



# Southern Pennines Strategic Development Corridor



## Strategic Programme Outline Case - Executive Summary

February 2019



To accomplish this, we have built an understanding and evidence base of local spatial planning proposals and the future growth aspirations of businesses, and how they could be met through improved transport infrastructure. Consideration has also been given to how potential advances in innovation and technology could support new and improved ways of connecting people and moving goods.

Our Strategic Programme Outline Cases for each Corridor provide the evidence base behind Transport for the North's Strategic Transport Plan and Investment Programme – our list of potential interventions to deliver a step-change in Northern transport, drive transformational economic growth, and improve opportunities for all.

It is the culmination of 18 months of consultation and collaboration with partners, stakeholders, businesses and transport operators across the north.

I hope you will find it an interesting, useful and compelling document for investment in transport across the north.

Peter Molyneux

Major Roads Director

Transport for the North

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## Background Documents

Further detailed evidence is available on TfN's website at:  
<https://transportforthenorth.com/>

# 1 Executive Summary

## Why: The Case for Change

### TfN's Overall Context

- 1.1 The significant and widening performance gap between the North of England and the rest of the UK has become evident, and will continue to grow unless action is taken to reverse this trend. To support transformational growth in the North, and subsequently increase the potential for national economic growth and rebalance the economy, a step-change in strategic transport infrastructure investment is required.
- 1.2 As England's first Sub-National Transport Body, Transport for the North (TfN) was established to transform the transport system across the North of England. It has a clear remit to plan strategic transport infrastructure required to support sustainable transformational economic growth in the North.

### TfN's Objectives

- 1.3 In its Strategic Transport Plan (STP), published in February 2019, TfN sets out its vision of "a thriving North of England where world class transport supports sustainable economic growth, excellent quality of life and improved opportunities for all". This vision is supported by four key Pan-Northern transport objectives:

**Figure 1: TfN's Pan-Northern transport Objectives**



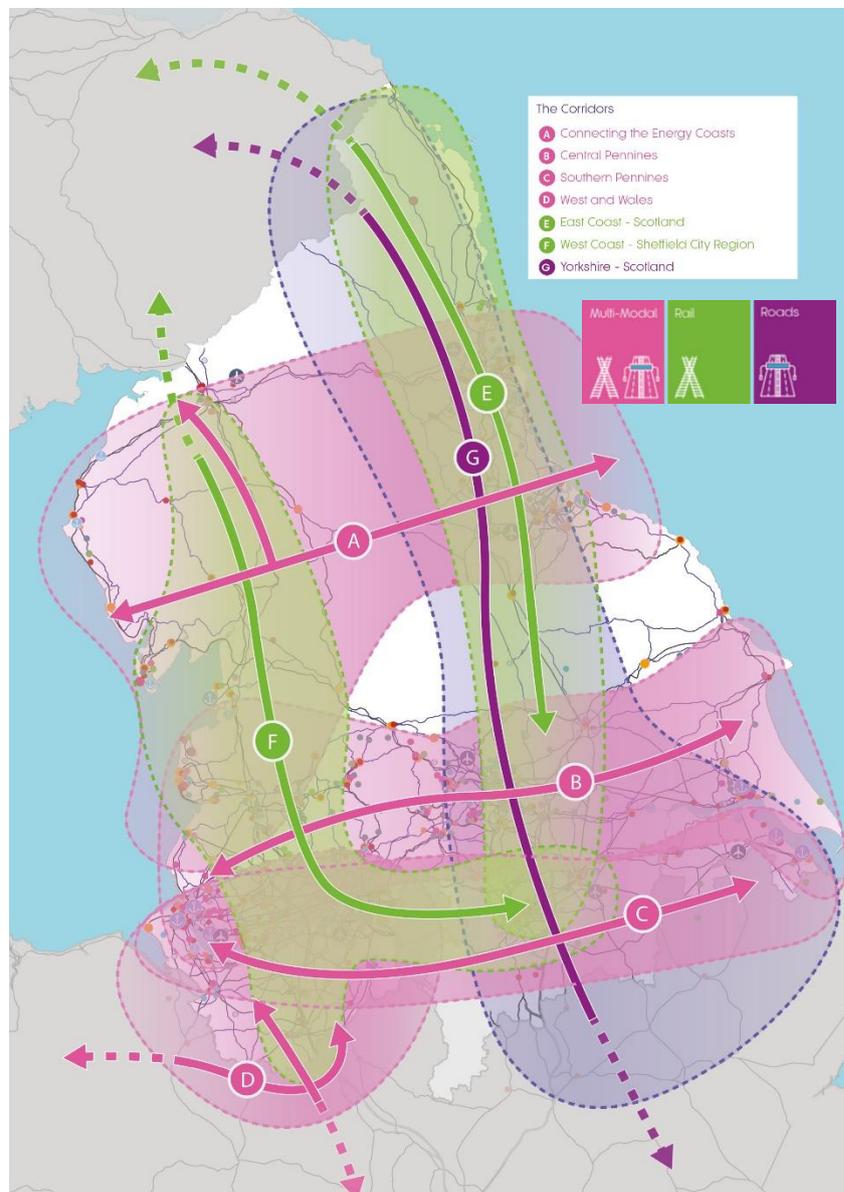
- 1.4 The Government is already funding a significant programme of transport interventions across the North. In addition, further investment is being planned by both central Government and local bodies. However, there is a need for a programme of further investments focusing on Pan-Northern

connectivity priorities. This will realise the opportunities from major transformational infrastructure projects currently planned and being developed such as High Speed 2 (HS2) and Northern Powerhouse Rail (NPR), achieving early benefits and ensuring that the wider programme maximises benefits to the whole of the North, and UK economy.

### Strategic Development Corridors

1.5 Building on existing and proposed projects, the Strategic Development Corridors (SDCs) represent strategic geographical and economic areas with the strongest potential towards transformational growth in the North. Combining evidence from the 2017 Integrated Rail and Major Roads Reports, the STP identifies seven SDCs where evidence indicates that the delivery of transformational growth is dependent on bringing forward major road and rail investment.

**Figure 2: Strategic Development Corridors**



Source: TfN Strategic Transport Plan – February 2019

- 1.6 The SDCs have been developed to represent where most of the largest gaps between demand and performance currently exist, and where there is likely to be the greatest economic potential for agglomeration between the prime and enabling capabilities<sup>1</sup> and the North's Important Economic Centres<sup>2</sup>.
- 1.7 TfN's remit is focused on the identification and recommendation of strategic transport interventions, which generally support longer distance trips and have pan-northern impacts. TfN will also work with partners to support complementary investment at a local level to ensure that a 'whole journey' and 'total network' approach to improving transport is followed.
- 1.8 This document presents a summary of the Strategic Programme Outline Case (SPOC) for Pan-Northern transport interventions in the Southern Pennines SDC.

### **Southern Pennines Evidence Base**

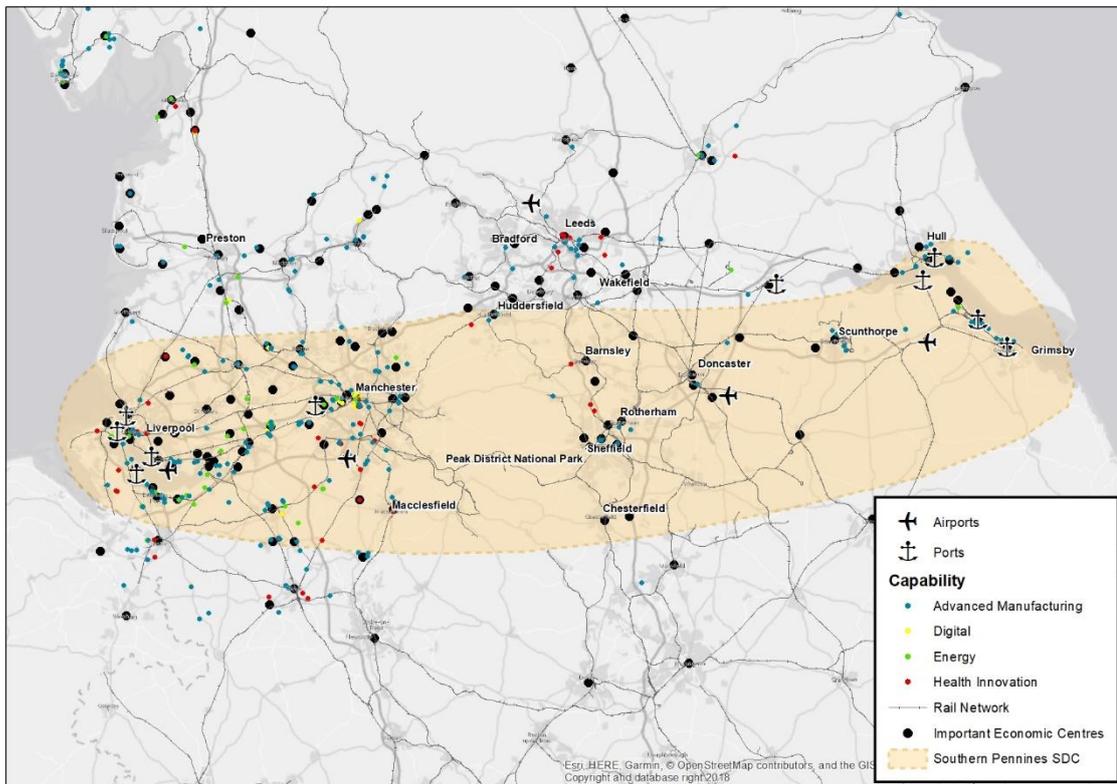
- 1.9 The Southern Pennines corridor provides connectivity between some of the major economic and population centres of the North, including Liverpool, Manchester, Sheffield and Hull, along with four major ports, and several international airports. It also provides access to West Yorkshire and Leeds City Region and connects North Lincolnshire to Sheffield, Manchester and Liverpool. The Southern Pennines corridor also provides important connectivity enhancements with the areas outside the corridor such as Preston and Lancashire in the west, Leeds and Bradford in the North and Lincoln in the East Midlands.
- 1.10 The North's prime and enabling capabilities – as listed in the Northern Powerhouse Independent Economic Review (2016) – are highly represented in this economic area as seen in Figure 3. The corridor is home to globally significant businesses, supply chains and economic assets with major sector representation and international competitive advantages in advanced manufacturing, low-carbon/energy and logistics, including the Energy Estuary in Hull and the Humber.

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<sup>1</sup> The prime and enabling capabilities were identified in the Northern Powerhouse Independent Economic Review (2016). They have been identified as differentiated and distinctive at a Pan-Northern level, highly productive and able to compete at national and international scales. Prime and enabling capabilities are as follows: Advanced Manufacturing, Energy, Health Innovation, Digital, Financial and Professional Services, Logistics, and Education (primarily Higher Education)

<sup>2</sup> These are defined in TfN's Strategic Transport Plan

**Figure 3: Important Economic Centres in the Southern Pennines SDC**



- 1.11 Advanced manufacturing is a particular strength with a strong cluster in the Sheffield City Region, which is home to the Advanced Manufacturing Research Centre managed by the University of Sheffield and the top Enterprise Zone for Modern Manufacturing and Technology in the UK. Greater Manchester also offers significant opportunities for growth in the advanced materials sector and advanced manufacturing is one of four specific areas of 'smart specialisation' identified by the Liverpool City Region. The Health and Life Sciences sectors are also of critical importance for the Liverpool City Region, as with its neighbours across the North West of England, it forms one of three main concentrations of Life Science clusters in the UK.
- 1.12 The fundamental challenge for the North's economy is to improve the interaction between these key economic clusters and assets to improve the sharing of knowledge, supply chain resources and innovation. This will act as a driver of agglomeration benefits and productivity.

- 1.13 This will involve connecting people, by improving accessibility for residents, improving access for visitors, supporting international connectivity and improving connectivity of businesses, economic assets and clusters in the Southern Pennines. Within this corridor, freight and logistics connectivity can continue to strengthen operations and investment at the corridor's ports, airports and inland ports.

### **Transport Challenges in Southern Pennines**

- 1.14 East-West connectivity will need to be transformed in order to support the forecasted economic and population growth. The only connection on the Strategic Road Network between Manchester and Sheffield City Region is the single carriageway A628 Woodhead Pass. The M62 is the only continuous east-west dual carriageway road across the North, carrying half of all trans-Pennine traffic. The ability of the Northern Powerhouse to work together as one and generate benefits for the whole of the UK is currently heavily dependent on the successful operation of just one road.
- 1.15 Even where north-south links have helped establish a recognisable economic spine such as the M1 and A1/A1(M)/A19, current and emerging pressures in terms of efficiency, reliability and resilience are evident, and constraining potential growth.
- 1.16 Within the corridor, the lack of efficient freight and logistics connectivity can constrain the strength of operations and investment at the corridor's ports, airports and inland ports. Enhancing strategic connectivity to the growth plans of the airports, Port Salford, iPort in Doncaster and the Ports of Liverpool and the Humber can have associated economic growth benefits along the corridor and the wider Northern economy. Grimsby and Immingham ports are the busiest in the UK by combined freight tonnage.
- 1.17 Connectivity between Manchester, Bolton and Preston was also considered as a critical corridor for improvement within this study. There are emerging economic ties between Lancashire and the Sheffield City Region in terms of advanced engineering and manufacturing, which will have to be complemented by equally good connectivity links.
- 1.18 All of the considered investments in the corridor will also need to be sensitive to sustainability considerations, particularly the Peak District National Park, as well as identifying the visitor economy benefits and improved quality of life from the enhanced strategic connectivity.

### **Future Technologies and Societal Change**

- 1.19 We are potentially at the start of profound change in how we move people, goods and services around. This is driven by innovation in engineering, technology and business models. The gathering pace of technological change through the delivery of higher speed and capacity digital networks, the connection and automation of vehicles, the adoption of robotics, zero emission propulsion, sharing of transport assets and new approaches to payment could transform travel and the provision and management of infrastructure and services. Whilst uncertain, technology has the potential

to reduce the demand for travel as well enabling significant benefits to both those using the transport network and to network operators.

- 1.20 A number of policy interventions were identified in the Option Assessment Report (OAR). These policy interventions have been considered further in the Southern Pennines 'Future Technology Intervention Impacts' Report (Dec 2018).

### **Benefits to users and businesses**

- 1.21 Transport investment has been shown to be a key enabler for growth in the North's economy which will bring benefits to people, businesses and the movement of goods while also unlocking new investment opportunities by:

- **Connecting people** - improving access to work opportunities, giving businesses access to a wider labour market, and improving access to leisure and tourism assets.
- **Connecting businesses** - improving connections to collaborators, clients and competitors, including those within the prime and enabling capabilities.
- **Moving goods** - supporting businesses to move freight and goods in efficient, multi-modal ways.

- 1.22 The major transformational infrastructure projects included in the Reference Case (defined below) are focussed on delivering improved connectivity between the North's city regions. A significant proportion of the growth catalysed by these projects will therefore be focussed on major towns and cities. To achieve transformational growth across all parts of the North, and to realise the necessary rebalancing of the northern and UK economies, it will require investment in further transport interventions.

- 1.23 These interventions include critical east-west connectivity improvements to foster economic activity, as well as improved airport and port accessibility for users, which are among the most important impacts by the programme of interventions. Connectivity between Greater Manchester, Lancashire and Merseyside has been considered by interchange improvements and various capacity improvements in both the road and rail connections which will benefit the large number of users on these key routes.

- 1.24 Several of the east-west connectivity interventions identified will aim to create better transport links to facilitate economic collaboration and competition as well as providing a larger pool of employees and employers across the corridor, hence helping businesses grow. These are supported by enhancements to key north-south motorway links such as the A1 and the M1, connecting West and South Yorkshire to the rest of the country.

- 1.25 Key businesses will also benefit from further agglomeration and easier employee accessibility with improved access and resilience across areas such as the Humber region clusters and North Lincolnshire. These connections will be enhanced by junction upgrades and key highway and

rail improvements which will also benefit port accesses for movement of people and freight.

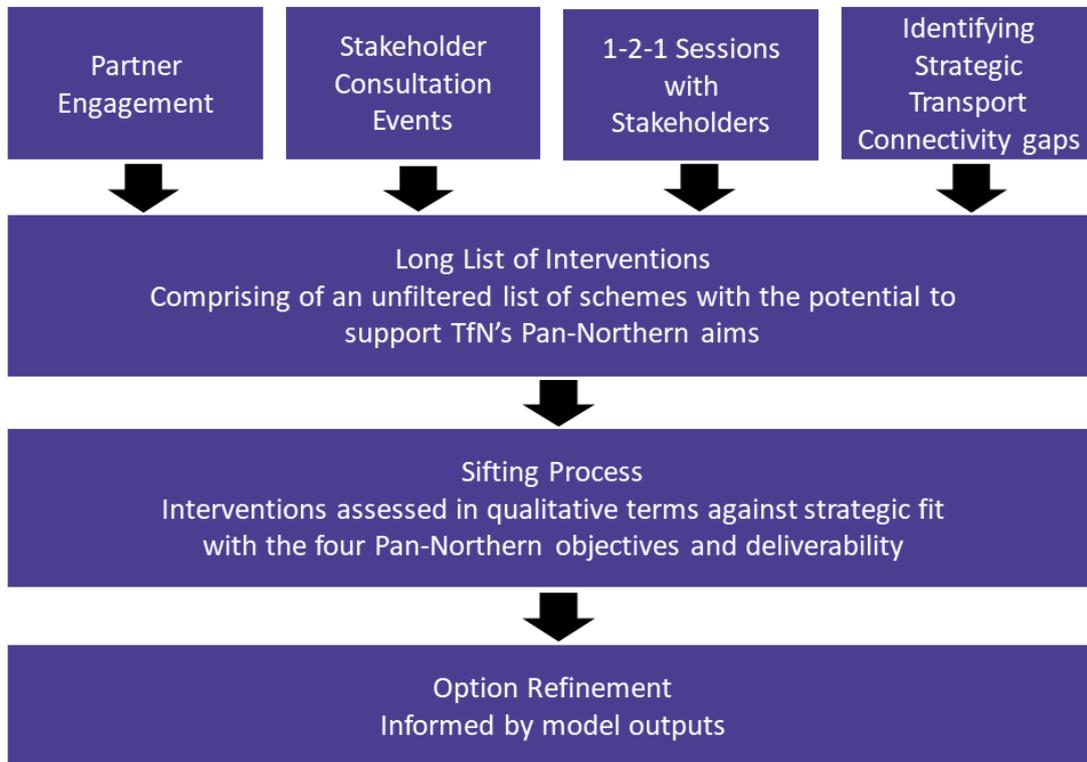
## What: Identifying the Transport Interventions required to Transform the Economy

### Reference Case

- 1.26 Government is already funding a significant programme of transport interventions across the North. In addition, further investment is being planned both by central Government and local bodies. This includes road investment schemes put forward by Highways England, transport schemes developed by combined and local authorities across the North, Pan-Northern schemes such as NPR being developed by TfN, and HS2, led by Central Government. It is therefore expected that significant investment in new transport infrastructure will be delivered in the coming decades to address connectivity challenges of the current transport system.
- 1.27 In this context, a Reference Case, considered to be a 'do-minimum' scenario, has been developed by TfN which includes both committed schemes and non-committed strategic interventions that can be reasonably expected to be delivered in the medium and long term and are necessary to achieve the North's economic growth aspirations.
- 1.28 A full list of the reference case interventions in the Southern Pennines area, for both road and rail, are listed in Table 3 of the SPOC. This includes, but is not limited to:
- **For road:** Transpennine Tunnel (Tunnel option including A628 Tintwistle Bypass, Mottram Moor and A57 Link Roads, Improvements to the M67, Improvements to the A616 from the A628 to the M1); Manchester South East Multi-Modal Strategy Package; M60/M62/M66 Simister Island; Manchester North West Quadrant Improvements Package; M18 J3 improvement; A1 Redhouse to Darrington; A1 Doncaster Bypass; A63 Castle Street; A63 Garrison Road Roundabout; East Leeds Orbital Route; M1/ M62 Lofthouse Interchange.
  - **For passenger rail:** HS2 Phases 1,2a and 2b including all station works to accommodate services; Northern Powerhouse Rail programme; Network Rail Enhancement Delivery Plan schemes, including Transpennine Route Upgrade (including Intermediate Interventions), North West Electrification Programme, Hope Valley capacity improvements, Sheffield-ECML electrification, W12 gauge clearance between Port of Immingham and Doncaster, and Derby to Sheffield Line Speed Improvements Phases 1 and 2.
- 1.29 The programme of interventions put forward within this corridor has been developed to maximise the overall benefits of the schemes in the Reference Case and to improve the distribution of benefits across the North.

### Pan-Northern Scheme Identification

1.30 A staged approach has been taken to the identification of Pan-Northern transport interventions in the corridor, as illustrated below:



### Partner Involvement & Governance

1.31 Transport for the North is the voice of the North of England for strategic transport. Reflecting TfN's governance arrangements, partners have been engaged and have contributed to the development of the Strategic Outline Programme (SOP) for this corridor throughout its lifecycle. This includes participation and approvals during scheme identification, objective setting, sifting, option refinement and economic appraisal processes.

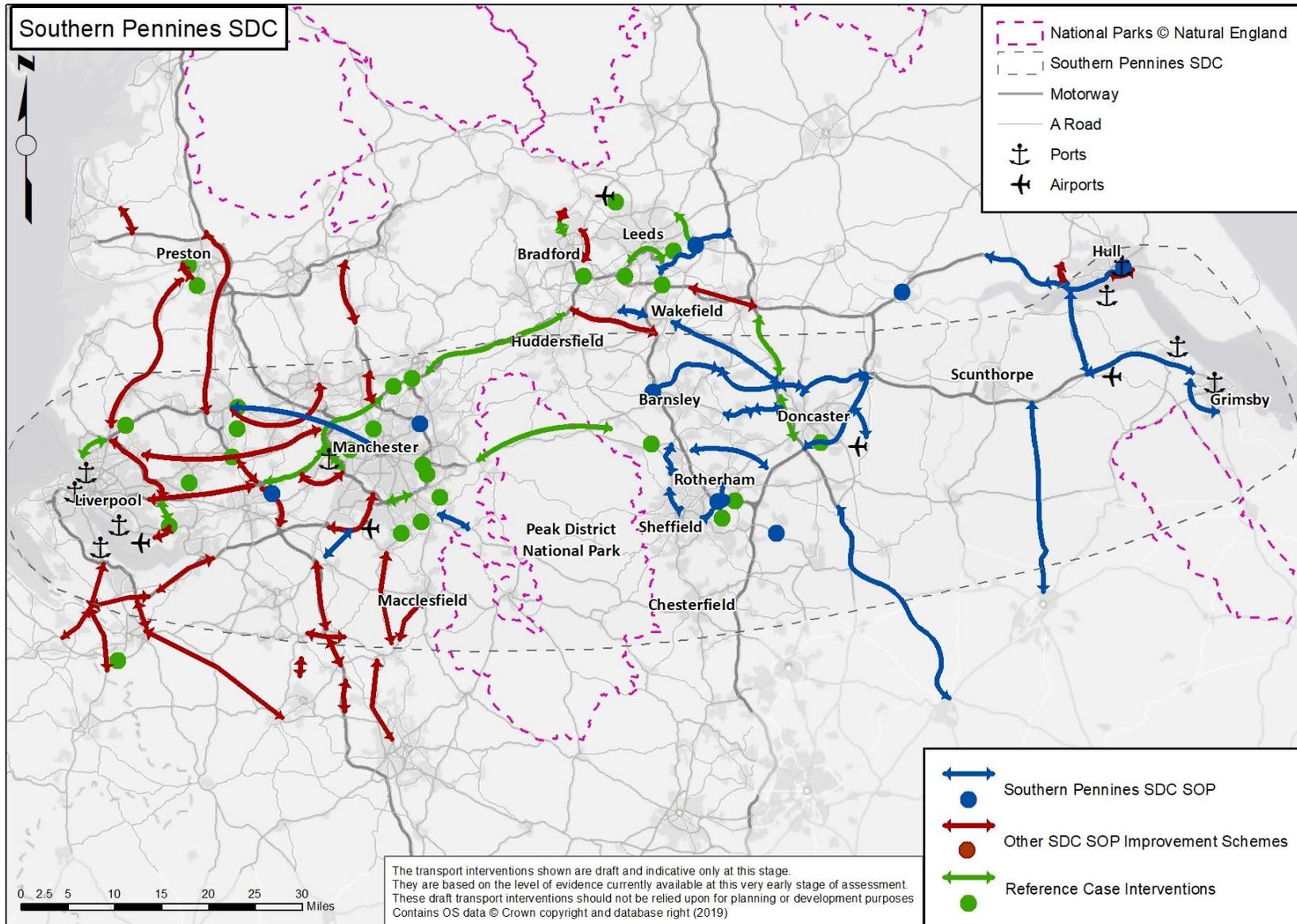
1.32 The Programme Board includes representatives from the following organisations: Combined Authorities, Local Transport Authorities and Local Enterprise Partnerships in the North, Department for Transport, Network Rail, Highways England, High Speed 2 Ltd.



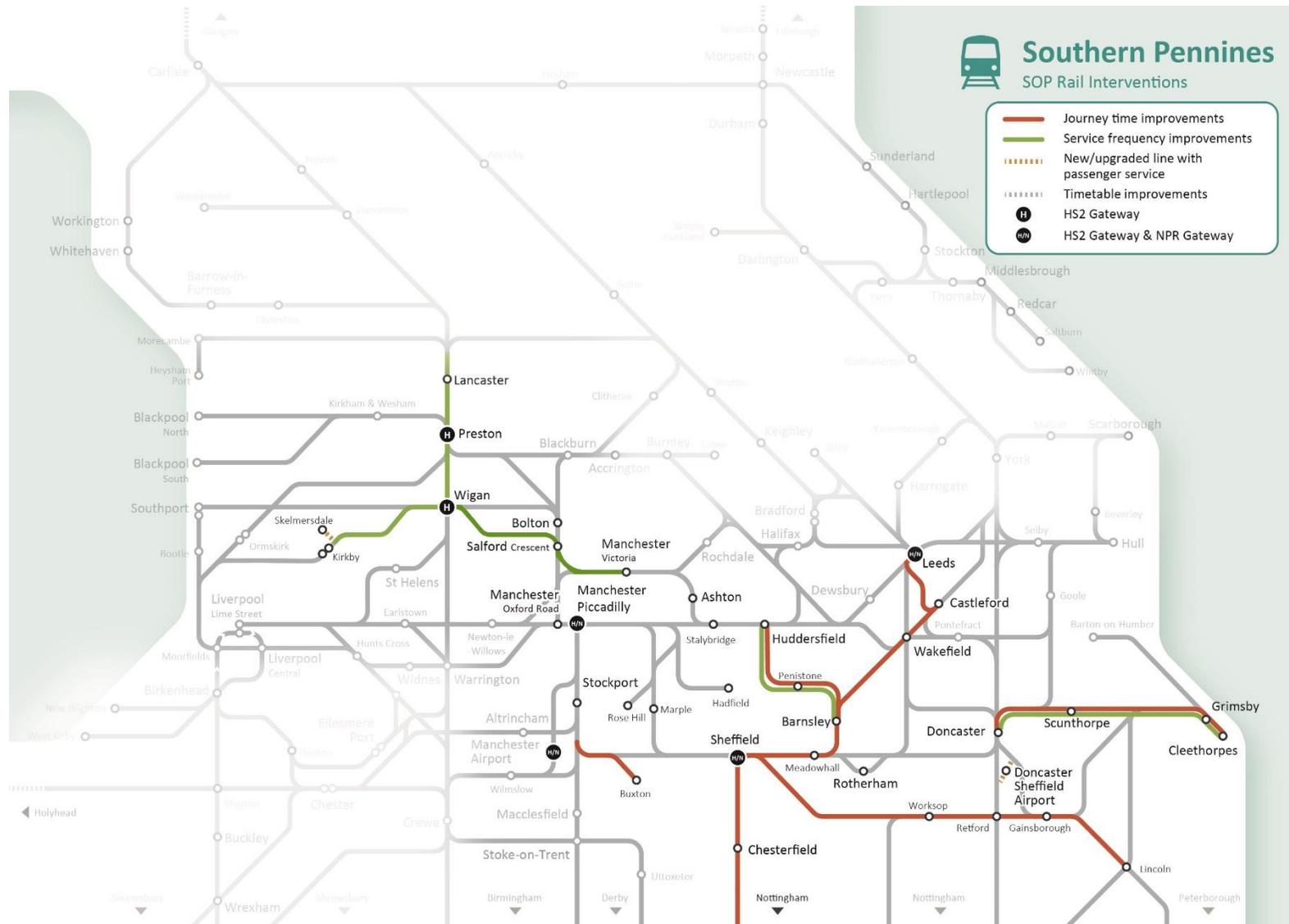
## **Key Pan-Northern Transport Outcomes and Programme of Interventions**

- 1.33 Aligned to TfN's Investment Programme the key Pan-Northern transport outcomes desirable within the corridor are:
- Improve East-West connectivity and journey times across the southern Pennines area;
  - Improve access and connectivity to key growth zones;
  - Improve access to International Gateways (e.g. Airports and Ports);
  - Improve access to South Yorkshire from the M1 and A1(M) corridors;
  - Improve access to Hull, East Riding, North Lincolnshire and North East Lincolnshire;
  - Improve rail connectivity within and between South Yorkshire, the Humber, and East Midlands;
  - Improve access to West Yorkshire from the M1, M62 and A1(M) corridors;
  - Improve connectivity within and between Greater Manchester, Lancashire and Merseyside.
- 1.34 The programme of interventions which will deliver both improved passenger rail and highway outcomes contained within the corridor are summarised in Figures 4 and 5 and build on the Reference Case.

**Figure 4: Southern Pennines Strategic Outline Programme Proposal for Road**



**Figure 5: Southern Pennines Strategic Outline Programme Proposal for Rail**



## Value for Money Statement

- 1.35 The Value for Money (VfM) Assessment summarises the monetised and non-monetised impacts of the appraised corridor interventions. Highways, passenger rail and road & rail freight are shown separately.

### **Appraisal of Highway Interventions**

- 1.36 The appraisal of highway interventions in the Southern Pennines SDC is based on the Department for Transport's standard forecasts and completion of Reference Case interventions. These are initial results, which will be re-evaluated as TfN take forward further work on modelling and appraising the SDC programme.

**Table 1: Value for Money Assessment**

<b>Value for Money Assessment</b>		
<b>Established Monetised Impacts (journey times/operating costs):</b>		
Established Monetised Impacts of appraised highway interventions  £5,771m	Net Cost to the Transport Budget of appraised highway interventions  £2,964m	Initial Ratio of Benefits to Costs  1.95
Initial Value for Money Category		Medium
<b>Evolving Monetised Impacts (plus wider economic impacts/reliability):</b>		
Established + Evolving Monetised Impacts £8,580m-£8,858m	Net Cost to the Transport Budget £2,964m	Provisional Ratio of Benefits to Costs 2.89-2.99
Provisional Value for Money Category		High
<b>Non-Monetised Impacts:</b>		
<p>Non-monetised Impacts conclusion:</p> <p>A fundamental aim of TfN and Partners is to protect and enhance, where possible, the built, historic and natural assets in the North. The Southern Pennines SDC programme includes interventions which have potential for negative environmental impacts within or close to National Parks, Areas of Outstanding Natural Beauty or designated heritage assets. These impacts will be carefully considered in subsequent stages of work and TfN and partners will seek to protect and enhance natural and historic assets, where possible, through the individual scheme development process.</p> <p>The programme is forecast to increase the number of trips made in the North by road and rail, the former in particular will have negative impacts on noise and air quality, in addition to additional Greenhouse Gases emissions (which have been monetised). At programme level, the overall net impact is expected to be adverse, but comfortably offset by the benefits to the Northern, and UK, economy.</p> <p>Non-monetised impacts have not yet been assessed directly, but there is sufficient risk to suggest that they have the potential to be moderate at a</p>		

### Value for Money Assessment

programme level. However, whilst the assessment approach is deemed to be proportionate to the detail required at this stage of programme development, it is concluded that there is currently insufficient assessment undertaken to inform altering the overall Value for Money categorisation. In addition, given that the provisional Value for Money range is quite central in the High Value for Money category threshold, the overall categorisation has been retained as **High Value for Money**.

Adjusted Value for Money Category	High
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### Appraisal of Passenger Rail Interventions

- 1.37 The passenger rail economic appraisal is at a northern level, so includes costs and benefits of appraised rail interventions within the Southern Pennines and within the other Strategic Development Corridors. Table 2 summarises the results of the rail appraisal.

**Table 2: Summary of passenger rail economic appraisal**

Established Monetised Impacts of appraised rail interventions	Net Cost to the Transport Budget of appraised rail interventions	Initial Ratio of Benefits to Costs
£464m	£424m	1.10 <sup>3</sup>
Initial Value for Money Category		Low

### Freight Benefits

- 1.38 The benefits of the SOP interventions for road and rail freight have been appraised using the Great Britain Freight Model and are reported at a GB and a Northern Level. The results, summarised in Table 3 provide a strong indication of the economic benefit of supporting freight growth in the North of England.

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<sup>3</sup> Based on established monetised impacts only, which focuses on journey time savings to rail passengers, and evaluated using values from the May 2018 WebTAG databook.

**Table 3: Summary of Freight Benefits of the Strategic Outline Programme**

Freight scenario	Present Value Benefits (£Ms- 2010 prices) <sup>4</sup>		
	Allocated to the North	Allocated elsewhere	Total
Benefit of Highways SOP for the North (freight vans)	3,020	170	3,190
Benefit of Highways SOP for the North (HGVs)	844	195	1,039
Benefit of re-routing interventions (Based on 3 alternative rail freight routes)	2,213	3,789	6,002
Benefit of removing all other rail freight capacity limits	1,683	4,080	5,763
Benefit of warehouse clustering	1,886	3,731	5,597
Benefit of Port measures (larger ferries)	761	1,929	2,690

- 1.39 The approach to assessing passenger rail and freight interventions is detailed further in their Strategic Outline Programme Case documents and additional technical reports.

#### **Summary of VfM**

- 1.40 The costs and benefits demonstrated above show that the transport interventions appraised in our SOP represent value for money based on the evidence currently available, giving a justified basis for progressing the case for investment in this corridor.

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<sup>4</sup> Benefits cannot be treated as cumulative or added directly to the assessment of highway and rail benefits

## Funding Requirement

- 1.41 The illustrative Strategic Development Corridor funding requirement for appraised (within the economic appraisal) and non-appraised interventions<sup>5</sup> is shown in Table 4. The indicative costs which underlie the funding requirements are based on high level benchmarked unit rate cost estimates appropriate for this early stage in the business case development cycle.
- 1.42 This represents an ambitious but realistic funding requirement for a programme of transport investment, building upon the reference case schemes, to be delivered over the period up to 2050.

**Table 4: Illustrative Funding Requirement (£ millions in 2017 prices)**

SPOC	Appraised Programme	Non-Appraised Programme	Full Programme
Highway: Central Pennines	£7,144	£334	£7,478
Highway: Energy Coasts	£2,158	£170	£2,328
Highway: Southern Pennines	£3,115	£583	£3,698
Highway: West and Wales	£3,281	£1,578	£4,859
Passenger Rail: North	£505	£6,100	£6,605
<b>Sub-Total<sup>6</sup></b>	<b>£14,896</b>	<b>£8,575</b>	<b>£23,471</b>
Programme Contingency (5%)			£1,174
Total Base Cost (including programme contingency)			£24,645
<b>Illustrative Total Funding Requirement (allowing for inflation)<sup>7</sup></b>	<b>£40,000 to £50,000</b>		

<sup>5</sup> TfN is developing the transport modelling tools plan to take forward further analysis and appraisal of the programme of transport interventions.

<sup>6</sup> Double counting of interventions in more than one SDC removed.

<sup>7</sup> Illustrative Funding Requirement - (most likely base cost 2017 prices)

## How: Delivering the Interventions

- 1.43 Reflecting TfN's governance arrangements, local TfN's transport authority partners, Department for Transport, Network Rail, Highways England have been engaged with, and have contributed to, the development of the Southern Pennines SDC throughout its lifecycle including participation in the option assessment and economic appraisal processes.
- 1.44 The SPOC for the corridor provides a key part of the evidence base for TfN's Strategic Transport Plan and Investment Programme, which sets out TfN's priorities for investment in transport across the North.
- 1.45 TfN is accountable for owning the vision for the proposed programme and integrating and aligning it with the wider TfN Strategic Transport Plan, the wider Northern Powerhouse agenda and key government policies and strategies.
- 1.46 TfN will provide the overall direction, governance and leadership, including chairing the Programme Board, further developing, refining and sequencing the package of interventions to facilitate the implementation of the proposed programme. TfN's role is overarching, in order to maintain a healthy alignment between the programme and wider Departmental and Government strategies, while engaging with HM Treasury, Cabinet Office, the National Infrastructure Commission, Infrastructure and Projects Authority and other key governmental stakeholders. TfN will also be responsible for managing the key strategic risks facing the programme and ensuring that the views of the local authority partners are represented.

### How TfN will take forward the Investment Proposals

- 1.47 TfN will lead on further business case development at the Pan-Northern/Strategic Development Corridor level, including seeking and prioritising funding for schemes. Beyond that stage, works and services will be procured by the appropriate delivery entity, yet to be determined. For example, this could include Highways England (for Strategic Road Network schemes), Network Rail and local transport authority partners.
- 1.48 The programme of interventions proposed for the Southern Pennines corridor includes many schemes, which will likely be delivered over a number of years. The timing of the delivery of interventions provides an opportunity for scheme promoters to ensure suppliers offer the correct skillsets as new framework and term maintenance contracts are let. More detailed market analysis will be undertaken as part of the next stage of works and updated as technologies in construction and within the complementary industries develop.

### Next Steps

- 1.49 The proposed programme of interventions across the Southern Pennines SDC comprises multi-modal investments to be delivered over time. The delivery of these schemes will require a comprehensive plan that carefully phases investment to ensure affordability, whilst balancing disruption, mitigation and enhancement of environmental impact and the realisation of

benefits to the residents and businesses of the North of England. The interdependencies with committed schemes such as HS2 and programmed road schemes are also a key factor to consider when developing the delivery plan.

- 1.50 It is envisaged that a number of early 'priorities for delivery' will be taken forward to Strategic Outline Business Case status in 2019/2020 and delivered between 2020-2027. Overall, a programme of short (up to 2027), medium (2027-2035) and long term (post 2035) interventions will be developed.
- 1.51 In the next year, TfN plans to update the Strategic Programme Outline Cases to inform an update of the Investment Programme. This will include work on reviewing the current SDCs and Investment Programme, including the sequencing of schemes. The next stage of modelling will include transformational NPIER<sup>8</sup> forecasts and the latest spatial planning information.
- 1.52 As in the first stage of development of the SDCs, TfN will fully engage with DfT, our local partners, national delivery bodies, transport operators and other key stakeholders (such as the Peak District National Park). This will ensure that partners' and stakeholders' contributions inform and help shape our delivery programme.

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<sup>8</sup> Northern Powerhouse Independent Economic Review