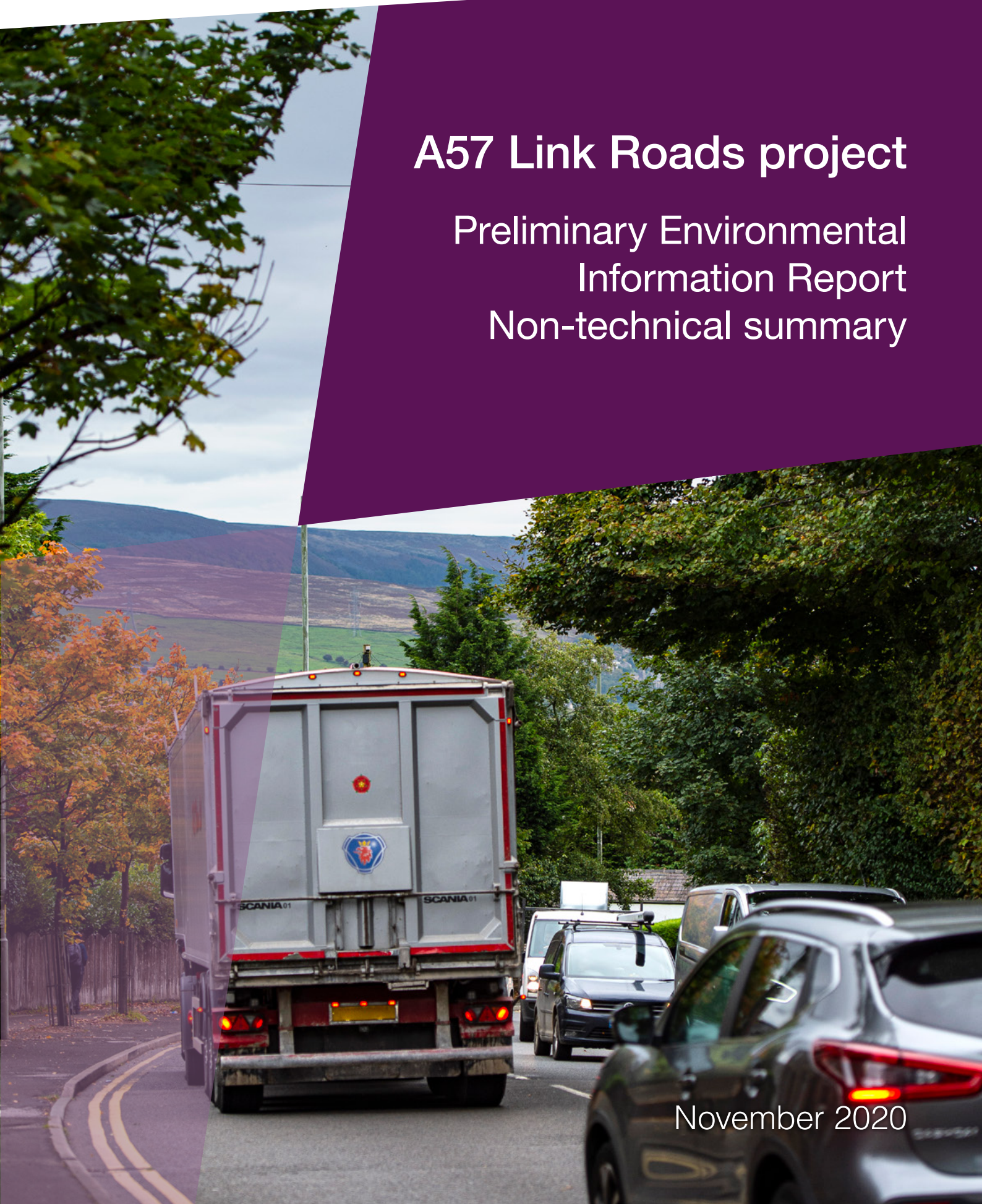
highways england

A57 Link Roads project

Preliminary Environmental Information Report
Non-technical summary



November 2020

Notice

This document and its contents have been prepared and are intended solely for Highways England's information and use in relation to A57 Link Roads. Balfour Beatty Atkins assumes no responsibility to any other party in respect of or arising out of or in connection with this document and/or its contents.

Document control

The Project Manager is responsible for production of this document, based on the contributions made by his/her team existing at each Stage

Document Title	Preliminary Environmental Information Report: Non-Technical Summary
Author	AR

Revision History

Version	Date	Description	Originator	Checker	Reviewer	Authoriser
P02	29/10/20	For issue	AR	EB	LY	MSR
P01	12/10/20	For issue	AR	EB	LY	MSR

Table of contents

1. Introduction

1.1 What is the purpose of the Preliminary Environmental Information Report?

1.1.1 This document provides a Non-Technical Summary (NTS) of the Preliminary Environmental Information for the A57 Link Roads, previously known as Trans-Pennine Upgrade (the "Scheme") as shown in Figure 1.1 below, to help provide an understanding of the potential environmental impacts.

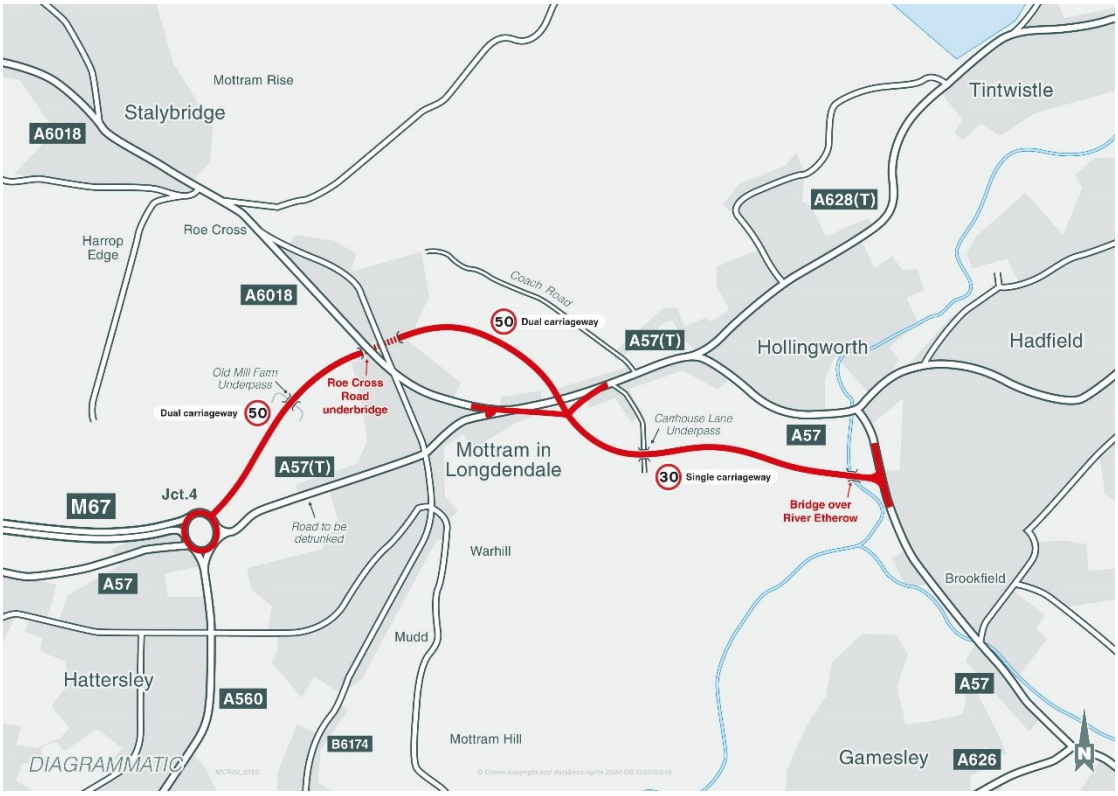


Figure 1.1 Scheme overview and location

1.1.2 In 2017, after a wide consultation about a number of different options, we announced a package of Trans-Pennine Upgrade work, to improve the existing route connecting the M67 at Mottram in Longdendale to the M1, north of Sheffield.

1.1.3 We held another consultation on the proposed package of upgrades in 2018, and have since split the work into two projects which are being delivered separately:

- Upgrades to the Westwood Roundabout near Sheffield; packaged with safety and technology improvements along the A628, A616 and A61, including electronic signs and improved closure gates
- The A57 Link Roads, which is the creation of two new link roads at the western end of the A57/A628 route, to provide a dual carriageway bypass around Mottram in Longdendale

1.1.4 It is intended that these measures will address longstanding issues of connectivity, congestion, reliability and safety of strategic Trans-Pennine routes between the M67 at Mottram in Longdendale and the M1 junction 36 and junction 35A, north of Sheffield.

1.1.5 We started construction on the Westwood roundabout and technology improvements in March 2020. However, as the A57 Link Roads (the Scheme) is classed as a 'Nationally Significant Infrastructure Project', to build it, we need to apply for a 'Development Consent Order (DCO)', which will be examined by the Planning Inspectorate and approved by the Secretary of State. More information about the DCO process is available on the project webpage at www.highwaysengland.co.uk/A57-Upgrade

1.1.6 With the situation around COVID-19 constantly developing and changing, we're not holding the face-to-face events we normally would. Instead, we're providing a range of alternative ways for you to speak to the project team, ask questions and ultimately make an informed response to the public consultation. This will include telephone events and online webinars which we will host through Microsoft Teams, and you can join one of these through our project web page. We will hold a presentation on the project during the webinars, followed by a question and answer session

1.1.7 We want to make sure you have access to all the information you need about the Scheme. During the consultation you can:

- Visit our scheme webpage at www.highwaysengland.co.uk/A57-Upgrade
- Speak to a member of the project team at one of our telephone events, by calling 0808 196 4502 during the following dates and times:
  - Tuesday 10 November - 10am to 3pm and 4pm to 8pm
  - Tuesday 17 November -10am to 3pm and 4pm to 8pm
  - Tuesday 24 November - 10am to 3pm and 4pm to 8pm

1.1.8 The information we will provide includes a description of the scheme, the likely significant environmental effects based on the preliminary environmental information available at the time, the measures proposed to manage such effects and the alternatives that have been considered. The information in this document supports consultees in developing an informed view of the likely significant environmental effects of the scheme and responses to the consultation.

1.1.9 The likely significance of an environmental impact is determined by taking account of the sensitivity of an environmental feature (e.g. house, wildlife habitat or river), the level of impact (i.e. the change from the existing situation) and, if the impact is negative, whether it can be avoided, reduced or mitigated through good design or management. The greater the sensitivity of the environmental feature and the greater the level of impact, the more significant the effect. The significance of effects is considered after mitigation or design changes have been implemented, these are called 'residual effects'. The level of significance is determined by specialists who are competent experts for their topic, who will follow standard guidance to complete their assessments.

1.1.10 Where possible, enhancements will be built into the design to bring about additional environmental benefits, for example, to improve wildlife habitats and increase biodiversity.

1.1.11 This process is known as an Environmental Impact Assessment, which is required by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 (the Environmental Impact Assessment Regulations). The findings of the Environmental Impact Assessment will be reported in an Environmental Statement.

1.1.12 While the Environmental Impact Assessment is ongoing, the Preliminary Environmental Impact Report (PEIR) has been developed for consultation and describes the current environmental conditions and anticipated impacts of the Scheme on the environment. This Non-Technical Summary provides a summary of the PEIR in non-technical language.

1.1.13 The information in this PEIR should be regarded as an initial account of the main environmental issues. Because of this, we have to include some uncertainties and assumptions, which may change as the environmental impact assessment of the Scheme progresses. The findings will be developed further in the Environmental Statement.

1.1.14 The Preliminary Environmental Impact Report (PEIR) has been divided as follows:

- PEIR Volumes 1-3 (www.highwaysengland.co.uk/A57-Upgrade)
- Volume 1: Main text that includes Scheme information, alternatives considered, environmental assessments for each environmental topic, glossary and references.
- Volume 2: Appendices that describe the study areas, planning legislation and policy, methodology and relevant tables for each environmental topic.
- Volume 3: Figures that include the Scheme and outline environmental design drawings and plans to inform each environmental assessment topic chapter in Volume 1.
- PEIR Non-Technical Summary (this document): A separate document that summarises the environmental assessment and current, preliminary findings for each topic.

1.2 What happens after consultation?

1.2.1 Following the consultation, we will give regard to all comments and suggestions received from the consultees in relation to the proposed development and the PEIR, including this summary. We will integrate them into further environmental impact assessment work that will be documented in the Environmental Statement, which will be submitted as part of the DCO application to the Planning Inspectorate in spring 2021.

1.2.2 The DCO application will also include a Consultation Report, which will document the outcomes of the consultation and how the feedback has helped shape the development of the design for the final proposal.

1.3 Where is the scheme?

1.3.1 Most of the Scheme is located at Mottram in Longdendale within the administrative boundaries of Tameside Metropolitan Borough Council, in the west of Greater Manchester. A small section to the west crosses over the boundary with High Peak Borough Council and Derbyshire County Council.

1.4 What are the environmental objectives of the scheme?

1.4.1 The environmental objectives of the Scheme include:

- Reduce noise levels and pollution for neighbouring properties - by reducing the amount of traffic from the existing A57 through Mottram in Longdendale
- Re-connect local communities and create better conditions for pedestrians, cyclists and equestrians - in Mottram in Longdendale

1.4.2 Further objectives and benefits of the scheme are detailed in the Scheme consultation brochure (www.highwaysengland.co.uk/A57-Upgrade).

1.4.3 Alongside the objectives for the specific Scheme, Highways England has their own key performance indicators such as "*No net loss of biodiversity from Highways England's activities, both from new schemes and its operational estate.*"

1.4.4 We published 'The Road to Good Design'[1] in January 2018, which sets out design principles with view to delivering the aspiration to 'deliver safer, better, beautiful roads which connect people and connect our country'. The Scheme will take all these principles into consideration.

2. Air quality

2.1 What is the existing environment like?

2.1.1 Air quality is measured by the amount of air pollutants it contains, where a pollutant is a substance in the wrong place, at the wrong time, at the wrong concentration. The key pollutants of concern in the UK are Nitrogen Dioxide and Particulate Matter. Action to manage and improve air quality is largely driven by European Union law, which sets legally binding limits for major air pollutants. These limits have been transferred to UK law and are included as objectives in the UK air quality strategy. The Department for Environment, Food and Rural Affairs (Defra) is responsible for ensuring that the limits are not exceeded in England, as well as co-ordinating air quality reviews and assessments and action plans for the UK as a whole.

2.1.2 Areas where air pollutant concentrations exceed UK air quality strategy objectives must be designated as an Air Quality Management Area (AQMA) by local authorities. There are a number of AQMA in proximity to the Scheme and roads in the wider area which will be affected by changes in traffic as a result of the Scheme.

2.1.3 The Scheme is located with the Greater Manchester AQMA. Roads affected by the Scheme in the wider area are within the Sheffield Citywide AQMA and an AQMA in Dinting Vale and the Glossop area designated by High Peak Borough Council. In addition, High Peak Borough Council designated an AQMA in the Tintwistle area. The Tintwistle AQMA is not within our study area but has been included in the assessment to align with the traffic model and provide a robust assessment.

2.1.4 Recent monitoring studies of the existing air quality indicates that there are multiple exceedances of the annual mean UK air quality strategy objective for NO_2 at some busy roadside locations within the air quality study area, (notably adjacent to A57 through Mottram, in Dinting Vale, in Hollingworth and adjacent to Woolley

[1] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/672822/Good_road_design_Jan_18.pdf

Lane). This means that NO_2 concentrations immediately adjacent to these busy roadside locations are above what is considered to be acceptable levels.

2.1.5 Based on monitoring data and also Defra modelling, concentrations of NO_2 at background concentrations of NO_2 (that is locations more distant from direct pollution sources, such as busy roads) within the study area are below the national objective limits.

2.2 What aspects of the scheme will potentially impact on air quality?

2.2.1 The Scheme has the potential to affect air quality positively and negatively during construction and once it is complete and operational. This is set out below.

2.2.2 During construction, sensitive receptors have the potential to be affected as a result of nuisance dust from construction activities such as earth moving and excavations, and emissions from construction traffic and equipment or machinery, as well as changes to existing road traffic due to traffic management and diversions.

2.2.3 Our air quality modelling has identified that, when the Scheme opens, areas where predicted concentrations of annual mean NO_2 would exceed the annual mean NO_2 UK air quality strategy objective without the Scheme will see large decreases of the predicted concentrations when compared with the predicted concentrations without the Scheme. This means that the Scheme will bring about improved air quality at properties located along busy roads, most notably adjacent to A57 through Mottram.

2.3 What are the key receptors that will potentially be affected?

2.3.1 The key receptors that can be affected by changes in air quality are human health receptors such as residential properties, schools and nurseries, hospitals and residential care homes, and ecological receptors, such as such as Sites of Special Scientific Interest (SSSIs) and non-statutory Local Wildlife Sites (LWS) and Local Nature Reserves (LNR).

2.3.2 The air quality assessment considers the effect on selected receptors within 200 m of any road expected to have a change in traffic. Receptors include those closest to the roads affected by the scheme, those that are representative of large numbers of properties, those that house the young, the elderly and other susceptible populations, as well as those near junctions, or locations with queuing traffic and ecological receptors.

2.4 How are these impacts being mitigated?

2.4.1 Any air quality effects due to construction would be temporary and could be suitably minimised by the application of standard and appropriate mitigation measures which may include dampening down of surfaces to reduce dust, road sweeping and good management of stored materials. On this basis, we consider it unlikely that there will be a significant effect on air quality due to the construction of the Scheme.

2.4.2 Based on our initial results, which indicate overall beneficial effects due to the Scheme, measures to minimise air quality effects would not be required once the

Scheme is operational. This will be confirmed when the assessment is updated in the Environmental Statement.

2.5 What are the limitations and assumptions of the current information?

2.5.1 The results presented in this Preliminary Environmental Impact Report are based on the latest air quality monitoring datasets at the time of the assessment in July 2020. However, our survey work is still ongoing and covers some additional sites. Our survey was paused in March 2020 due to COVID-19 restrictions but restarted in September 2020 once restrictions were sufficiently lifted. We are continuing to collect data for the purposes of monitoring trends.

2.5.2 The construction assessment will be completed for the Environmental Statement (ES), once further construction information is available including: the finalised construction footprint, haul road locations, construction traffic flows and details of traffic management measures including diversions.

2.5.3 More detailed site investigations are also required to determine the impact of the Scheme on ecological receptors within the study area. We will assess the significance of air quality effects on designated habitats in the study area and present the results within the Biodiversity chapter of the ES.

2.5.4 It is possible that the results presented in the ES could be higher or lower than those previously reported, because of changes to the datasets considered in this Preliminary Environmental Impact Report. We will review the results of the overall scheme significance and where necessary, update these conclusions in the ES.

3. Cultural heritage

3.1 What is the existing environment like?

3.1.1 Designated assets in the vicinity (500 m) of the Scheme include:

- One Scheduled Monument (Melandra Castle Roman fort)
- Two Conservation Areas (Mottram-in-Longdendale Conservation Area and Tintwistle Conservation Area)
- Two Grade II* Listed Buildings
- 45 Grade II Listed Buildings

3.1.2 Of these assets, only one, the Mottram Conservation Area, is partly located within the Development Consent Order (DCO) boundary[2].

3.1.3 There are also 94 non-designated assets within the 500m study area, nine of which are located within the DCO boundary.

3.2 What aspects of the scheme will potentially impact on cultural heritage?

3.2.1 The following potential impacts could occur as a result of the construction and operation of the Scheme:

[2] This boundary shows the limits within which works associated with the Scheme may be carried out. This includes the land required permanently and temporary for the operation and construction of the Scheme. See Volume 3, Figure 2.1 to view the DCO boundary.

- Direct physical impacts, potentially comprising the partial or total loss of a heritage asset, including buildings, earthworks or buried archaeological remains.
- Settings impacts, which could result in non-physical changes to the character and significance of heritage assets as a result of the interruption, or loss of, designed views and the removal of general screening.

3.2.2 Construction activities such as site clearance, compound sites and demolition works could cause direct physical impacts during construction.

3.2.3 During operation the Scheme should have no additional direct physical impacts on the historic environment, however, the setting of heritage assets could be impacted on, and these impacts could potentially be long term and permanent in nature.

3.2.4 Potential effects could be beneficial and/or adverse, for example: the change in traffic flow could reduce standing traffic, decreasing noise and air pollution and thus being beneficial to setting, and the wider historic environment. However, the Scheme also has the potential to bring traffic into those areas not previously subject to a main road.

3.3 What are the key receptors that will potentially be affected?

3.3.1 Key designated asset receptors include one Scheduled Monument, two Conservation Areas, two Grade II* Listed Buildings and 45 Grade II Listed Buildings and other non-designated assets.

3.3.2 A full list of the key heritage assets which could be affected by the Scheme can be found in Table 6.2 of Chapter 6 Cultural Heritage in Volume 1 of the PEIR.

3.4 How are these impacts being mitigated?

3.4.1 We consider that potential effects, adverse or otherwise, of construction activities on the setting of heritage assets would be temporary, and reversible. We will reduce this with best practice measures which will be set out in an Environmental Management Plan (EMP).

3.4.2 For the operational phase of the Scheme we will incorporate mitigations such as planting in our designs to provide screening for heritage assets once the planting has matured.

3.4.3 A programme of archaeological investigation will be carried out in areas affected by the Scheme where there is potential for significant archaeological remains to survive. The scope and extent of such investigations will be developed in consultation with the Archaeological Officers of the Greater Manchester Archaeological Advisory Service (GMAAS)

3.5 What are the limitations and assumptions of the current information?

3.5.1 Our assessment provides a broad, high level indication of effects based on preliminary assessment. We will undertake a more detailed assessment as part of the Environmental Statement, which will include a desk-based assessment, walkover surveys and consultation with local authorities and the GMAAS to further define the impact of the Scheme on cultural heritage and any required mitigation.

3.5.2 A programme of archaeological evaluation will also be undertaken to investigate the potential for buried archaeological remains.

4. Landscape and visual effects

4.1 What is the existing environment like?

4.1.1 The Scheme lies within Tameside Metropolitan Borough Council, and a small section of the west boundary of High Peak Borough Council and Derbyshire County Council, as well as the setting of the Peak District National Park.

4.1.2 The Scheme is located across a range of landscape and townscape character areas, including open moorland slopes, river valleys, and within and adjacent to some densely populated urban areas. The urban areas contain a number of residential properties as part of larger settlements on the edge of Manchester, and clusters of properties/farmsteads as well as more scattered properties/farmsteads within the rural areas.

4.1.3 There is also a relatively dense network of public rights of way and recreational routes within the DCO boundary, which include the Trans-Pennine National Trail, National Cycle Route 62, and the two regional long-distance paths, Tameside Trail (LON-90) and Etherow-Goyt Valley Way (LON-90).

4.2 What aspects of the scheme will potentially impact on landscape and visual effects?

4.2.1 During construction, potential impacts may arise due to site clearance to facilitate the new road layout, structures, earthworks, drainage, signage, lighting and construction access within the DCO boundary. These activities could open-up views to the highway and traffic, affecting nearby receptors and has the potential to change the landscape character.

4.2.2 It is considered these activities, although short term in nature, would be noticeable intrusive features.

4.2.3 Once the Scheme is completed, there could be potential impacts resulting from views of the highway, earthworks and structures, including new lighting.

4.3 What are the key receptors that will potentially be affected?

4.3.1 Key receptors that could be affected include:

- The landscape character around the Scheme; and
- Visual receptors comprising:
  - Residents of nearby properties including Grange Farm, Nettle Hall, Tara Brook Farm, Carr House Farm and properties along Edge Lane, Four Lanes, Ash Close, Meadowcroft, Littlefields, Old Hall Lane, Lodge Court, Coach Road, Tollemache Close, Brookfield Road.
  - Users of the Trans Pennine Trail, Etherow-Goyt Valley Way & Tameside Trail
  - Users of Public Rights of Way (PRoW).

4.4 How are these impacts being mitigated?

4.4.1 To reduce impacts during construction, we will develop the design to minimise the construction footprint and amount of vegetation clearance required. Sensitive working practices will be undertaken to protect adjacent vegetation. Where clearance is necessary, we will plant new native woodland to reinstate the screening effect of highway planting. Once established this new planting will provide increased screening and integration for the Scheme.

4.4.2 We consider that, through careful and sensitive design, it is likely most impacts can be mitigated and where appropriate, enhancements secured, particularly through additional planting and screening from false cutting slopes[3]. The planting will include native deciduous and evergreen planting, new blocks of woodland planting, infilling of existing hedgerows and the creation of new hedges.

4.4.3 We will also minimise light spill throughout the Scheme, through good lighting design.

4.5 What are the limitations and assumptions of the current information?

4.5.1 The type of receptor given for the landscape and townscape receptors is an initial indication only and will be re-evaluated during the assessment process and included in the ES.

4.5.2 The results presented in this PEIR are based on the most current assessment of the Scheme, which is on-going. We will continue to carry out further investigations and surveys in the coming months, which we will use to inform the more detailed assessment presented within the ES.

5. Biodiversity

5.1 What is the existing environment like?

5.1.1 Two statutory designated sites for nature conservation lie within 2km of the Scheme. Hurst Clough Local Nature Reserve (LNR) is situated 345m south and Great Wood LNR is situated 1.3km south of the Scheme. There are also 31 non-statutory designated sites for nature conservation within 2km of the Scheme.

5.1.2 The following protected sites are all approximately 2.2 km north-east of the Scheme.

- Dark Peak Site of Special Scientific Interest (SSSI);
- The Peak District Moors Special Protection Area (SPA); and
- The South Pennine Moors Special Area of Conservation (SAC)

5.1.3 The habitats identified as being present within or adjacent to the DCO boundary include:

- Traditional orchard
- Lowland dry acid grassland
- Broadleaved woodland

[3] False cutting is a means of screening a road by forming embankments on both sides of the feature to fit in with the surrounding landscape

- Wood pasture and parkland
- Hedgerows
- Improved grassland
- Semi-improved grassland
- Ponds and running water (rivers/streams/ditches)

5.1.4 There are eight ponds located within the DCO boundary, which vary in size and permanence. The River Etherow, Hurst Clough Brook and Glossop Brook are waterbodies that flow through the land within the DCO boundary.

5.1.5 The habitats within the DCO boundary have the potential to support notable and protected species, in particular bats, badger, birds, otters and aquatic invertebrates. We have carried out ecological surveys to confirm the presence of populations of notable and protected species within or close the scheme, and other species that make use of the habitats within the scheme for foraging or travelling to other habitats.

5.2 What aspects of the scheme will potentially impact on biodiversity?

5.2.1 During the construction phase of the Scheme, potential effects include physical loss, damage and fragmentation of habitats[4] within the footprint of the Scheme, during site clearance works. Clearance for temporary access routes for construction traffic and site compounds would also result in temporary loss of habitats.

5.2.2 There would be potential for habitat damage during construction from dust deposition and chemical pollution. Damage to pond habitats may occur through dust deposition and runoff from general construction works. There is also the potential for accidental spills of chemicals and other potentially toxic substances to occur.

5.2.3 The construction of river crossings may result in temporary and permanent loss of habitat and permanent shading of habitats. There could also be physical loss, damage and fragmentation of watercourse habitats associated with the construction of new crossings (namely culverts), extensions to existing crossings, localised realignments and new drainage structures.

5.2.4 Once traffic is using the new link roads, there is potential for effects on biodiversity. Movements of traffic could disturb and potentially displace species, such as birds. Lighting along the Scheme could impact on nocturnal species such as bats, otter or badger, if directed onto key commuting/foraging routes. Local changes in air quality could affect adjacent designated sites, or habitats, and there could be accidental damage or pollution of adjacent habitats from traffic incidents.

5.3 What are the key receptors that will potentially be affected?

5.3.1 The Scheme has the potential to affect non-designated sites, notable habitats, plants, terrestrial and aquatic invertebrates, fish, reptiles, birds, bats, otters and badgers, prior to mitigation.

[4] Habitat fragmentation occurs when larger areas of habitat are split into separate, smaller areas. For example, an area of habitat – e.g. a woodland – can be split into two separate sections by the construction of a road

5.4 How are these impacts being mitigated?

5.4.1 During construction, we will manage impacts through strict adherence to an Environmental Management Plan (EMP) that will be developed using best practice techniques. In addition, more specific control measures such as avoidance/ minimisation of lighting from sensitive construction areas and, if the project programme allows, scheduling the most disruptive works to avoid sensitive periods for specific species/species groups.

5.4.2 We will design the lighting of the Scheme to minimise light spill and restrict lighting to areas where the construction site or carriageway needs to be lit, for health and safety reasons.

5.4.3 We are developing the Scheme design to minimise impacts on biodiversity during operation. This includes incorporating a lighting scheme to avoid light spill beyond the road alignment and making sure sensitive lighting is used in areas of ecological sensitivity, for example areas where bats are known to forage.

5.4.4 We are also incorporating mitigation features into our design such as artificial bat roosts, bird nesting boxes, badger setts, otter-proof fencing, new wildlife corridors and underpasses and planting to create and enhance habitats. Safe crossing points for mammals will be installed across the Scheme to make sure that animals such as badgers and otters stay connected to their habitats once the Scheme is open.

5.5 What are the limitations and assumptions of the current information?

5.5.1 Our assessment of impacts on biodiversity is based on ecological surveys carried out in 2019 and 2020, which covered notable habitats and species potentially affected. Our surveys are still on-going, the results of which will be detailed within the ES.

6. Geology and soils

6.1 What is the existing environment like?

6.1.1 The underlying geology across the study area is a mixture of clays, sand and gravels created by past glaciers and rivers which are underlain by bedrock of mudstone, siltstone and sandstone. Made Ground which is soil containing man made material such as brick may be present near the surface in developed areas associated with past construction or industrial use. No sensitive geological sites (including geological SSSIs) are located within the study area.

6.1.2 Two geological fault lines are mapped to be crossing the Scheme. One positioned across the A57 east of the existing M67 junction 4, at the western extent of the Scheme. The other fault crosses the location of the proposed Mottram Underpass, running north west to south east. Geological fault lines are where bedrock has been displaced cross the Scheme.

6.1.3 The Scheme is also situated within an area possibly effected by past coal mining activity.

6.1.4 The Provisional Agricultural Land Classification (ALC) map of north-west England shows all the study area to be Grade 4 (poor quality land).

6.2 What aspects of the scheme will potentially impact on Geology and soils?

6.2.1 The construction phase could potentially introduce new sources of contamination (e.g. construction vehicle fuels) and disturb and move existing sources of contamination in the ground (e.g. associated with past industrial use). Construction activities may also introduce new pathways (e.g. foundations) for movement of existing contamination.

6.3 What are the key receptors that will potentially be affected?

6.3.1 The Scheme has the potential to impact the following receptors:

- Environmental (controlled waters, ecology and property) receptors and human health from the mobilisation of contamination
- Increasing the risk of geological or ground water hazards
- Degrading soil quality

6.3.2 It is not considered that there are any significant sources of land contamination present which could impact on nearby ground water, rivers or water courses.

6.4 How are these impacts being mitigated?

6.4.1 To reduce potential impacts, we are carrying out more ground investigation before we start construction, to confirm the findings of the previous ground investigations. We will produce a Soils Management Plan to make sure that all soils are managed carefully during construction. We will develop the Scheme to meet all the relevant regulations, best practice guidance and pollution prevention techniques.

6.4.2 We will return agricultural land that is temporarily used to its original condition, so that it can be returned to farming. We will aim to re-use as much agricultural soil as possible elsewhere on the Scheme.

6.5 What are the limitations and assumptions of the current information?

6.5.1 We have assessed these impacts through desk-based methods, including consideration of previous ground investigations, and considered a reasonable worst-case scenario.

6.5.2 We will confirm the impacts of the Scheme on geology and soils through further ground investigation, which will be completed before the construction works start.

7. Materials assets and waste

7.1 What is the existing environment like?

7.1.1 The existing environment, in terms of materials and waste, is influenced by the national demand for key construction materials, and the non-hazardous and hazardous waste generation and waste management, such as local landfill capacity.

7.1.2 The key construction materials to be used in the Scheme will likely include aggregate, concrete and asphalt, as well as the re-use of soil from elsewhere on site.

7.1.3 The Scheme is on the border of Greater Manchester and Derbyshire councils, so both Waste Planning Authority (WPA) areas have been included in this assessment. The capacity of waste management infrastructure has been estimated from waste received at facilities within the Greater Manchester and Derbyshire WPAs in 2018.

7.1.4 No mineral safeguarding areas were identified within the Scheme study area

7.2 What aspects of the scheme will potentially impact on material assets and waste?

7.2.1 During construction, potential impacts include the reduction of waste management facilities and landfill sites' capacities. Roads in close proximity to the Scheme will see increased vehicle movements in order to transport material resources to the Scheme. During the operational phase of the Scheme, we expect that there will be minimal material use and waste production.

7.3 What are the key receptors that will potentially be affected?

7.3.1 Receptors which have the potential to be impacted by material resources use and waste generation, are defined as:

- The market for key construction materials, which are to be used for the Scheme.
- The waste arisings baseline - the amount of waste that is predicted to be produced during the whole life of the Scheme.
- The predicted capacity of waste infrastructure, both regionally (non-hazardous and inert) and nationally (hazardous), which are anticipated to arise from the Scheme during the construction phase.

7.4 How are these impacts being mitigated?

7.4.1 During construction, we will minimise the use of materials through efficient design and use of minimal temporary works (where safe to do so). Our design will also specify the use of the largest amount of recycled content, in order to minimise the use of materials.

7.4.2 Our design will be developed to minimise the generation of waste through more efficient construction methods and identifying opportunities in the supply chain to use reusable packaging, where feasible.

7.4.3 We will aim to move waste up the waste hierarchy (Avoid/prevent, Reduce and Remediate), by identifying where it is suitable for materials and wastes to be reused or recycled. The aim therefore will be to minimise the amount of construction materials used and the amount waste requiring disposal.

7.5 What are the limitations and assumptions of the current information?

7.5.1 Our assessment of effects on materials and waste is based on design and construction information being available, which we will further develop in the ES.

8. Noise and vibration

8.1 What is the existing environment like?

8.1.1 The dominant source of noise in the proximity of the Scheme is road traffic noise. This is primarily generated by vehicles travelling along the principle routes in the area, including (from east to west) the B6174, A6018, A57 and A628.

8.1.2 Four Noise Important Areas (NIAs) are in proximity to the Scheme. The Department for Environment, Food, and Rural Affairs (Defra) have identified a number of NIAs in proximity of the Scheme. An NIA is where the 1% of the population that are affected by the highest noise levels from major roads are located, according to the results of strategic noise mapping[5].

8.2 What aspects of the scheme will potentially impact on noise and vibration?

8.2.1 The Scheme has the potential to have an impact on noise during both the construction phase and once the scheme is complete and operational.

8.2.2 The construction noise impact will be dependent on the construction methods used, and the proximity of the works to residential properties and other noise sensitive buildings.

8.2.3 Once the Scheme is complete, the noise levels in the area could be affected by changes in road layout, traffic flows, vehicle types, and speeds on the roads and other local roads, especially at those properties nearby.

8.2.4 Receptors close by to the existing route will likely experience beneficial impacts on noise due to traffic being moved further away, however receptors closer to the new route may experience a slight increase in noise levels.

8.3 What are the key receptors that will potentially be affected?

8.3.1 There are existing residential receptors located towards the western end of the Scheme, in Hattersley, centrally where the Scheme passes through Mottram, and at the eastern extreme of the Scheme at Woolley Bridge and Hollingworth. Isolated dwellings on B-roads are also present around the Scheme.

8.3.2 There are also ‘other noise sensitive receptors’ within the study area, which include:

- Healthcare facilities;
- Education facilities;
- Community facilities;

[5]These maps give a snapshot of the estimated noise from major road and rail sources across England

- Environmental Noise Directive (END) quiet areas or potential END quiet areas;
- International and national or statutorily designated sites (for example, protected wildlife sites such as SSSI's); and,
- PRoW and cultural heritage assets.

8.4 How are these impacts being mitigated?

8.4.1 We will reduce construction noise through alternative construction methods, temporary noise barriers and good working practices, which we will manage through strict adherence to an Environmental Management Plan (EMP).

8.4.2 We will keep residents and other affected parties informed of the progress of the work, including when and where the noisiest activities will be taking place, and how long they are expected to last. All noise complaints will be recorded, investigated and addressed.

8.4.3 As part of our design development of the Scheme, additional measures will be incorporated to address any predicted impacts after opening. More detail about where this mitigation is needed will be reported within the Environmental Statement, after we have completed our detailed assessment. Measures such as low noise road surfacing, speed limits, and environmental noise barriers will be considered. Barriers would be either earth mounding or acoustic fencing of various types, or a combination of the two.

8.5 What are the limitations and assumptions of the current information?

8.5.1 Our current assessment is based on a worst case scenario and will continue to be updated as more Scheme information becomes available. As a result, there is likely to be fewer negatively impacted areas than those identified in the PEIR.

9. Population and human health

9.1 What is the existing environment like?

9.1.1 There are a number of key settlements located in and around the study area, including Hattersley, Mottram-in-Longdendale, Hollingworth, Hadfield and Gamesley.

9.1.2 These settlements possess a variety of social and community facilities, including education and healthcare facilities, community centres, places of worship, libraries and sporting facilities.

9.1.3 A number of commercial businesses have been identified towards the east of the Scheme, including enterprises within Dinting Lodge Industrial Estate, Glossop Caravans and a number of petrol stations.

9.1.4 The principal land use within the Scheme is agriculture.

9.1.5 Public rights of way and other recreational routes, including bridleways and cycle routes, are present within the wider study area, notably the Pennine Bridleway National Trail (which incorporates the Trans-Pennine National Cycle Route 62 along part of its route).

9.1.6 The human health baseline focuses on the population for the wider study area, including demographic profile, demographic trends, socio-economics, deprivation, health and wellbeing characteristics, and general characteristics of the natural and built environment.

9.2 What aspects of the scheme will potentially impact on population and human health?

9.2.1 We consider that all aspects of the Scheme have the potential to impact people and communities, either temporarily or permanently. This could result from land take, severance of connectivity, access restrictions, effects to amenity and to human health.

9.3 What are the key receptors that will potentially be affected?

9.3.1 The Scheme has the potential to affect residential dwelling, commercial facilities, community facilitates, agricultural holdings, residents, walkers, cyclists and horse-riders.

9.4 How are these impacts being mitigated?

9.4.1 We will identify opportunities to introduce mitigation and enhancement measures into the Scheme design, so that it is developed to minimise and manage the impacts.

9.4.2 Our key considerations are reducing temporary and permanent land take, avoid severance and actively manage impacts on provisions for walkers, cyclists, horse riders and residents through careful design. We will follow strict best practice construction methods through the Environmental Management Plan to reduce disruption experienced by the community, especially those susceptible or vulnerable to health issues.

9.4.3 Our Scheme design will include a range of built in mitigation, for example:

- Construction works will be programmed so that affected public rights of way, footpaths or cycleways remain open for the duration of the construction period.
- Where this is not possible, a management system will include diversion routes to maintain connectivity and reduce stress for drivers, walkers, cyclists and horse-riders.
- Completion of an Environmental Management Plan (EMP), which will outline best practice construction methods, will effectively reduce any human health impacts from dust, light, noise, water and air quality impacts.

9.5 What are the limitations and assumptions of the current information?

9.5.1 Our assessment provides a broad, high level indication of effects based on preliminary assessment. We will undertake further assessment of effects when more details concerning the scheme design and construction are available.

10. Road drainage and the water environment

10.1 What is the existing environment like?

10.1.1 Surface water within the study area falls within the north-west River Basin District (RBD), as set out in the north-west River Basin Management Plan (RBMP).

10.1.2 There are three surface water bodies within the study area, namely the River Etherow, Glossop Brook and Hurst Clough Brook. There are also a number of other smaller existing field drains, ponds, areas of spring issues/sinks and unnamed streams indicated within the study area.

10.1.3 Aquifers also constitute part of the existing environment. The type of aquifer found in an area is defined by

- Geological characteristics;
- How much groundwater it is possible to extract, and how easily; and
- How much they support river flows and habitats;

10.1.4 The study area for this Scheme is underlain by a single bedrock aquifer: Manchester and East Cheshire Carboniferous, classified as a Secondary A aquifer[6], which has potential to support water supplies at a local scale.

10.1.5 The study area includes areas of Flood Zone 2 (between 0.1% – 1% chance of flooding in any year) and Flood Zone 3 (1% or greater chance of flooding in any year).

10.2 What aspects of the scheme will potentially impact on road drainage and the water environment?

10.2.1 Construction activities have the potential to affect water quality through

- Uncontrolled site runoff;
- The excavation of materials, and the subsequent deposition of soils, sediment, or other construction materials;
- The spillage of fuels or other contaminating liquids; and
- The mobilisation of contamination following the disturbance of contaminated ground or groundwater.

10.2.2 The risk of surface water flooding during construction is most likely to arise from heavy rainfall when runoff may pond, potentially resulting in flooding of working areas and excavations.

10.2.3 During the operational phase, the new hard standing areas could increase road runoff and drainage, affecting water quality. This may also increase surface water flood risk.

10.2.4 The implementation of new crossings and extensions to existing crossings may result in a loss of open channel. This has the potential to alter the quality of watercourses.

[6]Secondary A aquifers comprise permeable layers that can support local water supplies, and may form an important source of base flow to rivers

10.3 What are the key receptors that will potentially be affected?

10.3.1 Key surface water receptors identified are the River Etherow, Glossop Brook and Hurst Clough Brook and their associated floodplains, a number of field drains (ordinary watercourses) and ponds.

10.3.2 Key groundwater receptors within the study area include Secondary A bedrock aquifer and Secondary B superficial aquifers[7].

10.4 How are these impacts being mitigated?

10.4.1 During construction, we will identify mitigation measures within an Environment Management Plan (EMP). These measures will be associated with good site practice and in accordance with Environment Agency best practice.

10.4.2 We are developing the Scheme design to mitigate impacts during operation, which will include measures such as:

- Sustainable Drainage Systems (SuDs) to mitigate the pollution risk associated with road runoff.
- Minimising the length of culverts to facilitate any local environmental needs and maintain connectivity with the natural watercourse.
- The Inclusion of floodplain compensation areas[8], where necessary.

10.5 What are the limitations and assumptions of the current information?

10.5.1 Our assessment has been based on current knowledge and design information. We are undertaking further assessment as more details are made available.

11. Climate

11.1 What is the existing environment like?

11.1.1 The preliminary assessment within the Climate chapter is divided into two subsections, to address climate change:

- The potential effects of the Scheme on climate, including the level of greenhouse gases emissions emitted during both construction and operation.
- The vulnerability of the Scheme to climate change, including the impacts of extreme weather (caused by climate change), both during operation and construction, and adaptation to mitigate the effects of these impacts.

11.1.2 The assessment of the effects on climate quantifies emissions of greenhouse gases from the Scheme to the atmosphere. Sources of direct emissions include vehicles using the existing road and nearby roads, and sources of indirect emissions include maintenance and refurbishment activities, materials production and energy use by technology and lighting on the Scheme.

11.1.3 The assessment of the vulnerability of the Scheme to climate change depends on the sensitivity of the Scheme to climate hazards (extreme weather events) and the geographic exposure to these hazards. Our assessment will consider the key

[7] Secondary B aquifers are mainly lower permeability layers that may store and yield limited amounts of groundwater through characteristics like thin cracks
[8] Loss of flood storage due to the construction of the Scheme must be compensated for by providing an equal volume of storage to replace what is lost.

climate variables including extreme temperatures and rainfall and hazards (flooding, snowstorms), and how they are expected to change over the lifetime of the project (warmer and colder temperatures, higher rainfall).

11.2 What aspects of the scheme will potentially impact on climate?

11.2.1 The Scheme will lead to an increase in emissions during construction and operation, because construction activities will use processes and consume materials that emit carbon and greenhouse gases, and once operational the traffic is expected to increase across the local network. However, we do not consider that the level of emissions is sufficient to significantly affect the UK meeting its carbon budgets.

11.2.2 If we experience a period of extreme weather, such as a heatwave or prolonged heavy snowfall during construction, we may need to review the construction programme to try and prioritise those activities that are less vulnerable to the hot or freezing weather.

11.2.3 During the operation of the Scheme, there is potential for impacts on the newly created roads, landscaping, and other assets such as lighting (including their operation, maintenance and refurbishment), during extreme weather events. For example, heavier rainfall and wetter winters could increase pothole formation (by weakening the soil beneath the carriageway), increasing maintenance requirements, make essential maintenance more hazardous, and create traffic disruption.

11.3 What are the key receptors that will potentially be affected?

11.3.1 The only direct receptor of greenhouse gas emissions is the atmosphere.

11.3.2 Receptors from extreme weather events may be summarised as roads and supporting infrastructure, including bridges, embankments, earthworks and drainage.

11.4 How are these impacts being mitigated?

11.4.1 All aspects of the Scheme that directly or indirectly result in emissions of greenhouse gases have the potential to result in climate effects. These include:

- Production, manufacturing and transportation of construction materials.
- Construction processes, including construction plant energy use, water use, energy use from on and off-site worker facilities, worker commuting, waste transportation off-site, and off-site waste processing.
- Operation of the Scheme, including vehicles using the road network, street lighting, and signage.
- Scheme maintenance, including inspection works, and maintenance and repair works.

11.4.2 We will consider mitigation measures for minimising the effects of the Scheme on climate change, which will include applying the carbon reduction hierarchy: Avoid/prevent, Reduce and Remediate.

11.4.3 For vulnerability of the Scheme to climate change, we will include appropriate design for climate change, such as incorporating more green/blue infrastructure (i.e. water bodies and green areas), developing dust management plans and implementing water efficiency measures

11.5 What are the limitations and assumptions of the current information?

11.5.1 There is currently insufficient design information available to conduct a full assessment of the effects of the Scheme on climate, so we have undertaken a partial assessment to inform the PEIR. We will carry out a full assessment of the construction emissions and present this within the ES.

11.5.2 The ES will also include a detailed consideration of the current and projected future climate baseline.

12. Assessment of cumulative effects

12.1 What is the existing environment like?

12.1.1 A review of planning applications located within 3 kilometres of the Scheme (or 10 kilometres for other Nationally Significant Infrastructure Project (NSIPs)) of the Scheme has identified a shortlist of 'other developments' that are relevant to the assessment of potential cumulative effects for the Scheme:

- Land bounded by Ashworth Lane and Chain Bar Lane;
- Land North of Dinting Road, Glossop, Derbyshire;
- Land at Woolley Bridge, East of A57, Hadfield, Glossop, Derbyshire, for residential development and associated works;
- Site of Hattersley High School and Waterside Court;
- Hattersley Regeneration Sites 12 13 14 15 16 17 and 19; and
- Land at Milverton Avenue Hattersley regeneration site 11.

12.1.2 The level to which these developments interact and have cumulative effects with the Scheme is dependent on a number of factors including proximity to each other, size, scale and type of development, and how far the mitigation measures proposed reduces the various effects.

12.2 What aspects of the scheme will potentially impact on cumulative effects?

12.2.1 There are principally two types of cumulative impact:

- Combined effects: a single project (e.g. numerous different effects impacting a single receptor)
- Cumulative effects: different projects (together with the project being assessed)

12.2.2 For combined effects, all the effects identified within the ES chapters will be assessed to identify potential combined effects. To determine whether there is a potential for combined effects on a receptor, all remaining effects will be listed

against the receptors affected, so that receptors which would be affected by more than one impact can be identified. This ensures that the ES is not a series of separate assessments collated into one document, but rather a comprehensive assessment drawing together all the environmental effects of the Scheme.

12.2.3 For cumulative effects, the environmental effects of the Scheme will also be assessed in combination with the effects of other projects, as part of the Environmental Impact Assessment (EIA) process, where relevant information is available. Examples of potential significant cumulative effects with other developments and the scheme could include changes to receptors for air quality, noise and the landscape setting, as well as incremental changes, for example to water quality of watercourses such as the River Etherow.

12.3 What are the key receptors that will potentially be affected?

12.3.1 There may be beneficial, neutral or negative cumulative effects on air quality (operational), noise and vibration, population and human health, landscape and climate change. However, we have not assessed these yet and will consider them in further detail in the ES.

12.4 How are these impacts being mitigated?

12.4.1 If we identify any potential cumulative effects from 'other developments', suitable mitigation will be specified to avoid or reduce such effects. These measures may need to be developed in consultation with other developers.

12.5 What are the limitations and assumptions of the current information?

12.5.1 Our cumulative effects assessment is based on a search of current planned development. As new applications come forward and existing applications are 'varied', we may need to update this list. The list of development projects listed in the cumulative effects assessment will be updated in discussions with Tameside Metropolitan Borough Council and High Peak Borough Council.

13. Abbreviations, Acronyms and Descriptions

13.1 Acronyms and Abbreviations

Acronym/Abbreviations	Term
AQMA	Air Quality Management Area
ALC	Agricultural Land Classification
Defra	Department for Environment, Food and Rural Affairs
DCO	Development Consent Order
ES	Environmental Statement
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
END	Environmental Noise Directive
GMAAS	Greater Manchester Archaeology Advisory Service
LNR	Local Nature Reserve
LWS	Local Wildlife Site
NIA	Noise Important Area
NSIP	Nationally Significant Infrastructure Project
NTS	Non-Technical Summary
PEIR	Preliminary Environmental Impact Report
PRoW	Public Rights of Way
RBD	River Basin District
RBMP	River Basin Management Plan
SAC	Special Area of Conservation
SPA	Special Protection Area
SSSI	Sites of Special Scientific Interest
SuDs	Sustainable Drainage Systems
WPA	Waste Planning Authority

13.2 Glossary of terms

Term	Description
Agricultural Land Classification	A framework for classifying land according to the extent to which its physical or chemical characteristics impose long term limitations on agricultural use. Agricultural land is classified into five categories according to versatility and suitability for growing crops. The top three grades, Grade 1, 2 and 3a, are referred to as 'Best and Most Versatile' land.
Air Quality Management Area	An area identified where the National Air Quality Objectives are not likely to be achieved. The Local Authority is required to produce a Local Air Quality Action Plan to plan how air quality in the area is to be improved
Aquifer	An underground rock formation containing water, often used as a water source
Best and Most Versatile	Defined as Grades 1, 2 and 3a of the Agricultural Land Classification as land which is most flexible, productive and efficient in response to inputs and which can best deliver future crops for food and non-food uses such as biomass, fibres and pharmaceuticals
Character	Is formed by elements of a heritage asset or landscape which contribute to its importance or value. Character can also refer to the overall appearance of a place or structure as perceived by those who visit and enjoy it – alteration to this appearance has the potential to detract from enjoyment of a heritage or landscape asset.
Conservation Area	An area of special environmental or historic interest or importance, of which the character or appearance is protected by law against undesirable changes (Section 69 of the Planning (Listed Buildings and Conservation Areas) Act 1990).
Cumulative impact	The combined residual impact of a proposed Scheme over the entirety of the Scheme, as opposed to residual impact for individual sections of the Scheme; also the combined impact with other schemes
Cutting	A section of road where the surrounding land is at a higher level and the ground has been dug away to put in the road.
Defra	Defra is the government department responsible for environmental protection, food production and standards, agriculture, fisheries and rural communities in the United Kingdom of Great Britain and Northern Ireland. Defra is a ministerial department, supported by 33 agencies and public bodies.
Development Consent Order	The means of applying for consent to undertake a Nationally Significant Infrastructure Project (NSIP). NSIPs include, for example, major energy and transport projects.
Desk-based Assessment	A document produced to assess the overall heritage resources of a defined area. These are primarily performed without the aid of archaeological investigations through use of HERs and archive materials.
Do-Minimum	Future situation assuming no scheme is provided, but that maintenance is on-going
Do-Something	Future situation with the Scheme in place.

Term	Description
Earthworks	The process of excavating or increasing level of soil.
Environment Agency	A non-departmental public body with responsibilities relating to the protection and enhancement of the environment in England.
Environmental Management Plan	This document provides a framework to manage the environmental effects of projects to demonstrate compliance with environmental legislation, by providing a plan for the delivery of the project's design, mitigation, enhancement and monitoring commitments.
Flood compensation area	Loss of flood storage due to the construction of the Scheme must be compensated for by providing an equal volume of storage to replace what is lost. This is referred to as a flood compensation area.
Floodplain	Area of land prone to flooding and protected against development. The indicative floodplain is the flood risk area based on a 1 in 100 year storm.
Grade	In reference to designated assets: Many are classified to aid in assessing the level of protection they require based on their importance to the heritage or the county or an area. Assets are designated at Grades I (Highest), II* (High), II (Medium).
Historic England	Publicly funded body that champions and protects England's historic places, including Stonehenge and Avebury; also known as the Historic Buildings and Monuments Commission for England.
Local Nature Reserve	A statutory designation made under Section 21 of the National Parks and Access to the Countryside Act 1949, and amended by Schedule 11 of the Natural Environment and Rural Communities Act 2006, by principal local authorities. A Local Nature Reserve must be of importance for wildlife, geology, education or public enjoyment.
Listed Building	Building or structure listed by the Secretary of State as being of 'special architectural or historic interest'
Mineral Safeguarding Area	An area designated by Minerals Planning Authorities which covers known deposits of minerals which are desired to be kept safeguarded from unnecessary sterilisation by non-mineral development
Ministry of Agriculture, Fisheries and Food	A UK government department created by the Board of Agriculture Act 1889. The Ministry was dissolved in 2002, at which point its responsibilities were merged into the Department for Environment, Food and Rural Affairs (Defra).
National Character Area	The subdivision of England into 159 distinct natural areas. Each area is defined by a unique combination of landscape, biodiversity, geodiversity, history, and cultural and economic activity. Their boundaries follow natural lines in the landscape rather than administrative boundaries.
Nationally Significant Infrastructure Project	A project of a type and scale defined under the Planning Act 2008 and by order of the Secretary of State relating to energy, transport, water, waste water and waste generally. These projects require a single development consent. Planning permission, listed building consent and scheduled monument consent amongst

Term	Description
	others are not required for Nationally Significant Infrastructure Projects.
Natural England	Executive non-departmental public body responsible for the natural environment.
Noise Important Area	Areas where the 1% of the population that are affected by the highest noise levels from major roads are located according to the results of Defra's strategic noise maps
Public Right of Way	A way over which the public have a right to pass and repass. The route may be used on foot, on (or leading) a horse, on a pedal cycle or with a motor vehicle, depending on its status. Although the land may be owned by a private individual, the public may still gain access across that land along a specific route. Public rights of way are all highways in law.
Receptor	Environmental feature that has the potential to be adversely or beneficially affected by an impact of the proposed scheme, e.g., local residents, wildlife and water bodies
Scheduled monument	A 'nationally important' archaeological site or historic building, given protection against unauthorised change and included in the Schedule of Monuments kept by the Secretary of State for Culture, Media and Sport. The protection given to scheduled monuments is given under the Ancient Monuments and Archaeological Areas Act 1979
The Scheme	The A57 Link Roads Scheme
Site of Special Scientific Interest	A conservation designation denoting to a protected area in the United Kingdom. The Sites are protected by law to conserve their wildlife or geology.
Special Area of Conservation	Areas of strictly protected sites designated under the EC Habitats Directive (92/43/EEC) on the conservation of natural habitats and of wild fauna and flora. The listed habitat types and species are those considered to be most in need of conservation at a European level (excluding birds).
Special Protection Area	Areas of strictly protected sites classified in accordance with Article 4 of the EC Birds Directive (2009/147/EC) on the conservation of wild birds. They are classified for rare and vulnerable birds (as listed on Annex I of the Directive), and for regularly occurring migratory species.
Study Area	The spatial area within which environmental effects are assessed i.e. extending a distance from the project footprint in which significant environmental effects could occur (this may vary between the topic areas)
Vulnerability	The quality or state of being exposed to the possibility of being attacked or harmed, either physically or emotionally

If you need help accessing this or any other Highways England information, please call **0300 123 5000** and we will help you.

This document is also available on our website at **www.highwaysengland.co.uk**

For an accessible version of this publication please call **0300 123 5000** and we will help you.

If you have any enquiries about this publication email **info@highwaysengland.co.uk**
or call **0300 123 5000***. Please quote the Highways England publications code **PRPR143/20**.

Highways England creative job number MCR20_0185

*Calls to 03 numbers cost no more than a national rate call to an 01 or 02 number and must count towards any inclusive minutes in the same way as 01 and 02 calls.

These rules apply to calls from any type of line including mobile, BT, other fixed line or payphone. Calls may be recorded or monitored.

Printed on paper from well-managed forests and other controlled sources when issued directly by Highways England.

Registered office Bridge House, 1 Walnut Tree Close, Guildford GU1 4LZ
Highways England Company Limited registered in England and Wales number 09346363