



Department
for Transport

TRANS-PENNINE ROUTES

Feasibility Study Summary

March 2015

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1. Introduction

- 1.1** The trans-Pennine Routes feasibility study was one of six studies undertaken by the Department for Transport to look at problems and identify potential solutions to tackle some of the most notorious and long-standing road hot spots in the country.
- 1.2** The commitment to the studies was part of the biggest ever upgrade of the strategic national roads network, announced by the Government at the time of the 2013 Spending Review.
- 1.3** The studies have been progressed alongside the Highways Agency's Route Strategy programme, which is considering the current and future performance of the entire strategic road network, in order to inform future investment decisions.
- 1.4** This summary document for the trans-Pennine Routes feasibility study outlines: the study's aims and objectives; the current and likely future problems along the routes; the development and assessment of potential investment options; the assessment of business cases for prioritised investment options; and the investment decisions and outcomes announced by the Government in its Road Investment Plan¹.

¹ <https://www.gov.uk/government/collections/road-investment-strategy>

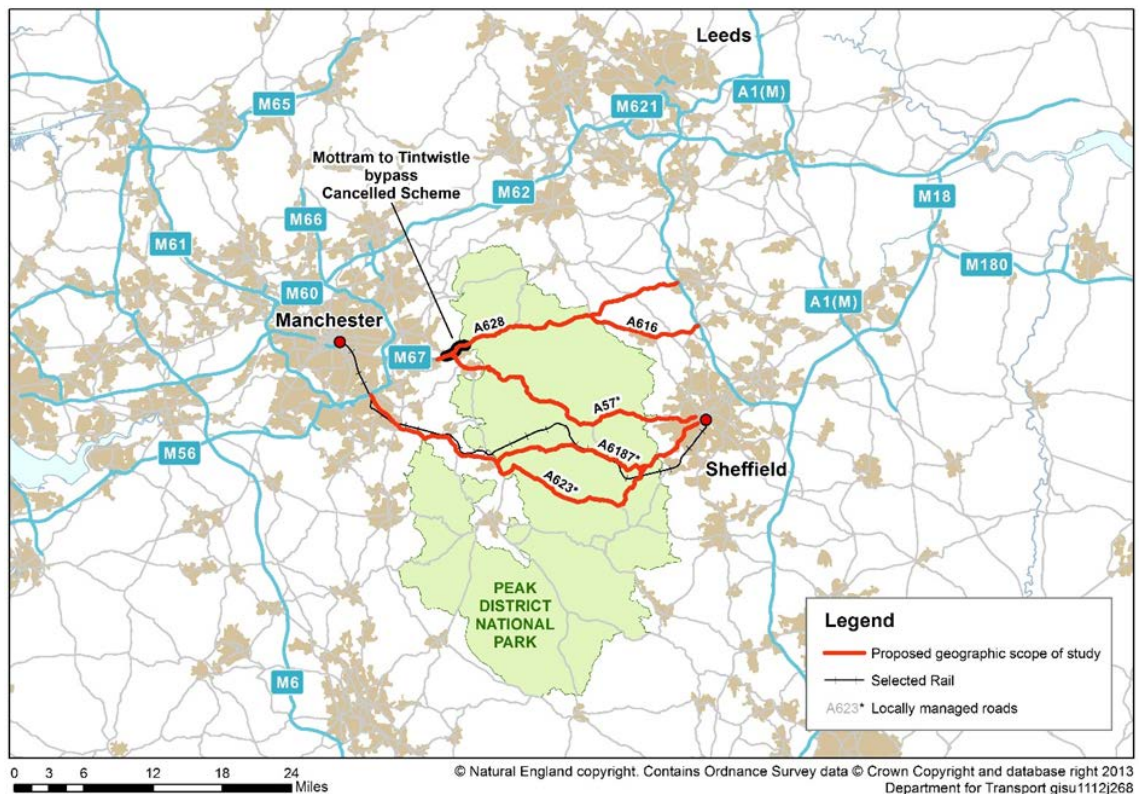
2. Context

- 2.1** The main trans-Pennine road route between the Manchester and Sheffield City Regions is the trunk road route consisting of the A57, A628, A616 and A61. This route connects the M67 at Mottram in the south east of the Manchester City Region with the M1 in the north west of the Sheffield City Region. Other roads provide connections between Manchester and Sheffield including the A57, as well as the A623, A6187 and other local roads.
- 2.2** The main direct trans-Pennine rail route between Manchester and Sheffield is provided by the Hope Valley line with passenger services provided by Northern Rail, East Midlands Trains and Trans-Pennine Express.
- 2.3** The issues around trans-Pennine connectivity have been considered before, with studies concluding that the performance of the links between Manchester and Sheffield is poor in comparison with links between Sheffield and Leeds and between Leeds and Manchester.
- 2.4** Recently, Sir David Higgins' report - *Rebalancing Britain: From HS2 towards a national transport strategy* - also considered the issues around improving east-west connectivity in the north, as part of his consideration of the current proposals for HS2 and the potential expansion of improved rail and road connections.

3. Study aims and objectives

- 3.1 The aim of the trans-Pennine Routes feasibility study was to identify the opportunities and understand the case for future investment solutions on trans-Pennine routes that would improve connectivity between Manchester and Sheffield, and that are deliverable, affordable and offer value for money.
- 3.2 In terms of geographic scope, the study considered the current trans-Pennine road and rail routes. These include the A628, A616 and A61 in terms of the strategic road network, as well as the A57, A624, A6187, A6, A625 and the A623 on the local authority road network. The Hope Valley rail line was also within the study's geographic scope.

Figure 1: The geographic scope of the trans-Pennine Routes feasibility study



- 3.3 The modal scope of the study was predominantly road-based, and took into consideration potential investment proposals on both the strategic and local authority road networks. The study also took into consideration the contributions that existing rail investment plans would bring to trans-Pennine connectivity.

- 3.4** The study also needed to understand other investment planning processes that could impact its work, such as the further rail investment recommendations that may emerge from the Northern Electrification Taskforce set up by the Secretary of State for Transport, and the rail industry's wider planning process for the next Control Period (2019 - 2024). The longer term options for trans-Pennine connectivity is now being taken forward in the context of the Transport for the North and the Department's work on a Northern transport strategy.
- 3.5** The objectives of the trans-Pennine Routes study were to:
- establish the current and potential future performance and the scale of current connectivity for the identified trans-Pennine routes;
 - review previous proposals and current investment plans to identify and assess the case for deliverability and timing of solutions that could address existing and future problems on the trans-Pennine routes and improve trans-Pennine connectivity between Manchester and Sheffield;
 - understand the balance of benefits and impacts from potential individual investment proposals and any additional benefits or impacts from an investment on a corridor or package basis; and
 - evidence, where possible, the wider economic benefits from the transport investment in improvements in trans-Pennine connectivity.
- 3.6** The study took place from spring to autumn 2014 and was undertaken by the Highways Agency and its consultants. The study process followed that in the Department for Transport's guidance (WebTAG) for such studies and a stakeholder Reference Group was formed to ensure effective external involvement. This Reference Group acted as a sounding board and allowed the views of stakeholders to be captured and considered during the study process. The organisations represented on the group are listed in the Annex.

4. Current and future situation

- 4.1** The trans-Pennine routes face a number of operational challenges. While current traffic flows appear to be within the theoretical capacity of the individual highway links, significant delays are caused by a number of junctions, the most notable being those on the Highways Agency's route in the urban areas of the A57, particularly the A57/B6174 junction in Mottram at the western end of the route and the A616/A61 junction at the eastern end of the route. On the local road network, the A57 north of Glossop suffers from congestion, particularly at its junction with Woolley Bridge Road and the A628.
- 4.2** Accident rates pose a challenge leading to issues for journey-time reliability and maintenance. Detailed analysis has been undertaken of the Highways Agency's route and has revealed that sections of the A628, A616 and A61 have accident rates above the national average. The A628, along with the A61, suffers from a high proportion of accidents during severe weather conditions, while the A628 also experiences a higher than national average rate for accidents at night as well as a high number of pedestrian accidents within the urban section through Tintwistle.
- 4.3** In addition, many of the trans-Pennine routes suffer road closures resulting from poor weather and accidents, with the A57/A628/A616/A61 and the local A57 being particularly susceptible to weather-related incidents. Maintenance is also an operational challenge as the majority of the trans-Pennine routes are single carriageway.
- 4.4** Currently, the levels of connectivity, in terms of business and freight trips, are stronger between Greater Manchester and West Yorkshire than with South Yorkshire. There are also marked differences in levels of commuting, with around 4 times more people commuting between Greater Manchester and West Yorkshire than from Greater Manchester and South Yorkshire.
- 4.5** The majority (71%) of those who commute between Greater Manchester and South Yorkshire do so by road, but this depends on the route used, as the share between road and rail journeys using routes covered by the study are relatively similar.
- 4.6** The comparatively limited levels of connectivity restricts economic interactions across the Pennines and the wider north, has led to relatively low levels of business to business journeys which in turn limits increased economic activity.

- 4.7** The study's analysis illustrated that the environmental challenges within the trans-Pennine area are widespread and significant. The majority of trans-Pennine routes pass through the Peak District National Park. The A57/A628/A616/A61 route is located near six Special Landscape Area designations, seven scheduled monuments, a Special Protection Area, a Special Area for Conservation, three Sites of Special Scientific Interest and six identified Flood Hot spots.
- 4.8** In addition, there are nine DEFRA Important Areas for Noise on the trans-Pennine routes, with the Highways Agency roads within seven areas and local authority roads in two others. The routes also pass through four Air Quality Management Areas.
- 4.9** The main rail route between Manchester and Sheffield, the Hope Valley line, provides semi fast and local train services in each hour but currently suffers from overcrowding, particularly at either end of the route. The existing Northern Hub proposals will improve line speeds and facilitate the provision of additional trains as well as increases in freight paths.
- 4.10** While the current traffic flows between junctions are within their designed capacity, the links between junctions on the A57 into Manchester and on the A6 through Stockport are likely to be operating close to their capacity in 20 years' time, as are links on the A625 into Sheffield. The performance of a number of junctions on the A57, A61 and A628 will also deteriorate further if no improvements are made.
- 4.11** The City Regions and local authorities have significant plans for growth in houses and employment over the coming decade and beyond, with 222,000 homes and 265,000 jobs planned. This is likely to increase demand for travel across the Pennines. The majority of development will occur on either side of the Pennines, rather than alongside the individual trans-Pennine routes. However, some developments at Glossop, Mottram and close to Barnsley could have adverse impacts on the road network.
- 4.12** Connectivity to Manchester Airport from the east is also a challenge and the importance is likely to increase with the significant proposals for Airport City and the Enterprise Zone.
- 4.13** Given the make-up of the economies of Sheffield and Manchester City Regions, improved connectivity would bring benefits to both cities. There is a strong theoretical case for transport projects that will improve the connectivity between Sheffield and Manchester City Regions to provide wider economic benefits.
- 4.14** The evidence and analysis of identified problems and issues were used to define a set of intervention-specific objectives in order to identify and assess potential investment options. The objectives established were:
- **Connectivity** – improving the connectivity between Manchester and Sheffield through reduction in journey times and improved journey-time reliability;
 - **Environmental** – avoiding unacceptable impacts on the natural environment and landscape in the Peak District National Park and optimising environmental opportunities;

- **Societal** – improving air quality and reducing noise impacts and addressing the levels of severance on the trans-Pennine routes in urban areas;
- **Capacity** – reducing delays and queues that occur during peak hours and improving the performance of junctions on the routes;
- **Resilience** – improving the resilience of the routes through reductions in the number of incidents and reduction of their impacts; and
- **Safety** – reductions in the number of accidents and reductions in their impacts.

5. Investment options

- 5.1** Following the identification of the current and future situation, the study reviewed previous work to identify investment proposals that could address the issues and problems. The study considered a range of individual investment proposals, as well as combinations of investment propositions. This approach looked to build on work done to date, rather than a fresh process to identify investment proposals.
- 5.2** The option generation focussed on the development of road-based options given that the current rail investment programme included improvement to the Hope Valley line and that Network Rail was leading a consultative Long Term Planning Process to establish the rail industry's investment priorities for the next control period (2019 – 2024). A joint task force had also been established to recommend the priorities for future rail electrification in the North, including considering the line between Sheffield and Manchester.
- 5.3** In addition, while the Study was underway the work of Sir David Higgins identified the importance of east-west rail links across the Pennines to support economic growth, with a focus on increased capacity and improved journey times. The Government subsequently provided a green light to develop these proposals known as HS3.
- 5.4** The study also captured details of potential investment proposals emerging from the first phase of the Highways Agency's South Pennine Route Strategy (within the study's geographic scope).
- 5.5** The option generation identified a long list of discrete highway and other transport interventions, together with packages of interventions. The next stage of work 'sifted out' any potential solutions that did not perform strongly against the specific intervention objectives, and/or failed to sufficiently alleviate the identified problems.
- 5.6** The initial sift also included considered the deliverability and technical feasibility of options and sought to identify any 'show stoppers' that were likely to prevent options being progressed.
- 5.7** Only those potential interventions that performed strongly against the sifting criteria were selected for further consideration. This made use of the Department for Transport's Early Assessment and Sifting Tool to provide a more granular assessment of the performance of potential options. Following this assessment of options it became clear that a small number of better performing options should be considered further. These options were:
- a bypass of Mottram, Hollingsworth and Tintwistle;
 - the Mottram Moor Link Road; and

- an A57 Mottram one-way system - a one way eastbound link from the M67 to the A6018; one way operation on the A6108 to the A57 and one way operation westbound on the A57 to the M67.
- 5.8** Each option on its own had the potential to address the issue of congestion on the strategic route and was therefore expected to improve journey times and journey time reliability. They could also address some of the issues around safety and the standard of the road. Some of the investment proposals also had the potential to address the issues faced by communities in the Mottram, Hollingworth and Tintwistle area at the western end of the route.
- 5.9** Given the identification of three discrete investment options in the Mottram area, the study concluded that any overall potential investment package for the trans-Pennine routes should include a 'central package' of measures, that could, in combination with an investment option at Mottram, address some of the other priority issues identified in the study's work. This central package of measures is as follows:
- a link road between the A57(T) and the A57 in Glossop;
 - safety measures across the route focussed on accident cluster sites and identified areas of concern;
 - climbing lanes at locations on the A628 to negate the impact of slow moving vehicles across the rural sections of the route;
 - a potential realignment of the A628 at Salters Brook;
 - dualling the A61 between junction 36 of the M1 and the Westwood roundabout (at the junction with the A616);
 - a technology package across the A628 route and the wider area taking in the motorway network and local routes feeding into the strategic route; and
 - a maintenance strategy.
- 5.10** The assessment of the possible options focused on investment proposals that had the potential to be delivered in the short to medium term. However, the study recognised that some potential, more transformational investment options such as road tunnels, could provide a high performing road link. Such options would merit further consideration, particularly as they had the potential to deliver a step change in the future levels of connectivity between Sheffield and Manchester.

6. Investment cases

- 6.1** The affordability, value for money (VfM) and deliverability of the prioritised proposals were then assessed. The study used the Department's transport appraisal guidance and considered the benefits and business cases for each of the transport investment proposals, as well as the cumulative or additional benefits and impacts from investment in the corridor as a whole.
- 6.2** The appraisal conducted was appropriate to the early stage of development of the proposals and will be developed further to ensure a full understanding of the impacts of the proposals and value for public money. Explanation of the way DfT assesses VfM can be found in the VfM note².
- 6.3** Four specific business cases were developed, with three of them featuring the proposed central package of measures and the inclusion of one the proposed investment options at the western end of the corridor route. The business cases were as follows:
- the central package plus the Mottram bypass;
 - the central package plus the Mottram Moor Link road;
 - the central package plus the Mottram One Way proposal; and
 - the A61 dualling option as a stand-alone option.
- 6.4** The study's assessment of the potential investment packages is as follows:

Package 1 (Central package and the Mottram bypass)

- Initial assessments for Package 1 suggested that the value for money case could be medium to high and that it would be effective in improving connectivity between Manchester and Sheffield. It could bring journey time benefits for both trans-Pennine trips and local trips from in and around the Mottram/Tintwistle/Glossop area and should improve reliability for all users.
- The inclusion of the full bypass would move traffic out of Mottram, Tintwistle and Hollingworth, bringing benefits for local residents through improved air quality, less noise, reduced accidents and reduced severance.

² https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/255126/value-for-money-external.pdf

- The proposed alignment of the bypass was likely to have a significant adverse impact on biodiversity, landscape, historic environment and the water environment. Traffic flows on the A628 passing through the Peak District National Park were forecast to increase which could bring adverse impacts on the environment and landscape.
- In terms of its deliverability, it was anticipated that delivery of all elements of the package could be completed by early 2024.

Package 2 (Central package and the Mottram Moor Link road)

- The initial assessment of Package 2 suggested a high value for money case and it would improve connectivity between Manchester and Sheffield to some extent, but does not provide significant additional capacity for these trips.
- The package brings journey time benefits for both local trips from in and around the Mottram/Tintwistle/ Glossop area and for existing trans-Pennine trips using the A628 or A57 and it should also improve reliability for all users.
- The package is effective in reducing delays on the A628 and A57 and moves traffic from the village of Mottram which will bring benefits for local residents in the form of improved air quality, less noise, reduced accidents and reduced severance.
- The package is expected to bring slight adverse impacts to the landscape, noise, historic environment, biodiversity and the water environment.
- In terms of deliverability, it was anticipated that delivery of all elements of the package could be completed by early 2023.

Package 3 (Central package and the A57 Mottram One-Way)

- The initial assessment of Package 3 suggested a high to very high value for money case and it would have impacts on connectivity between Manchester and Sheffield but only for trips via the A57, and does not provide significant additional capacity for these trips.
- The package brings journey time benefits for both local trips from in and around the Mottram/Tintwistle/Glossop area and for existing trans-Pennine trips using the A628 or A57. However these are negligible in comparison to packages 1 and 2. It should also improve reliability for all users as it is effective in reducing delays on the A628 and A57.
- Some local trips will become longer as the result of the one-way system. The package does not remove traffic from urban areas, with the exception of the A57 to A57(T) 'Glossop Spur' link.
- The package is expected to bring slight adverse impacts to the landscape, noise, historic environment, biodiversity and the water environment.
- It was anticipated that delivery of all elements of the package could be completed by early 2022.

A61 Dualling

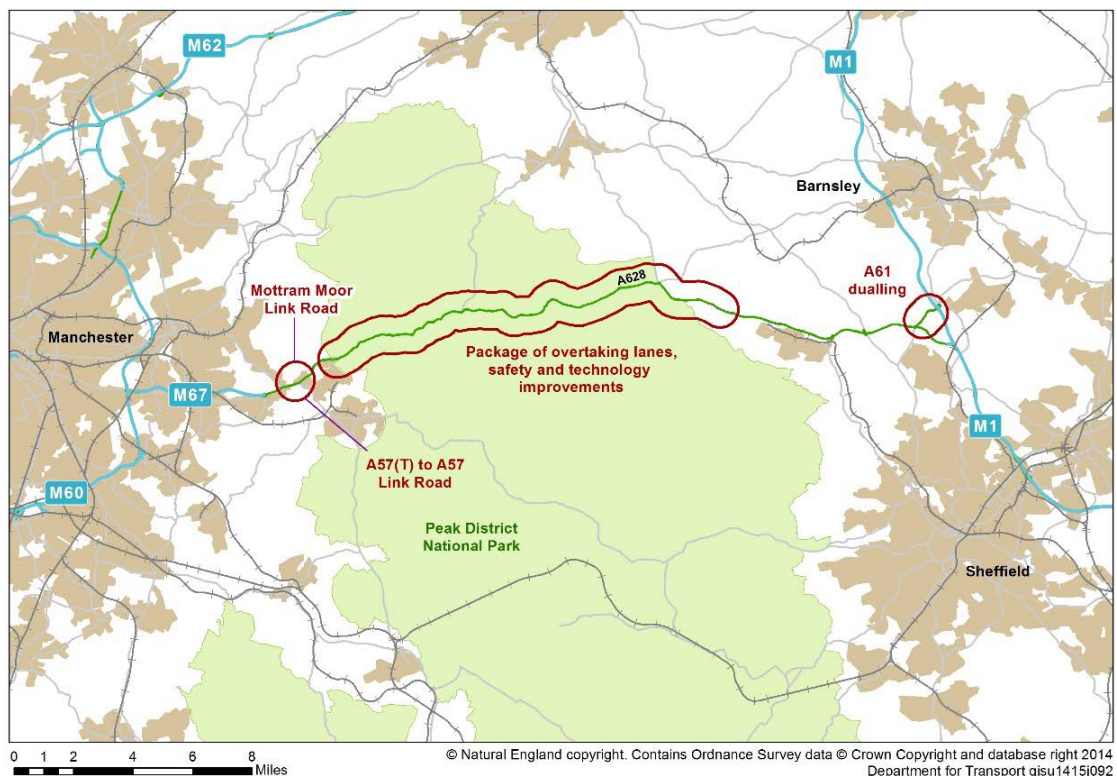
- The initial assessment of the scheme suggested a high value for money case and it would improve local connectivity but have little overall impact on connectivity between Manchester and Sheffield due to its relatively small scale.
 - The scheme would bring journey time benefits for local trips between M1 Junction 36 and the Westwood Roundabout and this would improve reliability for users travelling in the local area.
 - The scheme is expected to bring slightly adverse impacts to the air quality, landscape, noise, biodiversity and the water environment;
 - It was anticipated that delivery of the scheme could be completed by mid-2018.
- 6.5** The study also undertook analysis to understand both the potential costs and benefits, as well as the potential impacts of each component part of the packages to be able to understand the strength of the case for specific individual investment.
- 6.6** The analysis highlighted that of the individual options in the Mottram area, the Mottram Moor link road demonstrated the strongest value for money case compared to the bypass and Mottram one-way options.
- 6.7** In relation to the elements within the central package of proposals, those for the A57(T) to A57 link road and the dualling of the A61 provided significant benefits in their own right. The proposals for climbing lanes together with the Salter's Brook re-alignment demonstrated a strong value for money case, however there were significant negative impacts identified for the A628 re-alignment proposition.
- 6.8** The benefits of the safety measures and the implementation of technology were considered to cover their investment costs although there was a need for further, future assessment.

7. Study outcomes

- 7.1** Following completion of the study work and consideration of the potential investment options, the Government has committed to take forward an overall investment package of around £3.5 billion for the six feasibility studies.
- 7.2** The Government recognises that the routes between Manchester and Sheffield provide a key connection between two of our most important Northern cities.
- 7.3** Current journey times and performance of the connecting routes compare unfavourably against links between other cities separated by a similar distance. Elements of the route, particularly the A628, perform poorly both in terms of delays and accidents, causing impacts for both the communities on the route and on the environment of the Peak District National Park. There have been long-standing calls for improvements to connectivity but to date, an acceptable solution has not been found.
- 7.4** In order to make progress in addressing the issues, the Government announced investment worth over £170 million as part of the Road Investment Strategy in December 2014. This consists of the following:
- **Mottram Moor Link Road** – a new dual-carriageway link road from the M67 terminal roundabout to a new junction at A57(T) Mottram Moor and a new single carriageway link;
 - **A57(T) to A57 Link Road** – a new single carriageway link from the A57 at Mottram Moor to a new junction on the A57 at Brookfield, bypassing the existing A628/ A57 and A57 Woolley Lane/Hadfield road junctions;
 - **A61 Dualling** – on the east side of the Pennines, completion of the dualling of the A61 between the A616 roundabout and junction 36 of the M1;
 - **A628 Climbing Lanes** – consideration of the provision of two eastbound overtaking lanes on the A628 near Woodhead Bridge and near Salter’s Brook Bridge; and
 - **Safety and Technology Improvements** – safety measures focused on addressing accident clusters and the provision of traffic light cameras, speed cameras and message signs to allow drivers to make informed decisions.
- 7.5** These will address congestion and improve journey times between Manchester and Sheffield, as well as addressing issues with the safety and resilience of the route and deal with the impacts of the traffic in Mottram.

- 7.6** As part of the process of developing and delivering this investment package the Department for Transport has committed, through consultation with local communities and stakeholders, to look to reach consensus on the scope and viability of further improvements and extensions to the Mottram Moor Link Road that would alleviate the issues faced in Tintwistle and Hollingworth.
- 7.7** These proposals in this investment package will require further work, engagement and consultation to reach agreement on the specific details of the proposals. Delivery will require the successful completion of the necessary statutory planning process and the continued development of business cases and demonstration of value for money.
- 7.8** In the longer term, as a new strategic study ahead of the next Road Investment Strategy. The Department and Highways England will work with Transport for the North to explore the costs and feasibility of a high performance road link between Manchester and Sheffield through a purpose built tunnel. This could link the economies of the two cities while avoiding damaging impacts on the Peak District National Park. The Department for Transport is committed to balancing economic gains through improving connectivity, and protecting and enhancing our valued natural environment and landscape.

Figure 2: Outcomes from the trans-Pennine Routes feasibility study



Annex: Reference Group Members

Local Transport, Highway and Planning Authorities:

Barnsley Metropolitan Borough Council
Derbyshire County Council
Greater Manchester Combined Authority/Transport for Greater Manchester
High Peak Borough Council
Manchester City Council
Rotherham District Council
Stockport Metropolitan Borough Council
Sheffield City Council
Sheffield City Region Combined Authority/ SYPT
Tameside Metropolitan Borough Council

Local Enterprise Partnerships:

Derby, Derbyshire, Nottingham and Nottinghamshire (D2N2) LEP
Greater Manchester LEP
Sheffield City Region LEP

Statutory Bodies:

English Heritage
Natural England
Peak District National Park Authority

Other organisations:

Barnsley and Rotherham Chamber of Commerce
Campaign to Protect Rural England
Friends of the Earth
Friends of the Peak District
Greater Manchester Chamber of Commerce
National Trust
Sheffield Chamber of Commerce
Travel Watch North West
The Wildlife Trusts

Members of Parliament:

Andrew Bingham MP
Jonathan Reynolds MP
Angela Smith MP