL3/23)
- Reconstruction of existing overbridge superstructure on Ward Lane (MVL3/36)
- Reconstruction of Diggle Road overbridge (MVL3/39)
- Tunnel Strengthening Works (MVL3/39A)
- Reconstruction of existing rivetted plate steel underbridge (MVL3/39B)
- A new box culvert installation at MVL3/39B – Bywash
- Relocated Mossley Station (new outfall construction)
- Track drainage to Huddersfield Narrow Canal.
- Various temporary compounds immediately adjacent to watercourses.

12.2.29 The potential for adverse effects on water quality in nearby watercourses during construction (for example from accidental spillage or deposition of contaminants near surface waters) will be avoided through the management of works in line with Code of Construction Practice Part A [NR17] and requirements detailed in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]). A Pollution Prevention and Incident Control Plan (PPICP) will also be prepared and implemented in accordance with the proposed CoCP Part B in the 'Request for deemed planning permission and statement of proposed conditions' [NR11]. Works will be undertaken in accordance with the measures described in the PPICP, which will include good practice measures and protocols for the storage, use and management of potential contaminants on site, criteria for adequate bunding and hardstanding and silt fencing.

12.2.30 The surface water assessment found that during operation, the works will not have any direct impacts any of the watercourses previously identified providing that new drainage measures installed as part of the Order Scheme will provide, as a minimum, equivalent levels of water attenuation.

WFD assessment (groundwater)

12.2.31 A WFD compliance assessment has been undertaken for the groundwater environment of the Order Scheme.

12.2.32 Stage 1 (WFD Screening) identified that the Order Scheme has the potential to impact the following groundwater body (Refer to Figure 12A.3.3 in Volume 2 of the Environmental Report [NR14]):

- Manchester and East Cheshire Carboniferous Aquifers
GB41202G102900

12.2.33 The full character of the groundwater body has been described in Volume 3, Appendix 12A of this Report [NR14].

12.2.34 The principal elements of the Order Scheme which will potentially interact with the existing groundwater environment during construction and operation include:

- Installation of rock anchors to Stalybridge Tunnel (OS NGR: SJ 96657 98929) and Scout Tunnel (OS NGR: SD 97328 01330).
- Wrights Overbridge Works (MVL3/23) (OS NGR: SD 98109 04139).
- Manchester Road Footbridge Reconstruction (MVL3/10) (OS NGR: SD 97238 00715).
- Diggle Road Overbridge Reconstruction (MVL3/39) (OS NGR: SE 00711 08065).
- Relocation of Mossley Station.
- Mossley Cottages Works (OS NGR: SD 97374 01921).
- Reconstruction of Oldham Road Overbridge (MVL3/28) (OS NGR: SD 99191 04720).
- New Oldham Road Footbridge Works (MVL3/28A) (OS NGR: SD 99191 04720).
- Standedge Tunnel Bywash Underbridge Replacement (MVL3/39B) (SD 98109 04139).
- Diversion of utilities bridge into Stamford Road Bridge (MVL3/13) (OS NGR: SD 97352 02000).
- Construction of various temporary compounds which have below groundworks or storage of materials. Compounds may be in place for several years and have been considered as permanent works elements of the Order Scheme for the purposes of WFD.

12.2.35 Stage 2 (WFD Scoping) identified one groundwater body that the Order Scheme has the potential to impact through accidental pollution events:

- Manchester and East Cheshire Carboniferous Aquifers GB41202G102900.

12.2.36 Stage 3 (WFD Impact Assessment) concluded that the implementation of embedded mitigation, best practice guidance and site-specific mitigation measures were sufficient to maintain compliance under the WFD, without the need for further mitigation or water body derogation.

WFD assessment (surface water)

12.2.37 The findings from the WFD assessment (Appendix 12A) are based on the information available at the outline design stage but it is not anticipated that the Order Scheme will change significantly between outline and detailed design. The WFD will however be updated at detailed design stage to capture any changes to the Order Scheme.

12.2.38 The Stage 1 and Stage 2 WFD Assessment (Appendix 12A) concluded that there is potential for the Order Scheme to impact the following five WFD surface waterbodies (Refer to Figure 12A.3.1 and Figure 12A.3.3 in Volume 2 of the Environmental Report [NR14]):

- three WFD river water bodies:
 - Tame (Source to Chew Brook) GB112069064741
 - Tame (Chew Brook to Swineshaw Brook) GB112069061111
 - Tame (Swineshaw Brook to Mersey) GB112069061112
- Two WFD canal water bodies:
 - Huddersfield Narrow Canal west section GB71210268
 - Huddersfield Narrow Canal summit section GB70410520

12.2.39 The work elements of the Order Scheme potentially affecting the water environment through accidental pollution events include:

Surface water (construction and operation)

- Relocation of Mossley Station and introduction of new drainage to an unnamed culverted watercourse (Ordnance Survey National Grid Reference (OS NGR): SD 97530 02537).
- Potential interaction with unnamed ordinary watercourse associated with Wrights Overbridge works (MVL3/23) (OS NGR: SD 98109 04139).
- Uppermill Viaduct works (MVL3/31) (OS NGR: SD 99569 06285).
- Reconstruction of existing overbridge superstructure on Ward Lane (MVL3/36) (construction only) (OS NGR: SE 00280 07551).
- Diggle Road Overbridge Reconstruction (MVL3/39) (OS NGR: SE 00711 08065).
- Standedge Tunnel Strengthening Works (MVL3/39A) (OS NGR: SE 00680 08021).
- Standedge Tunnel Bywash Underbridge Replacement (MVL3/39B) (OS NGR: SD 98109 04139).
- Construction of various temporary compounds which are in close proximity to water bodies namely Plevins site compound (OS NGR: SD 97757 01536), Scout Spoil point compound (OS NGR: SD 97331 01196), Manchester Road Scout West (OS NGR: SD 97448 01241), Ward Lane satellite compound (OS NGR: SE 00300 07517), Grandpa Greens site compound 2 (OS NGR: SE 00370 07697), Sam Road car

park compound (OS NGR: SE 00621 07970) and Diggle Welfare, rail hub and office compound (OS NGR: SE 00598 07868).

- 12.2.40 All other project works were screened out of this assessment as they will not involve any direct risks to WFD objectives. Any indirect risks can be mitigated with the implementation of the CoCP Part A [NR17] and CoCP Part B PPICP.
- 12.2.41 Stage 3 (WFD Impact Assessment) concluded that the implementation of embedded mitigation, best practice guidance and site-specific mitigation measures were sufficient to maintain compliance under the WFD, without the need for further mitigation or water body derogation.

12.3 Mitigation and Consideration of Control Measures

- 12.3.1 There are no significant flooding constraints for the Order Scheme that cannot be mitigated during construction and operation with protective provisions. Therefore, no additional flood risk mitigation measures are required beyond compliance with the protective provisions. This includes the surface water management measures outlined in the PPICP which forms part of the CoCP Part B, CIRIA Environmental Good Practice on Site Guide (C811D), requirements contained in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]) and the EA's flood warning service.
- 12.3.2 In addition to the relevant works elements of the Order Scheme it is acknowledged that additional works will be consented using Permitted Development Rights are being undertaken as part of the Scheme. Construction of both the Scheme works and the Order Scheme works will likely be undertaken concurrently and therefore may give rise to cumulative effects both during the construction and operation phases.
- 12.3.3 The potential cumulative effects of the design, construction, and operation of the Scheme works being undertaken concurrently under Permitted Development Rights will be managed in accordance with the requirements detailed in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]).

Construction Phase Mitigation

Flood Risk

- 12.3.4 The CoCP [NR17] sets out best practice environmental management measures that will be implemented on-site during construction to address potential environmental impacts that may arise from the Order Scheme, ensuring the works are appropriately managed, and effects are reduced where feasible. The CoCP is split into Part A and Part B. Part A sets out the general principles, relevant measures, standards, and environmental management requirements to be adhered to during construction. Part B applies to the Order Scheme, comprising a series of standalone reports and delivery plans.

- 12.3.5 In relation to flood risk, the CoCP include a comprehensive PPICP and Piling Risk Assessment. The PPICP, which will be a condition of the Order Scheme for elements requiring planning permission, will address site drainage, surface runoff, and discharge requirements. Where necessary, it will also secure appropriate consents for discharges to sewers or controlled waters, in accordance with EA guidelines.
- 12.3.6 Requirements in NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]). Requirements included in that document comprise of a rigorous, effective and well-established set of environmental standards and procedures that are routinely implemented by Network Rail on its projects nationwide. It also details the processes to manage the environment during construction, ensuring compliance with relevant legislation and regulations.
- 12.3.7 CIRIA Environmental Good Practice on Site Guide (C811D) – the CIRIA Environmental Good Practice on Site Guide (C811D) is a comprehensive guide that provides practical information for managing environmental issues and delivering sustainable construction. The guide aims to assist with the adherence to high environmental standards and compliance with relevant legislation, such as the Environment Act 2021, ensuring that projects meet national environmental commitments.
- 12.3.8 Flood Warning Register – the Heron Lane road to Heron Lane Compound, Egmont Street road to Plevins Compound, and Lee Side road (Diggle Access and Diversion Works) to Diggle Welfare, Rail hub and Office Compound – which falls within Flood Zones 2 and 3 – will be registered with the Environment Agency’s flood warning service. This service monitors and forecasts potential flooding, providing timely alerts that would support the implementation of evacuation procedures. Registering these access routes would improve flood preparedness by facilitating the safe securing and evacuation of the compounds in the event of a flood warning.
- 12.3.9 Measures for Mitigating Flood-Related Hazards – a range of flood resilience measures is recommended to mitigate flood-related hazards at sites identified as high flood risk, as outlined in the PPICP, which forms part of the CoCP Part B:
- Buffer zone protection – no materials, equipment, or waste will be stored or placed within 16 m of the watercourse to prevent the risk of wash-in during high rainfall or flood events. Physical mitigation measures could be installed around the perimeter to further minimise the risk of accidental ingress.
 - Fuel and chemical storage – the storage of fuels, oils, or chemicals on-site is prohibited unless appropriately contained within bunded areas that meet relevant environmental containment standards
 - Long-term material storage – where long-term storage of materials is

proposed, flood resilience measures must be implemented to prevent displacement and wash-in during high rainfall or flood conditions. These may include elevated storage platforms, secure containment units (bundling), or other appropriate physical barriers.

- Flood monitoring and response – the site management plan must assign two designated personnel to be available on-call 24/7. These individuals must be registered to receive flood alerts and warnings from the EA. Upon receipt of a flood warning/alert, they are required to inspect flagged high-risk sites within one hour and initiate appropriate mitigation actions. Implementing surveillance systems is recommended to support flood risk monitoring throughout the construction phase.

Surface water

- 12.3.10 The following mitigation measures will be required to reduce the Order Scheme's potential impact on surface water quality and hydromorphology.
- 12.3.11 During construction best practice environmental management measures should be implemented on site through application of the CoCP. These measures will be detailed in a PPICP which will be secured via the Code of Construction Practice Part B. The contents of which will be submitted to and agreed by the relevant local authority as part of a condition as included in the 'Request for deemed planning permission and statement of proposed conditions' [NR11].
- 12.3.12 The changes to surface water drainage associated with the new outfall to OW 14 may contribute to a change in water quality within each receptor and also the wider catchment if the surface water drainage is not attenuated prior to discharge. Mitigation relating to surface water run-off will be detailed in CoCP Part B PPICP.
- 12.3.13 Works will be undertaken in accordance with the measures described in PPICP, which will include good practice measures and protocols for the storage, use and management of potential contaminants on site, criteria for adequate bunding and hardstanding and silt fencing.
- 12.3.14 The design process should seek to minimise in-channel works where practicable. Any in-channel works which cannot be eliminated will require the following mitigation measures:
- Use appropriate isolation techniques such as dams/over-pumping to create dry working areas e.g. during works on the unnamed watercourse near Standedge Tunnel.
 - Installation of silt curtains to minimize the propagation of fine sediment pollution in watercourses e.g. during works on the Huddersfield Narrow Canal at Standedge Tunnel.

- Continuous water quality monitoring should be undertaken prior to, during and following in-channel works to identify and assess magnitude of potential pollution events downstream of works and whether additional mitigation is required.
- Use of appropriate pollution control measures to ensure contaminants from construction activities do not enter the watercourse e.g. silt fences.
- Prepare site-specific responses for potential pollution incidents (e.g. spillages) or extreme weather events (e.g. storms) which may cause an increase in sediment runoff.

Groundwater

- 12.3.15 Deep foundations - where deep foundations extending beneath the groundwater table are required as part of the Order Scheme (e.g. piling, retaining walls), these will be designed in accordance with industry standards. Detailed designs will take into account the site-specific groundwater level monitoring data obtained from intrusive ground investigation for the Order Scheme. A piling risk assessment will be carried out as part of the CoCP Part B where required to ensure the selected piling method does not introduce contamination pathways into the aquifer.
- 12.3.16 Groundwater dewatering - should dewatering be required as part of construction, industry standard best practice mitigation will be followed, including integration of dewatering into the CoCP.
- 12.3.17 Run-off from construction sites to surface water and groundwater - construction can generate significant risk of pollution to surface water bodies and groundwater bodies. Any risks will need to be fully mitigated by suitable control of construction practices and will be incorporated into PPICP.
- 12.3.18 Construction works will adhere to environmental best practice such as guidance provided in Pollution Prevention Guidance (PPG) notes, specifically PPG 5 for Works and Maintenance In or Near Water (EA, 2014a⁵⁷) and PPG 6 for Construction and Demolition Sites (EA, 2014b⁵⁸). All PPGs that were previously maintained by the EA were withdrawn in 2015 as being out-of-date and a new set of guidance notes are presently being issued as Guidance for Pollution Prevention (GPP) documents for

⁵⁷ Environment Agency (EA), 2014a [withdrawn]. Pollution Prevention Guidelines: Works and Maintenance In or Near Water (PPG5). Available from: <https://www.gov.uk/government/publications/works-in-near-or-over-watercourses-ppg5-prevent-pollution>

⁵⁸ Environment Agency (EA), 2014b [withdrawn]. Pollution Prevention Guidelines: Construction and Demolition Sites (PPG6). Available from: <https://www.gov.uk/government/publications/construction-and-demolition-sites-ppg6-prevent-pollution>

Northern Ireland, Scotland and Wales. The series includes GPP5⁵⁹ for Works and Maintenance In or Near Water which may be used as a source of information for good practice but noting this guidance is not currently endorsed by the EA.

Operational Phase Mitigation

Flood Risk

- 12.3.19 No specific mitigation is required during the operational phase of the Order Scheme, as there is no change in flood risk compared to the baseline. Nevertheless, measures will still be implemented to prevent potential flood risk, detailed in the PPICP, as part of the CoCP Part B, which will include good practice measures and protocols for the storage, use and management of potential contaminants on site, criteria for adequate bunding and hardstanding and silt fencing.
- 12.3.20 No discharge will occur without prior consent via the Order's protective provisions from the respective relevant local authorities. These include the EA for discharges into main rivers, the LLFA for discharges into ordinary watercourses (Tameside and Oldham MBCs), and United Utilities for discharges into surface water sewers. Any additional drainage proposed can be agreed upon after the Stalybridge to Diggle (Saddleworth) Enhancements Order is submitted. Consent will be sought from the respective relevant local authorities to discharge surface water runoff to watercourses.

Surface water

- 12.3.21 No specific mitigation measures are required during operation in terms of water quality for surface water receptors. Mitigation relating to surface water run-off during operation will be detailed in CoCP Part B PPICP

Groundwater

- 12.3.22 For groundwater, the mitigation implemented at construction stage in relation to deep foundations and below ground works is also applicable to the operation phase.

⁵⁹ https://www.netregs.org.uk/media/1418/gpp-5-works-and-maintenance-in-or-near-water.pdf?utm_source=website&utm_medium=social&utm_campaign=GPP5%2027112017

13. AIR QUALITY

13.1 Introduction

- 13.1.1 This chapter provides a summary of the potential air quality effects during construction and operation of the Order Scheme and the mitigation of identified impacts.
- 13.1.2 The appraisal of air quality effects in this report has focussed on the Order Scheme elements as presented in Volume 1, Chapter 1, Table 1-1 of this Report [NR14]. However, certain other elements of the Order Scheme will be consented and undertaken under Permitted Development Rights (PDR) – these are considered in section 1.4 below.
- 13.1.3 A more detailed Air Quality Technical Appendix (Volume 3, Appendix 13A) [NR14]) has also been prepared, appraising the potential air quality effects of the Order Scheme.
- 13.1.4 Relevant legislation, planning policy and guidance used in the appraisal of air quality impacts are described in Volume 3, Appendix 13A. These include:
- The Environment Act 1995 as updated by the Environment Act 2021
 - The Air Quality Strategy (AQS): Framework for local authority delivery
 - National Planning Policy Framework (2024)
 - Planning Practice Guidance (2019)
 - DfT's Rail Environmental Policy Statement (2021)
 - Department for Environment, Food and Rural Affairs (DEFRA)'s Clean Air Strategy (2019)
 - Local authority planning policy in the administrative areas of Tameside Metropolitan Borough Council, Oldham Metropolitan Borough Council and Greater Manchester
 - DEFRA's Local Air Quality Management (LAQM) Technical Guidance LAQM.TG(22) (2025)
 - Institute of Air Quality Management (IAQM) Guidance: Land-use Planning and Development Control: Planning for Air Quality (2017)
 - IAQM Guidance on the Assessment of dust from demolition and construction (2024)

13.2 Appraisal of Impacts and Effects

- 13.2.1 The Order Scheme does not lie within any Air Quality Management Area (AQMA)s. AQMAs are areas designated by the relevant local authority where national air quality targets are not being met.
- 13.2.2 The nearest AQMA to the Order Scheme is the Tameside AQMA, located at a distance of approximately 360m west of the Order Scheme boundary. Two major approach roads (A106 and A635), which may carry construction or operational traffic for the Order Scheme, do extend into the Tameside AQMA.
- 13.2.3 Local authority air quality monitoring data for Tameside Borough⁶⁰ and Oldham Borough⁶¹ in the study area indicates that all recorded concentrations of nitrogen dioxide (NO₂) were below the AQS objective of 40 µg/m³ between 2020 and 2023. Air quality constraints are illustrated in Figure 13.1.1 in Volume 2 of the Environment Report [NR14].
- 13.2.4 DEFRA data⁶² also indicates that mapped background concentrations in the vicinity of the Order Scheme are expected to be well below the AQS objective for NO₂ and particulate matter (PM₁₀ and PM_{2.5}).
- 13.2.5 Transport and construction emissions have the potential to affect both human health and sensitive ecological receptors.
- High sensitivity human health receptors are located within 250m of the Order Scheme boundary in the settlements of Stalybridge, Mossley, Micklehurst, Grasscroft, Uppermill and Diggle.
 - The only ecological receptor located within 250m of the Order Scheme boundary is identified as Huddersfield Narrow Canal Site of Special Scientific Interest (SSSI).
- 13.2.6 As reported in Chapter 10 Traffic and Transport of this report [NR14], traffic data indicates that construction traffic flows exceed the relevant IAQM screening criteria on two modelled network links. An assessment was undertaken using National Highways' Design Manual for Roads and Bridges (DMRB) spreadsheet tool to understand the contribution of the additional construction vehicle movements on affected roads on local pollutant concentrations. The receptor locations selected for assessment of construction traffic impacts are shown in Figure 13.2.1 in Volume 2 – Figures of the Environment Report [NR14].

⁶⁰ [Tameside Metropolitan Borough Council - Air Quality monitoring service](#)

⁶¹ [Oldham Metropolitan Borough Council - Air Quality monitoring service](#)

⁶² [Home - DEFRA UK Air - GOV.UK](#)

- 13.2.7 The findings of the assessment show that air quality impacts associated with construction traffic are negligible and not significant. These findings are set out in Volume 3, Appendix 13A [NR14].
- 13.2.8 An appraisal of construction dust impacts associated with construction of the new Mossley Station has been undertaken in accordance with published IAQM guidance, detailed in full in Volume 3, Appendix 13A. The construction dust study area is shown in Figure 13.3.1 Volume 2 of the Environment Report [NR14].
- 13.2.9 The outcome of the appraisal found that the risk of dust soiling was high for construction, medium for trackout⁶³ and low for earthworks. The risk to human health was low for construction and trackout and negligible for earthworks. The overall dust risk is considered to be 'high' (the highest dust risk identified across all activities). Appropriate mitigation measures for high risk construction activities are outlined in Volume 3, Appendix 13A.
- 13.2.10 Potential operational air quality impacts may arise from building emissions at the new Mossley Station. Specification for provision of heating and domestic hot water for staff and passenger welfare will be determined at detailed design stage. It is recommended that low emission solutions e.g. air source heat pumps and electric hot water heaters are considered in preference to gas-fuelled boilers, if appropriate/feasible. Specification of low-VOC finishes and furnishings is also recommended.
- 13.2.11 Operational rail emissions will reduce as the delivery of electrification upgrades under the Order Scheme will allow operation of electric passenger trains and removal of diesel passenger trains from service.
- 13.2.12 As reported in Chapter 10 Traffic and Transport of this Report [NR14] operation of the Order Scheme will not result in any additional vehicle trips, highway re-alignment of more than 5m, or the creation of new road junctions. As such, in line with the IAQM guidance there is no requirement to further consider air quality impacts associated with operational phase traffic emissions. This is also valid for the new Mossley Station, where it has been confirmed that there will be no further parking provision or vehicle trips than the existing levels, therefore not requiring further air quality appraisal.

⁶³ Trackout can be defined as the deposition of dust and dirt from a construction site onto a public road network where it may then be re-suspended in the air by vehicles using the road network

13.3 Mitigation and Consideration of Control Measures

Construction Traffic

- 13.3.1 The potential Order Scheme mitigation and control measures of construction traffic emissions on local air quality are considered below. Traffic flows were screened in accordance with published methodologies (EPUK/IAQM). Appraisal of construction traffic emissions is reported in section 5, Volume 3, Appendix 13A of this Report [NR14] and indicates that there will be negligible impacts associated with construction vehicle movements. It is recommended that the Construction Traffic Management Plan (CTMP) seeks to route construction traffic to avoid the Tameside AQMA, where practicable. It is understood that some elements of construction works may require temporary bridge closures. This may cause short term air quality impacts due to increased traffic on diversion routes. Further, more detailed information available on diversion routes or associated traffic management measures will be included in the CTMP, to be secured by condition and agreed with the relevant local planning authorities as required by the 'Request for Deemed Planning Permission and Statement of Proposed Conditions' [NR11].

Construction Dust

- 13.3.2 Recommended dust mitigation measures for control of construction dust emissions associated with construction of the new Mossley Station are outlined below and restated in Volume 3, Appendix 13A of this Report [NR14].

Best Practicable Means

- 13.3.3 Construction works associated with the Order Scheme have the potential to generate dust emissions, which will require effective control/minimisation for their duration.
- 13.3.4 For the majority of construction dust, impacts can be effectively managed using the measures within NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]).
- 13.3.5 Construction dust impacts associated with construction of the new Mossley Station have been appraised in accordance with published methodologies (IAQM). The outcome of this appraisal identifies appropriate dust mitigation measures to be applied in addition to NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]), which are outlined in section 13.3.12.
- 13.3.6 Best practice environmental management measures in relation to air quality will be implemented on-site during construction through application of the CoCP, which is split into Part A and Part B.

- 13.3.7 Part A of the CoCP is provided in document **[NR17]** and sets out the general principles, relevant measures, standards and environmental management requirements to be adhered to during construction.
- 13.3.8 Part B of the CoCP is applicable to the Order Scheme and will be secured through a planning condition included in the 'Request for Deemed Planning Permission and Statement of Proposed Conditions' **[NR11]**.
- 13.3.9 The CoCP Part B will be a series of standalone reports and delivery plans (collectively referred to as 'the CoCP Environment Plans'). One of the reports which is of specific relevance to Air Quality is:
- A nuisance management plan (NMP) concerning dust, wheel wash measures, air pollution and temporary lighting.
- 13.3.10 Commencement of construction of the Order Scheme will be linked to the submission and approval by Tameside or Oldham Councils as the relevant local planning authorities of the CoCP Part B, as stipulated by a condition in the 'Request for Deemed Planning Permission and Statement of Proposed Conditions' **[NR11]**. Preliminary works will comply with the environmental controls as set out in the CoCP Part A and covered under paragraph 15.2.18 of that document.
- 13.3.11 Management and monitoring actions for air quality are to be undertaken following completion of the Scheme, as covered by the CoCP.
- 13.3.12 Selected mitigation measures given in the IAQM Construction Dust Guidance for the relevant risk level of the construction activities associated with the new Mossley Station are given below. The following general mitigation measures are specified as highly recommended for high risk construction sites:
- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.
 - Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary.
 - Display the head office or regional office contact information.
 - Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
 - Make the complaints log available to the local authority when asked.
 - Record any exceptional incidents that cause dust and/or air emissions, either on-site or off-site, and the action taken to resolve the situation in the logbook.

- Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked.
- Carry out regular site inspections to monitor compliance with the NMP, record inspection results, and make an inspection log available to the local authority when asked.
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.
- Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.
- Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.
- Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period.
- Avoid site run-off of water or mud.
- Keep site fencing, barriers and scaffolding clean using wet methods.
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.
- Cover, seed or fence stockpiles to prevent wind whipping.
- Ensure all vehicles switch off engines when stationary - no idling vehicles.
- Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.
- Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking and car-sharing).
- Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.
- Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.
- Use enclosed chutes and conveyors and covered skips.
- Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

- Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.
- Avoid bonfires and burning of waste materials.
- As the site is classed a high risk for construction the following mitigation are highly recommended:
- Avoid scabbling (roughening of concrete surfaces) if possible.
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.

Operational Emissions

- 13.3.13 Mitigation in operation is inherent in design, as electrification of the railway will reduce emissions from passenger services in comparison to diesel locomotives. As such, no further mitigation is required.
- 13.3.14 Mitigation of building emissions from the new Mossley Station will be integrated in the detailed design stage and relevant measures are outlined within Volume 3, Appendix 13A of this Report [NR14].
- 13.3.15 In addition to the Order Scheme, certain additional works will be undertaken using PDRs. Relevant works being undertaken under PDRs which may affect air quality include (but are not limited to) establishment and operation of compounds, track lowering, other temporary works, minor demolition and construction works within the curtilage of Network Rail operational boundary (refer to Table 1-2 and section 1.3.10 in Volume 1, Chapter 1 of this Report [NR14] for further details of work to be undertaken using PDR).
- 13.3.16 Works undertaken using PDR will be mitigated through compliance with NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]). For air quality, control of emissions to air is addressed at sections 6.3 and 6.7 of those requirements, whereby the contractor shall reduce emissions to air including from construction plant and non-road mobile machinery and dust emissions as low as reasonably practicable.
- 13.3.17 Construction of works undertaken using PDR will likely be undertaken concurrently with the Order Scheme and therefore may give rise to cumulative or in-combination effects both during the construction and operational phases of the Scheme.

- 13.3.18 The potential for cumulative or in-combination effects of the design, construction and operation of the works being undertaken using PDRs and the Order Scheme will be managed in accordance with the relevant clauses included within NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]). Further mitigation in relation to cumulative or in-combination impacts arising from PDR and Order Scheme works will be secured via adherence to the control measures outlined within the CoCP (Part A) [NR17].

14. SUMMARY OF MITIGATION

14.1 Introduction

- 14.1.1 This chapter provides an overview of the mitigation to be provided for the Order Scheme. Throughout this chapter, both embedded and additional mitigation measures are identified. These mitigation measures follow the mitigation hierarchy of avoid, then reduce, then mitigate and as a last resort compensate.

14.2 Mitigation measures

Embedded Mitigation Measures

- 14.2.1 Where reasonably practicable, environmental effects have been avoided through the incorporation of embedded mitigation, developed as an integral part of the Order Scheme design itself. Details of these measures are described in Chapter 3 (The Order Scheme), and where relevant, in Chapters 5 to 13 of this Report and relevant appendices in Volume 3 [NR14].
- 14.2.2 Embedded mitigation in the Order Scheme design seeks to ensure that impacts likely to result in adverse effects will be avoided or minimised as far as practically possible.
- 14.2.3 The layouts of the Order Scheme have been designed – where practicable - to use only land supporting habitats with no or of low ecological value where practicable and minimise loss of trees. Specific examples of avoidance of higher value habitats include:
- Heyrod Hall (MVL3/7): Reduction in working area to avoid tree losses on access track and adjacent bridge;
 - Manchester Road Footbridge (MVL3/10A): Reduced working area to avoid impact on land within the SBI;
 - Plevins Compound: Constrained land take boundary avoids tree felling in surrounding woodland;
 - Relocated Mossley Station: reducing land take requirement west of the railway line, for access, to avoid impacting screening vegetation and woodland;
 - Armit Road Compound: Reduction in compound area to avoid vegetation loss. Restriction of traffic on access path to works to avoid devegetation within SBI;

- Greenfield Compound: Reduction in scope of works to restrict compound works to the highway only to avoid impacting woodland east of Oaklands Road;
- Uppermill Viaduct (MVL3/31): Reduction in working area and scope of works at the base of the Viaduct to avoid devegetation of mature woodland;
- Ward Lane Compounds: Retention of trees bordering the Huddersfield Narrow Canal;
- Diggle Access and Diversion: Micro siting of passing places to avoid removal of trees adjacent to Harrop Court Road and Boat Lane.

14.2.4 Other examples of embedded mitigation include:

- Provision of upgraded footpath following closure of Stockport Road Level Crossing to overcome potential impacts associated with the closure of the level crossing;
- Footpath Upgrade to PRow traversing Wickens Underbridge following closure of Moorgate Halt Level Crossing to overcome potential impacts associated with the closure of the level crossing;
- Provision of a new pedestrian footbridge at Greenfield Station (MVL3/28A) to provide a safer pedestrian route to the station to alleviate potential pedestrian access restrictions following alterations to the structure;
- Provision of land in the Order for alternate parking areas at Egmont Street and Saddleworth Rangers to avoid disruption of street parking during the works;
- Reduction in scope of works on Heron Lane to avoid direct impacts to the River Tame;
- Reduction in working area associated with Royal George Underbridge (MVL3/25) to avoid impacts to church land immediately adjacent the bridge;
- Reuse of materials to be reclaimed from demolished bridges in the reconstruction of others to minimise waste and retain the aesthetic of retained historic elements;

- Retention of, and visibility of, as much original fabric of listed structures as possible;
- Inclusion of new finishes and materials that relate to the character of the area and the historic structure;
- Employing geogrid or similar materials for temporary construction compounds to help avoid risk of impact to unknown archaeology and to maintain permeability; and
- Materials, colour and design of bridges and other structures will be sympathetic to the local context to minimise visual impact.

Additional Mitigation Measures

- 14.2.5 This section presents a summary of the environmental mitigation measures or management actions to be implemented during construction and operation of the Order Scheme, in addition to the embedded mitigation measures summarised above.
- 14.2.6 The mechanism for securing implementation of mitigation measures for the Order Scheme benefitting from Deemed Planning Permission will be through planning conditions included in the 'Request for Deemed Planning Permission and Statement of Proposed Conditions' **[NR11]**. The mechanism for implementation of mitigation measures for associated temporary land use to facilitate these works, will be through compliance with the CoCP Part A **[NR17]** and Network Rail's NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report **[NR14]**), with a commitment that construction environmental management documents forming part of the CoCP Part B will also apply to associated temporary activities land uses.
- 14.2.7 The tables within this chapter provide cross references to the chapters and appendices of the Report (Volume 3 **[NR14]**) where mitigation measures are outlined. An overview of the key documents which will provide the mechanism for implementation of mitigation measures is provided as follows:

Code of Construction Practice

- 14.2.8 Best practice environmental management measures will be implemented on-site during construction through application of the CoCP, which is split into Part A and Part B.
- 14.2.9 Part A of the CoCP is provided in document **[NR17]** and sets out the general principles, relevant measures, standards and environmental management requirements to be adhered to during construction.

- 14.2.10 Part B of the CoCP is applicable to the Order Scheme that require deemed planning permission and will be secured through a planning condition included in the 'Request for Deemed Planning Permission and Statement of Proposed Conditions' [NR11].
- 14.2.11 The CoCP Part B will be a series of standalone reports and delivery plans (collectively referred to as 'the CoCP Environment Plans') comprising:
- An external communications programme;
 - A pollution prevention and incident control plan (PPICP);
 - A waste management and materials plan;
 - A nuisance management plan (NMP) concerning dust, wheel wash measures, air pollution and temporary lighting;
 - A noise and vibration management plan (NVMP) including a construction methodology assessment; and
- 14.2.12 Commencement of construction of each stage of the Order Scheme will be linked to the submission and approval by TMBC or OMBC as the relevant local planning authorities of the CoCP Part B CoCP, as stipulated by the 'Request for Deemed Planning Permission and Statement of Proposed Conditions' [NR11]. Preliminary works will comply with the environmental controls as set out in the CoCP Part A and covered under paragraph 15.2.18 of that document.
- 14.2.13 Management and monitoring actions are to be undertaken following completion of the Order Scheme, as covered by the CoCP

Landscape and Ecological Mitigation Proposals

- 14.2.14 Ecology and biodiversity will be appropriately protected through the application of a comprehensive Landscape and Ecological Management Plan (LEMP). The LEMP is intended to be the subject of a planning condition and applies to the Order Scheme that require planning permission, as described in the 'Request for deemed planning permission and statement of proposed conditions' [NR11].
- 14.2.15 The LEMP will be informed by the Outline Landscape and Ecological Mitigation and Restoration Proposals provided in Figure 7.3 in Volume 2 of this Report [NR14].
- 14.2.16 In accordance with the wording of the relevant planning condition [NR11], each stage of development (excluding preliminary works) shall be implemented in accordance with a Landscape and Ecological Management Plan (LEMP), to be submitted to and approved in writing by TMBC or OMBC as local planning authorities.

- A plan of existing trees and tree features (such as groups of trees or woodland) to be retained and protected and to be removed in accordance with BS5837 (Trees in relation to design, demolition and construction).
- A plan identifying how ecological assets will be protected as identified in the Environmental Report [NR14] with all agreed measures being in place prior to the commencement of works.

14.2.17 The LEMP will include the following details:

- A plan of existing trees and tree features (such as groups of trees or woodland) to be retained and protected and to be removed in accordance with BS5837 (Trees in relation to design, demolition and construction);
- A plan identifying how ecological assets will be protected as identified in the Environmental Report [NR14], as required pursuant to a condition;
- a plan of ecological mitigation details including areas of new plantings and details of any habitats created or enhanced;
- an implementation timetable and a programme for initial aftercare, long term management and maintenance responsibilities for a period of five years post-completion; and
- details of organisation(s) responsible for maintenance and monitoring.

14.2.18 The LEMP will reflect the survey results and ecological mitigation and enhancement measures set out in this Report by including ecological measures such as:

- the aims and objectives of the management to be undertaken;
- a programme of monitoring with thresholds for action as required; and
- full details of measures to ensure protection and suitable mitigation to all relevant protected species and those species identified as being of importance to biodiversity (including any European Protected Species Licensing (EPSL) mitigation requirements).

14.2.19 The LEMP will also include further details on hard and soft landscaping works, covering the locations where landscaping will be undertaken such as mitigation, restoration or compensation works, including:

- full detailed landscape plans indicating full planting specification, including layout, species, number, density and size of trees, shrubs, plants, hedgerows and/or seed mixes and sowing rates, including extensive use of native species;

- any structures, such as street furniture, any non-railway means of enclosure and lighting;
- any details of regrading, cut and fill, earth screen bunds, existing and proposed levels;
- any areas of grass turfing or seeding and depth of topsoil;
- a timescale for the implementation of hard landscaping works;
- details of monitoring and remedial measures, including replacement of any trees, shrubs or planting that fail or become diseased within the first five years from completion; and
- details of protective measures for retained trees, in accordance with BS5837.

- 14.2.20 The 'Request for deemed planning permission and statement of proposed conditions' [NR11] includes a condition on Biodiversity Net Gain (BNG) that seeks to achieve a 10% habitat net gain (offset all habitat loss and add 10% enhancement to that loss) in accordance with DEFRA metric 3.0³. In conditioning this commitment for approval with TMBC and OMBC, this safeguards the overall contribution to ecology and conservation for the Deemed Planning Permission.
- 14.2.21 A BNG Strategy to achieve an overall 10% net gain in biodiversity for the Deemed Planning Permission, including monitoring, maintenance, management and reporting arrangements, will be submitted for approval to TMBC and OMBC. Implementation of the BNG Strategy is likely to be phased, linked to the completion of permanent works, as per the relevant planning condition.
- 14.2.22 In addition, Network Rail commits to a BNG of 10% across the whole Scheme to include works undertaken using general Permitted Development Rights elements in accordance with the wider TRU Key Performance Indicator (KPI) for that programme of works covering the line of route from Manchester Victoria Station through to York Station, in which the Order Scheme is located⁴.

Construction Traffic Management Plan

- 14.2.23 A Construction Traffic Management Plan (CTMP) will be produced to provide details of traffic management for construction traffic on public roads and primary lorry routes, to include details such as appropriate signage, access and egress points, details of road or pedestrian diversions, temporary road closures or deliveries of overlarge (abnormal) loads (if required).
- 14.2.24 The CTMP is the subject of a planning condition [NR11] Construction Traffic Management and finalised Travel Plan and applies to the Deemed

Planning Permission, as described in the 'Request for deemed planning permission and statement of proposed conditions' [NR11].

- 14.2.25 For the Deemed Planning Permission elements (except preliminary works), a CTMP will need to be submitted to and approved in writing by TMBC or OMBC.
- 14.2.26 The CTMP will include measures to be undertaken during the construction stage and will address the requirements for traffic management measures such as:
- traffic route signage;
 - signing and security of compound access and egress; and
 - details on temporary diversions of both highways and public rights of way required as part of the Order Scheme, including co-ordination of temporary road closures during demolition and reconstruction of bridges and for delivery of overlarge abnormal loads (if required).
- 14.2.27 The CTMP will also include a finalised Travel Plan relating to construction staff to encourage the reduction of the use of single occupancy private vehicles to travel to worksites or compounds and the use of sustainable modes of transport.
- 14.2.28 Whilst the planning condition and the requirement for a Construction Traffic Management Plan and finalised Travel Plan only applies to the Deemed Planning Permission, in compliance with Network Rail's NR/ENV/015, similar measures will also apply to the associated temporary works used to facilitate the planning permission works as standard practice.
- 14.2.29 When traffic management (including road closures, diversions, on street parking suspensions or bus stop suspensions) are required, Temporary Traffic Regulation Orders (TTROs) will be deployed in accordance with Order powers. Such works will be managed to minimise impacts on the local highway network, that are for no longer than strictly necessary and that they utilise suitable diversionary arrangements. Such traffic management and mitigation measures will be subject to further discussions and approval with the relevant local authorities including in some instances requirements for TTROs.

Archaeological Written Scheme of Investigation

- 14.2.30 Archaeological recording of assets affected will be secured through the implementation of section 5 of the CoCP Part A [NR17]. Where required, protection of archaeological assets from accidental damage during works will be secured through the implementation of section 5 of the CoCP Part A [NR17]. An Archaeological Written Scheme of Investigation (WSI) is the subject of a planning condition attached to the Deemed Planning

Permission, as described in the 'Request for deemed planning permission and statement of proposed conditions' [NR11]. The WSI will need to be submitted to and approved in writing by TMBC or OMBC as required.

- 14.2.31 The WSI will take the form of archaeological investigation, recording, reporting; and publication if required. The WSI will identify areas where no additional work is required and where field work and/ or a watching brief are required and the measures to be taken in order to protect, record or preserve any significant archaeological remains that may be found. Network Rail will also agree the scope and methods of the WSI will also be agreed with Greater Manchester Archaeology Advisory Service.
- 14.2.32 In compliance with the CoCP Part A [NR17] and Network Rail's NR/ENV/015, archaeological effects are assessed and will also be mitigated for the associated temporary land use through a WSI where required.

14.3 Mitigation Measures Summary

- 14.3.1 Tables 14-1 and 14-2 below present a summary of environmental mitigation measures and management actions proposed for the Order Scheme which have been identified for the construction and operational phases, respectively.
- 14.3.2 Where reference is made to the Deemed Planning Permission conditions, these relate only to the Order Scheme that require planning permission. Mitigation for associated temporary works will be secured and delivered through compliance with CoCP Part A [NR17] and Network Rail's commitments set out within NR/L2/ENV/015 (Volume 3, Appendix 1A of this Report [NR14]).

Table 14-1: Summary of the Order Scheme mitigation measures for construction

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
Heritage	Environmental Report Volume 1: Chapter 5 and Volume 3: Appendix 5A	Listed Building Consents. Written Scheme of Investigation.	Listed buildings.	Historic building recording to Levels 1, 2 and 3, will be undertaken as appropriate / agreed with stakeholders and in accordance with a Written Scheme of Investigation to define mitigation and compensation measures.
Archaeology	Environmental Report Volume 1: Chapter 5 and Volume 3: Appendix 5A and 5B	Part A of CoCP [NR17] NR/L2/ENV/015	Previously-unknown potential archaeological assets	To minimise risk of impact and to preserve unknown archaeological remains within temporary land use, terram and geogrid protection will be laid over temporary land use areas following topsoil strip.
		Part A of CoCP [NR17] NR/L2/ENV/015 Written Scheme of Investigation (as part of Planning Conditions [NR11])		Any requirement for further archaeological works will be secured through a planning condition [NR11]. This will include the Written Scheme of Investigation that will be prepared for the Order Scheme that require planning permission and submitted for approval to the relevant local authority, which will be followed in the event of the discovery of previously unknown potential archaeological assets during construction.

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
Ecology	Environmental Report Volume 1: Chapter 6 and Volume 3: Appendix 6A	Scheme Design British Standard 5837:2012 LEMP (as part of Planning Conditions [NR11]) Part A of CoCP [NR17] NR/L2/ENV/015	All identified ecological features	<p>The layouts of the Order Scheme have been designed to make use of habitats of no or low ecological value where possible. Habitat losses will be restricted to areas of arable, amenity grassland, poor semi- improved neutral grassland and improved grassland. The removal of higher value habitats such as trees, hedgerow sections and scrub has been minimised where possible through design.</p> <p>Protection of retained trees and hedgerows will be implemented to prevent accidental damage, through suitable tree protection in accordance with British Standard 5837:2012.</p>
				Baseline data and the ecological impact appraisal will be updated if conditions change or if ecological features not previously identified and assessed are discovered once works commence.
		Legislative requirement Part A of CoCP [NR17] LEMP (as part of Planning Conditions [NR11]) NR/L2/ENV/015	Invasive and Non-Native Plants and Species (INNPS)	Implementation of biosecurity mitigation measures to prevent the spread of INNPS. Removal of any invasive or injurious species will comply with the relevant Network Rail guidance notes, whether as part of the LEMP for development that requires planning permission or in connection to works being undertaken using general Permitted Development Rights.

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
		Part A of CoCP [NR17] Part B of CoCP (as part of Planning Conditions [NR11]) Scheme Design NR/L2/ENV/015	Standing water and associated protected and notable fauna species	Best practice measures for preventing pollution incidents during construction of the Order Scheme will be detailed in the PPICP. Pollution control measures will be implemented in order to avoid and minimise adverse effects of pollution and runoff on the adjacent water environment. This will be further supported by measures that will be employed to mitigate and control the generation of dust during the construction activities.
		Part A of CoCP [NR17] Network Rail standards	All identified ecological features	As part of the Order Scheme induction for staff, relevant information on the ecological features identified will be provided through toolbox talks. This will encourage staff to be considerate to wildlife that may be using habitats adjacent to the Order Scheme Area and to report any discoveries or incidents involving wildlife. Environmental information will be displayed at site welfare compounds that will remind staff about the key environmental issues.
		Legislative Requirement Local Planning Policy Network Rail standards	Protected and notable fauna species	During Scheme clearance and preparation, an appropriately trained person will be present to provide a watching brief during vegetation removal and disturbance of natural and artificial refugia materials that could provide shelter habitat including for breeding birds, amphibians, common reptile species, hedgehog and others to reduce the

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
				risk of killing or injury. Any strimming will be undertaken using a phased approach to reduce habitat to a low level so it can be checked by the appropriately trained person 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.
		Legislative Requirement Local Planning Policy Network Rail standards	Amphibians, reptiles and hedgehog	Removal of vegetation and refugia materials suitable for shelter by amphibians, reptiles and hedgehog will be undertaken carefully to avoid disturbing hibernating animals. Any common amphibian species, reptiles or hedgehog discovered will be moved to an area of suitable habitat outside the works area.
		Legislative Requirement NR/L2/ENV/015	Bats	<p>The felling or pruning of trees with suitability for bat roosts will be conducted with caution under the assumption that bats may still be present. The trees will be re- checked for signs of bats in the survey season prior to felling or pruning and as a precaution, works will be undertaken under the supervision and watching brief of a suitably trained ecologist.</p> <p>As part of the consideration of the cumulative impacts of the Order Scheme and other works associated with the Scheme, an EPSM may also be required for the works subject to permitted</p>

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
				<p>development if they directly impact the common pipistrelle day/ transitional confirmed roost at Spring Bank Lane (MVL3/9) and roosts 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 an 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.</p> <p>Additionally, a 30m vegetation buffer will be maintained from the disused tunnel portal at the Former Butterhouse Tunnel Site Compound to avoid potential impacts on roosting bats</p>
		BS 5837:2012 Part A of CoCP [NR17] Part B of CoCP (as part of Planning Conditions [NR11])	Bats	A suitable buffer in accordance with British Standard 5837:2012 will be retained around any trees identified as being at risk from accidental damage. This will explicitly include trees that have been identified as providing suitability for supporting bat roosts and the required 30m buffer zone from the portal of Butterhouse Tunnel to

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
		NR/L2/ENV/015		avoid potential disturbance effects in the event roosting bats are present, it will also ensure that potential access to roost features are not obstructed. Additional measures such as making sure that lighting does not illuminate features with bat roost suitability will also be implemented. Preconstruction checks of all structures will be required prior to the commencement of works.
		Legislative Requirement	Great Crested Newt	Works across the Order Scheme will progress using the Network Rail Great Crested Newt Organisational Licence which is granted by Natural England and delivered through NatureSpace and the Newt Conservation Partnership. Works will be carried out in accordance with reasonable avoidance measures, including undertaking works during the active period for amphibians, using capture methods prior to ground clearance and using exclusion fencing.
		Part A of CoCP [NR17] Part B of CoCP (as part of Planning Conditions [NR11]) NR/L2/ENV/015	Nocturnal wildlife	Temporary lighting for construction will be designed to be directional and avoid illumination of adjacent natural habitats to minimise indirect disturbance effects to nocturnal wildlife. The NMP that will be prepared as part of Part B of the CoCP will include best practice measures for any construction lighting that is required. Similar measures to the NMP will also be complied with for associated temporary land use in accordance with

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
				CoCP.
		NR/L2/ENV/015	Protected and notable fauna species	A NVMP will be prepared that will include best-practice measures for reducing impacts from noise during the construction phase; by minimizing disturbance to residents through best-practice measures, this will help to minimise disturbance to noise sensitive features such as bats and breeding birds. Similar measures to the NVMP will also be complied with for associated temporary land use in accordance with CoCP Part A.
		Legislative requirement	Breeding birds	<p>Mitigation is required to meet legal requirements for breeding birds during Scheme Area construction clearance. All birds are protected while nest building and when nesting under the Wildlife and Countryside Act 1981, and it is an offence to destroy or damage an occupied bird nest. The following mitigation will be implemented:</p> <ul style="list-style-type: none"> Where possible vegetation removal will be undertaken outside the nesting season (i.e., avoiding 01 March to 31 August). Checks for ground nesting bird species would also be undertaken during Scheme Area clearance and preparation works undertaken in the bird breeding season.

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
				<ul style="list-style-type: none"> 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. <p>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).</p>
Landscape and visual	Environmental Report Volume 1: Chapter 7; Volume 3: Appendix 7A	Part A of CoCP [NR17] LEMP (as part of Planning Conditions [NR11]) NR/L2/ENV/015	Trees	Protection of retained trees will be implemented to prevent accidental damage, through suitable tree protection in accordance with BS 5837:2012, as detailed within the LEMP.
		Part A of CoCP [NR17] NR/L2/ENV/015	Land Restoration	Upon completion of the temporary use of land, it will be restored to its pre-works activity condition as far as possible in accordance with the Outline Draft Mitigation and Land Restoration Proposals included in Volume 2 (Figures 7.3.1 – 7.3.20) of

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
				this Report [NR14].
		Part B of CoCP (as part of Planning Conditions [NR11])	All visual impact receptors	Construction directional lighting required during the construction stage will be designed to reduce unnecessary light spill outside of the Order Scheme boundary and designed in accordance with CoCP Part B.
		Part A of CoCP [NR17] Construction Methodology	All visual impact receptors	The design of construction hoarding around compounds will be appropriate to the location to minimise visual impacts.
		LEMP (as part of Planning Conditions [NR11])	All visual impact receptors	Existing vegetation along the boundary of the Order Scheme will be retained wherever possible and managed to ensure its continued presence to aid the screening of low-level views of construction activity. Mitigation planting will comprise native species, with trees lost to development replanted, on site where practicable, at a ratio of 3:1.

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
Arboriculture	Environmental Report Volume 1: Chapter 8 Volume 3: Appendix 8A	Scheme Design Part A of CoCP [NR17] LEMP (as part of Planning Conditions [NR11]) NR/L2/ENV/015	Trees	<p>Detailed design will avoid or reduce tree loss or impacts where possible.</p> <p>Tree loss will be mitigated with a scheme of new tree planting as per the LEMP. Protection of retained trees and hedgerows will be implemented to prevent accidental damage, through suitable tree protection in accordance with British Standard 5837:2012. An Arboricultural Method Statement (to BS5837:2012) (that will form part of the LEMP) will be in place.</p> <p>Where root loss is required, this will be achieved using a clean sharp tool via a hand dug trench under the supervision of an arboriculturist.</p> <p>Where service diversions are required, these will generally be designed to avoid tree positions and where this is not feasible will be installed under arboricultural supervision using trenchless or hand excavation techniques to allow important roots to be retained.</p> <p>Trees will be protected with temporary tree protection fencing from the outset to create a construction exclusion zone.</p> <p>All materials, arisings, plant storage, use and</p>

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
				<p>access requirements will be carefully managed to avoid trees including bunded areas for refueling.</p> <p>Areas for new tree planting will be protected from damage to soil structure with fencing or ground protection.</p> <p>Protection of trees and hedgerows within associated temporary land use will be implemented in accordance with the Tree Protection Plans (Figure 9.2 in Volume 2 of this Report [NR14]) and the Outline Mitigation and Land Restoration Proposals (Figure 7.3, Volume 2 of this Report [NR14]), to be confirmed via the LEMP.</p>
Noise and Vibration	Environmental Report Volume 1: Chapter 9 Volume 3: Appendix 9A	Part A of CoCP [NR17] Part B of CoCP (as part of Planning Conditions [NR11]) Network Rail guidance in NR/L2/ENV/015 and NR/L2/ENV/121	All relevant sensitive receptors	<p>Site specific measures to mitigate the localised and temporary construction phase noise and vibration impacts and effects will be implemented during the works in order to minimise the disturbance and disruption experienced by local receptors, particularly with respect to work at night.</p> <p>Specific measures related to the works at the relocated Mossley Station include:</p> <ul style="list-style-type: none"> Adhered to BS:5228 best practice guidance for siting fixed plant

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
		Legislative requirement		<ul style="list-style-type: none"> Installation of ambient noise sensors on the platforms which will adjust the Public Announcement (PA) output levels based on the ambient noise levels at the time of the announcement. <p>These will comprise of Best Practicable Means incorporated into a NVMP incorporated into the CoCP Part B.</p>
Transport	Environmental Report Volume 1: Chapter 10, Volume 3: Appendix 10A	Part A of CoCP [NR17] Planning Condition [NR11] NR/L2/ENV/015	Users of the local road network	<p>A Construction Traffic Management Plan and Travel Plan (CTMP) will be produced in close liaison with, and be approved by, the relevant local authority as required by a planning condition [NR11].</p> <p>Construction traffic will be directed to use specific routes which are appropriate for the types of vehicles to be approved by the relevant local planning authority.</p> <p>Mitigation measures for temporary compound access works such as temporary traffic lights or bellmouth widening will be included within the CTMP as required.</p> <p>Construction traffic management for associated temporary land use will be implemented in accordance with the CoCP Part A [NR17] and Network Rail commitments (set out within</p>

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
				NR/L2/ENV/015).
		Part A of CoCP [NR17] Planning Condition [NR11] NR/L2/ENV/015	Users of the local road network	A Travel Plan for project staff will be produced as to encourage a sustainable arrangement for travel to and around the Order Scheme that require planning permission.
		Part A of CoCP [NR17] Part B of CoCP (as part of Planning Conditions [NR11]) NR/L2/ENV/015	Residents Users of the local road network	A NMP and NVMP (both Part B of CoCP) will include measures such as wheel wash facilities, sheeting to cover HGV loads, usage of a road sweeper, and directional reversing alarms.

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
		Part A of CoCP [NR17]	Pedestrians	Temporary Diversions will be provided for all bridge closures in the Order and will be agreed within the CTMP / TTROs.
Geo-environment	Environmental Report Volume 1: Chapter 11 Volume 3: Appendix 11A	Scheme Design	All	Supplementary ground investigations will be undertaken at detailed design stage to confirm ground conditions and any potential for contamination to further assess the levels of contamination and geotechnical constraints across the Order Scheme Area and identify any further mitigation measures required.
		NR/L2/ENV/015 Health and Safety Regulations	Construction workers	Site-specific risk assessments will be undertaken prior to all construction works to define health and safety measures, including the use of personal protective equipment. The potential risk associated with ground gas generation associated with Made Ground and probable shallow coal mine workings will be mitigated through compliance with confined space legislation. Before construction works start, a health and safety risk assessment will be conducted in accordance with current health and safety regulations. Any confined spaces will be assessed prior to entry.
		Part A of CoCP [NR17] Part B of CoCP (as	Offsite human health	To avoid the risk to offsite receptors from direct contact potential contaminants in Made Ground, natural soils, groundwater and leachate, dust generation will be kept to a minimum in

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
		part of Planning Conditions [NR11] NR/L2/ENV/015		compliance with the CoCP Part B PPICP, NMP and in accordance with general best practice.
		Part A of CoCP [NR17] Part B of CoCP (as part of Planning Conditions [NR11]) NR/L2/ENV/015	Surface water	There is potential for contaminants to be mobilised to surface water. The CoCP Part B PPICP will include measures to avoid risk to surface waters from potential contamination.
		Part A of CoCP [NR17] Part B of CoCP (as part of Planning Conditions [NR11]) NR/L2/ENV/015 Legislative requirements	Groundwater	There is the potential for construction involving piling to create preferential pathways for migration of impacted groundwater into the Secondary Aquifers. The potential risks associated with piling would be considered within a piling risk assessment as part of the CoCP Part B PPICP, with the appropriate mitigation implemented. There may be potential for shallow groundwater to be encountered beneath the Order Scheme area which may need to be controlled during excavation. If required, Network Rail will apply for a water abstraction licence.

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
		Scheme Design	Development infrastructure/ Foundation design	<p>The presence of probable unrecorded coal mine workings beneath the Order Scheme area may result in potential chemically aggressive ground conditions within natural strata and groundwater and be a source of ground gas. Potential risks will be mitigated by using concrete and service pipes appropriate for any chemically aggressive ground conditions identified at the Order Scheme area.</p> <p>If piled foundations are required and contamination is identified, a piling risk assessment will be conducted during the detailed design stage and documented as part of the CoCP Part B PPICP.</p> <p>There is also the potential for buried structures/ infrastructure to be encountered due to mine workings beneath the Order Scheme area. The presence of mine workings will be considered in the foundation and earthworks design.</p> <p>Footings will be taken deeper than the minimum depth specified, where structures are located within influencing distance of any existing or future trees to avoid impacting on tree roots.</p>
		Part A of CoCP [NR17] Part B of CoCP (as		Soil and/ or rock materials arising from construction will be sampled, tested and assessed with the aim of re-use either at the originating site

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
		part of Planning Conditions [NR11] NR/L2/ENV/015		<p>or at a receiving site in accordance with the CL:AIRE Definition of Waste⁶⁴ [Development Industry Code of Practice⁶⁵. Re-use criteria will be devised by means of risk assessment specific to the receiving site detailed within CoCP Part B waste management and materials plan. Any materials that do not meet the suitable re-use criteria and that require disposal off-site will be sampled, tested, assessed and characterised in line with BS EN 14899:2005.</p> <p>In the unlikely event that unexpected significant levels of contamination are identified and any remediation strategies are required, Tameside and Oldham Councils will be consulted to agree a remedial strategy and a copy of the remediation strategy and verification reports will be provided.</p> <p>Any areas of minor contamination will be dealt with under the WMP submitted as part of the CoCP Part B with no further consultation with the local authorities.</p>

⁶⁴ [DoW:CoP](#)

⁶⁵ [The Definition of Waste: Development Industry Code of Practice \(DoWCoP\)](#)

Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
Flood Risk and Drainage	Environmental Report Volume 1: Chapter 12 Volume 3: Appendix 12A, B, C	Part A of CoCP [NR17] Part B of CoCP (as part of Planning Conditions [NR11]) NR/L2/ENV/015	Surface water	The PPICP will include a construction surface water management plan to manage surface water during construction. Construction materials will not be stored in areas of the compound that are deemed to be at a high risk of flooding from surface waters and permeable materials will be used to ensure that water can still infiltrate into the soil. All areas of the Order Scheme that fall within Flood Zones 2 and 3 will be registered with the EA's flood warning service.
		Part B of CoCP (as part of Planning Conditions [NR11]) NR/L2/ENV/015	Groundwater	Where below-ground works are included within the design, these will be designed to be capable of withstanding hydrostatic pressure and groundwater ingress to avoid vulnerability to groundwater flooding.
Air Quality	Environmental Report Volume 1: Chapter 13 Volume 3: Appendix 13	Part A of CoCP [NR17] Part B of CoCP (as part of Planning Conditions [NR11]) NR/L2/ENV/015	All sensitive receptors	Construction works associated with the Order Scheme have the potential to generate dust emissions, which will require effective control/minimisation for the duration of the construction project. Mitigation will include adherence to measures within Network Rail's requirements included in NR/L2/ENV/015 and additional measures of dust control in line with Institute of Air Quality Management (IAQM) Construction Dust Guidance. These will be

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Environmental topic	Cross-reference for further detail	Mechanism by which the measures are secured	Receptor	Mitigation measures
				implemented through the Code of Construction Practice (CoCP) Part B.

Table 14-2: Summary of the Order Scheme mitigation measures for Operation

Environmental topic	Cross- reference for further detail	Mechanism by which the measures are secured	Receptor	Proposed mitigation measures
Cultural Heritage and Archaeology	Any mitigation proposed during construction which is applicable for effects identified during the operational phase is not duplicated here (similar issues or impacts which may start during construction and continue during operation).			
Ecology	Environmental Report Volume 1: Chapter 6; Volume 3: Appendix 6A	Scheme Design Part B of CoCP (as part of Planning Conditions [NR11] NR/L2/ENV/015	Badger, Bats and Breeding Birds	Behaviour changes on foraging and commuting animals due to fragmentation of habitats and increased disturbance from road users will be minimised by the location and design of the Order Scheme in accordance with the LEMP.
			Biodiversity Net Gain	BNG commitments / covenants / agreements for all future enhancement sites will be maintained for a period of in accordance with the relevant planning condition [NR11].
Landscape and Visual	Environmental Report Volume 1: Chapter 7; Volume 3:	Scheme Design	All visual impact receptors	Bridges and other permanent structure have been carefully designed to integrated with the local landscape, sympathetic to the local context to minimise

Environmental topic	Cross- reference for further detail	Mechanism by which the measures are secured	Receptor	Proposed mitigation measures
	Appendix 7A			visual impact. This includes careful selection and use of materials, colours and design and positioning of works.
		LEMP (as part of Planning Conditions [NR11])	All visual impact receptors	The proposed LEMP will be implemented at the earliest opportunity and maintained for a period of time to ensure the successful establishment of planting to aid in the reduction of long-term impacts on landscape character and visual amenity. Land restoration for temporary land used under Permitted Development Rights will be undertaken at the earliest opportunity.
Arboriculture	Any mitigation proposed during construction which is applicable for effects identified during the operational phase is not duplicated here. The operation of the Order Scheme is not predicted to have a significant effect on arboriculture and therefore mitigation measures are not proposed.			
Noise and Vibration	Environmental Report Volume 1: Chapter 9; Volume 3:	Scheme Design	Residential receptors	Plant and equipment noise, including the Public Address (PA) system at new Mossley Station will be adequately controlled to suitable levels

Environmental topic	Cross- reference for further detail	Mechanism by which the measures are secured	Receptor	Proposed mitigation measures
	Appendix 9A			with standard mitigation measures, such as plant selection, placement, orientation and screening, although further assessment in accordance with BS4142 would be required at a future stage.
	Any mitigation proposed during construction which is applicable for effects identified during the operational phase is not duplicated here. The operation of the Order Scheme is not predicted to have a significant effect on geoenvironment and therefore mitigation measures are not proposed.			
Flood Risk and Drainage	Environmental Report Volume 1: Chapter 12; Volume 3: Appendix 12A, B, C	PPCIP, as part of Part B of CoCP (as part of Planning Conditions [NR11])	Drainage	For the majority of the Order Scheme that requires planning permission, there is either no or only limited change to the impermeable area. Nevertheless, measures will be implemented to prevent potential flood risk, to be detailed in the PPCIP which will be developed at detailed design in accordance with the Network Rail's minimum requirements (NR/L2/ENV/015).

Environmental topic	Cross- reference for further detail	Mechanism by which the measures are secured	Receptor	Proposed mitigation measures
Air Quality	Environmental Report Volume 1: Chapter 13; Volume 3: Appendix 14	Scheme Design	All Sensitive Receptors	Mitigation in operation is inherent in design as the electrification of the railway will reduce emissions from diesel passenger services.

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