# Passenger Rail

## Strategic Programme Outline Case

October 2019

TRANSPORT FOR THE NORTH

## Contents

## Figures

## Tables

## Appendices

# 1 Introduction

## Background

1.1 The people of the North are at the heart of TfN's Strategic Transport Plan (STP)[1]. An effective, efficient Northern transport network is a fundamental part of everyday life – connecting people to jobs, health, education and leisure opportunities, connecting businesses to each other and allowing the efficient movement of goods and services. A transport system that is fit-for-purpose with strong north-south and east-west connections will be the backbone of a strong economy for the North and for the UK.

1.2 The STP has a horizon year of 2050 to align with the *Northern Powerhouse Independent Economic Review* (NPIER)[2] and to enable the development of a long-term transport investment programme for the North. This will mean that TfN and its Partners can work with Government to secure funding to deliver the right schemes in the right place at the right time, providing certainty for local transport authorities to plan complementary investment and also for the private sector to plan commercial investments. The pipeline of investment will give confidence to businesses across the North to invest and grow, give the supply chain, including SMEs, confidence to plan interventions, build up their skills base, and collaborate across industries.

1.3 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 draft Long Term Rail Strategy and Major Roads Report, the STP identifies seven corridors (see Figure 1) where evidence indicates delivery of transformational growth is dependent on bringing forward major road and rail investment.

1.4 These corridors complement Northern Powerhouse Rail (NPR), Integrated and Smart Travel and three Strategic Road studies[3], which form part of the reference case for this study.

1.5 This study presents the Rail Passenger Strategic Programme Outline Case for the North, incorporating the findings and outputs of the six Strategic Development Corridors (SDCs) as shown in Figure 1:

- Connecting the Energy Coasts;
- Central Pennines;
- Southern Pennines;
- West and Wales;

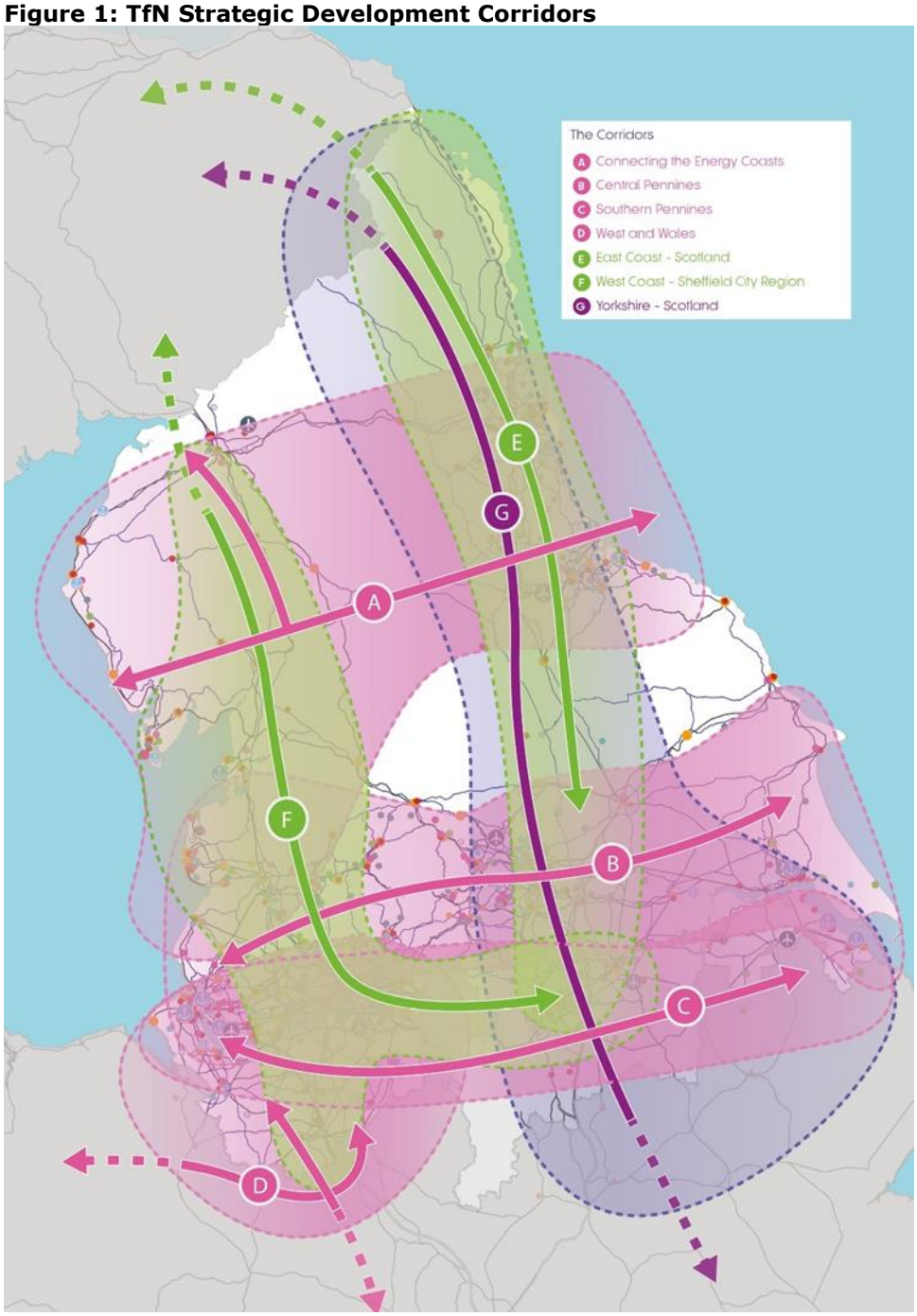
[1] Strategic Transport Plan for the North (Final)

[2] **https://transportforthenorth.com/wp-content/uploads/Northern-Powerhouse-Independent-Economic-Review-Executive-Summary.pdf**

[3] Northern Trans Pennine Routes; Manchester North West Quadrant; Trans Pennine Tunnel

- East Coast – Scotland, (combined with Yorkshire – Scotland); and
- West Coast – Sheffield City Region.

**Figure 1: TfN Strategic Development Corridors**




Source: TfN – Strategic Transport Plan

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 to improve connectivity and the economic interaction between the existing key economic clusters and assets of the North and facilitate potential future clusters in other locations. Investment considered within the context of these corridors is focused on interventions that will benefit the whole of the North. Acknowledging the

possibility that locations of demand and investment priorities may change over time with land use decisions and market responses, which will be informed by future iterations of the STP. The study does not consider interventions with a predominantly local impact.

## Transport for the North

1.7 Transport for the North is the voice of the North of England for transport; a statutory body of elected leaders and a partnership of business leaders from across the whole of the North of England who collectively represent all of the region's 16 million citizens.

1.8 Alongside local political Leaders, TfN's Board also has representatives from the national transport bodies (Network Rail, Highways England and HS2 Ltd) and works closely with its neighbours in Wales, Scotland and the Midlands.

1.9 TfN's vision is of *"a thriving North of England where world class transport supports sustainable economic growth and improved opportunities for all"*. As England's first Sub-National Transport Body, TfN was established to transform the transport system across the North of England, and TfN has a clear remit to identify, make decisions on, and plan the transport infrastructure required to support transformational economic growth in the North.

1.10 The statutory powers that have been granted allow and require TfN to:

- Develop and implement a Strategic Transport Plan for the North of England.
- Act as 'one voice' for the North, clearly communicating pan-Northern priorities to the Secretary of State for Transport.
- Coordinate and deliver smart ticketing systems across the North.
- Become a statutory partner in rail and road investment decisions, through the Rail North Partnership and Highways North Board.
- Oversee (jointly with the Department for Transport) franchised rail services covering Northern and Transpennine Express franchises.
- Promote highways improvements of Northern significance, with the agreement of Government and relevant highway and local authorities.
- Decide on capital grants.

1.11 Complementing the work of existing local transport authorities and with powers devolved down from central government rather than up from local government, TfN's role is to add value, ensuring that funding and strategic decisions about transport in the North are informed by local knowledge, expertise and requirements.

1.12 A vision of a transformed North was set out in the *Northern Powerhouse Independent Economic Review*. It concluded that transformational growth will require investment and improved performance in a number of critical areas, especially education, skills, innovation and inward investment, alongside improved transport infrastructure and services for passengers and freight.

1.13 The *Northern Powerhouse Independent Economic Review* also established that a transformed North could see an additional 850,000 jobs and almost £100 billion additional Gross Value Added (GVA), over and above 'business as usual' trends, by 2050.

1.14 It is crucial that the productivity gap which currently holds back growth in the North is reduced, to ensure that all of the North performs as well as the rest of the UK. A step-change in strategic transport infrastructure investment is a vital enabler to achieve the North's economic aspirations – establishing a value-for-money investment programme, within an ambitious, but realistic, funding envelope, is TfN's primary responsibility.

## Definition of Pan-Northern

1.15 TfN has gone some way to defining what is meant by the term 'Pan-Northern'. A key component of this is subsidiarity; pursuing governance and decision making at a local level, whilst accounting for the appropriate scale of organisation required to exercise powers at a regional (for example, Pan-Northern) level.

**The Definition of Pan-Northern**

*Why? "Facilitate and enable transformational growth of the economy through improved connectivity for people, businesses and goods to, from and within the North."*

How this will be achieved:

- By enhancing the North's major transport networks to operate more efficiently and more reliably and to increase network resilience
- Supporting, informing and influencing present and future land-use development
- Promoting and supporting the built and natural environment
- Supporting the reduction of transport-related carbon emissions and contributing to improvement of air quality
- Ensuring proposed transport interventions offer value for money
- Improving journey time, quality and choice

1.16 It flows from this principle that TfN is the appropriate level at which to take transport decisions impacting across regional and sub-regional geographies in the North, whilst local authorities are the appropriate level at which to take transport decisions that are contained within a locality in the North and where investment is not necessarily driven by Pan-Northern aspirations. 'Pan-Northern' is a short-hand, encompassing, definition which refers to transport schemes that naturally fit within TfN's remit.

## The rationale for Strategic Development Corridors

1.17 Interventions considered within the SDC programmes are complementary to the three ongoing Strategic Road Studies, Northern Powerhouse Rail, HS2, and other committed improvements, which are included within the 'reference case' for this study – explained in further detail in Chapter 2.

Ultimately all schemes identified in this SDC study are aimed at supporting TfN's objectives, including transformational growth in the North. However not every scheme will transform the transport system in its own right. Investment in the SDCs, in addition to the schemes included in the reference case, is required to:

- Maximise/enhance the benefits of reference case schemes
- Distribute the benefits of the North's 'major transformational-infrastructure projects[4]' for example through improving connectivity to the NPR/HS2 gateways
- Achieve early benefits of Pan-Northern transport investment through identifying potential short, medium and long-term interventions within the programme
- Fill gaps in TfN's wider programme, targeted at the corridors where the greatest potential to unlock transformational economic growth and contribute to the other key STP objectives (such as improving efficiency, inclusivity and the environment), has been identified.

1.18 The SDCs, including technical and overall governance arrangements, have been developed and delivered by partners and stakeholders as detailed in Option Assessment Process and Management Dimension.

## The Passenger Rail Study Area

1.19 The study area encompasses the combined geography of the Central Pennines, Connecting the Energy Coasts, Southern Pennines, West and Wales, West Coast – Sheffield City Region and East Coast – Scotland Strategic Development Corridors. In so doing, the majority of passenger services within the North of England are within scope.

1.20 The North is served by a number of long distance and inter-urban services, which, as well as providing connectivity within the region, also connects it to wider markets and catchments across the rest of the country. The primary focus of this study is connectivity within the North, so amendments to these services have only been considered where appropriate in order to satisfy pan-Northern objectives.

1.21 The rail network in the North of England is comprised of a complex series of routes providing access to, from, and between major population centres and their hinterlands, international gateways, rural communities and logistics centres. There are almost 600 stations in the North, a diverse range of major city centre hubs, suburban commuter interchanges and rural 'halts', each serving as a gateway to their communities.

1.22 It is a mixed-use, predominantly two-track railway, with all types of passenger and freight services often utilising the same track. It is this characteristic which acts as one of the key limiting factors to the planning and delivery of rail services in the North.

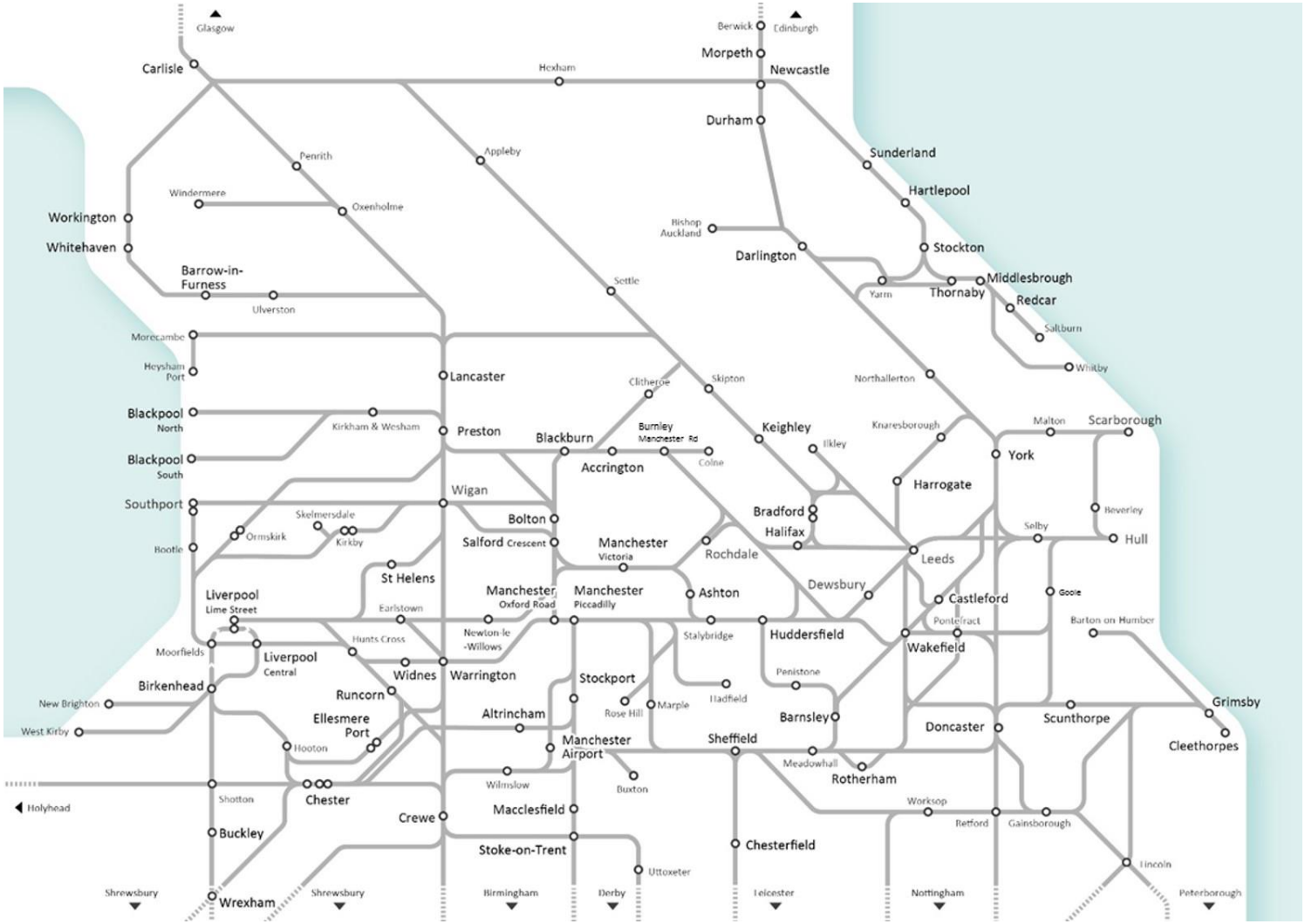
[4] The three ongoing Strategic Road Studies, Northern Powerhouse Rail

1.23 The majority of passenger services are provided under franchise or concession agreements with a letting authority. In most cases, the parties to the agreements are the operating company and the Department for Transport (DfT). However, the management of the Northern and TransPennine Express franchises is currently undertaken jointly by DfT and Transport for the North through the Rail North Partnership, the first such arrangement of its type.

1.24 The Merseyrail network is self-contained and managed by Merseytravel through a Concession Agreement on behalf of the Liverpool City Region (LCR), and via devolved powers from the DfT. The Tyne and Wear Metro runs on a mainly self-contained network, however services operate on Network Rail infrastructure between Newcastle and Sunderland. The Tyne & Wear Metro is currently operated by Nexus through the arm's length company North East Metro Operations Limited (NEMOL).

1.25 Further devolution is occurring in the Midlands, where a number of routes provided by the West Midlands franchise are being jointly managed between DfT and the West Midlands Rail Executive – a consortium of 16 local transport authorities – and in Wales, where Transport for Wales (TfW, on behalf of the Welsh Government) is managing the Wales & Borders franchise, subject to certain DfT rights and requirements in relation to the English part of the franchise. Both franchises provide some services in North West England.

**Figure 2: Rail Study Area**



1.26 'Open access' services operate on a commercial basis under license from the Office for Road and Rail (ORR), with no franchise or concession agreement in place. There are two 'open access' operators serving the North of England, both via the East Coast Main Line (ECML). A further service along the ECML is due to commence in 2021, and track access has been recently agreed to operate services on the West Coast Main Line (WCML) between London and Blackpool from Spring 2020.

## Rail Freight

1.27 The North's rail network also accommodates significant freight flows. Rail freight traffic can include:

- Inter-modal container traffic (both deep-sea and domestic), normally between dedicated inter-modal terminals or port facilities;
- Bulk commodities such as biomass and construction materials, generally between client owned terminals such as power stations and quarries; and
- Materials necessary for the maintenance of the railway - generally determined by Network Rail using either privately-owned loading facilities or dedicated Network Rail facilities.

1.28 The need to balance the requirements of both passenger and freight operators is a key challenge when planning future use of the network.

1.29 An understanding of the potential benefits of accommodating additional freight traffic is set out in the Freight Technical Note. The costs of accommodating freight growth on the rail network have not been quantified as part of this Passenger Rail SPOC, and freight benefits have not been included within the Value for Money assessment in Chapter 15 of this document.

1.30 Future phases of work will examine whether there is a case for investment to realise benefits for both the passenger and freight markets.

## Scope of Strategic Development Corridor SPOC

1.31 The TfN SDC business cases have been developed to a level of detail approaching a conventional 'single-scheme' Strategic Outline Business Case (SOBC)[5], but greater than a Strategic Outline Programme. To distinguish them from these two documents defined in HM Treasury and DfT guidance, they have given the description of Strategic Programme Outline Case (SPOC).

1.32 TfN's vision for its SDC business cases is that they demonstrate the justification for a sequenced programme of interventions within the context of the *Northern Powerhouse Independent Economic Review* and

[5] DfT guidance uses SOBC whereas more recent Treasury guidance uses Strategic Outline Case (SOC) for the equivalent development stage for interventions with a single approval

transformational economic growth. The business case documents seek funding commitment sufficient to progress development of early sequence interventions and to further refine the overall programme.

1.33 Funding approvals for interventions within the SDC programmes will be sought through the UK public sector's staged approach to major investment decisions as shown for transport projects in Figure 3.

**Figure 3: The Three Phases of the Decision Making Process**


Source: DfT Transport Business Cases

1.34 Fundamental to this process is the need for procurement activity to be complete before finalisation of the Full Business Case and all required contracts entered shortly after an affirmative final investment decision. Business cases will be developed for interventions within the SDC individually or in packages of interventions sufficiently similar or related that they can be procured together.

1.35 It follows that the SDC programme of varied and wide-ranging interventions sequenced over an extended time horizon could not directly follow the above process. However, there are interdependencies and synergies between interventions within and between the SDCs which mean that the case for individual interventions would not represent its contribution to the whole package. For example, an early intervention may not deliver its full potential benefits until later interventions in the programme have been delivered.

1.36 HM Treasury public sector business case guidance[6] describes a Strategic Outline Programme (SOP) Business Case content specified to be appropriate to a programme of interventions, but at an early stage and with a relatively low level of detail, particularly in terms of Value for Money appraisal.

6 **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/469317/green_book_guidance_public_sector_business_cases_2015_update.pdf** (Oct 2015)

## Structure of SPOC

1.37 The TfN SPOCs have been developed with reference to the HM Treasury (HMT) Green Book[7] and Department for Transport (DfT) [8] and HMT business case guidance[6]. The 2018 update to the HMT Green Book has moved to describing the five main content sections of a public-sector business case as 'dimensions'; previously these were known as cases. TfN's SDC SPOCs follow this change in convention, being structured as follows:

- An **Introduction** comprising chapter 1
- The **Strategic dimension** comprising chapters 2 to 7
- The **Economic dimension** comprising chapters 8 to 14
- The **Financial dimension** comprising chapters 16 to 18
- The **Commercial dimension** comprising chapters 19 to 21
- The **Management dimension** comprising chapters 22 to 28
- An **Appendix** providing supporting detail

1.38 Each of the five business case dimensions opens with an explanation of its underlying purpose, followed by the key messages from that dimension. Each of the five dimensions closes with a summary. For the Economic dimension, the summary is provided in the form of a Value for Money statement which follows the approach set out in DfT's Value for Money Framework[9] document. Each SPOC is accompanied by a standalone non-technical summary document.

## Supporting Documents

1.39 This report sits alongside the SPOC documents produced for each of the Strategic Development Corridors. For each individual SDC, the following documents, developed during the SDC study programme, provide additional detail in support of this SPOC:

- Stage 1 Appraisal Specification Report
- Option Assessment Report
- Transport Forecasting and Economic Appraisal Report
- Environmental Appraisal Report

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[7] **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685903/The_Green_Book.pdf** (March 2018)

[8] DfT: **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/85930/dft-transport-business-case.pdf** (January 2013)

[9] **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/630704/value-for-money-framework.pdf** (July 2017)

# Strategic Dimension

The Strategic dimension of a business case sets out to demonstrate:

- That to achieve rational aims, there are problems that need to be solved and opportunities that need to be taken (the **case for change**)
- That transport investment (including in technology solutions) is an appropriate way to deliver that change and that TfN is the appropriate promoter (the **need for intervention**)
- That an appropriately broad approach has been taken to identifying interventions and a robust approach taken to shortlisting (the **option assessment process**)
- That constraints, interdependencies and the needs/capabilities/views of stakeholders have been identified and taken into consideration in selecting a way forward (the **wider context**)

# 2 Introduction

## Background

The Strategic dimension sets out the robust **case for change**, which underlies the proposed programme of interventions for the study area, and how it fits with wider policy objectives. It goes on to summarise the **need for intervention**, which justifies TfN promoting strategic transport interventions, drawing this evidence together in identifying a set of **objectives** specific to the SDC.

2.1 The Strategic dimension goes on to explain key elements of the wider context and summarises the process through which an SDC Programme, tested against different levels of demand growth, has been developed.

The Strategic dimension has been developed with reference to HM Treasury[6] and DfT[8] business case guidance. It has drawn on DfT Supplementary Strategic Case Guidance, with respect to its *Transport Investment Strategy*[10] and Rebalancing Toolkit[11].

## Policy Context

2.2 The UK Government, as well as regional and local authorities, have identified the need for investing in strategic infrastructure to improve the

10 **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/669041/strategic-case-supplementary-guidance.pdf** (December 2017)

11 **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/669043/supplementary-guidance-rebalancing-toolkit.pdf** (December 2017)

country's productivity and increase economic growth and overall wellbeing in a way that is socially and environmentally responsible. In addition, the need for rebalancing the economy and shifting away from targeting purely 'net national' impacts has become increasingly important. This need to create an economy that works for everyone and every region has been highlighted in several national, regional and local policies. Infrastructure projects and changes delivered to stimulate the economic development of the North of England needs to consider these policies to ensure consistency with the wider national framework and other infrastructure initiatives.

**National Policy**

2.3 At a national level, the Government's Industrial and Transport Investment strategies outline the need to actively support the UK's long-term productivity and economic development through strategic infrastructure projects and investments[12,13].

2.4 The *Industrial Strategy* sets the overall objective of creating an economy that boosts productivity and earning power throughout the entire UK. It identifies five main foundations of productivity:

- Ideas – 'the world's most innovative economy'
- People – 'good jobs and greater earning power for all'
- Infrastructure – 'a major upgrade to the UK's infrastructure'
- Business Environment – 'the best places to start and grow a business'
- Places – 'prosperous communities across the UK'

2.5 Improved infrastructure plays a key role in the Industrial Strategy, as the need for better connectivity to link up people and markets to attract investment has been highlighted. To stimulate more inclusive economic growth through transport investments, the strategy also takes greater account of regional imbalances to ensure that growth can be achieved across all regions in the UK.

2.6 DfT's *Transport Investment Strategy*[14] is closely aligned with the Industrial Strategy. The key objectives of the Transport Investment Strategy are shown in Table 1:.

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**12** HM Government, *UK Industrial Strategy* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf

**13** Department for Transport, *Transport Investment Strategy* (2017) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/624990/transport-investment-strategy-web.pdf

[14] Department for Transport, *Transport Investment Strategy* (2017) https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/624990/transport-investment-strategy-web.pdf

**Table 1: Transport Investment Strategy Objectives**

| Objective | Challenge |
|---|---|
| Create a more reliable, less congested, and better-connected transport network that works for the users who rely on it | Current transport networks have become increasingly out-of-date and experience increasing demand, causing delays and less reliability. In many places the transport network does not provide the connections people and businesses need. |
| Build a stronger, more balanced economy by enhancing productivity and responding to local growth priorities | UK productivity lags behind other developed countries and prosperity and benefits haven't been shared evenly between different regions, leaving some communities being left behind. |
| Enhance the global competitiveness by making Britain a more attractive place to trade and invest | The long-term success in a globalised world will depend on the UK's ability to attract job creating investment, enhance the country's industrial strengths and enhance global trade. |
| Support the creation of new housing | Transport infrastructure is considered as one of the keys to unlocking development and delivering places people want to live. |

2.7 The necessity for improved transport links is also highlighted in the '*Making our Economy Work for Everyone'* report by the Inclusive Growth Commission[15]. This report outlines that connecting people to economic assets and opportunities needs to be a key priority to enable inclusive economic growth. The report also states that investment in social infrastructure is required indicating the necessity for building transport and economic connectivity for regions and places which were previously disadvantaged due to poor transport links.

2.8 The DfT's Local Transport White Paper: *Creating Growth, Cutting Carbon: Making Sustainable Transport Happen*[16] vision is "…for a transport system that is an engine for economic growth, but one that is also greener and safer and improves quality of life in our communities". The key objectives identified by the White Paper are to encourage economic growth, reduce carbon emissions and encourage the wider objectives of transport (such as more physical activity, improved road safety and air quality). Similar references to socially and environmentally responsible economic growth are included in the UK Industrial Strategy.

2.9 The Ministry of Housing, Communities and Local Government's 2018 draft *National Planning and Policy Framework*[17] sets out the need for sustainable development that has three overarching objectives: economic, social and environmental. The framework identifies the need for significant weight to be placed on supporting economic growth and productivity but states that opportunities should be taken to secure net gains across the three objectives.

**Regional Policy**

2.10 At the regional level, the aspiration of improving the country's productivity and economic development through improved transport links is emphasised in different policy documents. The *Strategic Transport Plan*[18] published by TfN in 2019 has a clear vision of "connecting and growing the economy of

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[15] Inclusive Growth Commission, *Making our Economy Work for Everyone* (2017) **https://www.thersa.org/globalassets/pdfs/reports/rsa_inclusive-growth-commission-final-report-march-2017.pdf**

[16] DfT *Local Transport White paper: Creating Growth, Cutting Carbon: Making Sustainable Transport Happen* (2011) **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/3890/making-sustainable-local-transport-happen-whitepaper.pdf**

[17] Ministry of Housing, Communities and Local Government, *draft National Planning and Policy Framework* (2018) **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/685289/Draft_revised_National_Planning_Policy_Framework.pdf**

[18] Transport for the North, *Strategic Transport Plan* (2019) **https://transportforthenorth.com/wp-content/uploads/final-draft-strategic-transport-plan.pdf**

the North of England". This vision is supported by key Pan-Northern transport objectives:


2.11 The STP identifies seven strategic development corridors (based on the 2017 Integrated Rail and Major Roads Reports), as shown in Chapter 1. These corridors are representative of where evidence indicates delivery of transformational growth is dependent on bringing forward major road and rail investment.

2.12 Through the NPIER, transport investment has been shown to be a key enabler for growth in the North's economy. In short, transport has three main roles that can help support the North's existing and future economic assets and clusters:

- 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.

2.13 Collectively, these three roles provide the key aims of the STP for the North, and will be achieved through improved:

- Connectivity between the North's economic assets and clusters;
- Multi-modal connectivity improvements;
- Delivering nationally significant infrastructure projects, major employment and major local development approvals;
- Cross-border connectivity with the North's economic neighbours; and
- Supporting the international connectivity of the North.

2.14 The STP is closely aligned with the report on the Northern Transport Strategy published in 2015[19], which first set out the vision for a Northern Powerhouse. The report highlights the need for a new strategic approach to connect the cities of the North to support improvements in economic performance. The outlined approach emphasises the necessity for improving connectivity to maximise economic growth in the North. The STP envisions a highly interconnected and integrated region of thriving cities, acting as a valuable counterweight and complement to London.

2.15 The need for better connectivity and closer collaboration in the North is also demonstrated by the *Northern Powerhouse Independent Economic Review*[20] (NPIER) published in 2016. The NPIER outlines the performance gap between the North and the rest of the UK with respect to productivity and identifies the lack of agglomeration, poor connectivity and transport links as key factors (among others) that hinder the economic development of the North. The NPIER concludes that improved connectivity between key settlements can help to:

- promote a higher employment rate, by improving access to centres of employment
- promote higher productivity, by improving access to markets
- increase the pool of workers available to work in higher productivity urban locations
- increase the effective scale of cities and the associated benefits of agglomeration

2.16 The NPIER set out a bold vision of economic transformation for the North that will rebalance the UK economy and increase international competitiveness. It articulates the vision of a transformed North and concluded that improving economic performance in the North could bring significant benefits for the UK economy by 2050 of:

- £92 billion (15%) increase in GVA (the measure of the value of goods and services produced in an area, industry or sector of an economy)
- 850,000 additional jobs
- 4% higher productivity than in a business as usual scenario.

2.17 This uneven development between different regions within the UK and the need for rebalancing the UK economy is also the focus of the 'Rebalancing Toolkit' developed by the Department for Transport[21]. This toolkit is

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[19]Transport for the North, *The Northern Powerhouse: One Agenda, One Economy, One North* (2015) **https://www.transportforthenorth.com/wp-content/uploads/A-report-on-the-Northern-Transport-Strategy-1.pdf**

[20] Transport for the North, *The Northern Powerhouse Independent Economic Review* (2016) https://transportforthenorth.com/wp-content/uploads/Northern-Powerhouse-Independent-Economic-Review-Executive-Summary.pdf

[21] Department for Transport, *Strategic Case Supplementary Guidance Rebalancing Toolkit* (2017)

designed to help authors of strategic cases assess how a project fits with the objective of spreading growth across the whole country.

2.18 The Northern Freight and Logistics Report[22] identifies the need for better connectivity with respect to freight and logistics. The report sets the out the overall objective: *"Maximise the efficiency of the movement of goods to, from and within the North of England to contribute to the transformation of the economy of the Northern Powerhouse"*.

**Rail Policy**

2.19 The draft Long Term Rail Strategy[23] (LTRS) is TfN's primary policy document for rail in the North of England. It forms a key element of the Strategic Transport Plan (STP) and will be used to inform TfN's future programme of work and its input into wider rail industry processes. It will influence and inform the investment strategies, policies and programmes pursued by national Government, devolved bodies, Network Rail and Local Transport Authorities.

2.20 The draft LTRS sets out an ambitious series of improvements covering the rail network across the whole of the North of England. It recognises that a high-quality rail network can be an enabler of increased productivity, economic growth and improved quality of life.

2.21 The improvements prescribed in the draft LTRS are structured around the "5Cs":

- Connectivity;
- Capacity;
- Customers;
- Communities; and
- Cost-effectiveness

2.22 The schemes within the Rail SOP are primarily aimed at enabling connectivity improvements – connecting places faster, more frequently and more directly. The intended outcome from such improvements is to improve rail's attractiveness relative to other modes – primarily private car – and to increase modal shift. In turn, this will support the growth of the economy (employment and population) whilst mitigating the impacts of traffic congestion, particularly (but not exclusively) for travel to and from urban centres.

2.23 The draft LTRS defines a series of conditional outputs and desirable minimum standards which have been used to define the connectivity

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/669043/supplementary-guidance-rebalancing-toolkit.pdf

**22** Transport for the North, *Northern Freight and Logistics Report* (2018) https://www.transportforthenorth.com/wp-content/uploads/TfN-Freight-and-Logistics-Report.pdf

[23] Transport for the North, *Long Term Rail Strategy* (2018) **https://transportforthenorth.com/reports/long-term-rail-strategy/**

improvements within the Passenger Rail SOP programme. The key desirable minimum standards considered within the SDCs are:

- All passenger routes to be served by a minimum of two trains per hour;
- Inter-urban services to achieve average journey speeds of at least 60mph; and
- Local and suburban services to achieve average journey speeds of at least 40mph.

2.24 The draft LTRS sits within a national policy context set primarily by the DfT. In November 2017 DfT published *Connecting people: a strategic vision for rail.* The document sets out the national strategic vision for rail and focusses on:

- A more reliable railway – with spending on asset renewals, deploying digital technology and rolling out joint management of infrastructure and operations;
- An expanded network – expanding commuter routes, unlocking housing and development, and building new high-capacity railways;
- A better deal for passengers – including smart technology, improved compensation arrangements, and new models for passenger services;
- A modern workforce – including improvements to skills, incentivisation, and diversity; and
- A productive and innovative sector – accelerating innovation, embedding sustainable development and supporting inward investment.

2.25 In addition to these national and regional policies, a series of local transport and rail policies exist, which define priorities within each of TfN's partner authority areas. These policies include:

**Table 2: Local Transport and Rail Policies**

| **Authority** | **Policy Document** |
|---|---|
| Blackburn with Darwen | Local Transport Plan |
| Blackpool | Local Transport Plan Implementation Plan |
| Cheshire and Warrington (including Cheshire East, Cheshire West and Chester, and Warrington | Sub-regional Transport Strategy |
| City of York | Local Transport Plan |
| Cumbria | Cumbria Transport Plan Strategy |
| East Riding of Yorkshire | Local Transport Plan |
| Greater Manchester | 2040 Transport Strategy |
| Hull | Local Transport Plan |
| Lancashire | Local Transport Plan |
| Liverpool City Region | Long Term Rail Strategy |

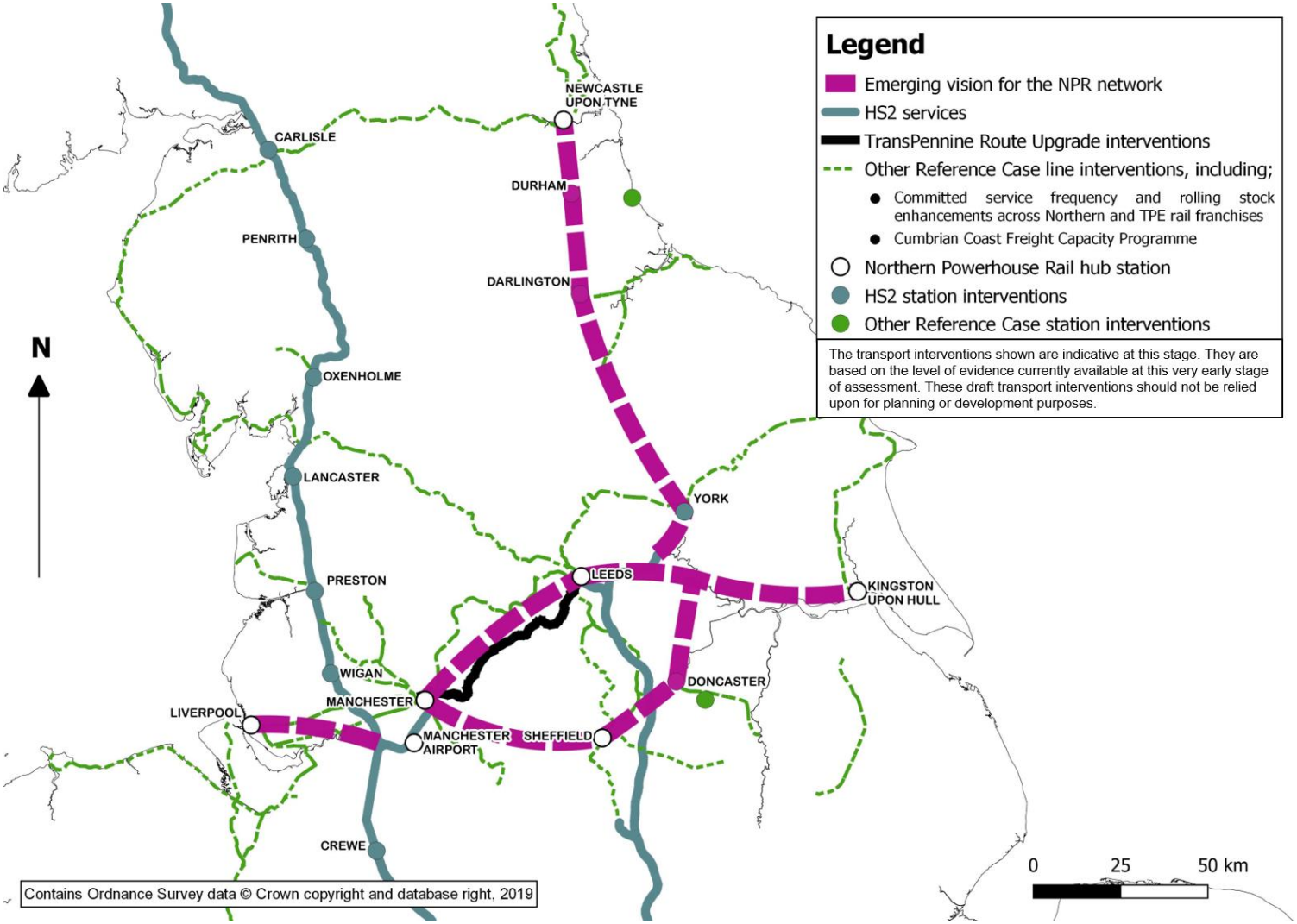
| Authority | Policy Document |
|---|---|
| North East Lincolnshire | Local Transport Plan |
| North East and North of Tyne | Metro and Local Rail Strategy |
| North Lincolnshire | Local Transport Plan |
| North Yorkshire | Local Transport Plan |
| Sheffield City Region | SCR Transport Strategy & Integrated Rail Plan |
| Tees Valley Combined Authority | Strategic Transport Plan |
| West Yorkshire | Local Transport Plan |

## The Reference Case

2.26 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. This includes road investment schemes put forward by Highways England, schemes within the Great North Rail Project, currently being delivered by Network Rail, 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. Combined, these will transform journey times and service frequencies between the North's largest cities and to London, Birmingham and the Midlands. 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.

2.27 Figure 4 illustrates HS2 (Phases 1, 2a and 2b) and the Northern Powerhouse Rail (NPR) alongside other reference case interventions. Combined, these will transform journey times and service frequencies between the North's largest cities and to London, Birmingham and the Midlands. 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.

**Figure 4: Locations of reference case interventions**



2.28 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. The programme of interventions identified through the SDCs have been developed to maximise the overall benefits of the schemes in the Reference Case and to improve the spatial distribution of benefits. The Reference Case is based on current understanding of interventions at the time of publication. It could change due to government policy or other activities. Changes to Reference Case schemes will be monitored and reviewed during further phases of SDC development.

2.29 For the purposes of this study, the WebTAG definition of reasonably foreseeable has been extended for the SDCs to include any strategic intervention that is at Strategic Outline Business Case stage or equivalent, including interventions without an identified funding route. Post 2025 the reference case includes other work programmes identified by the Strategic Transport Plan as necessary to achieve the North's economic growth aspirations.

**Table 3: Reference case parameters and assumptions**

| 2020-2025 | Post 2025 |
|---|---|
| STP 'baseline investment assumptions' will be included in the Reference Case (already been confirmed by Highways England, Network Rail and DfT as committed). | Reference Case includes other work programmes identified by the STP as necessary to achieve the North's economic growth aspirations; HS2, Northern Powerhouse Rail, Northern Trans-Pennine Routes, Trans Pennine Tunnel & Wider Transport Connectivity Assessment and Manchester North West Quadrant. |
| Interventions identified by the SDC consultants and TfN as being 'reasonably foreseeable'. | Reference Case should be developed to ensure a 'do-minimum' standard within the transport model is represented (removing excessive 'hotspots'). |
| WebTAG definition of reasonably foreseeable has been extended for the SDCs to include any strategic intervention that is at SOBC stage or equivalent, including those without an identified funding route. | |
| Expect to include interventions within Highways England's Road Investment Strategy and Network Rail's Enhancements Delivery Plan | |

2.30 The Reference Case for passenger rail comprises:

- Infrastructure enhancements committed for delivery as part of Network Rail's Enhancements Delivery Plan. This includes, for example, the Transpennine Route Upgrade (TRU) and North of England Programmes;
- Service frequency enhancements committed as part of existing franchise agreements – including those committed by the Northern and Transpennine Express franchises;
- HS2 Phases 1, 2a and 2b. Despite Phases 2a and 2b still being subject to Parliamentary consideration and subsequent legislation, the impacts on journey times, particularly between centres in the North and London, are such that they could serve to 'mask' the impacts of the Passenger Rail SOP. It was therefore considered appropriate to include HS2 within the Reference Case. The modelled service pattern for HS2 has been assumed to be as per that published in the most recent business case[24], accounting for the Crewe North Connection[25];
- Northern Powerhouse Rail (NPR), TfN's flagship rail programme which seeks to transform journey times and service frequencies between the North's largest cities. Similarly to HS2 above, the impacts of NPR are of sufficient scale that the further impacts induced by the Passenger Rail SOP may be difficult to differentiate. It was therefore considered appropriate that NPR form part of the Reference Case for the SDC studies. The emerging vision for the NPR network is described later in this Chapter.

2.31 In addition, a small number of additional schemes were included in the Reference Case, despite not being fully committed at the time of study preparation. These were schemes where a significant proportion of the anticipated capital cost had been secured by the scheme promoter, and the scheme was justified by an Outline Business Case. The programme of interventions put forward within this SPOC has been developed to maximise the overall benefits of the schemes in the Reference Case and to improve the spatial distribution of benefits.

## Structure of Strategic Dimension

2.32 The remainder of the Strategic dimension of this SPOC is structured as follows:

- Chapter 3 sets out the Case for Change which is the foundation for the programme of interventions justified within this business case
- Chapter 4 outlines the Need for Intervention and identifies SDC objectives and conditional outputs which would support their achievement

[24] **https://www.gov.uk/government/publications/hs2-phase-two-economic-case**

[25] **https://www.gov.uk/government/publications/hs2-crewe-hub-consultation-governments-response**

- Chapter 5 explains the wider context with influence on the deliverability of the programme and the interventions within it
- Chapter 6 summarises the option assessment process which identified interventions within the SDC coordinated and complementary programmes to meet the conditional outputs
- Chapter 7 summarises the findings of the Strategic dimension

# 3 The Case for Change

## Introduction

3.1 This chapter sets out the Case for Change which underlies the justification for strategic rail investment in the North of England. Fundamentally, transport investment infrastructure is required to support transformational growth in the North which in turn increases the potential for national economic growth.

3.2 The Case for Change is based on identifying problems which need to be solved and opportunities which need to be taken to allow and support growth in the North's economy.

## Need for growth in the North's economy

3.3 The North is home to 515,000 businesses, more than 6.8 million jobs, and over 15 million people, with population growth of 6.7% over the last 20 years.

3.4 The North has a wealth of high-profile, growing UK-wide and international businesses, and a long history of innovation, utilising the rich and diverse set of assets and talent to support national growth. Over the last decade businesses and employees across the North have generated an additional £65 billion (25%) to the UK economy. Today the North is the second most productive region in the UK in absolute terms, with a total economic contribution of over £332 billion, 19% of the UK's total.

3.5 However, while individual economies of the city regions of the North have experienced strong economic progress, the North as a region lags behind London and the South East with respect to its economic performance. A significant and widening performance gap between the North and the rest of the UK has become evident and will continue to grow unless action is taken to reverse this trend.

3.6 Investment in transport infrastructure is required to support transformational growth in the North and subsequently increase the potential for national economic growth due to:

- **The size of the North's economy:** being the second most productive region in the UK in absolute terms demonstrates the North's importance to national productivity
- **Poor productivity performance:** When considered on a GVA per hour worked basis the North's productivity level is 88% of the UK average. The North also performs poorly when productivity is measured on a GVA per worker or per capita basis and this productivity gap is growing

- **A need to invest in and support the NPIER Prime and Enabling Capabilities[26];** The Capabilities are key differentiators of the North's economy on an international level, which are highly productive and capable of competing on national and international stages. Support for these capabilities is required to achieve the ambition for transformational growth
- **Transport infrastructure's contribution to economic growth;** Transport can contribute to achieving transformational growth particularly through agglomeration, labour market expansion, connectivity to global markets and encouraging skills investment.

3.7 The success of the UK in the global marketplace and the success of the Government's Northern Powerhouse Strategy and Industrial Strategy depends upon transforming the economy of the North.

**GVA – The Performance Gap**

3.8 The IER demonstrated that there is a gap in the North's prosperity and productivity (that is, a performance 'gap', measured by GVA per capita) that is persistent and entrenched, being consistently 25% below the rest of England average and around 10-15% below the average when London is excluded. Most recent data reveals that gap has widened further, with GVA per person now 29% below England's average. Figure 5 displays the relative performance of the major centres of the North of England with other parts of the UK.

**Employment Rate – The Employment and Skills Gap**

3.9 The consequence of this long-term imbalance is that London and the South East have become a magnet for investment, business and skilled workers. Meanwhile much of the rest of the country (including the North) lags behind, with the former industrial powerhouses of the North among the worst performers. With a higher share of people with lower skills (a problem which has worsened in the post-recession period), the North has suffered from a range of inter-related issues which can also be used to indicate the significance of the performance gap in the North.

3.10 While the employment gap is likely to be the result of large numbers of people becoming detached from the labour market as they are not able to find the right job opportunities for them[27], the skills gap is likely to be the outcome of both demand and supply dimensions. From a demand perspective, low educational attainment (especially among younger cohorts) and low employment rates are the key factors contributing to a

[26] 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)

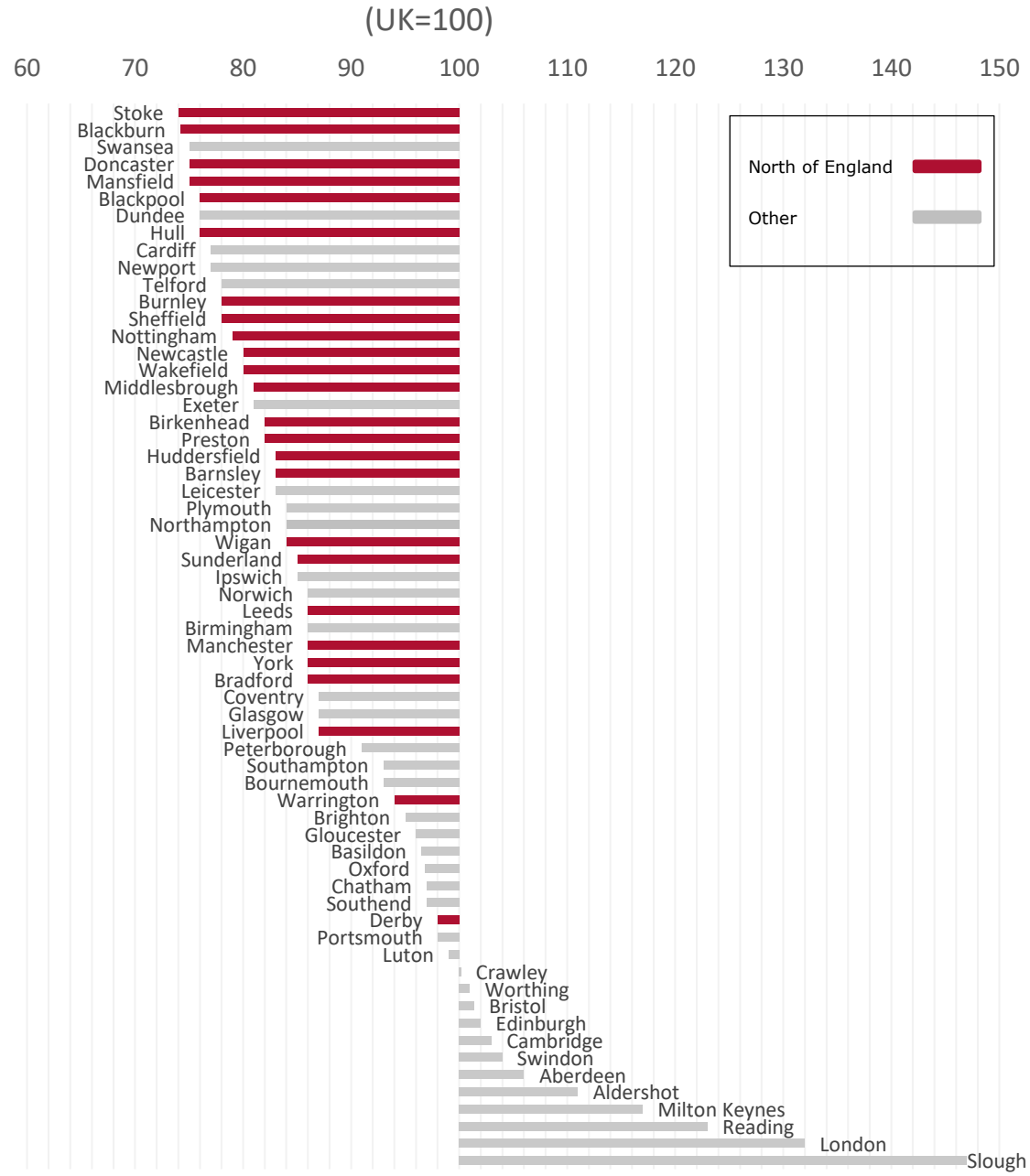
[27] Transport for the North, the Northern Powerhouse Economic Review (2016)

limited pool of talent that employers can access. From a supply perspective, limited job prospects and an insufficiently dynamic economy to attract and retain higher-skilled workers are critical aspects that influence the attraction and retention of talent.

3.11 This is reflected in the proportion of working age population with high levels of qualifications, which is below the UK average in Yorkshire and the Humber, the North West, the North East and significantly below London, the South East and Scotland. All these factors play a key role in the development of the labour market[28].

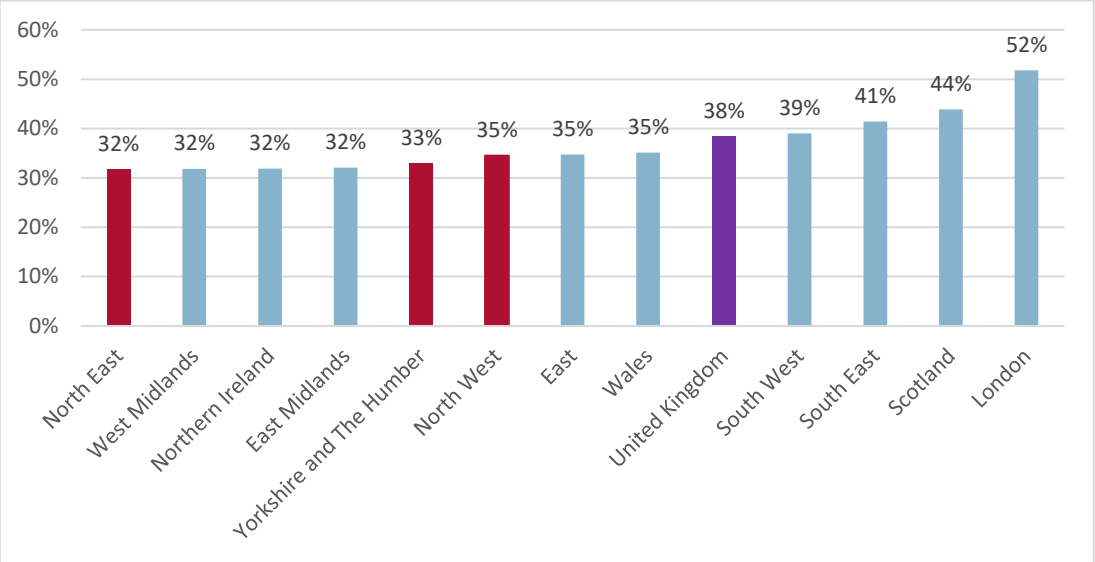
[28] Transport for the North, the Northern Powerhouse Economic Review (2016)

**Figure 5: Relative Productivity of major centres within the North of England and other parts of the UK (GVA per head index 2015)[29]**




[29] Source: Author's analysis of Centre for Cities, the role of place in the UK's productivity performance, 2-17, productivity performance based on 2015 ONS data (GVA per head index)

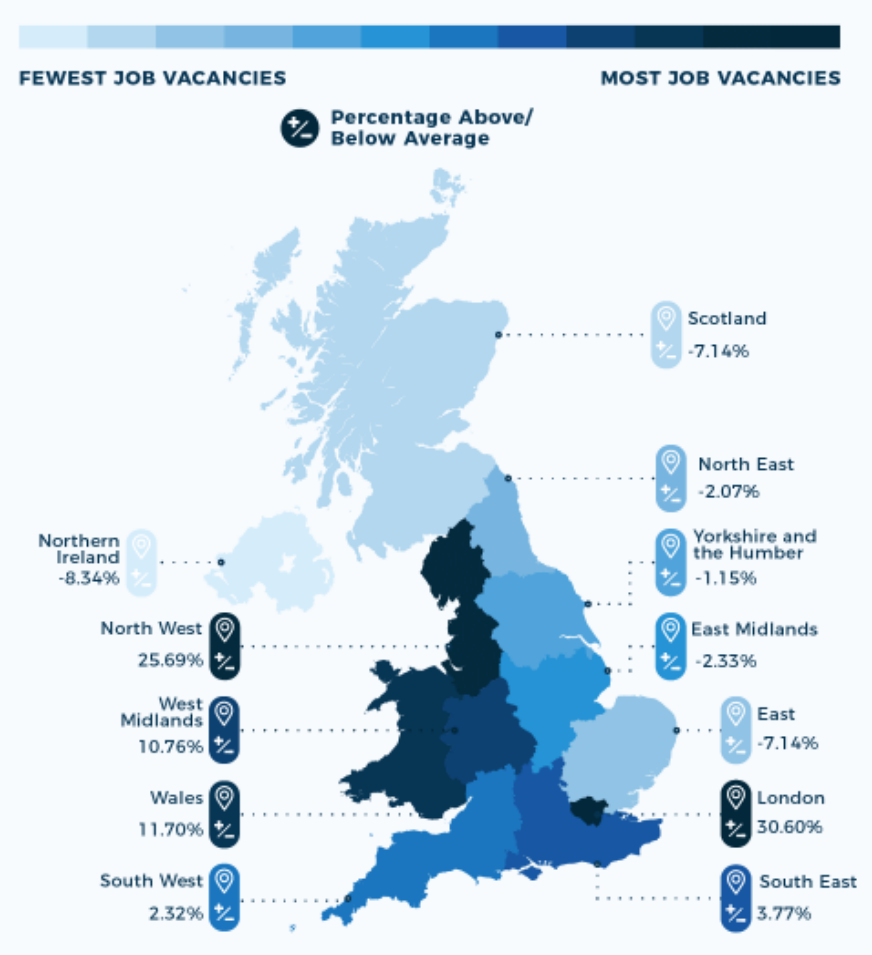
**Figure 6. Proportion of working age population with NVQA+ qualifications in 2017[30]**




3.12 An analysis of UK skills demand demonstrates that the North West is one of the regions with the highest numbers of job vacancies in the UK, according to analysis from the UK Visa Bureau's 'UK Shortage Occupations List' by Small Business Prices, which is in accordance with the findings of the IER. The North West has particularly high demand for financial sector jobs, directors and CEOs, nurses, social workers, mechanical engineers and welding professionals. This suggests that improving access to jobs from areas with fewer vacancies (such as Yorkshire and the Humber) and attracting talent are key priority areas to improve the functioning of labour markets across the North.

[30] Annual Population Survey (December 2017 data)

**Figure 7: Skills demand UK by region[31]**




## Labour Productivity – Investing in Northern Powerhouse Cluster Industries

3.13 The IER identified four areas where the North is highly skilled and globally competitive. These are called 'prime capabilities - promoting, growing and connecting the North's prime capabilities could result in higher productivity:

- **Advanced manufacturing** – capitalising on the North's industrial heritage and strengths in advanced materials. Manufacturing was worth £46bn in the North in 2014, over a quarter of the UK's total manufacturing output.
- **Health innovation** - pioneering clinical research and trials particularly in life sciences, cancer and ageing, pharmaceuticals, research and development. The North exported £7.3 billion worth of pharmaceutical products in 2015, accounting for 45% of all medicinal exports from UK.
- **Energy** - new technologies for energy security, production, distribution, storage, carbon capture, decommissioning and grid management. 31%

[31] Source: **http://smallbusinessprices.co.uk/uk-skills-shortage/**

of the UK's total renewable electricity was generated in the North in 2015.

- **Digital** - linking digital capabilities such as cognitive computation, simulation/modelling, financial technology, cyber security, high-performance computing, data analytics (big data), and strengths in media. The North is home to seven of the UK's 27 key tech clusters.

3.14 The prime capabilities are supported by three 'enabling capabilities':

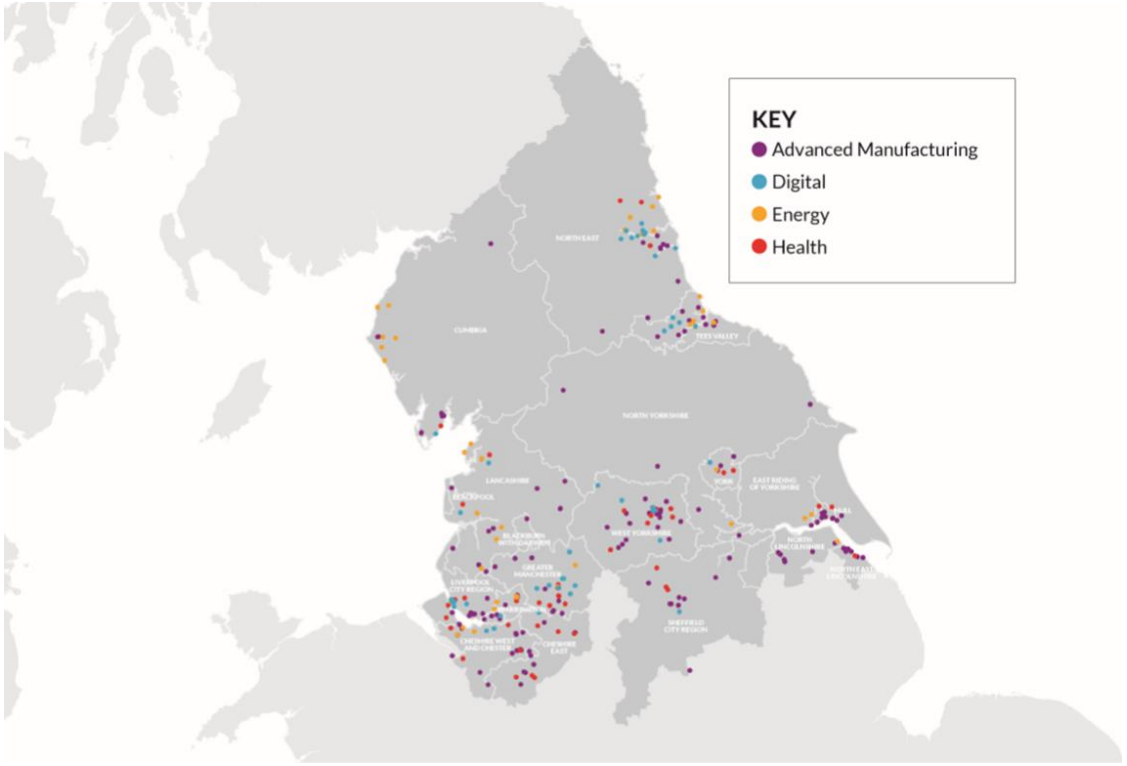
- **Education** (particularly higher education providing research capability and technical expertise for supplying skilled labour and export strengths);
- **Financial & Professional Services** (key business, legal, insurance and financial services); and
- **Logistics**.

3.15 The four "Prime" capabilities and three "Enabling" capabilities, collectively represent approximately 30% of all jobs in the North and over 35% of GVA.

3.16 In a 'transformed future' scenario, the Northern economy would become more productive, partly through increasing the skills of its workforce and lowering levels of economic inactivity - both these factors are associated with an increased propensity to travel. All other things being equal, increased productivity would therefore be expected to lead to marked changes in both the travel patterns of individuals and aggregate patterns across the entire North.

3.17 Figure 8 displays the Northern Powerhouse cluster industries. This highlights the need for connectivity to facilitate competition, collaboration and specialisation.

**Figure 8: Location of Northern Powerhouse Cluster Industries in the North**




3.18 Changes in investment or economic agglomeration could be expected to lead to greater employment within higher-level occupations and higher incomes, and potentially different lifestyles, leading to further changes in travel patterns. Currently, poor and inconsistent transport links are limiting agglomeration and constraining growth.

## Transport's influence on economic growth

3.19 Better connections at a Pan-Northern level, particularly connections between the North's existing and future economic assets, will help provide the conditions in which jobs can be created and growth achieved. To realise the benefits of agglomeration, the North requires its networks of railways, roads and also the main inland waterways, to provide effective, resilient and reliable connections. These connections should meet a series of standards of journey time and frequency set by the North. Sufficient capacity will also be required to accommodate the increased passenger and freight travel demand that growth will bring.

3.20 The work undertaken by the NPIER highlighted that transport connectivity is a key enabler of economic growth. This is true for the North of England, as research shows that the key growth sectors cluster in its city centres. Better transport connectivity is important because:

- Investment in skills is more likely to occur where there is access to well-paid jobs and training
- Foreign investors are more likely to be attracted to locations that are well connected to global markets and which have access to a well-qualified workforce

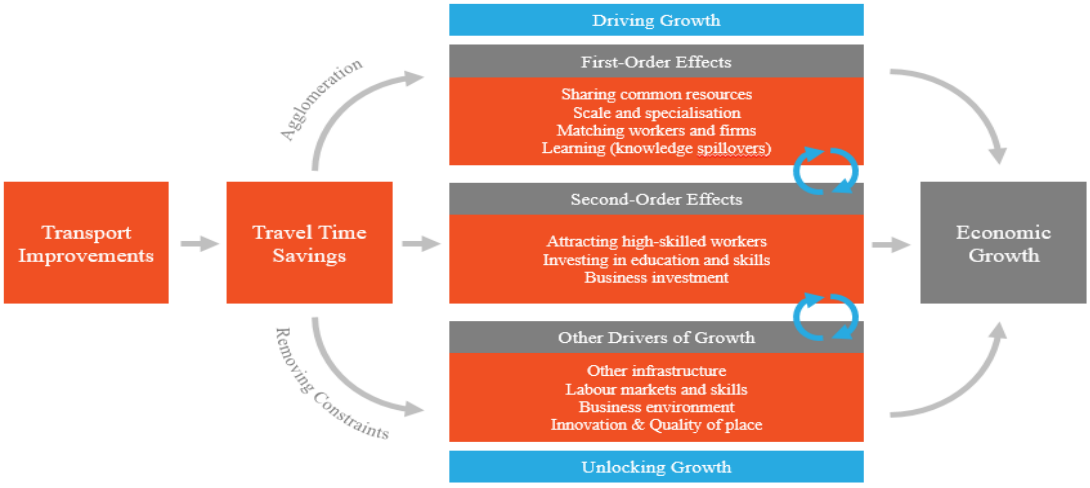
- Firms are more likely to specialise and innovate in areas with deep and extensive labour markets
- Firms can start to cluster and agglomerate more effectively

3.21 Overall, the impacts of transport are wide-ranging and can be grouped into three types: user benefits, productivity, and investment and employment impacts[32]. A logic chain showing how investment in transport infrastructure could flow through to wider economic impacts in the North is shown as Figure 9.

3.22 Investment in transport benefits both passengers and road users as well as industry. The forecast growth within the NPIER shows an increase in road and rail usage. This also links to the road and rail freight moved within and out of the North. The key increases in freight flows are currently North/South routes. Additional investment in East West connectivity would bring opportunities for more people and goods to be moved in those directions and growth in freight traffic through Northern ports which could see growth in containers and construction goods being moved around the North generating warehousing and processing capability. Close working with the private sector and our partners will be required to see progress made.

3.23 Improving transport connectivity in the North of England (both between and within cities) and to/from North Wales will support and enable growth in the key growth sectors and their high value jobs by bringing towns and cities and economic centres across the North closer together, creating the agglomeration benefits of a much larger, single economy.

**Figure 9: Transport interventions and economic performance**




Source: Adapted from frontier economics: Assessing the productivity benefits of improving inter-city connectivity in Northern England (2016), Figure 2.

[32] Anthony J. Venables et al., *Transport investment and economic performance: Implications for project appraisal* (2014) **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/386126/TIEP_Report.pdf**

3.24 Markedly improved Pan-Northern connectivity is required to facilitate the development of bigger and more agglomerated labour markets across the North. Closing the transport investment gap will help to address connectivity issues, especially between cities.

**Future demand for personal travel under a transformed North**

3.25 Transformational economic growth in the North is be expected to lead to far-reaching changes in transport demand and travel patterns compared to today. There is potential for significant changes in transport accessibility to transform the economic geography of the North. Improved transport infrastructure will stimulate new travel patterns, as individuals adapt their behaviour to take advantage of enhanced connectivity to access new employment opportunities.

3.26 To reflect uncertainty regarding key factors affecting travel demand, Transport for the North has developed four future scenarios representing the potential variation in travel markets in the North by 2050. The assumptions have been grouped so that each scenario represents a coherent and plausible future. No one scenario is more likely than another – but taken together they represent the likely range of outcomes in travel demand in the North.

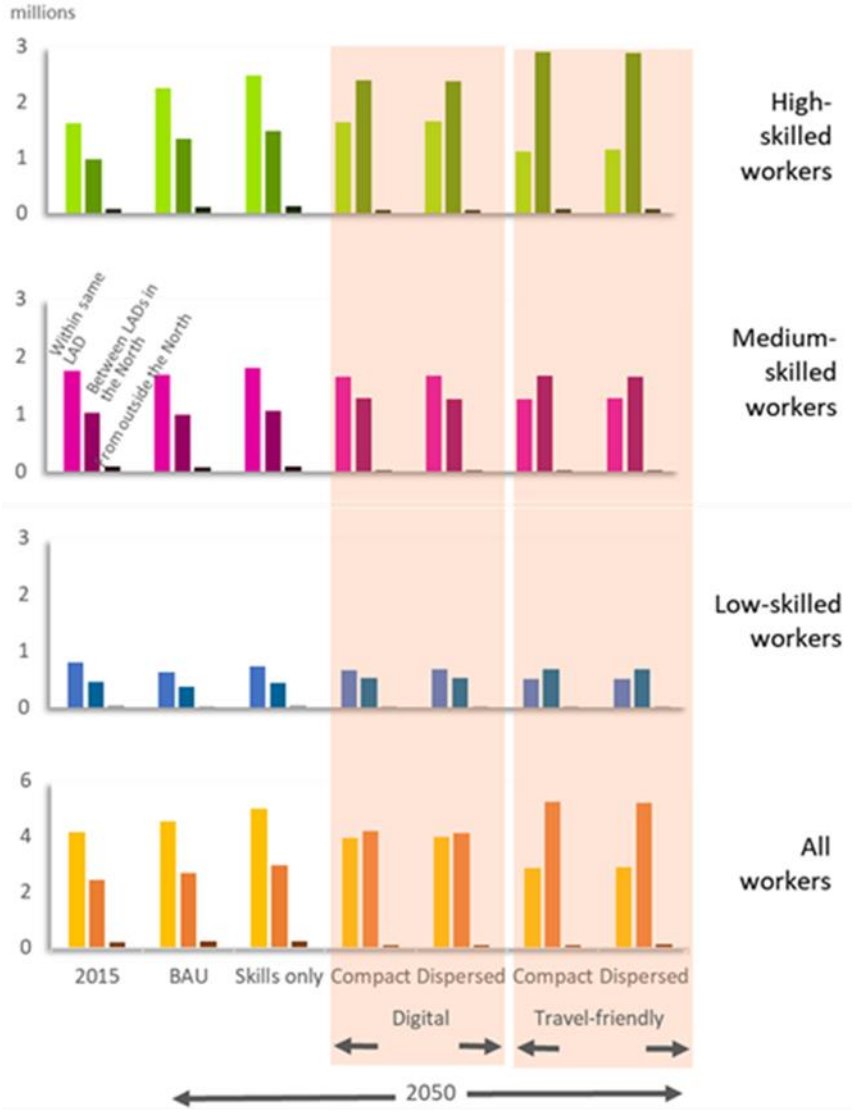
3.27 Total demand for rail travel is expected to be up to four times higher than today. This would mean an increase in the current total of 178 million trips in the North to around 760 million trips by 2050. In a transformed North, total demand for road travel is forecast to increase by up to 54% by 2050. This would mean an increase in the current total of 126 billion vehicle km travelled in the North to 193 billion vehicle km by 2050.

3.28 As described previously, analysis of the North's labour markets indicates that the majority (61%) of the North's workers lived and worked in the same local authority district in 2015. Under the business as usual scenario, this proportion is not expected to change in to the future. However, in the transformational scenario, the proportion of workers taking employment outside of their home district is expected to markedly increase by 2050. The greatest change is expected for high-skilled occupations, who already have a higher propensity to travel further for work.

**Figure 10: Initial Northern Transport Demand Model Foresighting Scenarios**

3.29 Figure 11 below shows the commuting patterns in terms of flows of workers under the four different scenarios. It shows that in all scenarios, workers are more likely to commute across local authority district boundaries, especially among high-skilled workers and in the two Travel Friendly scenarios.

**Figure 11: Commuting patterns under a transformed North**




3.30 Even in the two Digital scenarios, the number of workers commuting across local authority district boundaries in the North is some 70% higher than in 2015, whilst the number of actual workers is only some 20% higher. In the two Travel Friendly scenarios, it is more than double the number in 2015.

### Transport challenges and economic opportunities

3.31 The fundamental challenge for the North's economy is to improve the economic interaction between the key economic clusters and assets of the North to improve the sharing of knowledge, supply chains, resources, and innovation to drive agglomeration benefits and productivity. Physically connecting the North's towns, cities, and international gateways will facilitate this. It can also create agglomeration economies centred on areas of commercial and industrial specialisation.

3.32 Each of the SDCs have distinct economic strengths, that require support from future transport investment as well as important connectivity challenges that need to be overcome, if the North as a whole is to deliver transformational growth. While significant investment in transport infrastructure is currently planned for the region, there is a need for a programme of further Pan-Northern investments to maximise and realise the opportunities from the major transformational infrastructure projects such as HS2 or NPR.

3.33 Better transport connectivity increases the physical proximity of firms, workers and consumers and concentrates economic activity into clusters. Improving transport connections between the North's cities, towns, economic centres, infrastructure and assets allows for greater opportunities. This will be supported by a strong logistics industry. This section presents the key transport challenges and economic opportunities that can be realised with a programme of rail investments in the North.

## Passenger Rail's Role in the North

**Connecting People: Accessibility for Residents**

3.34 The North's transport system needs to be accessible, resilient, safe, well-maintained and accommodating for the free-flowing movement of people for work, leisure, education and other personal business trips. Better transport links make jobs more accessible, provide greater choice and can deliver a better quality of life.

3.35 This will also help the North's deprived areas reach their full economic potential. For an employee seeking work, better links increase the number and range of jobs and career opportunities available. For an employer, better connectivity increases the ability to access and compete across a larger labour market catchment area.

3.36 The limited reach of labour markets means that Northern workers have reduced job opportunities, and Northern employers have much smaller labour markets. This is holding back wages and productivity and makes the North a less attractive place for businesses.

3.37 Improved connectivity to Important Economic Centres will assist with increased engagement in the labour market, access to skills and improved interaction between centres. A relatively small proportion of the North's population commutes by rail. This is due to factors such as the cost, convenience and perception of the rail network, as well as capacity

constraints on both intra and inter-urban rail services. Many of the current journeys between Northern economic assets and clusters are slow and infrequent, both in absolute terms and compared with journeys to and from London. For example, it currently takes longer to travel by rail between Liverpool and Hull than it does to travel twice the distance between London and Paris.

3.38 Rail can play a critical role in matching skilled workers with appropriate employment as a result of its specific characteristics – notably the capability of transporting large numbers of workers into town and city centre locations without being subject to highway congestion and its associated impacts on journey time, the environment and quality of life.

3.39 A strengthened and more prosperous Northern economy will result in a higher number of employment opportunities, many of which will be located in urban centres. A larger jobs market in key skilled sectors will in turn increase demand for education and skills training, with many centres of further education located in or close to town and city centres.

3.40 A rising population will require more housing capacity. The location of future housing developments will have a major impact on future travel patterns and transport demand. If housing development is dispersed further from economic centres, increased commuting demand and longer distance trips will become more prevalent.

3.41 The North currently has a modal share for rail for commuting of 3.4%, defined both in terms of residence and workplace. Whilst this is comparable with the rest of England outside of London and the South East, and potentially masks concentrations of the higher rail modal share on key routes to/from for journeys to the North's larger urban centres, it indicates that overall, a relatively small proportion of the North's population use rail to commute, and that there is significant scope for rail to increase its share of the market as the economy grows.

*Long-distance connectivity*

3.42 There is currently a disparity between north-south and east-west connectivity in the North of England. Those services which utilise the East Coast, West Coast and Midland Main Lines for some or all of their journey tend to be significantly quicker than those operating across east-west corridors such as the North Trans Pennine, Hope Valley, Tyne Valley or Calder Valley routes.

3.43 North-south connectivity, particularly to and from London, has been improved through sustained periods of investment to the Midland and West Coast Main Lines, the effects of which are illustrated in Table 4: below. The average journey times in the table relate to non-overtaken trains.

**Table 4: Comparison of frequencies and journey times between Northern centres and London in 1997 and 2017[33]**

| | 1997 | | 2017 | |
|---|---|---|---|---|
| | Frequency | Avg Journey Time | Frequency | Avg Journey Time |
| Liverpool | 1 | 02:45 | 1 | 02:12 |
| Manchester | 1 | 02:30 | 3 | 02:09 |
| Preston | 1 | 02:37 | 2* | 02:15 |
| Carlisle | 0.5 | 04:00 | 2* | 03:22 |
| Leeds | 1 | 02:26 | 2 | 02:13 |
| Sheffield | 1 | 02:22 | 2 | 02:05 |
| York | 2 | 02:00 | 2-3 | 02:06 |
| Newcastle | 2 | 03:00 | 2 | 03:04 |
| **includes overtaken trains* | | | | |

Source: National Rail Enquiries

3.44 However, despite these improvements there are connectivity gaps between the North and some other areas of the UK. Some major Northern cities such as Bradford and Hull lack direct connectivity to other major cities, such as Birmingham and others have no direct link to London. There is only very limited connectivity between the North and Cardiff (via Chester and Manchester)[34] and Leicester (via Sheffield), and some economic centres such as Middlesbrough have no direct connectivity to either Glasgow or Edinburgh. Important centres of growth, such as Cambridge, and areas to the south and east of London have no direct links to the North.

3.45 The quality of service provision across Manchester from the North West to Sheffield City Region and the East Midlands is insufficient, with capacity and reliability issues prevalent, as well as poor journey times. The current potential for growth is inhibited by a lack of direct connectivity and integration of rail services linking the key economic centres within key SDC corridors. There is a growing demand for transport connectivity to strengthen the collaboration between the various advanced manufacturing, health technology, digital businesses and research centres in the North such as those in the Sheffield City Region with Lancashire and Cumbria.

3.46 It is important to the North that its businesses can readily access important suppliers, markets and collaborators beyond the North of England,

[33] From Table 3.2 of the Draft Long Term Rail Strategy, TfN

[34] In the medium term, further connectivity to/from South Wales may be enabled via the Halton Curve.

particularly in key centres such as London, Edinburgh and Birmingham, as well as economic centres such as Cambridge.

3.47 HS2 Phases 1 and 2a will provide a further step-change in north-south connectivity once completed in 2026/27. The scheme will deliver a dedicated high-speed railway line between London and Crewe, with high speed services running on the 'conventional' rail network to Liverpool, Manchester and further north on the West Coast Main Line. HS2 Phases 1 and 2a will significantly reduce journey times and increase capacity between cities in the North West of England, Birmingham and London. Phases 1 and 2a will reduce the journey times between Manchester Piccadilly and London Euston by 37 minutes, Liverpool and London Euston by 40 minutes and between Crewe and London Euston by 35 minutes.

3.48 Current proposals for Phase 2b of HS2, intended for completion in 2033, will extend the dedicated high-speed line from Crewe to Manchester via Manchester Airport, as well as to a junction on the West Coast Main Line at Golborne, where HS2 services to Wigan and stations further north will join the 'conventional' network. A further line will also link Leeds and Sheffield to London via the East and West Midlands. A link to the East Coast Main Line at York will allow high speed services to serve destinations north of York, including Darlington, Durham and Newcastle.

3.49 For these longer-distance journeys, rail will have key journey time advantages relative to road travel, as well enabling direct access to central locations. In some cases, particularly to/from London, connectivity is currently strong, and will undergo a further step-change improvement with the introduction of HS2. However, certain centres are poorly connected to the North currently, especially those remote from the main lines and future high-speed routes. Unless weaknesses in the wider network are addressed, this will serve to erode journey time advantages and weaken the attractiveness of rail.

**Connecting People: Connecting Business, Economic Assets and Clusters**

3.50 Sustainable economic growth can occur when businesses, employees and customers are better connected through transport. The industries identified as the four prime and three enabling capabilities within the Northern Powerhouse Independent Economic Review, as well as businesses in the wider economy, are spread across the North.

3.51 Beyond local areas, transport links to other parts of the North and the UK are critical to local long-term success. Pan-Northern transport improvements will support the economy through multiplier impacts, providing enhanced connectivity between adjacent functional economic areas, and to shared Northern, national and international gateways. This transformation of pan-Northern connectivity can in turn result in improved local connectivity, delivering economic and social benefits.

3.52 Transformational growth projections forecast material increases in highway and rail trips. Underlying these growth forecasts are assumed supporting

improvements in the northern transport network. Without such intervention, the forecast growth will not occur; poor road and rail connectivity between economic assets and clusters in the North is affecting the capability of these clusters expanding and preventing the growth in supply chains. This is also true for a number of economic assets and clusters outside the urban cores.

3.53 Growth in knowledge-intensive jobs in the North, such as those in the NPIER prime and enabling capabilities, will lead to increased demand for travel:

- workers within each of the seven capabilities have distinctive travel patterns, in part a result of the different geographies and occupational breakdowns within each capability, but also because of the different mix of people who work in each capability.
- Since those employed in the four prime and three enabling capabilities are typically more highly skilled, better qualified and in higher occupational groups, they would be expected to have a greater propensity to travel, especially by rail. This is illustrated in Figure 12, which shows that within six of the seven prime and enabling capabilities, the number of annual rail trips exceeds the English average. Each worker within Finance and Professional Services, for example, makes over 50% more rail trips than the national (England) average.
- Similar trends can be observed in terms of total distance travelled. Workers within all IER capabilities travel greater distances than the England average, as illustrated in Figure 13. Those in the digital, financial and professional and educational capabilities travel the greatest distances. Notably, workers within Finance and Professional Services travel 65% further by rail than the England average.

**Figure 12: Number of rail trips annually (all journey purposes), average for NPIER prime and enabling capabilities**

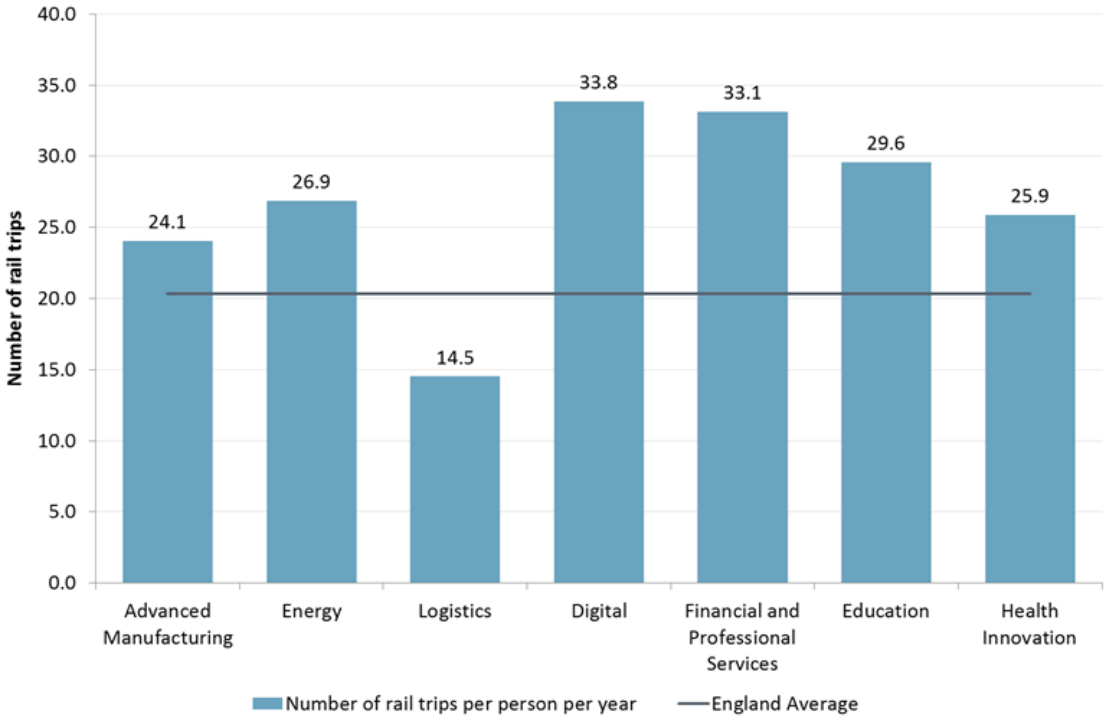
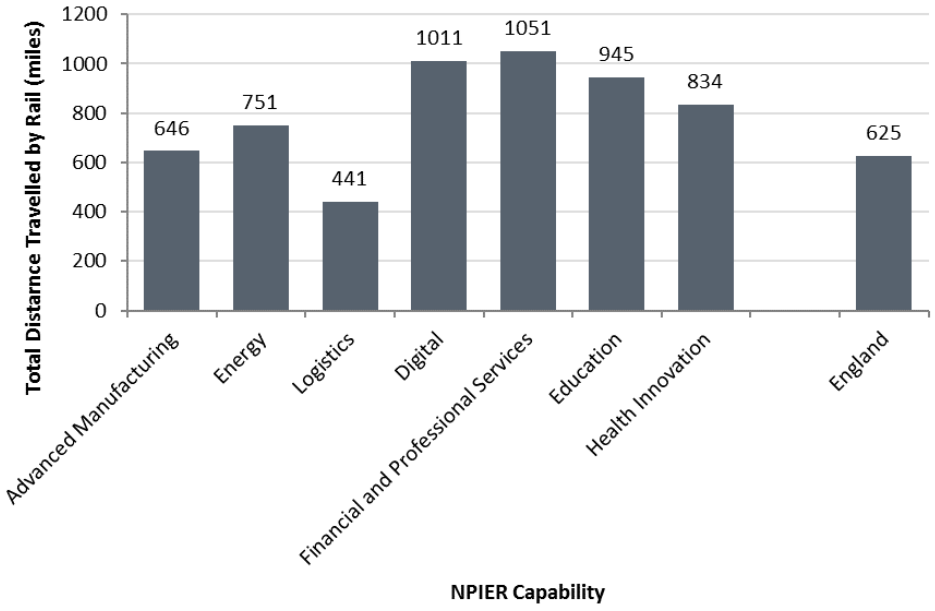



**Figure 13: Weighted average total distance travelled by rail per person per year by NPIER Capability in England[35]**




[35] Source: Analysis of National Travel Survey (2013) and Business Register and Employment Survey (2015) data

Source: NPR Strategic Case (SDG)

3.54 In the absence of intervention, this growth will put additional pressure on the highway network –and benefits would be less well distributed.

3.55 The IER states that "enhanced pan-Northern city-centre to city-centre rail links, east-west and north-south, are needed to facilitate the bigger labour markets that support the success of knowledge-based firms – and, to be effective, they must be integrated with city region local public transport networks, which are joined-up with wider networks, involving frequent rail services, light rail and bus, all supported by smart, multi-modal ticketing.

3.56 For employment in city centres to grow to the maximum extent and the full scale of agglomeration benefits realised, it will need to be accommodated by enhanced public transport connectivity due to space constraints on both inter-city links and within cities at origin and destination points.

3.57 When average journey speeds are overlaid onto a network schematic, as in Figure 14 below, the lower average speeds across key east-west routes can be observed. It also highlights particular speed 'pinch-points' on the network, where the average speed of inter-urban services falls below 40mph. In the east-west direction, there is only one section of the network (Stalybridge – Huddersfield) where the average speeds of inter-urban services exceed 60mph.

3.58 Average speeds (and by extension journey times) are influenced by a number of factors – including the capabilities of the infrastructure (line speeds, level crossings), rolling stock acceleration and top speed capabilities, stopping patterns and station dwell times. Limitations in any of these influencing factors can serve to increase journey times.

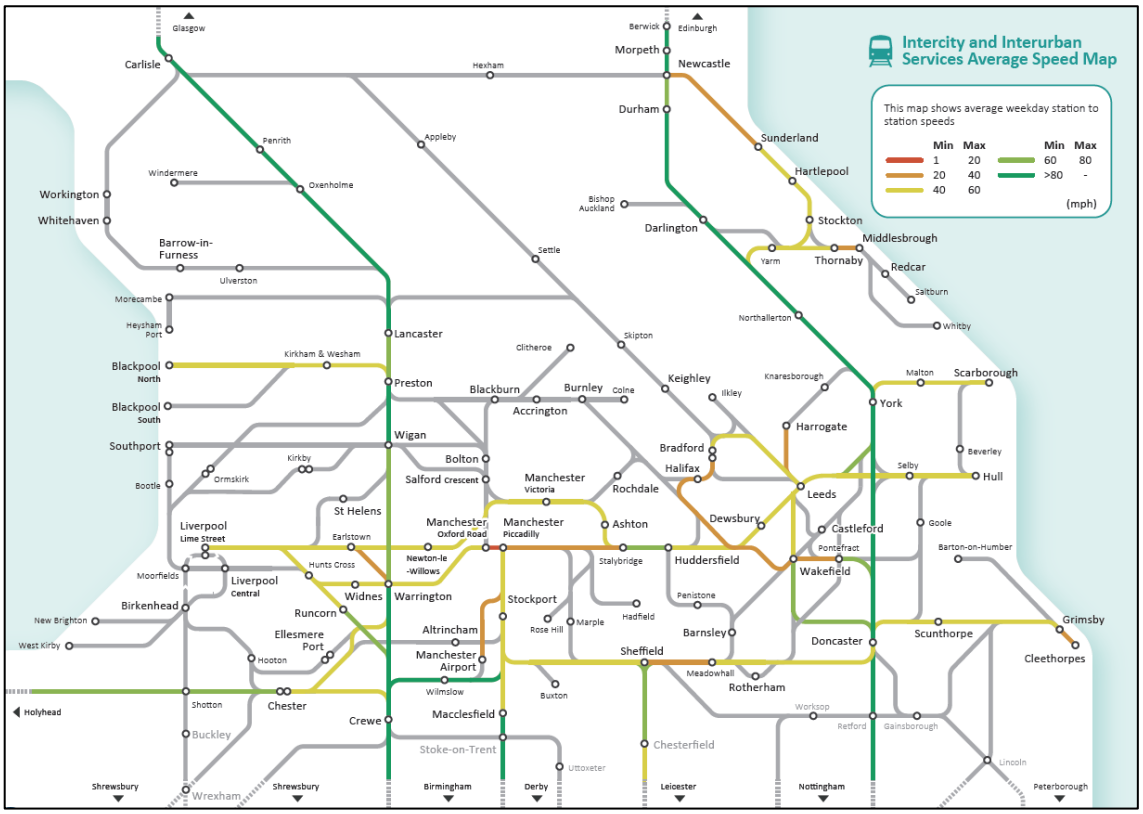
3.59 Improved east-west rail connectivity would support greater agglomeration, productivity and efficiency across the North of England, and enable cities in the North to develop stronger economic links and function more like other major global economic regions, such as the Randstad area of the Netherlands and the Rhine-Ruhr conurbation in Germany. This will grow labour markets enabling better matching of employee skills and allow more inter-city linkages between businesses.

3.60 The Northern Powerhouse Independent Economic Review (NPIER) identified the significant potential of delivering better links between Cumbria, Lancashire and the City Regions of Sheffield and Manchester, building upon the strength of academic institutions and complementary skills and advanced manufacturing processes, as well as globally significant businesses, supply chains and economic assets. For example, it is important to connect economic centres including the Advanced Manufacturing Park, which is home to the Nuclear Catapult Research Centre, in the Sheffield City Region with strengths across the North West such as the National Energy College, advanced manufacturing including subsea technologies, nuclear power transmission, marine engineering, polymer science, and renewable energy.

3.61 The growth of the Northern economy will drive, and will be dependent on, increased business-to-business travel between its economic centres. The rail network will need to enable this travel to be undertaken as quickly and efficiently as possible, and must offer a viable and attractive alternative to road-based transportation.

3.62 Connectivity between the North's centres, in terms of passenger service frequencies and journey times, is too often poor, extending the perceived distance between centres and acting as a barrier to travel. Issues such as overcrowding and poor on-board facilities can make rail travel unproductive, effectively removing one of rail's key advantages over other modes.

**Figure 14: Average speeds of selected long distance/inter-urban services**




3.63 Investment being delivered through the TransPennine Express franchise will go some way toward addressing overcrowding and improving service frequencies, and the introduction of the 'Northern Connect' brand in the Northern franchise will complement the inter-urban network by delivering a distinct customer offer and improved service quality.

3.64 However, the full benefits of this investment cannot be realised without sustained improvements to enable journey time reductions and further frequency increases, particularly on key east-west corridors.

3.65 The TransPennine Route Upgrade (TRU) project is designed to do that, and to deliver much faster journeys, at a higher frequency and with more capacity, than today's railway. Its high level strategic outputs are summarised as follows:

- Leeds to Manchester target journey time of 40 minutes;
- York to Manchester target journey time of 62 minutes;
- Capacity for six inter-urban services per hour for trains of eight vehicles, and up to two local services per hour, in both directions;
- 92.5% of passenger trains to arrive within 5 minutes of scheduled time – which is a higher standard than the '92.5% within ten minutes' that is stipulated (but rarely achieved) on all other long-distance services; and, if possible
- W10/W12 gauge clearance and provision of 1 freight path per hour (in each direction) for freight services between Manchester Victoria/Guide Bridge and Thornhill (which is south of Dewsbury)

3.66 Electrification is being considered where it may be required to deliver the high level strategic outputs.

3.67 The TRU would help build towards the Northern Powerhouse Rail (NPR) programme, being developed by TfN and the Department for Transport, working collaboratively with Northern Partners.

3.68 As set out in the STP, a step change in the level of rail connectivity between the North's largest cities is required to support opportunities and choices to the next generation of workers and businesses. NPR would support economic transformation in the North by delivering faster and more frequent rail journeys linking the North's largest cities with each other, and to Manchester Airport. It also has potential to provide much improved connectivity for other significant economic centres, and the potential to release capacity on the existing rail network for freight and other local services. NPR will help deliver the integrated Northern labour markets that are necessary to achieve economic transformation, unlock investment potential and create opportunity and new economic choices for millions of people across the North.

3.69 NPR is being developed alongside the Long Term Rail Strategy, and is complementary to investment plans for the wider rail network. Integral to the proposal is ensuring that the wider network can also incorporate and realise the associated benefits of NPR

3.70 TfN analysis shows that NPR could:

- Increase the population within one hour's rail travel of four of the largest cities from 10,000 today to 1.3 million;
- Change the way labour markets work, where people live and work and how businesses collaborate and will support the North to attract and retain the people and skills it needs. Once the network is delivered, 40% of businesses identified as in the Northern Powerhouse Independent Economic Review prime capabilities would be within 90 minutes rail travel of four or more of the North's largest cities, compared to only 12% today; and
- Be integrated with HS2 to maximise connectivity and demand on the planned new fast north south connections, and make greater use of HS2 infrastructure.

**Figure 15: Emerging vision for the Northern Powerhouse Rail network**


## Connecting People: Accessibility for visitors

3.71 The North's towns and cities also act as significant attractors to visitors, along with national parks, seaside resorts and coastal attractions. The latter are often at the periphery of the North's transport network and are also the most susceptible to incidents on the network.

3.72 Increasing the visitor economy will require easy and accessible transport connections so that national and international visitors can access attractions across the North. Improved connectivity would enable more visitors to travel directly to the North, making it more likely that they will spend more time and money here. With improved local, regional and international connectivity, the number of visitors and tourist trips to the North could be greatly increased.

3.73 At the same time, it is vital that the transport network does not restrict tourism. Opportunities to enhance the built and natural environment through a carefully designed and operated transport network should be seized.

3.74 The tourism sector represents the third largest employer within the UK, accounting for 9.5% of total employment. There are 265,000 businesses associated with tourism, which account for 10% of all businesses in the UK. Within the regions that encompass the north, nearly 350,000 people are directly employed by the tourism industry. The number of visitor trips made to the North as a whole, North West and North East relative to the UK is provided below:

**Table 5: Visitor trips made to the North as a whole, North West and North East relative to the UK[36]**

| Region | Day Visits (£m) | % | Domestic (£m) | % | Inbound (£m) | % | Total (£m) | % | Direct Employment | % |
|---|---|---|---|---|---|---|---|---|---|---|
| North | 7,647 | 14.5 | 3,081 | 13.6 | 1,546 | 7.3 | 12,302 | 12.7 | 227,817 | 12.7 |
| North East | 2,277 | 4.3 | 616 | 2.7 | 216 | 1 | 3,116 | 3.2 | 57,704 | 3.2 |
| North West | 5,370 | 10.2 | 2,465 | 10.9 | 1,330 | 6.3 | 9,186 | 9.5 | 170,113 | 9.5 |
| **UK Total** | **52,848** | **100.0** | **22,549** | **100.0** | **21,027** | **100** | **96,724** | **100.0** | **1,789,333** | **100.0** |

3.75 In-bound tourism brings the North around £1.9 billion (GVA) in revenue, with huge potential for more domestic and international tourists to be attracted to the many world-class attractions that the North has to offer.

3.76 Leisure and tourism are vital components of local economies across the North, but its value is dispersed across the North's national parks, cultural attractions in the centre of its towns and cities, and rural and coastal attractions. The visitor economy has the potential not only to provide GVA and jobs growth, but can also maintain and enhance the Northern population's quality of life, whilst helping retain and attract a skilled and experienced workforce who can maintain and develop these attractions.

3.77 Direct rail connectivity to some leisure destinations is currently poor – for example there are often no direct rail services between coastal centres and potential sources of visitors in major population centres in the North and elsewhere. Direct connectivity is important as families and groups can have lower propensity to interchange – particularly with several items of luggage. If direct connectivity cannot be provided, there is a need to make interchange as easy and seamless as possible.

3.78 Where services do exist, timetables and capacity provision are not always aligned to seasonal demand patterns and special events, with evidence of overcrowding at key times. Facilities on-board trains serving tourist destinations are not always well-suited to the needs of groups and families, nor those with luggage, where storage space can be limited. Infrequent

[36] Source: Tourism: Jobs and Growth, VisitBritain/Deloitte, 2013 & Deloitte, 2013, DETI, Inter Departmental Business Register 2014.

services and slow journey times, particularly on routes which could serve as a gateway to National Parks and rural destinations, present a further barrier to rail travel.

3.79 Evenings are particularly vibrant in the North's major economic centres – its towns and cities. It is important that the economic and cultural benefits of evening leisure can be realised across the North, and not restricted to those residing in large population centres. People must be able to access leisure opportunities, and the employment options they generate, and travel home afterwards.

**3.80** Currently, rail service provision from economic centres to their catchments in the evening is inconsistent. There are some good examples of connectivity in the evening, but there are also examples of last departures earlier than 10pm, particularly on Sundays. First arrival times on Sundays can also be poor in some cases, and certain lines are closed entirely, preventing any services from operating. Additionally, a few open lines are void of any passenger services and in certain cases this is expected to continue into the next franchise. Service improvements committed in the Northern and TransPennine Express franchises will go some way towards addressing these issues, but gaps will remain.

**Connecting People: Supporting International Connectivity**

3.81 International connectivity and accessibility are important to support a dynamic Northern economy. A significant contribution to GVA would be achieved if more international tourism and business trips were made directly to the North's ports and airports. Enhanced connectivity to global markets are closely linked to levels of foreign direct investment.

3.82 Overall, some 39.6 million air passengers were carried on flights to/from the North's airports in 2016, around 15% of the UK total. The largest proportion of air passengers consists of outbound leisure trips, which contributed around £0.5 billion to GVA in 2016.

3.83 There were around 2 million return business-related air trips to and from the North in 2016, with £5 billion of GVA in the North currently from air passengers derived from business productivity brought about through direct international air connections to and from the North's airports.

**3.84** A key challenge is to attract more businesses to take advantage of the North's prime and enabling capabilities. To achieve this, it needs to be easier, cheaper, faster and more reliable to travel to and from the North's gateways. Easier access to the North's airports can also support additional economic growth by enabling increased development of sites near or adjacent to the North's airports.

**Table 6: Annual Passenger Movements[37] [38]**

| Airport/Port | Total passengers per annum (2018) |
|---|---|
| Carlisle Airport | Re-opened in 2019 |
| Doncaster Sheffield Airport | 1,222,000 |
| Grimsby & Immingham Port | 98,000 |
| Heysham Port | 251,000 |
| Hull Port | 851,000 |
| Humberside Airport | 193,000 |
| Leeds Bradford Airport | 4,039,000 |
| Liverpool Airport | 5,047,000 |
| Liverpool Port | 659,000 |
| Manchester Airport | 28,293,000 |
| Newcastle Airport | 5,334,000 |
| Teesside Airport | 142,000 |
| Tyne Port | 621,000 |

3.85 Whilst the North currently accounts for around 25% of the UK's population, its airports handle around 15% of all airport passengers in the UK. This suggests a degree of underperformance in the connectivity provided given the relative scale of the population and economic base.

3.86 Improved international connectivity will benefit the wider supply chain and visitor economy across the North, as well as creating agglomeration effects from faster, more reliable connections between key areas of employment, with £2 billion spending by 4.5 million overseas visitors. Increasing the visitor economy will require easy and accessible transport connections so that national and international visitors can access attractions across the North – in 2016 26.3 million domestic visitors spent £4.8 billion.

3.87 Ultimately, if more passengers can access the North's airports by road and rail within 1 to 2 hours, then more airlines are more likely to introduce new European and Intercontinental services from the North's airports. This drives an increasingly competitive market whilst providing more choice and opportunity for passengers.

[37] Civil Aviation Authority, *Airport Data 2018* **https://www.caa.co.uk/Data-and-analysis/UK-aviation-market/Airports/Datasets/UK-Airport-data/Airport-data-2018/**

[38] Department for Transport, *Sea passenger statistics: data tables (SPAS)* **https://www.gov.uk/government/statistical-data-sets/sea-passenger-statistics-spas**

3.88 Rail is relevant here in several ways:

- In providing surface access (either directly or via interchange with other modes) to the North's airports (particularly Manchester, Newcastle, Liverpool John Lennon, Leeds Bradford, and Doncaster Sheffield), ensuring that airports can draw upon the widest possible catchment areas, making it attractive for airlines to expand global connections.
- By providing wider rail connectivity to continental Europe via the HS1 Link and the Channel Tunnel.
- In providing surface access to the North's five key rail-connected port areas on major estuaries (Grimsby & Immingham, Liverpool, Tees & Hartlepool, Hull and Tyne), and several rail-connected sub-regional ports. During 2014/15 178 million tonnes of freight was transported through ports in the North, almost 38% of the Great Britain total. In addition, the North boasts a network of inland waterways (such as the Manchester Ship Canal access to Trafford Park, access to Hull via the Humber, etc.), where rail may play a role in improving intermodal connectivity.

3.89 Making the North's airports more accessible by public transport will allow the benefit of these assets to be felt across the North. Whilst the provision of direct rail connectivity to airports is not always achievable nor desirable, interchange between rail and other forms of public transport must be made quick and simple.

3.90 An important international gateway for the North is Manchester Airport. Good access to the airport is important not just for the North West, but also from across the Pennines and to the airport's wider catchment in the Midlands and North Wales. Connectivity improvements were secured as part of the Northern and TransPennine Express refranchising process, and the Long-Term Rail Strategy recognises the importance of further direct rail links to the airport. However, some key catchments have slow rail journey times to the airport relative to their distance, with convoluted routes via central Manchester. The alternative of road access would only add further to the congestion pressures on the motorway network, in the case of Chester, and unsuitable routes across the Peak District National Park in the case of Sheffield.

3.91 Connectivity on the wider network must enable fast and seamless journeys across the North. HS2 Phase 2b and Northern Powerhouse Rail schemes will deliver significant improvements to connectivity between Manchester Airport and the largest cities of the North. However given the constraints on rail services to the existing Manchester Airport rail station, and their importance to the wider northern economy, it is a priority to improve rail accessibility to the airport during the 2020s.

**3.92** Aside from Manchester Airport, the North's other regional airports provide for direct access between international destinations and markets and their catchment areas across the North. None of these airports are served directly by the national heavy rail network, with interchange to other forms of public transport required to complete the door-to-door journey. This

requirement can pose a barrier to use, particularly for those travelling in family groups and with luggage, and good quality information and through-ticketing is not always available.

**Supporting the Built/Natural Environment**

3.93 The transport industry accounts for 24% of the UK's greenhouse gas emissions. The North's dependence on travel by private vehicle, due to the lack of alternatives, perpetuates this significant contribution to greenhouse gases within the study area - per capita levels of carbon dioxide emissions related to transport are particularly high in Hull, Leeds, Bradford, Oldham, Blackburn with Darwen, Sefton and Blackpool. Improved efficiency on the highway network and investment in rail will assist with reducing this global pollution.

3.94 Many of the built-up areas within the study area have identified air quality issues, directly linked to transport emissions. Promoting and supporting the natural environment and built environment with respect to sustainable travel options associated with the major transport networks will be a key opportunity and necessity of future transport initiatives.

3.95 Reducing carbon emissions and improving air quality is now a central requirement for the transport, freight and logistics sector. The UK's Clean Growth Strategy includes the aim to collaborate with the industry to reduce the impact of freight emissions and improve air quality across all transport modes. There is a need to investigate and understand the different options for the study Corridor to move towards delivery of alternative fuelling and operation.

**Addressing isolation, reducing deprivation and improving quality of life**

3.96 The economies and social requirements of rural communities in the North are different to those of its major towns and cities. Residents must often travel further to reach employment, education and leisure opportunities, and rail connectivity can provide an economic 'lifeline' to those in remote communities – especially to those without access to a private car. Rail service provision does not always meet these economic requirements, with few services on some rural routes, providing only limited direct connectivity to the wider North, and others where stations are not served frequently.

3.97 The community rail movement has helped to put the local community at the heart of their railway by creating job and local enterprise opportunities; creating social cohesion through supporting diversity and inclusivity and by reducing the adverse societal effects caused by the abandonment of parts of the railway. Community Rail has been a catalyst for bringing partners together to work towards physical, economic and social regeneration. This includes a notable, growing number of community station projects across the North helping to support wider regeneration, as well as signs of community rail playing a broader role in community development.

3.98 The North also has many areas suffering from the effects of economic deprivation, with concentrations in both urban centres and in areas of industrial heritage such as the former coal mining communities of County Durham. Rail does not always effectively meet the needs of these areas, with some stations difficult to access without private car and poorer service provision for employees with irregular shift patterns.

3.99 Increasing access to employment, education and training for the population of the North can help to reduce unemployment and help those in low skilled jobs move into higher paid, more productive jobs. Effective and affordable public transport is the most efficient means of travel for workers at all skill levels and can be the only option for some people.

3.100 Rail can play a significant role in addressing the barriers to travel faced by a diverse section of society. Accessibility both to/from and at rail stations and on trains should not be barriers to travel and TfN is committed to supporting improvements to stations and trains, and influencing new franchise commitments to reduce the barriers to travel for all. Disruption to facilities and services can have a big impact on both the accessibility of rail services to disabled people, and on disabled people's confidence in travelling by rail. TfN will work with train operators to ensure that the needs of those with reduced mobility and hidden disabilities and appropriately and courteously provided for.

3.101 The North's quality of life is an underpinning asset which supports its economy, particularly in providing an attractive place for people to live, work, invest and visit. Rail has an important part to play in supporting improvements to quality of life.

**Technology**

3.102 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 the travel and the provision and management of infrastructure and services. Globally, nationally and locally, vehicle, infrastructure and service providers, across both the public private sectors are investing in and adopting a range of new technologies and will disrupt current travel markets; however, the scale and timing of Transformational change is unclear.

3.103 Furthermore, these disruptors to transport will not only affect the way transport networks are used, they will also shape whether and when people make journeys. The ability to operate remotely from the traditional work place, access health, education and other daily needs from home, plan journeys with in advance with greater accuracy, and the ability to work while travelling may lead to shifting travel patterns and reductions in the need to make journeys during the established and narrowly defined weekday morning and evening peak periods.

3.104 The Digital Railway programme has the potential to significantly improve both capacity and reliability through the implementation of digital signalling

systems and traffic management. Harnessing this technology will enable the rail network to be more flexible and responsive to changes in demand and improve the reliability of key assets such as signalling. Evolution in ticketing technology provides an opportunity to improve inter-modal integration, price certainty for passengers and increase the amount of travel data available to better plan the requirements of the future network.

3.105 There are significant variations in digital connectivity across the North. The fixed and mobile network coverage is primarily strong in the main centres, with the latter having greater coverage through the delivery of 4G into more remote areas. However, there is a considerable gap in connectivity the further away populations are from the North's main conurbations. This limits opportunities for e-commerce, home education and tele-working in areas already suffering from poorer levels of physical connectivity, damaging the North's ability to reach global markets from less connected areas.

3.106 The National Infrastructure Commission's Connected Future report into 5G and telecommunications technology[39] suggested that high speed communications should be installed along all major transport corridors. With a digital backbone associated with road and rail networks, provided through fixed and mobile infrastructure facilitated by a number of providers, as well a consistent 'utility' of digital provision to all homes, business and centres for services, the true potential for hyper-connectivity can start to be realised. Major infrastructure upgrades implemented in the Corridor should consider the potential to contribute to the 'digital backbone'.

3.107 The national transport infrastructure providers are continuing to roll out digital technologies to their networks with both Highways England and Network Rail delivering both operational and monitoring systems to provide efficiency improvements users. However, at the local level there are varying levels of uptake of digital and smart systems for network management and providing services to users. Furthermore, issues in the Corridors associated with transport connectivity and the associated environmental impacts may be reduced through technological advances in:

- Connected Vehicles;
- Automation and robotics;
- Zero emission propulsion;
- Emerging rail traction technology such as bi-mode, tri-mode and battery;
- Shared assets;
- On account payment systems; and
- Additive Manufacturing.

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39 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/577906/CONNECTED_FUTURE_ACCESSIBLE.pdf

## Summary of Transport Issues

3.108 The issues described in this Case for Change chapter demonstrate the need to provide improved rail connectivity to support the sustainable growth of the Northern economy and enhance the quality of life of those who reside in the region.

3.109 The North of England's economy is currently under-performing relative to the rest of the UK. The North experiences a lower average GVA per capita than the rest of England, with lower rates of employment and skills, and lower productivity than the English average.

3.110 The NPIER suggests that promoting, growing and connecting the sectors of the economy where the North is internationally-competitive (the "Prime capabilities" and their supporting "enabling" capabilities) would help in addressing this performance gap. Workers in these sectors have a higher propensity to travel, particularly by rail.

3.111 Transport connectivity is an important enabler of growth in these and other sectors because:

- Investment in skills is more likely to occur where there is access to well-paid jobs and training
- Foreign investors are more likely to be attracted to locations that are well connected to global markets and which have access to a well-qualified workforce
- Firms are more likely to specialise and innovate in areas with deep and extensive labour markets
- Firms can start to cluster and agglomerate more effectively

3.112 Investment in transport therefore benefits both users and the economy as a whole - supporting and enabling growth in the key growth sectors and their high value jobs by bringing towns and cities and economic centres across the North closer together, creating the agglomeration benefits of a much larger, single economy.

3.113 Under these transformed economic conditions, Northern Transport Demand Model (NTDM) forecasts show that the volumes of people travelling beyond their home district for employment would increase significantly.

3.114 Rail can play a critical role in matching skilled workers with appropriate employment as a result of its specific characteristics – notably the capability of transporting large numbers of workers into town and city centre locations without being subject to highway congestion and its associated impacts on journey time, the environment and quality of life.

3.115 It is an important enabler of international connectivity, with direct rail surface access to the North's principal international airport at Manchester providing the potential to bring the whole region within reach of international markets, and rail freight connections to the North's ports supporting the movement of goods to and from the UK.

3.116 Rail supports the visitor economy, currently worth £1.9bn GVA per annum to the North, by providing direct access to the region's major tourist destinations and international gateways.

3.117 However, rail travel between the towns and cities of the North can be slow and infrequent - a function of multiple constraints including the capability of both the infrastructure and rolling stock, level crossings, stopping patterns and station capacity. These limitations can be particularly acute when travelling east-west across the natural barrier presented by the Pennines.

3.118 In addition, connectivity to some neighbouring regions can be indirect and slow as a consequence. Some economic clusters are not well connected to international gateways, and some tourist centres are not well-served by connections to important sources of potential visitors.

3.119 Significant investment is currently on-going in the North's rail network, and more is planned through the transformational infrastructure projects HS2 and NPR. However, a further programme of pan-Northern interventions is required in order to realise and maximise the potential opportunities presented by these schemes and address the existing and residual connectivity gaps across the remainder of the North's rail network.

# 4 The Need for Intervention

## Introduction

4.1 The Need for Intervention builds on the Case for Change set out in Chapter 3. It focusses on the problems and opportunities identified as being key to the unlocking of transformational growth. It firstly shows why investment is needed beyond the schemes assumed to be delivered in the Reference Case. It then identifies why TfN is the appropriate promoter for the additional infrastructure investment required and what objectives, subordinate to TfN's STP[40] objectives, TfN aims to achieve with a programme of rail investment in the North.

## Why further investment is needed

4.2 Across the North there are both physical (such as highway connectivity, journey times and reliability) and economic barriers restricting trade and business interactions. These barriers limit clustering of businesses, i.e. agglomeration economies, causing under-utilisation of the potential knowledge/innovation spill-overs resulting from improved efficiencies. When the transformational growth is factored in, synergies between road and rail will be critical to addressing these challenges and opportunities, as will an understanding of how transport demands will change in the future.

4.3 In a 'transformed future' scenario, the Northern economy would become more productive partly through increasing the skills of its workforce and lowering levels of economic inactivity - both these factors are associated with an increased propensity to travel. All other things being equal, increased productivity would therefore be expected to lead to marked changes in both the travel patterns of individuals and aggregate patterns across the entire North.

4.4 Under the transformational scenario, growth is expected in high and medium-skilled occupations (an increase of 35,300 and 1,600 jobs per annum by 2050 respectively), while jobs in low-skilled occupations are expected to stabilise from 2030 after a decline since 2015. In a transformed North, by 2050:

- total demand for rail travel is expected to be up to four times higher than today, to around 760 million trips.
- total demand for road travel is forecast to increase by up to 54% by 2050, to around 193 billion vehicle km travelled.

4.5 The major transformational infrastructure projects included in the Reference Case (including HS2, NPR, Northern Trans Pennine Routes, Trans Pennine Tunnel and Wider Transport Connectivity Assessment and Manchester North West Quadrant), are focussed on delivering improved connectivity between the North's city regions. A significant proportion of the growth catalysed by

[40] Provided in the Regional Policy Section of this report (SPOC January 2019)

these projects will therefore be focussed on major towns and cities. To achieve transformational growth across all parts of the North, not just in the large urban conurbations, and realise the necessary rebalancing of the northern and UK economies will require further transport intervention.

4.6 Building on these foundations, the SDCs represent economic ecosystems where the evidence to date indicates most progress towards the transformational growth scenario would be made by bringing forward Pan-Northern road and rail investment over the lifetime of the STP, with investment in all corridors critical in achieving TfN's and Partners collective ambitions.

## Why TfN is the appropriate promoter

4.7 TfN's remit is focused on the identification and recommendation of strategic transport interventions, which generally support longer distance trips and have a pan-northern impact. 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.

## The sub-objectives of the SDCs

4.8 Subordinate to the four objectives set out in the STP, a set of sub objectives were set at the SDC level, to ensure that TfN's aims for investment are achieved. These sub objectives were developed in consultation with stakeholders, including one to ones with industry, to support both the STP's objectives and the aspirations for Pan-Northern interventions. Sub objectives underwent a rigorous process of approvals including TAG and SDC Project and Programme Boards.

4.9 These sub objectives are set out in the following table together with their performance measures.

**Table 7: SDC Sub-objectives**

| STP Objectives | Sub Objectives | SDC Performance Measures |
|---|---|---|
| Transforming the economic performance | Improving productivity across the North | Does the scheme improve the connectivity for people and/ or goods? |
| | Improving links between the North's ports, airports, and strategic transport interchanges and the major transport networks for people and goods | |
| | Supporting, informing and influencing present and future land-use development in the North | Does the scheme improve accessibility to any of the North's four prime capabilities? |

| STP Objectives | Sub Objectives | SDC Performance Measures |
|---|---|---|
| Increase efficiency, reliability, integration and resilience in the transport system | Improving efficient operational performance of existing major transport networks | Does the scheme improve the throughput of existing transport networks? |
| | Increasing the capacity and capability of the major transport networks for people and goods | |
| | Improving the reliability of the major transport networks for strategic transport movements of people and goods | Does the scheme improve the predictability of journey times? |
| | Improving travel choices and user experience for the movement of people and goods across the North | Does the scheme improve customer/ driver experience including via increased choice? |
| | Increasing the resilience of major transport networks | Does the scheme improve the resilience/ recovery of major transport networks? |
| Promote and enhance the built, historic and natural environment | Improving sustainable travel options and making best use of the North's existing major transport network. Supporting the reduction of transport-related Greenhouse Gas (GHG) emissions and improvement of air quality across the major transport networks | Does the scheme increase use of sustainable travel options associated with the major transport networks and reduced transport-related emissions (CO2, NOX, PM)? |
| | Reducing the impact of transport on local communities and environmentally sensitive areas | Does the scheme reduce the impact of transport in environmentally sensitive areas? |
| | | Does the scheme reduce the impact of transport on local communities? |

| STP Objectives | Sub Objectives | SDC Performance Measures |
|---|---|---|
| Improve inclusivity, health, and access to opportunities for all | Supporting the delivery of Transformational Infrastructure and employment projects | Does the scheme improve access to economic assets of National of pan-Northern significance? |
| | Supporting and enhancing the visitor economy | Does the scheme improve access to major tourist destinations? |
| | Supporting and enabling the delivery of strategic housing sites | Does the scheme improve integration with local transport networks? |
| | Supporting an affordable inclusive transport network with enhanced access to key opportunities, education and skills. | |
| | Improving integration and coordination with local transport networks | |

# 5 Wider Context

## Introduction

5.1 This section summarises the wider context of the proposed programme of rail interventions across the SDCs. By outlining the programme's delivery constraints, as well as interdependencies with other implemented or planned projects as well as wider stakeholder needs and views, this section aims to provide a bigger picture with regards to the ease of implementation, its relation to other projects and the wider public opinion.

## Delivery Constraints and Opportunities

5.2 A number of specific and more general constraints have been identified that may affect the delivery of the programme.

*Transport Model Limitations*

5.3 The future travel market scenarios available for use in the transport modelling are as follows:

- National Trip End Model (NTEM) Core – in line with WebTAG guidance;
- NTEM Core with spatial plans and TEMPRO constrained at LEP level;

- NTEM Core with IER land use uplift, constrained at LEP level; and
- Northern Transport Demand Model (NTDM) derived transformational high growth.

5.4 Transport modelling has focussed on the NTEM Core scenario during this stage of work. Plans are currently being made to resolve technical issues experienced with additional scenarios through follow-on commissions.

5.5 Notwithstanding, the NTEM Core scenario represents a lower travel market than TfN's transformational growth demand forecasts in terms of volume of movements and can therefore be seen as a very conservative representation of the benefit to cost ratio (BCR) for a given intervention /programme of interventions.

*Environmental*

5.6 The North of England includes 58 different National Character Areas (NCA). Designated high value landscapes within the North include its many National Parks, Areas of Outstanding Natural Beauty (AONB) and Heritage Coasts. Poorly located or designed transport infrastructure has the potential to degrade existing landscape character and visual amenity.

5.7 By the nature of the Pennines (which contain designated and non-designated landscapes including the Peak District and Yorkshire Dales National Parks) running north-south through a significant section of the North, any efforts to improve east-west connectivity or local or regional connections within the Pennines and its fringes will risk significant adverse landscape impacts.

## Interdependencies

*Reference Case*

5.8 As set out in the reference case definition, the basis against which the programme of rail interventions in the SDCs are assessed includes some improvements which are not yet committed. Therefore, the basis of the assessment and conclusions reached in this SPOC are dependent on implementation of the reference case. That is not to say the programme does not have benefits in its own right, however this has not been examined as part of this this early stage of development work.

*Major Transformational Infrastructure Projects*

5.9 Part of the rationale for the SDCs is to build on and extend the benefits of other significant investments in TfN's wider programme. Schemes such as the Transpennine Route Upgrade (TRU) and, later, Northern Powerhouse Rail (NPR) would benefit from the implementation of the proposed programme of intervention. As the major transformational infrastructure projects and SDC projects target the improvement of inter-city transport links, it can be expected that complementary benefits can be achieved. Furthermore, as HS2 is expected to function as an additional catalyst for

NPR[41], the integration of both projects with the proposed programme of SDC interventions will have additional complementary benefits. That is not to say the programme does not have benefits in its own right; however, this has not been examined as part of this stage of work.

5.10 An overarching programme perspective is required to ensure the view of these complementary benefits is retained as various packages and interventions move forward in the delivery process.

*Wider Policy Context*

5.11 The proposed programme of interventions is not only closely aligned with key national, regional and local policies, but it is also expected that these policies are interdependent with regional interventions as suggested here. Notably, the programme of interventions will also lead to strong complementary benefits for non-transport policies.

5.12 Key national non-transport policies and strategies such as the UK Industrial Strategy or the Making our Economy Work for Everyone report[42], also identified the need for investing in strategic infrastructure to improve the country's productivity and increase economic growth and overall wellbeing. As a result, it is expected that the proposed programme of interventions will play a central complementary role for achieving the objectives of these strategies.

5.13 The NPIER identified poor connectivity and transport as one of the factors driving the productivity gap in the North. Forecasts anticipated that a 'transformed' North, where there were improvements to transport connectivity, as well as the skills base and innovation, would lead to an additional 850,000 jobs, 4% Increase in productivity and a GVA 15% higher than a business as usual scenario.

*Business Case and Funding Approval*

5.14 The costs associated with the development and construction of the programme are significant and the programme is currently in the early stages of business case development. To secure any government funding toward the scheme the DfT's Transport Business Case process will need to be adhered to. This SPOC is the first step, followed by:

- Strategic Outline Business Case development and approval
- Outline Business Case development and approval
- Full Business Case development and approval

[41] Global Railway Review (2018) **https://www.globalrailwayreview.com/news/67419/hs2-npr-ambitions-greater-manchester/**

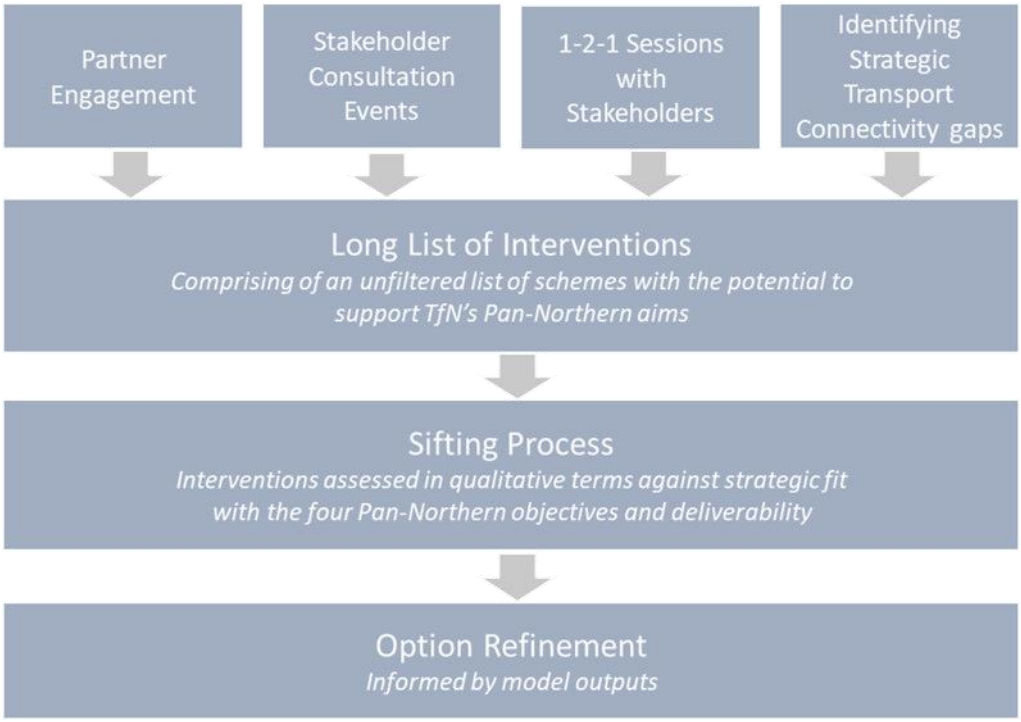
[42] Inclusive Growth Commission, *Making our Economy Work for Everyone* (2017) **https://www.thersa.org/globalassets/pdfs/reports/rsa_inclusive-growth-commission-final-report-march-2017.pdf**

# 6 Option Assessment Process

## Overview

6.1 A staged approach has been taken to the identification of Pan-Northern transport schemes in the corridor as shown in Figure 16.

**Figure 16: Staged Approach to Pan-Northern transport scheme identification**




## Introduction

6.2 The Option Assessment Process outlines the different steps undertaken to identify and shortlist priority rail interventions across the SDCs. A thorough approach was undertaken including the consideration of strategic priorities, multiple criteria as well as different future scenarios to identify an initial set of options. In the following step, an additional sift process was applied to distinguish the final set of interventions. The following section describes this process.

## Option identification and shortlisting

6.3 For each SDC, a process of identifying and shortlisting schemes with Pan-Northern impacts was carried out. The initial long list of interventions was developed through engagement with stakeholders, complemented by reviewing policies and scheme proposals within the study corridors. Sources included: Highways England's Road Investment Schemes, Network Rail's Enhancements Delivery Plan, TfN STP, Long Term Rail Strategy and local authority schemes. The longlisting exercise took account both of Pan-Northern outcomes, emerging policy and future technology developments.

6.4 Rail interventions on the longlist were Outcome-led. That is, where a particular connectivity weakness was identified, through comparison of the reference case to key strategic rail ambitions, the resolution of this weakness became the desired Outcome. For example, where a rail journey time under the reference case was higher than it would be based on the draft LTRS Desirable Minimum Standards, the Outcome for the connection in question would be to improve journey times.

6.5 Once Outcomes had been defined, they were translated into "Outputs" – for example desired journey time saving (in minutes) – and "Inputs" – which attempted to describe the types of interventions necessary to deliver the outputs whilst recognising that no engineering design had been undertaken.

6.6 Following creation of the longlist, a sifting process was undertaken considering each intervention's strategic fit with the four STP objectives and SDC sub objectives (as set out in Table 7:). This was based on a qualitative appraisal of each transport input's likely contribution to the relevant performance measures and deliverability using a four-point scoring scale as set out in Table 8: and aided through application/ reference to a set of metrics (covering the four-point scale) for each performance indicator.

**Table 8: Assessment scoring scale**

| Performance Measure | Deliverability | Rating |
|---|---|---|
| A strong fit with the desired outcome with large beneficial and/or pan-northern or national scale impacts | Strongly deliverable | |
| A good/reasonable fit with the desired outcome with beneficial and/or sub-corridor level impacts | Likely to be some deliverability issues but are not considered to be insurmountable | |
| A neutral/marginal impact with the desire outcome and/or with local impacts | Not applicable | |
| Conflicts with the desired outcome and/or conflict with other interventions, with risk amelioration/mitigation in place | Significant barriers to deliverability that need to be overcome through risk amelioration | |

6.7 The sifting tool also provides a 'performance rating' for each of the four STP objectives. This does not represent a summation or weighting of the individual performance indicator ratings ('scores'); but rather takes an informed risk-based view of how well/ poorly the potential intervention met the strategic objective when considered across the respective performance indicators.

6.8 In order to ensure a consistency of approach the sifting tool was subject to verification and moderation across all SDCs. The outcome of the initial sifting exercise was to classify potential interventions into one of three categories:

- **Potential Core SOP Intervention:** An intervention that has the potential to support transformation improvement, measured against the four Strategic Plan objectives, in its own right
- **Potential Complementary SOP Intervention:** An intervention that as part of a package of interventions that together have the potential to support transformational improvement (but is not Pan-Northern in its own right). Sequenced delivery could mean that complementary interventions come earlier, they could be the quicker wins.
- **Non-Pan Northern Intervention:** An intervention that would only have limited benefits as part of a package of interventions but may have local benefits

6.9 All STP objectives have been treated with equal importance. Interventions that have the potential to strongly support one or more of the STP objectives may be considered a potential core intervention as part of a balanced SOP for the SDC as a whole. It is fully recognised that some potential interventions are likely to face barriers to deliverability and these challenges will need to be overcome as part of the scheme development process.

## Option refinement

6.10 Phase 1 of the studies concluded with an Option Assessment Report (OAR) and an initial sifted list of interventions, representing a draft SOP. This draft SOP was appropriately coded into the regional highway and rail models for more detailed appraisal, refinement and package optimisation.

6.11 For rail, this coding was informed by a separately-commissioned operational assessment of each SOP intervention (whilst still recognising that further design and development will be required to fully understand the interventions required to deliver the Outputs). In some cases, the journey time improvements sought from the interventions were adjusted to reflect this assessment.

6.12 In addition, a version of the NPR indicative train service specification (ITSS) was used to inform the option refinement process. The ITSS features a number of amendments to "conventional" services, the economic and financial impacts of which are assumed to have been reflected in the NPR SOBC. In some cases, there was a degree of overlap between the rail interventions identified by the SDC corridor OARs and the NPR ITSS. The Reference Case for the Rail SDC was updated to avoid double-counting these impacts.

6.13 It was the intention to base the optioneering process on a transformational travel market, derived from the NTDM, but as described previously this has not been possible owing to technical difficulties encountered during this stage of work.

6.14 Instead, Transport for the North provided forecast matrices for 2035 and 2050. These were generated using the DfT's Exogenous Demand Growth Estimator (EDGE)[43], which estimates growth in demand for rail travel based on exogenous factors such as employment, population and GDP. The forecast matrices provided only addressed growth for internal trips (those entirely within the TfN study area); no growth was applied to external trips on instruction from TfN. In addition, the 2050 matrices assume there is no change in demand after 2038.

6.15 The rail optioneering process consisted of an initial comparison of anticipated user journey time benefits and capital costs for each sub-corridor package of interventions, undertaken alongside TfN's partners. SOP interventions were then categorised in the following manner:

- interventions that have a strong strategic case and are supported by the NoRMS model outputs;
- interventions that have a strong strategic case but are not adequately represented by the NoRMS model, and/or requiring further development and analysis.

6.16 The option refinement process also removed a number of potential interventions where the transport need was met by better performing alternative interventions or the intervention is not expected to make any meaningful contribution to the desired Pan-Northern transport outcomes.

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

6.17 A final strategic outline programme (SOP) of interventions for the Passenger Rail SPOC has been defined and is presented below in Table 9: for rail, and shown graphically in Figure 17. The SOP proposals alongside the relevant Reference Case schemes are set against the key pan-Northern outcomes within the Strategic Development Corridors.

6.18 The SOP interventions within this report are accompanied with potential policy interventions regarding the function and purpose of inter-urban corridors. By embracing innovative solutions now, such as the policy interventions shown in Table 10, TfN can influence future infrastructure and improved connectivity. TfN will also ensure that through engagement and dialogue with partners investment plans for inter-urban routes are cognisant of, and complement delivery of local strategies and policies for urban transport networks.

[43] Described further in the Transport Forecasting and Economic Assessment Report

**Table 9: Strategic Outline Programme of Rail Interventions**

| Key Pan Northern Outcomes within the Rail SPOC | Status | Rail/ Public Transport |
|---|---|---|
| Provision of high-speed rail services across the North to the rest of the UK, radically reducing journey times and providing enhanced connectivity beyond the HS2 network<br><br>&<br><br>Ensuring the North is ready for HS2 to maximise the benefits of this nationally significant project | SDC Reference Case | • Phase 2a<br>• Phase 2b<br>• Preston Station<br>• Wigan North Western Station<br>• Lancaster Station |
| | SDC SOP Intervention | • Southport to Wigan (journey time improvements): *Central Pennines SDC*<br>• York to East Coast (journey time improvements): *Central Pennines SDC*<br>• Service frequency enhancements between Ormskirk and Preston: *Central Pennines SDC* |
| Ensuring the North is ready for HS2 to maximise the benefits of this nationally significant project, including access to growth opportunities in and around Central Manchester, Crewe Hub, Warrington New City, and Wigan | SDC Reference Case | |
| | SDC SOP Intervention | • Stockport Station (later phases): *West and Wales SDC*<br>• Warrington Bank Quay (or integrated Station at Warrington): *West and Wales SDC*<br>• Wigan North Western (or integrated Station at Wigan): *West and Wales SDC* |

| Key Pan Northern Outcomes within the Rail SPOC | Status | Rail/ Public Transport |
|---|---|---|
| Enhancing connectivity between the North's largest economic centres, with faster more frequent services, to build on HS2 | SDC Reference Case | • Northern Powerhouse Rail<br>• Interventions at the major hubs necessary to realise the benefits of improved connectivity along the NPR corridors, including: York, Manchester Piccadilly, Liverpool Lime Street and the Leeds Station Masterplans |
| | SDC SOP Intervention | |
| Enhance North-South strategic connections across the North to support UK competitiveness | SDC Reference Case | • West Coast Main Line – Wigan and Preston to Scotland (journey time and capacity improvements) |
| | SDC SOP Intervention | • Crewe to Preston (capacity improvements): *West Coast – Sheffield City Region SDC*<br>• Borders Railway extension: *West Coast – Sheffield City Region SDC* |
| Enhance East-West strategic connections across the North to support UK competitiveness | SDC Reference Case | • TransPennine Route Upgrade (including intermediate interventions) |
| | SDC SOP Intervention | • Harrogate – Skelton Junction: *Central Pennines SDC*<br>• Skipton – Colne: *Central Pennines SDC*<br>• Preston to York (journey time improvements): *Central Pennines SDC*<br>• York to Hull (service improvements): *Central Pennines SDC*<br>• Liverpool to Preston (journey time and service improvements): *Central Pennines SDC*<br>• New Manchester Airport – Nottingham via Crewe and Derby limited stop service, increasing Crewe-Derby frequency from 1 to 2tph: *West and Wales SDC* |
| Enhance access to the North's international gateways in the Central Pennines SDC | SDC Reference Case | |
| | SDC SOP Intervention | • Leeds Bradford Airport Parkway Station: *Central Pennines SDC*<br>• Rapid transit link between Liverpool South Parkway Station and Liverpool John Lennon Airport: *Central Pennines SDC / West and Wales SDC* |

| Key Pan Northern Outcomes within the Rail SPOC | Status | Rail/ Public Transport |
|---|---|---|
| Ensure that the needs of freight operators can be met | SDC Reference Case | |
| | SDC SOP Intervention | • Gauge enhancements and journey time improvements between Selby and Port of Hull: *Central Pennines SDC*<br>• Port of Liverpool to West Coast Main Line enhancements: *Central Pennines SDC*<br>• West Coast Main Line freight capacity enhancements and better accommodation of freight: *Central Pennines SDC / West Coast – Sheffield City Region SDC*<br>• Port Salford rail freight access: *Central Pennines SDC*<br>• Freight prioritised gauge cleared route across the Pennines: *Central Pennines SDC* |
| Improve connectivity and resilience around the Liverpool City Region, Greater Manchester City Region, the Cheshire & Warrington LEP, the Potteries, and the Mersey Dee economic clusters in the West & Wales SDC | SDC Reference Case | • Northern, Transpennine Express and Wales and Borders rail franchise commitments<br>• Liverpool Central Station passenger capacity enhancements<br>• Manchester – Preston improvements<br>• Liverpool City Region upgrades (Lime Street improvements & Chat Moss)<br>• Cross Manchester capacity and reliability<br>• Journey time improvements to the 'Borderlands' (Wrexham – Bidston – Liverpool) corridor |
| | SDC SOP Intervention | • Crewe – Stoke – Derby (journey time improvements): *West and Wales SDC*<br>• Stoke Park & Ride: *West and Wales SDC*<br>• New station at Broughton: *West and Wales SDC*<br>• Northwich to Sandbach rail reopenings and new stations: *West and Wales SDC*<br>• Mid-Cheshire Line (journey time and capacity improvements): *West and Wales SDC*<br>• CLC Line (capacity and service improvements): *West and Wales SDC*<br>• Chester station – passenger & track capacity enhancements: *West and Wales SDC*<br>• Additional calls at Hartford to make total of 2tph in each direction: *West and Wales SDC*<br>• Improved connectivity between North Wales, Chester, Manchester and West Yorkshire: *West and Wales SDC* |

| Key Pan Northern Outcomes within the Rail SPOC | Status | Rail/ Public Transport |
|---|---|---|
| Improve connectivity and resilience to tourism and economic clusters on the Fylde Coast economic cluster | SDC Reference Case | |
| | SDC SOP Intervention | • South Fylde Line (journey time capacity improvements): *Central Pennines SDC / Connecting the Energy Coasts SDC*<br>• Enhanced public transport links to Fleetwood: *Central Pennines SDC / Connecting the Energy Coasts SDC*<br>• Journey time improvements Preston – Blackpool North: *Central Pennines SDC / Connecting the Energy Coasts SDC* |
| Facilitating the delivery of housing growth | SDC Reference Case | |
| | SDC SOP Intervention | • Skelmersdale Rail Link: *Central Pennines SDC / Southern Pennines SDC / West and Wales SDC* |
| Improve connectivity and resilience around the Humber, Liverpool City Region, Greater Manchester City Region, Lancashire and Leeds City Region economic clusters in the Central Pennines SDC | SDC Reference Case | • Northern and Transpennine Express rail franchises<br>• Liverpool Central Station<br>• Manchester – Preston improvements<br>• Liverpool City Region upgrades<br>• Calder Valley Line upgrade<br>• Cross Manchester Capacity and Reliability |
| | SDC SOP Intervention | • Hull to Scarborough (journey time and frequency improvements): *Central Pennines SDC*<br>• Burnley to Manchester (journey time and service improvements): *Central Pennines SDC*<br>• Blackburn to Manchester Victoria (journey time improvements): *Central Pennines SDC*<br>• Rossendale to Manchester public transport connectivity: *Central Pennines SDC*<br>• East Lancashire Line (journey time and capacity improvements): *Central Pennines SDC*<br>• Colne to Accrington (journey time and service improvements): *Central Pennines SDC*<br>• Bradford to Leeds (journey time improvements): *Central Pennines SDC*<br>• Harrogate Line (journey time improvements): *Central Pennines SDC*<br>• Continued programme of work to develop the capacity and capability of the rail network in the Leeds City Region: *Central Pennines SDC*<br>• Lancaster – Morecambe (capacity improvements): *West Coast – Sheffield City Region SDC* |

| Key Pan Northern Outcomes within the Rail SPOC | Status | Rail/ Public Transport |
|---|---|---|
| Improve connectivity and resilience to West Cumbria from the M6 / West Coast Mainline Corridor | SDC Reference Case | • Cumbrian Coast freight capacity programme |
| | SDC SOP Intervention | • Cumbrian Coast Line (journey time and capacity improvements): *Connecting the Energy Coasts SDC*<br>• Furness Line (journey time and reliability improvements): *Connecting the Energy Coasts SDC* |
| Improve connectivity and resilience to the Fylde Coast from the M6 / West Coast Mainline Corridor | SDC Reference Case | • Manchester – Preston improvements |
| | SDC SOP Intervention | • South Fylde Line (journey time capacity improvements): *Central Pennines SDC / Connecting the Energy Coasts SDC*<br>• Enhanced public transport links to Fleetwood: *Central Pennines SDC / Connecting the Energy Coasts SDC*<br>• Journey time improvements Preston – Blackpool North: *Central Pennines SDC / Connecting the Energy Coasts SDC* |
| Improve East-West Trans-Pennine connectivity and journey times | SDC Reference Case | • Northern rail franchise service enhancements |
| | SDC SOP Intervention | • Whitehaven to Newcastle (frequency improvements): *Connecting the Energy Coasts SDC*<br>• Tyne Valley Line – route upgrade and service improvements: *Connecting the Energy Coasts SDC*<br>• Windermere to West Yorkshire (service improvements): *Central Pennines SDC* |
| Improve access to International Gateways – Carlisle Lake District Airport, Newcastle Airport, Port of Workington, Port of Barrow, Port of Blyth, Port of Sunderland, Port of Tyne, Port of Tees | SDC Reference Case | |
| | SDC SOP Intervention | • East Coast Main Line spur to Newcastle Airport: *Connecting the Energy Coasts SDC* |

| Key Pan Northern Outcomes within the Rail SPOC | Status | Rail/ Public Transport |
|---|---|---|
| Improve the connectivity and resilience of key North-South links between functional economic centres on the eastern side of the Pennines | SDC Reference Case | • HS2 Phase 2b<br>• East Coast Main Line power supply upgrade<br>• Horden Peterlee Station |
| | SDC SOP Intervention | • Durham Coast Line (route upgrade and service improvements): *Connecting the Energy Coasts SDC*<br>• Middlesbrough Station: *Connecting the Energy Coasts SDC*<br>• Darlington Station Growth Hub: *Connecting the Energy Coasts SDC*<br>• Sunderland Station and Sunderland Station track layout improvements: *Connecting the Energy Coasts SDC*<br>• Northallerton – Newcastle capacity enhancements and timetable resilience: *Connecting the Energy Coasts SDC*<br>• Newcastle Station including platform lengthening: *Connecting the Energy Coasts SDC / East Coast – Scotland SDC*<br>• East Coast Main Line journey time and reliability improvements to address known issues on the route: *East Coast – Scotland SDC*<br>• York – Newcastle improvements to existing ECML to make best use of IEP trains: *East Coast – Scotland SDC*<br>• Doncaster – Leeds capacity improvements: *East Coast – Scotland SDC*<br>• Doncaster Station remodelling to reduce conflicts: *East Coast – Scotland SDC* |
| Improve connectivity and resilience to Tees Valley from the A1(M) / A19 and East Coast Mainline Corridor | SDC Reference Case | |
| | SDC SOP Intervention | • Middlesbrough – York (journey time and service improvements): *Connecting the Energy Coasts SDC*<br>• Bishop and Saltburn Lines journey time improvements: *Connecting the Energy Coasts SDC* |
| Improve East–West connectivity and journey times across the southern Pennines area | SDC Reference Case | • A rail service of 5 trains per hour (tph) between Manchester and Sheffield: Northern Powerhouse Rail (NPR) with 4 services via Stockport and 1 service via Marple<br>• 2tph from Manchester Piccadilly to Buxton<br>• NPR providing 1 tph service from Liverpool to Lincoln via Sheffield<br>• 1tph from Barnsley to Huddersfield |
| | SDC SOP Intervention | • Heavy rail capacity and journey time improvement in the South Manchester area and on the Wilmslow and Buxton lines: *Southern Pennines SDC* |

| Key Pan Northern Outcomes within the Rail SPOC | Status | Rail/ Public Transport |
|---|---|---|
| Improve access connectivity to key growth zones | SDC Reference Case | • Aire Valley Expansion with regeneration and growth opportunities |
| | SDC SOP Intervention | • New rail stations at Droylsden/Littlemoss 'Eastern Gateway', East Leeds Parkway and Cottam Parkway: *Central Pennines SDC / Southern Pennines SDC* |
| Improve access to International Gateways in the Southern Pennines SDC | SDC Reference Case | |
| | SDC SOP Intervention | • Rail connection and station for Doncaster Sheffield Airport: *Southern Pennines SDC*<br>• New station between Barnetby and Habrough: *Southern Pennines SDC*<br>• Manchester Airport western link: *West and Wales SDC* |

| Key Pan Northern Outcomes within the Rail SPOC | Status | Rail/ Public Transport |
|---|---|---|
| Improve rail connectivity within and between South Yorkshire, the Humber, and East Midlands | SDC Reference Case | • A rail service of 4tph between Doncaster and Hull: NPR with 1 service via Selby, 2 services conventional fast via Selby and 1 service stopping via Thorne<br>• A rail service of 6tph between Sheffield and Doncaster: NPR with 2 services direct, 1 service conventional fast and 3 services tram-train via Rotherham Parkgate<br>• Additional NPR service between Cleethorpes via Sheffield and Doncaster<br>• 4tph between Barnsley and Sheffield<br>• 3tph between Barnsley and Leeds<br>• A rail service of 9tph between Leeds and Sheffield: HS2 with 4 services, 2 services conventional fast, 2 services conventional semi-fast and 1 service conventional stopping<br>• A rail service of 9tph between Leeds and East Midlands: HS2 with 5 services, 2 services conventional fast via Derby, 1 service conventional inter-urban to Chesterfield and 1 service conventional inter-urban to Nottingham |
| | SDC SOP Intervention | • Journey time and capacity improvements between Cleethorpes and Doncaster to increase links between Northern Lincolnshire and the Sheffield City Region and the North West: *Southern Pennines SDC*<br>• Sheffield to Lincoln (journey time, frequency and capacity improvements): *Southern Pennines SDC*<br>• Penistone Line (journey time, frequency and capacity improvements): *Southern Pennines SDC*<br>• Improvements to the Northern Loop from Sheffield station to HS2, including new stations in South Yorkshire, along with journey time and reliability improvements via Barnsley: *Southern Pennines SDC*<br>• Regular 1tph from Barnsley to Doncaster via Meadowhall: *Southern Pennines SDC*<br>• Sheffield – Nottingham (journey time improvements): *Southern Pennines SDC* |

| Key Pan Northern Outcomes within the Rail SPOC | Status | Rail/ Public Transport |
|---|---|---|
| Improve connectivity within and between Greater Manchester, Lancashire and Merseyside | SDC Reference Case | • A rail service of 6tph from Manchester to Preston: 1 service fast via Bolton, 1 service fast via Golborne, 1 service semi-fast via Bolton and 3 services stopping via Bolton<br>• 1tph from Manchester Airport to Barrow/Windermere<br>• A rail service of 11tph from Liverpool to Manchester: NPR with 5 services, 2 services conventional fast, 1 service conventional semi-fast and 3 services conventional stopper<br>• A rail service of 6tph from Manchester to Wigan: 1 service fast via Golborne, 3 services stopping via Atherton and 2 services stopping via Bolton |
| | SDC SOP Intervention | • New rail link and town centre connecting Skelmersdale to Liverpool and Manchester, as well as the national rail network: *Central Pennines SDC / Southern Pennines SDC / West and Wales SDC*<br>• Windermere and Barrow to Manchester Airport (frequency and journey time improvements): *Southern Pennines SDC*<br>• Preston/Bolton to Sheffield (direct connectivity/journey time improvements): *Southern Pennines SDC*<br>• Birchwood park and ride: *Southern Pennines SDC*<br>• Heavy rail capacity and journey time improvements in the South Manchester area and on the Wilmslow and Buxton lines in addition to the Bus Rapid Transit Schemes connecting Wigan Borough and Salford City: *Southern Pennines SDC* |

**Figure 17: Combined SDC Passenger Rail SOP Proposals**

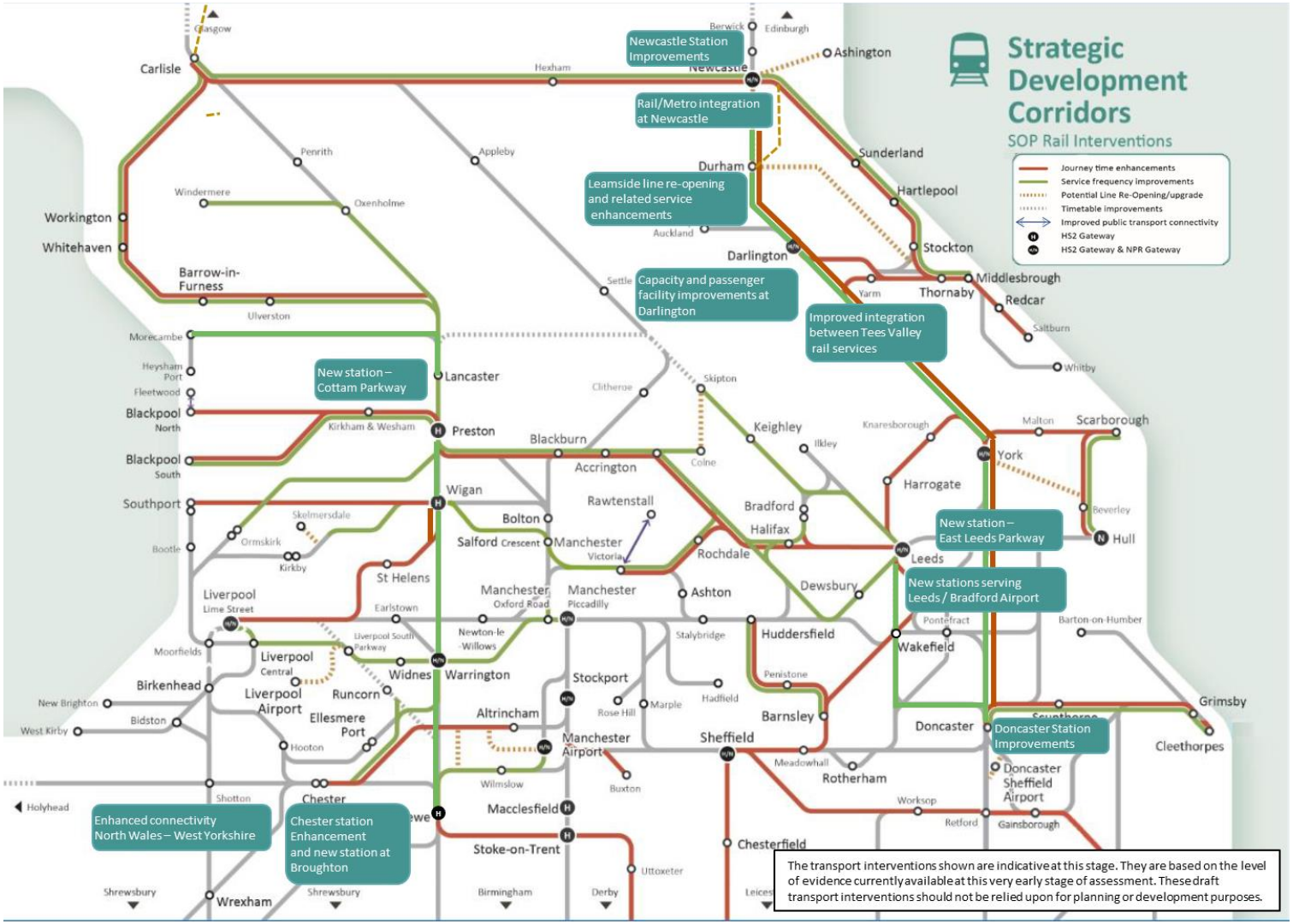


**Table 10: Potential Policy Interventions**

| Potential Policy Intervention |
|---|
| Enhance digital connectivity across the rail network |
| Expand digital signalling on the rail network |
| Increase efficiency of the road network through use of technology e.g. Connected & Autonomous vehicles |
| Use of data / technology to improve management of freight demand on the rail network |
| Improved integration across travel modes e.g. through smartcard / mobile technologies |
| Improved customer experience |
| Low emission & clean air zones |
| New pricing models for road and public transport |

6.20 From a freight perspective work has been undertaken to better understand the implications of future growth in freight demand, both to, from and through the North of England, and the demand it might create at a spatial level for new warehousing associated with intermodal terminals and ports.

6.21 The transport interventions shown are indicative at this stage. They are based on the level of evidence currently available at this very early stage of assessment. For many of the Reference Case schemes there remains a critical requirement to continue with the development of cases and to secure funding and TfN will work with partners to achieve that. It should also be pointed out that many of these interventions require further development and a positive funding decision before they can be delivered.

6.22 Delivery of these draft transport interventions should not be relied upon for planning and development purposes.

## Stakeholder Consultation

6.23 TfN undertook a series of Stakeholder Consultation sessions to inform the SDC studies. These sessions sought the views of Councils, transport authorities and businesses with an interest in each SDC area. During these consultations the following key views were raised by stakeholders:

- *East-west connectivity on road & rail is a big issue for businesses, hampered by restricted capacity and congestion.*
- *We need to invest in increasing capacity through new infrastructure but also getting more from our existing assets.*
- *In relation to a lot of the current problems identified, reliability and capacity are more important than speed.*
- *More freight needs to be enabled to use the rail network & also waterways*

- *Clear leadership and momentum from within the region are crucial to driving progress where previously it has been slow – that means consensus behind key priorities and a more unified voice*
- *A more holistic and proactive response to infrastructure planning would enable us to get upstream of major developments, unlocking growth opportunities more quickly*

6.24 The consultation exercises enabled stakeholders to nominate specific rail schemes for inclusion at Long-Listing stage, prior to completion of the OAR. Network Rail's East Coast Main Line Route Study, also produced in consultation with stakeholders, informed the Long-Listing. Stakeholder-nominated schemes were assessed via the process described earlier in this section.

6.25 Further consultation with both Network Rail and TfN's partner authorities was undertaken during the optioneering process, post-OAR, to discuss and agree the placement of rail schemes within the three categories (Core, Complimentary, non-Pan Northern) described above. This consultation informed the final definition of the Strategic Outline Programme set out in Table 9:.

## Anticipated impacts of the programme

6.26 The economic performance of the North of England suffers from several economic shortcomings and has been experiencing a significant performance gap with the rest of the UK. Low levels of productivity, poor connectivity and low levels of agglomeration have caused an under developed economy with respect to the UK's national performance. The implementation of the identified programme of interventions will lead to several wide-ranging impacts that aim to tackle some of the economy's shortcomings and stimulate the overall economic development of the region. How these impacts align with the objectives of the STP are summarised below.

**Increasing efficiency, reliability, integration and resilience in the transport system**

6.27 Delivering the Passenger Rail SOP interventions will help to improve the overall attractiveness of rail relative to other modes of transport. Faster and more frequent services will improve journey time competitiveness – particularly for trips to and from larger centres where highway congestion and car parking constraints make private car use less attractive. By providing a viable and attractive alternative to road-based transport, the rail network can help to serve increasing travel markets without exacerbating congestion on the highway network.

**Transforming economic performance**

6.28 The improved rail connectivity described above will help expand the catchments around key centres of employment and services – improving access to labour and markets for businesses and service providers.

Reducing the perceived distance between centres of business will also help to support agglomeration.

**Improving inclusivity, health and access to opportunities for all**

6.29 Improving rail connectivity will help to improve access to opportunities to those more likely to suffer the impact of isolation and deprivation, in particular:

- Those without access to private car; and
- Those in rural communities, geographically further from centres of employment and services.

These issues can be particularly acute for certain cross-sections of society, such as older people, job-seekers and young people/students.

6.30 Faster rail services will bring more jobs, education opportunities and services within a reasonable travelling distance of rural communities. More frequent services will enable smaller stations to be served without impacting on journey time for those travelling from larger, key stations.

**Promoting and enhancing the built, historic, and natural environment**

6.31 Increasing the attractiveness of rail relative to private car will help to encourage modal shift, reducing overall car kilometres on the highway network with consequential positive impacts on noise, accidents, greenhouse gas emissions and local air quality.

# 7 Strategic Dimension Summary

7.1 This document sets out the clear case for the strategic importance and necessity of the proposed programme of rail interventions in the North. It is necessary to be ambitious to meet DfT and TfN's objectives and support the region's as well as Britain's future prosperity by investing in a modern and reliable rail network that will help to re-balance the British economy, improve overall regional productivity and leading to overall more sustainable economic development.

7.2 The strategic dimension has clearly outlined the strategic needs of the North and how the proposed programme of interventions will add significantly more value than the Reference Case. It was shown that only by moving forward with these additional investments and projects, transformational growth can be achieved which will benefit not only the North of England but also the wider competitiveness of the UK.

7.3 This document has also demonstrated the close alignment of the proposed programme of interventions with national, regional and local policies. In a next step, the strategic dimension has also discussed in detail the transport challenges and economic opportunities of the North’s rail network. Challenges include:

- Door-to-door journey times for public transport commuting into the North's economic centres limits the size of the labour pool (for businesses) and reduces the number of employment, education and training opportunities within reasonable travelling time (for individuals)
- The reliability and punctuality of services causes a perception that rail services cannot be relied on for commuting, business and other journeys
- The rail 'offer' between the North and centres elsewhere in the country can be often unattractive, presenting a barrier to both business and leisure travel by rail
- The rail 'offer' for business to business trips between the North's economic centres can be unattractive, reducing firms' supplier and customer bases which may limit clustering and specialisation
- Door-to-door journey times to/from major tourist destinations reduces the attractiveness of public transport for leisure travel relative to car, and can limit destination options for those without access to a car
- Journey times and network capability and capacity to/from the North's international gateways reduces the attractiveness of rail freight
- Integration between the rail network and other modes can be unattractive and can present a barrier to more environmentally friendly, multi-modal travel
- The railway serving rural and economically-deprived areas of the North does not deliver its potential to help meeting their economic and social needs
- The railway cannot react flexibly and respond quickly to changes in demand

7.4 Rail interventions have been identified to boost the role of rail in the North and promote transformational growth in the region, namely:

- Connecting People: Accessibility for Residents
- Connecting People: Connecting Business, Economic Assets and Clusters
- Connecting People: Accessibility for Visitors
- Connecting People: Supporting International Connectivity
- Supporting the Built/Natural Environment
- Addressing isolation, reducing deprivation and improving quality of life
- Technology (Digital Railway)

7.5 In a following step, the Option Assessment Process was described in detail to allow a transparent review of how the numerous interventions were scored and identified as priority actions. Additionally, the wider context outlining the programme's delivery constraints, interdependencies with other implemented or planned projects as well as wider stakeholder needs and views were provided to reflect the bigger picture with regards to the ease of implementation, its relation to other projects and the wider public opinion.

7.6 In addition to the strategic assessment of the proposed programme of rail interventions, more detailed information on economic, financial, commercial and management implications are required to demonstrate an informed and comprehensive case. The next section outlines the economic dimension

demonstrating the value for money of the proposed programme of interventions.

# Economic Dimension

The focus of the Economic dimension is demonstrating that the proposed package represents Value for Money to the UK as a whole, in that:

- It is a justified public sector intervention, with positive impacts outweighing costs and negative impacts
- A process of refinement has been undertaken, working towards a programme which represents the strongest option

# 8 Introduction

## Background

8.1 The Economic dimension sets out the approach taken to quantifying benefits and costs as part of the assessment, and also provides qualitative assessments of impacts which cannot be quantified at this stage of assessment.

8.2 The evidence-led process which led to the identification of a programme of rail interventions for the SDCs is described in Chapter 5, within the Strategic dimension of this SPOC. The programme combines road and rail interventions of differing scales and delivery programmes, with beneficial outcomes to individuals and organisations within and beyond the SDC area.

8.3 The economic case concludes with a Value for Money (VFM) assessment which draws together the quantified and qualitative factors, the latter including consideration of the programme's alignment with DfT and TfN strategic objectives as set out in Table 1: and Table 7: respectively. These matters will be combined with a consideration of strengths and limitations in the level of analysis at SPOC stage, to determine a VfM category for the programme.

8.4 The economic appraisal has followed the TfN assurance process which includes:

- TAG Meetings - to agree the appraisal process with partners;
- SDC Project Boards – to agree and sign off all study products with partners;
- Weekly Senior Modelling Group (SMG) meeting across the delivery teams to ensure that a consistent approach is applied to the different SDCs and the different modes; and
- Technical Assurance 'deep dive' sessions to ensure that the appraisal outputs are robustly checked.

8.5 The level of appraisal and assurance undertaken is considered to be greater than what would normally be expected for this phase of work.

8.6 The appraisal is documented in detail in the following supporting documents:

- Transport Forecasting and Economic Assessment Report;
- Appraisal Specification Reports (ASR) (for each corridor SDC);
- Appraisal Summary Tables (AST)

## Rationale for Investment

8.7 The appraisal will demonstrate that further investment is required above the reference case in order to achieve growth. The current case is built upon the growth estimates produced from EDGE only. Transformational growth would generate a larger demand and greater benefits. However, transformational growth scenarios have not been assessed at this stage.

## Approach to Value for Money Appraisal

8.8 The VfM appraisal of the Rail SDC Programme has been undertaken with reference to DfT's Transport Appraisal Guidance[44] (WebTAG) for May 2018. Unless stated otherwise monetised impacts within the Economic dimension are presented in 2010 GDP Deflator Real Market Prices discounted to 2010 present values[45], as specified by WebTAG. The WebTAG version used here is no longer the current version, but it is the version used for the previous SDCs to remain consistent with the whole series of studies at this phase of development by TfN.

8.9 The proportionate approach to the VfM appraisal of the SDC Programme was set out in the Stage 1 Appraisal Specification Report[46] (ASR) for the studies. The ASR set out how the economic, environmental and operational assessments for the project would be undertaken, and how they would be supported by traffic modelling, whilst taking into consideration budgetary, programme, political, environmental and spatial constraints. It is noted that the approach evolved over the course of the study (as is to be expected); nonetheless the ASR remains a useful reference document in support of this SPOC.

8.10 The Economic dimension for each of the SDCs sets out the approach taken to forecasting the demand and economic impacts resulting from the programme of highway interventions within a modelling framework which represents the specific corridor. Passenger rail interventions, which in many cases have impacts which are not contained within the corridor boundaries, have been represented in this separate exercise for all six corridors combined. Similarly, the highway and rail freight impacts, which are UK-wide, have been separately represented. Changes in travel times and costs resulting from these wider interventions, have been included within the Reference Case for the highway intervention forecasts, to limit the potential double counting of their impacts. Results from the separate analyses are brought together within the VfM statement.

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[44] **https://www.gov.uk/guidance/transport-analysis-guidance-webtag**

[45] For further details, see Chapter 10

[46] Product 04: Appraisal Specification Report (February 2018)

8.11 The demand and economic benefits forecasting for the programmes of interventions is prudently based on forecast matrices generated using the DfT's Exogenous Demand Growth Estimator (EDGE). In contrast, the option identification and selection process was based on the assumption that the transformational economic growth identified in NPIER was achieved. On balance, TfN considers the constructed case to be more credible with lower demand growth and less uncertainty, than the alternative with transformational growth at this stage of development. TfN will assess transformational impacts in further business case development using its Analytical Framework.

8.12 Accordingly, the forecast demand and economic benefits presented in this Economic dimension considers only at this stage those interventions that have both a strong strategic case and are supported by the EDGE-based model outputs.

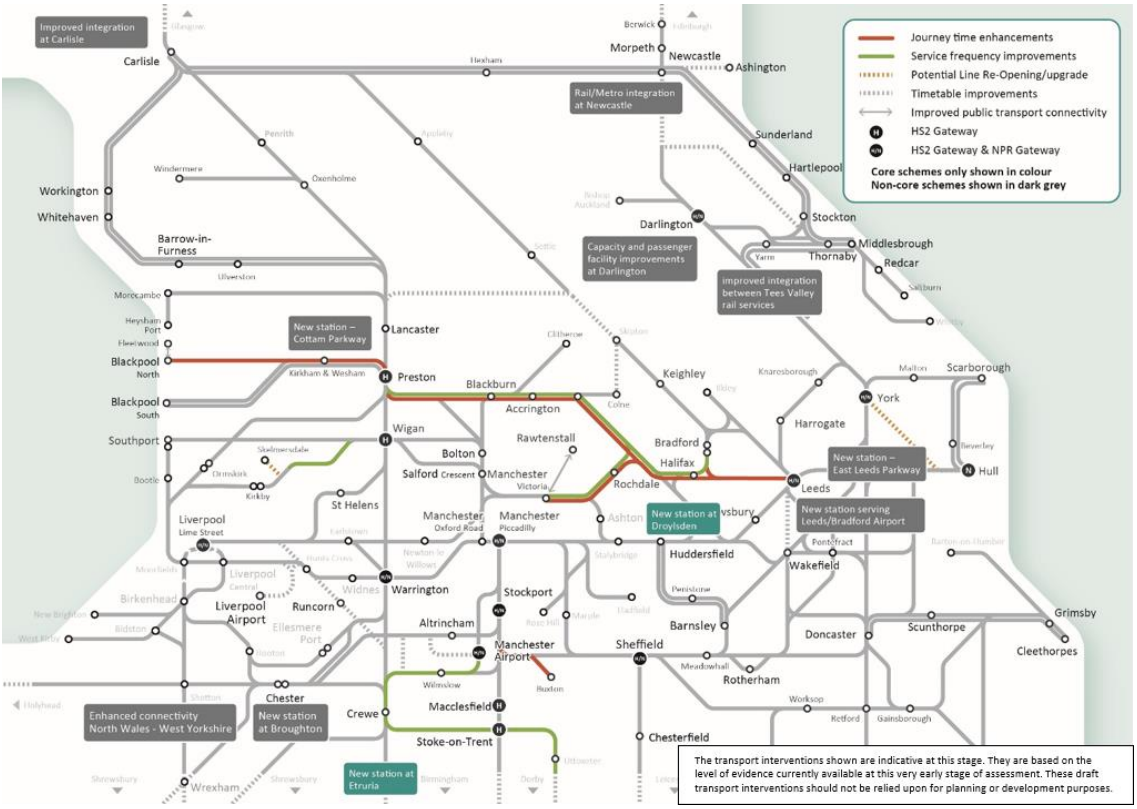
8.13 Table 11 below lists the final strategic outline programme of rail interventions that have been appraised at this very early stage of programme development for the SDCs, alongside those interventions that have a strong strategic case but are not adequately represented by the NoRMS modelling suite and/or the forecast growth matrices used for the study, and which therefore require further development and analysis. TfN are further developing the Analytical Framework to facilitate improved appraisal of the Appraised and non-Appraised schemes and plan to progress further work on a northern level economic dimension for road and rail interventions in 2019/20. The distribution of the appraised schemes is illustrated in Figure 18.

**Table 11: Rail interventions appraised within the Economic Dimension**

| **Rail Interventions Appraised within the Economic Dimension** |
|---|
| • Journey time improvements Preston to Blackpool North<br>• Skelmersdale rail link<br>• East Lancashire Line (journey time and capacity improvements)<br>• Burnley to Manchester journey time and service improvements<br>• Preston to York (journey time improvements)<br>• Crewe – Stoke - Derby (journey time improvements)<br>• Extension of North Staffordshire services to Nottingham and Manchester Airport<br>• Manchester – Skelmersdale (via Wigan) service frequency enhancement<br>• New stations at Droylsden/Littlemoss (Eastern Gateway) and Stoke park and ride<br>• Buxton Line (journey time improvements) |
| **Rail Interventions Not Appraised within the Economic Dimension at this stage** |
| • South Fylde Line (journey time and capacity improvements)<br>• Service frequency enhancements between Ormskirk and Preston<br>• Liverpool to Preston (journey time and service improvements)<br>• Southport to Wigan (journey time improvements)<br>• Colne to Accrington (journey time and service improvements)<br>• York to East Coast journey time improvement<br>• Skipton – Colne reopening<br>• Bradford to Leeds (journey time improvements)<br>• Harrogate Line (journey time improvements) and Harrogate – Skelton Junction<br>• Blackburn to Manchester Victoria (journey time improvements)<br>• Rossendale to Manchester public transport connectivity |

- New stations at LBA Parkway, East Leeds Parkway and Cottam Parkway
- Rapid transit link between Liverpool South Parkway station and LJLA Airport
- York to Hull (service improvements)
- Hull to Scarborough (journey time and frequency improvements)
- Cumbrian Coast Line – journey time and capacity improvements
- Whitehaven to Newcastle (frequency improvements)
- Furness Line – Journey time and reliability improvements
- Windermere and Barrow to Manchester Airport (frequency and journey time improvements)
- Windermere to West Yorkshire (service improvements)
- Tyne Valley Line – route upgrade and service improvements
- Durham Coast Line – route upgrade and service improvements
- Middlesbrough Station
- Darlington Station Growth Hub
- Sunderland Station and Sunderland Station track layout improvements
- Northallerton - Newcastle capacity enhancements and timetable resilience
- Newcastle Station including platform lengthening
- Middlesbrough to York journey time and service improvements
- Bishop Auckland to Saltburn Line journey time improvements
- Increased service calls at Hartford and other WCML stations
- Mid-Cheshire Line (journey time and capacity improvements)
- Northwich to Sandbach reopening and new stations
- Knutsford to Manchester Airport (Western Link connection)
- Extension of Leeds – Chester service to Llandudno Junction
- New station at Broughton
- Preston/Bolton to Sheffield (direct connectivity/journey time improvements)
- Rail connection and station for Doncaster Sheffield Airport
- New station between Barnetby and Habrough
- South TransPennine Line – journey time and capacity improvements between Doncaster and Cleethorpes
- Sheffield to Lincoln (journey time improvements and service frequency enhancements)
- Penistone Line (journey time improvements and service frequency enhancements)
- Hallam Line (journey time improvements)
- Barnsley – Doncaster direct services
- Sheffield – Nottingham (journey time improvements)
- Stockport Station (later phases)
- Warrington Bank Quay (or integrated Station at Warrington)
- Wigan North Western (or integrated Station at Wigan)
- Gauge enhancements and journey time improvements between Selby and Port of Hull
- Port of Liverpool to West Coast Main Line enhancements
- West Coast Main Line freight capacity enhancements
- Port Salford rail freight access
- Freight prioritised gauge cleared route across the Pennines
- CLC line (Capacity and Service Improvements)
- Chester station - passenger & track capacity enhancements
- Enhanced public transport links to Fleetwood
- Continued programme of work to develop the capacity and capability of the rail network in the Leeds City Region
- East Coast Main Line spur to Newcastle Airport
- Heavy rail capacity and journey time improvement in the South Manchester area in addition to the Bus Rapid Transit Schemes connecting Wigan Borough and Salford City
- Birchwood park and ride
- East Coast Main Line journey time and reliability improvements to address known issues on the route
- York – Newcastle improvements to existing ECML to make best use of IEP trains
- Doncaster – Leeds capacity improvements
- Doncaster Station remodelling to reduce conflicts
- Lancaster – Morecambe (capacity improvements)
- Crewe to Preston (capacity improvements)
- Borders Railway extension
- West Coast Main Line freight capacity enhancements and better accommodation of freight

**Figure 18: Passenger Rail SDC appraised schemes**




## Distributional Impacts

8.14 Distributional impacts (DI) consider the variance of transport intervention impacts across different social groups. DfT guidance on Distributional Impact Appraisal[47] identifies the eight indicators where DI may apply, beneficially or adversely: user benefits, noise, air quality, accidents, security, severance, accessibility and personal affordability. Step 1 in a DI appraisal is a screening process, identifying whether any impacts which remain after mitigation actions are either significant or concentrated and therefore whether progressing DI appraisal through subsequent steps in the process is necessary.

8.15 A completed DI Screening Pro-Forma is provided as Appendix A to this SPOC. This supersedes the version presented in the ASR. At the programme level, the following impacts are identified through the screening process as having the potential for significant or concentrated consumer (non-business) impacts during the operational phase[48]:

47 **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/638644/TAG_unit_a4.2_distrib_imp_app_dec2015.pdf** (December 2015)

48 DfT DI Guidance excludes employers' business trips and impacts during construction

- **User benefits**: changes in consumer (non-business) journey times, including from improved reliability and punctuality. This impact area has the closest match with the rationale underlying the SDC programme, with the expected outcomes being in terms of journey time savings which effectively improve connectivity between residents and opportunities and improve accessibility by offering greater choice of in-scope destinations
- **Personal Affordability**: changes in consumer (non-business) journey costs, whether highway (for example vehicle operating costs or parking charges) or public transport (fare)[49]

8.16 The potential for the above two indicators to have a material DI impacts has been appraised within this SPOC and can be found in chapter 13 described under the relevant social impacts indicators. Both areas are fundamental to the strategic objectives which underpin the SDC programme in support of TfN's STP (see Table 7:), in particular sub-objectives on improving productivity and ensuring an affordable and inclusive transport network, together representing the improvement in connectivity from a more efficient transport system and resulting gain in productivity.

8.17 The screening process should not be interpreted as a suggestion that TfN does not consider the remaining DI impacts as unimportant nor unaffected. As business cases for interventions within the SDC individually or in packages come forward, the DI screening process will be repeated. At a more local scale it is likely that the screening process will identify a different group of indicators to take to DI appraisal.

8.18 It is further noted that the two impacts identified for consideration above, are simply where material impacts of the programme overlap with indicators which DfT has identified for their Distributional Impact potential. Elsewhere in the Economic dimension, the material impacts of the programme are considered – with particular attention given where these align with the underpinning strategic rationale.

## Structure of Economic Dimension

8.19 The remainder of the Economic dimension of this SPOC is structured as follows:

- Chapter 9 describes the approach to costing interventions, including the treatment of optimism bias, and summarises the overall cost of the programme
- Chapter 10 outlines the approach to quantifying the impacts of the programme, including the forecasting of demand impacts and the processes of economic appraisal
- Chapters 11 to 14 follow the format of DfT's Appraisal Summary Table introducing the SDC Programme's: **Economy** impacts (11);

[49] The transport modelling framework which supports this SPOC, is only sufficiently detailed to allow quantified analysis of the first of the these (vehicle operating costs). Other changes in personal affordability are considered qualitatively

**Environment** impacts (12); **Social** impacts (13); and **Public Accounts** impacts (14)
- Chapter 15 brings the various impacts together, with a consideration of the robustness of the analyses completed, as a **Value for Money** statement for the programme

# 9 Approach to Costing Interventions

## Introduction

9.1 This chapter sets out the derivation of the implementation costs of delivering the Rail SDC programme and the lifecycle costs, comprising maintenance and renewals costs) for the interventions delivered.

9.2 The monetised Economic Appraisal, which forms the foundation of the VfM Appraisal, represents the difference between a Reference Case and the interventions of the SDC programme.

9.3 Subsequent text describes the approaches to cost risk and uncertainty, including the treatment of Optimism Bias. This chapter concludes by presenting the net costs which are compared against monetised benefits within the Economic Appraisal.

## Approach to Intervention Sequencing

9.4 The approach to quantifying the impacts of the Rail SDC programme, as set out in the ASR[46] and summarised in chapter 10 of this SPOC, for reasons of practicality adopts the proportionate approach of assuming a single opening year for all interventions (rather than the sequenced approach described in chapter 6 of this document). For internal consistency, within the Economic dimension (but **not** the Financial dimension) of this SPOC the same approach has been taken, with implementation costs represented up to a 2035 assumed opening year and lifecycle costs from then onwards (over a 60 year appraisal period (2035 – 2094)

9.5 It is noted that this approach does not have any material effect on the results the Economic Appraisal or the robustness of any conclusions based on that appraisal. In terms of implementation costs, this approach effectively assumes that the discounted cost would not change if it was assumed to be incurred in a different year, that is that the downward effect of discounting and the upward effect of real terms inflation and increasing uncertainty would cancel out.

## SDC Programme

### Implementation Costs

9.6 The Rail SDC economic appraisal considers the capital cost of the SOP programme itself, together with any changes in the capital cost of maintenance and renewals in future years. Only those schemes presented in Table 11 are considered within this economic appraisal.

9.7 For the economic appraisal of the Rail SDC, all monetary units are presented in 2010 discounted market prices.

9.8 It should be noted that the costs used in economic appraisal differ from the outturn costs used for funding decisions and to those presented within the Financial Case. For the economic appraisal of the Passenger Rail SOP, all monetary units are presented in 2010 discounted market prices.

9.9 Base costs for the interventions in the Passenger Rail SOP were compiled based on unit rates derived from outturn cost data for a number of recent rail schemes. This includes published information on completed and planned schemes and internal data held by TfN's consultants.

9.10 Unit rates were derived for a number of categories of improvements, into which the interventions in the Passenger Rail SOP were placed. These categories included, but were not limited to:

- Modest journey time improvement (<10%), no change in frequency;
- Mid-range (10-30%) journey time improvement, which may include a service frequency increase;
- Substantial journey time improvement (>30%), which may include a service frequency increase.

9.11 Given the early stage of scheme definition, and the volume of interventions within the Passenger Rail SOP, the unit rates and subsequent costings are not based on any assumption as to the existing infrastructure constraints or the engineering works which may be required to relieve them.

9.12 These two sources of costs provide values scheme base costs, which have been treated as 2018 prices. The process to convert 2018 scheme base costs to 2010 discounted market prices to be used in appraisal is presented within Chapter 14.

**Lifecycle Costs**

9.13 Given the early stage of scheme development, a full assessment of expected operating and maintenance costs has not been undertaken. For the purposes of the economic appraisal, maintenance and renewal costs equivalent to 10% of the PV of total capital costs has been included.

9.14 These costs have been assumed to all be incurred within the single year of 2035.

9.15 At this stage of assessment, an assumption has been made that any increase in operating cost (through fuel consumption, staffing costs, vehicle maintenance etc) will be offset by an increase in revenue generated. The net impact to subsidy has therefore assumed to be nil. A more detailed understanding of revenue and operating cost impact will be undertaken as interventions are further developed to SOBC stage and beyond.

## Cost Risk and Uncertainty

9.16 Given the early stage of cost development, which is based on only a high-level understanding of the engineering interventions required to deliver the

desired outputs, allowances for further development (20%) and risk (25%) have been applied to the base year costs.

9.17 Given that an allowance for risk has been applied to the costs, the 64% Optimism Bias recommended by WebTAG for Conventional Rail schemes at Stage 1 of scheme development has been reduced to 31% - in order to retain an overall base cost adjustment of 64%.

9.18 The SDC programme cost estimate is based upon the assumption that the full package of measures associated with the programme will be delivered by 2035. At this stage of scheme development, it has been assumed that all costs will be incurred in the single year of 2034. Costs are set out in Table 23 of this document.

# 10 Quantified SDC Programme Impacts

## Introduction

10.1 This chapter summarises the quantification of the impacts of the Passenger Rail SDC programme including the approach to and results of the demand forecasting undertaken and of the monetised Economic Appraisal. It describes how the transport models used to represent the impacts of the Reference Case and SDC Programme fit within TfN's wider analytical framework.

10.2 The modelling undertaken to represent the impact of the Passenger Rail SOP considers only endogenous change to the rail network and background growth. It does not reflect the impact of changes to the highway network proposed as part of the individual SDC corridor SOPs. As TfN's analytical framework develops, a detailed understanding of how changes to highway connectivity and capacity impact on the rail market will be developed.

## Approach to Demand Forecasting

10.3 Rail passenger forecasting was undertaken using the NoRMS Phase 2 model, which is a Cube-based rail assignment model of the North of England, including all rail stations. The model includes a simplified representation of the network outside of the North, providing access to external destinations, and is combined with an endogenous impact model to provide elasticity-based changes in demand based on changes in service provision. TfN determined that the NoRMS model was fit for purpose for this study. Details of validation and verification tests can be found in the NoRMS Phase 2 report. The model base year is 2015.

10.4 The NoRMS forecast model consists of the following weekday time periods:

- Morning peak (07:00-10:00);
- Inter-peak (10:00-16:00);
- Evening peak (16:00-19:00); and
- Off-peak (19:00-07:00).

10.5 The total daily volume in each period is modelled, in contrast to average hourly models.

10.6 The demand was segmented into the following six user classes:

- Employer's business (internal);
- Commuting (internal);
- Other (internal);
- Employer's business (external);
- Commuting (external); and
- Other (external).

10.7 Here, internal trips are those entirely within the North area, while external trips are those passing in to, out of or through the North area.

10.8 As the impact of interventions in the off-peak period was considered to be lower than the others and owing to constraints in the SDC programme, the SOP interventions were not tested in this period. Based on a common methodology with the SDC highway appraisal, benefits for the busiest weekend periods were represented by an additional thirteen hours per week of benefits from the weekday inter-peak model, with trip purpose proportions adjusted to reflect typical weekend demand.

10.9 Forecast matrices for 2035 and 2050. These were generated using the DfT's Exogenous Demand Growth Estimator (EDGE), which estimates growth in demand for rail travel based on exogenous factors such as employment, population and GDP.

10.10 The forecast matrices provided only addressed growth for trips internal to the North of England; no growth was applied to external trips. In addition, the 2050 matrices assume there is no change in demand after 2038. For the purpose of economic appraisal, they are therefore treated as 2038 to ensure appropriate interpolation between forecast years.

10.11 The EDGE forecasts do not account for changes in rail supply. The NoRMS endogenous impact model forecasts an elasticity-based response to the rail schemes and service changes included in the reference case. The resulting total reference case demand is 16% higher than EDGE forecasts.

10.12 A prior version of the reference case network and train service files, incorporating changes to the base model driven by franchise commitments and High Speed Two (HS2), was used as the basis for forecasting. Further amendments were made to this service pattern to produce an SDC reference case network, including a review of HS2 services and the addition of Northern Powerhouse Rail (NPR) and other committed improvements.

## Highway, and Freight and Logistics Modelling

10.13 Highway forecasting to inform the SDC corridor reports was undertaken using modified versions of the Highways England 2015 Regional Transport Models (RTM). The model zoning was reviewed and dis-aggregated where appropriate in areas where SOP interventions are likely to be located.

10.14 Future year forecasts have been developed for 2035 and 2050 using DfT standard forecasts. The full forecasting process is described in detail in each corridor's Combined Traffic Forecasting and Economic Appraisal Report.

10.15 Generalised Costs for Value of Time (VoT) and Vehicle Operating Costs (VOC) have been included from TAG data book May 2018.

10.16 The Freight and Logistics Market is modelled using the Great Britain Freight Model managed and owned by MDS Transmodal (MDST). The inputs to the model come from standard DfT statistics for Ports and Maritime, road data collected through the Continuing Survey of Roads Goods Transport (CSRGT) and private sector intelligence. MDST also utilise Network Rail data which although highly sensitive, is presented in such a way so individual rail flows cannot be identified. The Heavy Goods Vehicle and Van data that is used to model the road freight impacts can be aggregated in terms of benefits. The other freight scenarios that have been used include looking at the impact of larger ships, warehouse clustering and rail capacity that is both constrained and unconstrained. These scenarios cannot be aggregated together as they rely on very different economic conditions and private sector investment to grow.

10.17 It should be noted that the impact of accommodating additional freight traffic on the rail network has not been considered as part of this report, and will be assessed as part of future phases of work.

## Approach to Economic Appraisal

10.18 The economic assessment evaluates the monetised costs and benefits of the proposed SDC programme relative to the reference case scenario. At this stage of the study, only level one benefits have been assessed. The Economic Appraisal approach has been agreed through TAG and SMG and follows WebTAG guidelines.

### Level One Established Monetised Impacts

10.19 This level of benefits is used to generate initial value for money (VfM) estimates and, for the rail element of the SDC study, focuses on journey time savings to rail passengers. An estimate of highway decongestion benefits is also included, based on the forecast impact of the SDC programme on car passenger-distance.

10.20 The journey time benefits are evaluated using TUBA 1.9.11, which incorporates values from the May 2018 WebTAG data book. This appraisal is based on the extended generalised journey time calculated by NoRMS as part of its endogenous impact model (explained in further detail in the passenger rail models and appraisal report).

10.21 As the morning peak, inter-peak and evening peak periods in the NoRMS model together represent total demand for each period on an average weekday, annualisation factors of 253 are used for each period to cover a year of twelve-hour (07:00-19:00) weekday periods. An additional 676 average inter-peak hours are included to represent a year of six-and-a-half

hour weekend days. No adjustment has been made to account for weekday or weekend off-peak (early morning and late evening) benefits. As the SDC programme would also deliver journey time benefits in these periods, the benefit calculated is a conservative estimate.

10.22 Impacts to congestion, accidents, air quality, noise and greenhouse gases, and those to infrastructure costs and indirect taxation, have been monetised using the Marginal External Cost (MEC) approach set out in WebTAG unit A5.4.

10.23 Change in car passenger kilometres are generated by TUBA, based on inputs from NoRMS, for two model years (2035 and 2038). Growth has been interpolated linearly between the two model years. Car diversion factors are taken from the "Non-London Inter-Urban" category within WebTAG data book Table A5.4.5. Car passenger km are assumed to be split equally between the North West, North East and Yorkshire & Humber regions, and weighted MECs are calculated using proportions of traffic applied from the 2035 data set in data book Table A5.4.1, and marginal external costs and indirect tax (in pence per km) from the 2035 data set in data book Table A5.4.2.

10.24 Decongestion benefits have been split by user type based on the all-week average percentage of distance travelled by car occupants in data book Table A1.3.4. Although the all-week user type split may over-represent 'Other' users due to the higher proportion of these trips in the non-appraised weekday and weekend off-peak periods, this is presentational, and the overall benefits will be affected by the split.

**Level Two Evolving Monetised Impacts and Level Three Indicative Monetised Impacts**

10.25 Level Two and Level Three benefits have not been quantified as part of the appraisal for this stage of work, given the data and tools available to inform the process in this phase of work. In the Case for Change chapter, we evidenced how those working within the "prime" and "enabling" capabilities make both more and longer rail trips than the average for England. These highly-productive sectors, if promoted and better connected, have the potential to help address the economic underperformance of the North relative to the rest of the country. Making rail faster and/or more frequent through the interventions in the Passenger Rail SOP therefore has the potential to improve productivity in these and other high value sectors.

**Non-Monetised Impacts**

10.26 Non-monetised impacts form a key component of assessing the overall value for money of a scheme. For the Passenger Rail SOP, the following non-monetised assessments have been undertaken:

- Regeneration
- Landscape
- Townscape
- Historic environment

- Biodiversity
- Water environment
- Affordability

## Scope of Economic Appraisal

10.27 The scope of Economic Appraisal has been agreed through TAG and SMG and seeks to provide a robust, yet proportionate, appraisal of the Passenger Rail SOP given the current stage of scheme development. This is in line with WebTAG guidelines.

10.28 As presented in Section 15, the overall Value for Money of the Passenger Rail SOP will be determined through a consideration of both monetised and non-monetised benefits which fall across the three levels of benefits detailed in preceding section.

10.29 For clarity as to the scope of economic appraisal, Table 12 sets out the monetised and non-monetised assessments undertaken across the three level of benefits.

**Table 12 Scope of Economic Assessment for Passenger Rail SDC SOP**

| | **Established Monetised Impacts** | **Evolving Monetised Impacts** | **Indicative Monetised Impacts** | **Non-Monetised Impacts** |
|---|---|---|---|---|
| | *Included in initial and adjusted metrics* | *Included in adjusted metric* | *Considered after metric using switching values approach* | |
| **Level** | **1** | **2** | **3** | **Qualitative** |
| **Included in appraisal at this stage** | Journey time savings<br>Vehicle operating costs<br>Greenhouse gases<br>Cost to Broad Transport Budget<br>Indirect Tax<br>Noise<br>Air Quality<br>Accidents | | | Regeneration<br>Landscape<br>Townscape<br>Historic environment<br>Biodiversity<br>Water environment<br>Affordability |

| | | | | |
|---|---|---|---|---|
| **Not included in appraisal** | Physical activity<br>Journey quality | Reliability<br>Static clustering<br>Output in imperfectly competitive markets<br>Labour supply | Move to more / less productive jobs<br>Dynamic clustering<br>Induced investment<br>Supplementary economy modelling | Security<br>Severance<br>Access to services<br>Option and non-use values |

## Forecast Impact of the SDC Programme

10.30 The forecast impact of the Passenger Rail SDC programme is set out in Table 13 below. The table demonstrates the increases in total trips, boardings, total distance (for both passengers and vehicles) and the total value of generalised cost savings in passenger hours relative to the Reference Case.

**Table 13: Impact of the Passenger Rail SDC Programme (Daily values, 2050)**

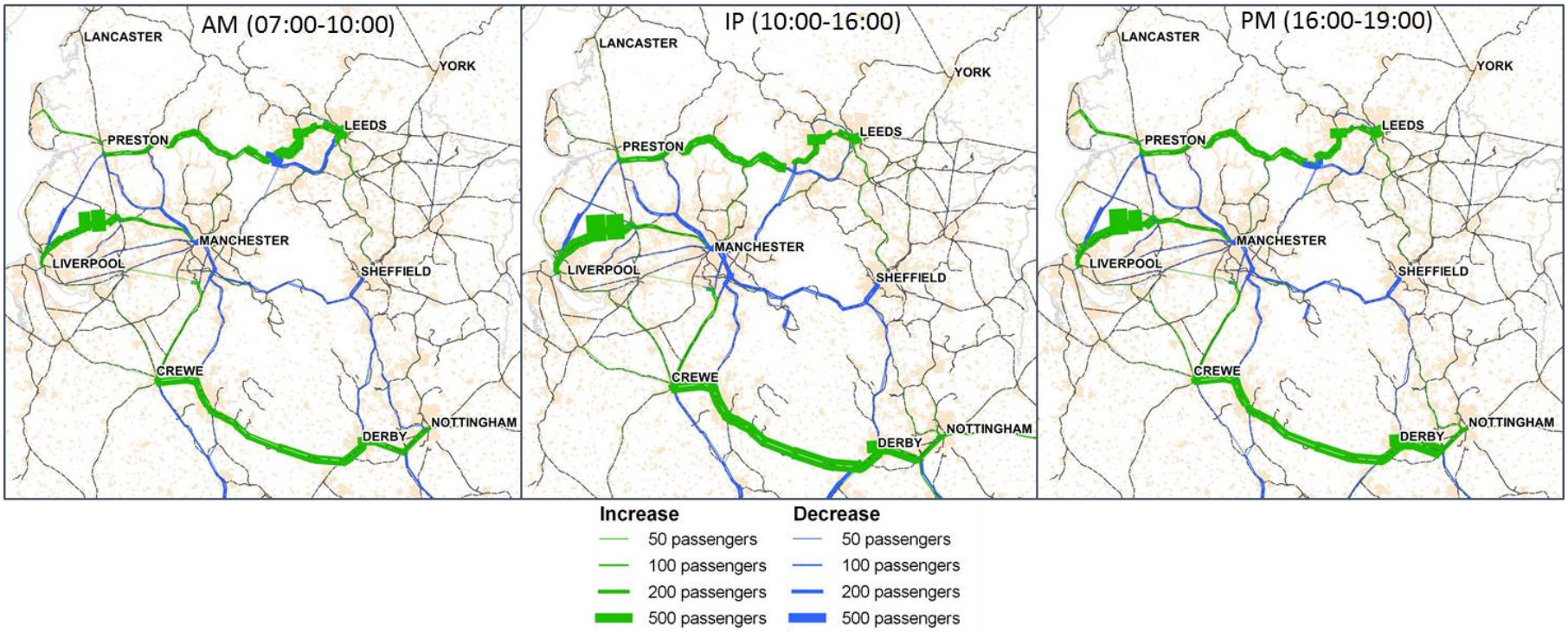
| | **Reference Case** | **Appraised SOP Schemes** | **Difference** |
|---|---|---|---|
| Total trips | 934,947 | 939,471 | 4,523 (0.48%) |
| Total boardings | 1,300,235 (1.39 per trip) | 1,307,178 (1.39 per trip) | 6,943 (0.53%) |
| Total distance (passenger-km) | 68,144,081 (72.9 per trip) | 68,292,391 (72.7 per trip) | 148,309 (0.22%) |
| Total on-train time (passenger-hours) | 637,788 (40.9 mins per trip) | 638,253 (40.8 mins per trip) | 464 (0.07%) |
| Total distance (vehicle-km) | 537,812 | 546,413 | 8,601 (1.60%) |
| Total running time (vehicle-hours) | 6,373 | 6,478 | 105 (1.64%) |
| Total generalised cost saving (passenger-hours) | 2,713,000 | 2,721,000 | 7,301 (0.3%) |

10.31 The forecast impact on demand is shown in Figure 19. Demand increases are observed:

- between Preston and Leeds, reflecting the journey time improvements and service frequency enhancements on the routes between Preston, east Lancashire, West Yorkshire and Greater Manchester in the SOP;
- between Crewe and Derby, reflecting journey time improvements and service frequency enhancements between Manchester Airport, Crewe, Stoke-on-Trent and the East Midlands; and
- between Liverpool and Wigan (via Kirkby), reflecting the impact of the Skelmersdale link and associated service extensions from the Merseyrail network.

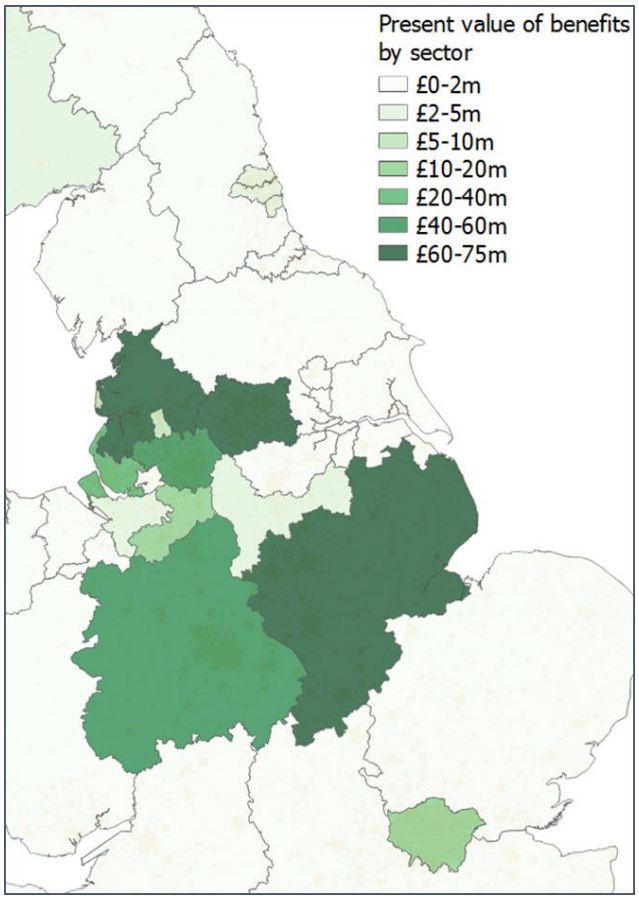
10.32 Some demand decreases are observed, particularly on key routes around Manchester (the Bolton, Diggle and Rochdale corridors, for example). This could be explained by the availability of faster direct journeys between certain station pairs, removing the need for passengers to interchange at Manchester stations.

**Figure 19: Change in total daily demand by period**



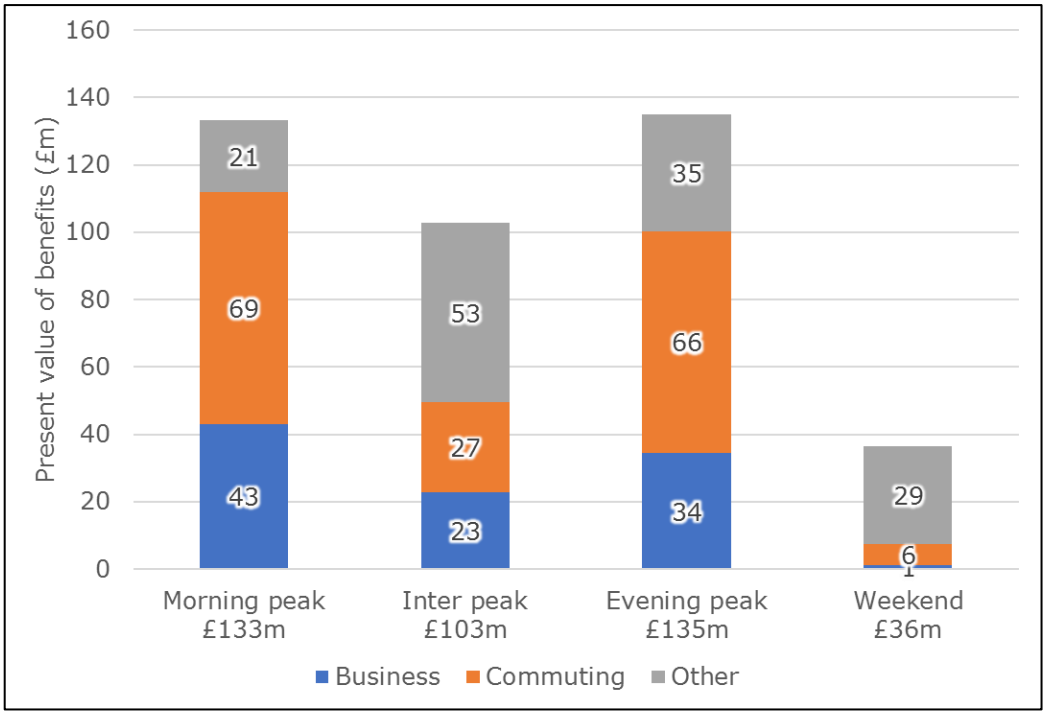
10.33 Figure 20 provides a spatial summary of the economic benefits (present values). The largest benefits are generated in Lancashire, West Yorkshire and the East Midlands, with strong benefits also generated in the Liverpool City Region, Greater Manchester and the West Midlands. Again, this aligns to the journey time and service frequency enhancements in the SOP.

**Figure 20: Distribution of benefits**




10.34 Figure 21 shows the distribution of user benefits by time period and journey purpose. The most significant benefits occur in the morning and evening peak periods, with commuters generating the most benefits by journey purpose.

**Figure 21: Distribution of benefits by time period and journey purpose**




# 11 Economy Impacts

## Introduction

11.1 Following the structure of DfT's standard Appraisal Summary Table (AST), this chapter sets out the economic impacts on business users of the SDC Programme, including the Transport Economic Efficiency impacts which are represented within the Economic Appraisal. This chapter also contains a qualitative assessment of Regeneration and Wider Impacts. The impacts on non-business users (consumers) form part of the social impacts and are covered in chapter 13.

11.2 The impact of the Rail SDC programme on the Northern Economy is of particular importance to the VfM case presented in this SPOC given that it is based on identifying the interventions which will unlock delivery of the transformational growth set out within NPIER[50]. However, as set out in paragraph 8.11 the economic appraisal is based on 'business as usual' growth as represented in DfT's EDGE forecasting tool.

## Business Users & Transport Providers

11.3 A summary of the business user impact estimated by TUBA is set out in Table 14 below.

[50] Transport for the North, *The Northern Powerhouse Independent Economic Review* (2016) https://transportforthenorth.com/wp-content/uploads/Northern-Powerhouse-Independent-Economic-Review-Executive-Summary.pdf

**Table 14 Business user impact**

| Business | All Modes | Road | Rail |
|---|---|---|---|
| Travel time | £106,326 | £4,657 | £101,669 |
| Vehicle operating costs | | | |
| ***Subtotal*** | **£106,326** | **£4,657** | **£101,669** |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

11.4 The monetised impacts set out in the table arise from travel time savings for business users, enabled by the journey time improvements and service frequency enhancements in the Passenger Rail SOP. Although business users make up the smallest proportion of baseline demand, the monetised impacts are significant due to the higher value of time perceived by this user time. The road impacts arise from the Marginal External Cost calculations described in Chapter 10, and represent the impact of highway decongestion following road users switching to rail. This element combines travel time and vehicle operating cost impacts.

## Reliability Impact on Business Users

11.5 The intended outcomes of the Passenger Rail SOP are focussed on improved connectivity. As such, interventions specifically designed to address any existing or projected future reliability issues have not been considered in this phase of work, and no quantified assessment of reliability impact has been made. The impact on reliability would be considered as part of the development of each individual scheme, with mitigations put in place as required. Therefore, overall reliability impact is considered to be neutral.

## Regeneration

11.6 The schemes included in the Passenger Rail SDC programme represent a substantial investment in transport provision across the corridor. However, the focus of the scheme is to improve "pan-Northern" strategic connectivity, rather than addressing local accessibility challenges with a view to unlocking development and consequent regeneration impacts. Thus, it is considered likely that the impact of the Passenger Rail SDC programme will be neutral.

## Wider Impacts

11.7 As described above, the interventions in the Passenger Rail SDC programme would be expected to generate wider impacts due to the effect of bringing businesses in key economic clusters 'closer together', thus making them more productive. Wider impacts have not been quantified as part of this phase of study but it is considered likely that the programme will generate slight beneficial wider impacts. Analysis of wider impacts will be undertaken in later phases of the SDC studies.

## Summary

11.8 Table 15 below summarises the Economy impacts:

**Table 15 Summary of SDC Programme Economy Impacts**

| **Economy Impacts** | |
|---|---|
| Business user time benefits | £106,326 |
| Regeneration | Neutral |
| Wider Impacts | Slight Beneficial |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

# 12 Environment Impacts

## Introduction

12.1 Following the structure of DfT's standard Appraisal Summary Table (AST), this chapter sets out the potential impacts to the environment of the Passenger Rail SDC Programme, particularly noting any dis-benefits that may occur. As this assessment has been undertaken at a pan-Northern level and only includes the impacts of shift from highway to passenger rail as a result of the Passenger Rail SOP, quantified impacts cannot be included within the individual corridor SPOC reports.

## Noise

12.2 The Passenger Rail SDC programme will result in a reduction of noise due to modal shift from highway to rail. The monetised impact has been estimated using the Marginal External Cost (MEC) approach described in Chapter 10, with change in car passenger km taken from TUBA.

**Table 16: Noise Monetised Impact**

| | Total |
|---|---|
| Noise | £426 |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

## Air Quality

12.3 The Passenger Rail SDC programme will result in improvements to local air quality due to modal shift from highway to rail. The monetised impact has been estimated using the Marginal External Cost (MEC) approach described in Chapter 10, with change in car passenger km taken from TUBA.

**Table 17: Local Air Quality Monetised Impact**

| | Total |
|---|---|
| Local Air Quality | £32 |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

## Greenhouse Gases

12.4 The Passenger Rail SDC programme will result in improvements to greenhouse gas due to modal shift from highway to rail. The monetised impact has been estimated using the Marginal External Cost (MEC) approach described in Chapter 10, with change in car passenger km taken from TUBA.

**Table 18: Greenhouse Gases Monetised Impact**

| | Total |
|---|---|
| Greenhouse Gases | £1,504 |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

## Landscape and Townscape

*Landscape*

12.5 The Passenger Rail SOP includes interventions that fall within or in proximity to National Parks and Areas of Outstanding Natural Beauty (AONB), which are landscapes of the highest national value. Although the majority of interventions within the Passenger Rail SOP are anticipated to be deliverable within the existing rail ownership boundary, a small number of interventions are "off-line", and therefore have the potential to impact local landscape designations and degrade the character of landscapes within the North. With mitigation it is anticipated that many of these impacts will be minimised, but considering the inclusion in the SOP of these offline schemes and schemes within high value lands.

Risk appraisal at a Northern level: Likely to have slight adverse effects

*Townscape*

12.6 Most Passenger Rail SOP interventions will also fall within settlements, and as such have the potential to impact physical and social characteristics of the urban environment that comprise townscapes. However, it is anticipated that the majority of rail interventions will be deliverable within the existing rail ownership boundaries, which will minimise impacts. Off-line schemes such as the Skelmersdale link have the potential to impact settlements along the proposed line of route. Mitigating measures will need to be considered during subsequent stages of develop in order to minimise these impacts.

Risk appraisal at a Northern level: Likely to have slight adverse effects

## Historic Environment

12.7 Although the Passenger Rail SOP interventions fall within proximity to designated heritage assets including Saltaire and the Lake District World Heritage Sites, there are only a small number of off-line schemes, so the overall impact on these assets across the North is anticipated to be limited. With appropriate consultation and mitigation many of the potential adverse impacts can likely be avoided or minimised, but there remains a risk that

the Passenger Rail SOP could have some residual impacts on heritage assets. The Passenger Rail SOP does improve access to certain historic and culturally significant sites, including Saltaire, Liverpool Maritime Mercantile City and the Lake District World Heritage Sites. There may also be opportunities to work with partners and stakeholders to improve the condition and management of heritage assets.

Risk appraisal at a Northern level: Likely to have slight adverse effects

## Biodiversity

12.8 The SPOC comprises infrastructure development that has the potential to adversely affect the integrity of local, national and international (European) designated sites, and the status and distribution of priority habitats and species. However, it is assumed that TfN's programme of interventions will be delivered in accordance with commitments to no net biodiversity loss. Furthermore, there is the potential to deliver any necessary biodiversity mitigation or compensation to contribute to strategic local and national biodiversity priorities, and protect and enhance biodiversity through green infrastructure. The SOP comprises many improvements to existing rail infrastructure, of which the proposed works undertaken through the SOP may present opportunities to enhance the environmental performance of this infrastructure.

Risk appraisal at a Northern level: Likely to have slight adverse effects

## Water Environment

12.9 Both offline and online SOP schemes risk exposing watercourses to increased risk of transport related pollution. While it is considered that these impacts can likely be mitigated, the SOP will present increased risk of adverse impacts to the inland water environment. There may however also be opportunities to enhance the water environment, although these cannot be identified at this stage.

Risk appraisal at a Northern level: Likely to have slight adverse effects

## Summary

12.10 The SOP includes rail improvements and new infrastructure that will, through encouraging modal shift from private car, improve noise levels and air pollutant concentrations at sensitive receptors, and decrease emissions of greenhouse gases. There is a slight risk of adverse impacts to environmental assets and designated wildlife sites, and on Areas of Outstanding Natural Beauty (AONB), particularly from off-line interventions. The SOP further has the potential for impacts on other designations of national and local value, and adverse impacts to environmental resources such as landscape character, ecological networks and the setting of cultural heritage assets.

12.11 With further environmental assessment and option development, and where necessary mitigation and compensation, it is anticipated that these environmental impacts can be minimised or avoided through careful design

and appropriate mitigation, and in some cases opportunities identified for environmental enhancements. Following this process the majority of the SOP interventions are likely to comply with relevant policy and contribute to the objective of the STP to 'promote and enhance the natural, historic and built environment', and further objectives established in the Integrated Sustainability Appraisal (ISA).

12.12 Interventions proposed through this study will be taken forward through other separate commissions to Strategic Outline Business Case (SOBC) in line with the Department for Transport's business case approach. This will include more detailed consideration of individual interventions or groups of interventions, for which appropriate environmental appraisal will take place. Subsequently, any schemes will undergo further environmental assessment through the Network Rail Governance for Railway Investment Projects (GRIP) process or local authority or Nationally Significant Infrastructure planning consent processes. This is likely to include an Environmental Impact Assessment (EIA) for many of these schemes, a process that leads to production of an Environmental Statement (ES). The residual environmental impacts of these schemes will inform the consenting authority's decision.

12.13 Table 19 below summarises the Environment impacts:

**Table 19 Summary of Environment Impacts**

| **Environment Impacts** | |
|---|---|
| Noise<br>*MEC Derived Impact* | £426 |
| Air Quality<br>*MEC Derived Impact* | £32 |
| Greenhouse Gases<br>*MEC Derived Impact* | £1,504 |
| Landscape | Slight Adverse |
| Townscape | Slight Adverse |
| Historic Environment | Slight Adverse |
| Biodiversity | Slight Adverse |
| Water Environment | Slight Adverse |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

# 13 Social Impacts

## Introduction

13.1 Following the structure of DfT's standard Appraisal Summary Table (AST), this chapter sets out the potential impacts to the social impacts of the SDC Programme, including the Transport Economic Efficiency impacts

(Commuting and Other Users, Personal Affordability) which are represented within the Economic Appraisal. This chapter also contains qualitative assessments of a range of impact, with Access to Services, being of particular importance to the case for the rail interventions.

## Commuting and Other Users

13.2 Table 20 provides a summary of the impacts on consumer users (time only) as estimated by TUBA. A full set of impacts on commuting and other users is reported in the personal affordability section and the TEE table.

**Table 20: Summary of consumer user impacts**

| Consumer users | All Modes | Road | Rail |
|---|---|---|---|
| Non-business commuting travel time | £176,873 | £9,517 | £167,356 |
| Vehicle operating costs | | | - |
| Non-business other travel time | £177,938 | £39,674 | £138,264 |
| Vehicle operating costs | | | - |
| ***Subtotal*** | **£354,811** | **£49,191** | **£305,620** |

13.3 The results show significant user journey time benefits for both commuters and other users arising from the improvements in the SOP. In addition, road user benefits arise from highway decongestion through travel time improvements and reductions to vehicle operating costs (presented as a combined figure here). These benefits are most significant in the non-business other journey type, due to the high volume of these trip types as a proportion of the total in WebTAG data book Table A1.3.4

### Distributional Impacts

13.4 Figure 22 provides a spatial summary of the economic benefits. This considers the distribution of commuting and other benefits divided by the number of commuting and other trips.

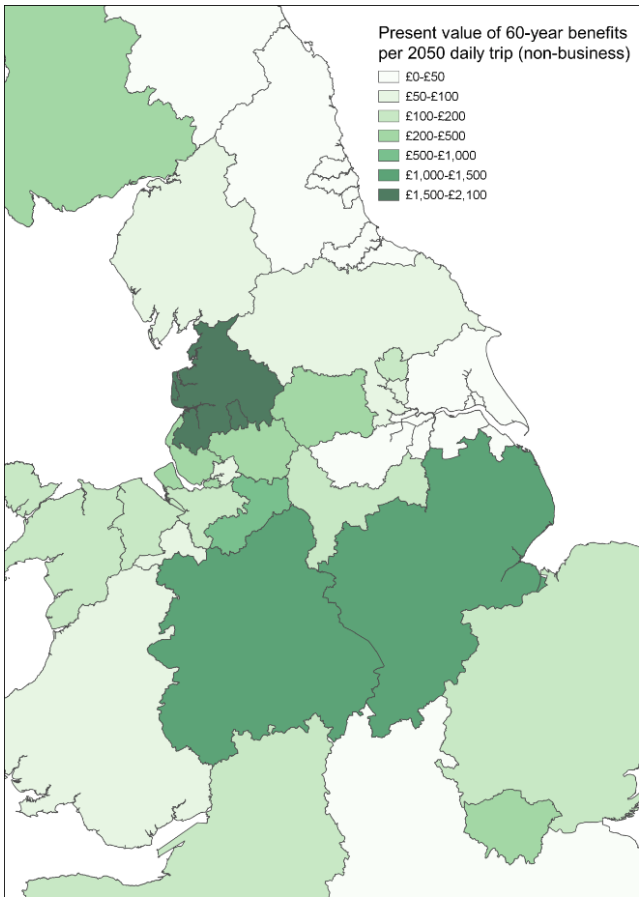
13.5 Every sector experiences a benefit. The highest benefits (around £2,000 PVB per daily trip) occur for Lancashire (and Blackpool, Blackburn with Darwen), as Lancashire directly benefits from several core interventions. The East and West Midlands are next with around £1,200 PVB per daily trip. In Scotland and the south of England/Wales, including parts of the East and West Midlands, the model only includes trips that enter the study area, which causes their 'per trip' benefits to be higher than reality.

13.6 This distribution of benefits reflects that the Passenger Rail SOP was designed to complement the Reference Case schemes of HS2 and NPR, which would be anticipated to deliver significant benefits to areas across the

Liverpool – Hull corridor and to North Yorkshire, Tees Valley and the North East.

13.7 Although the spatial summary shown in Figure 22 is not sufficiently disaggregate to understand precisely where benefits arise within the zones, there is known to be significant areas of deprivation around rail-connected urban centres across the areas shown to benefit from the scheme.

**Figure 22: Distributional Impacts**




## Accidents

13.8 The Rail SDC programme will result in improvements to greenhouse gas due to modal shift from highway to rail. The monetised impact has been estimated using the Marginal External Cost (MEC) approach described in Chapter 10, with change in car passenger km taken from TUBA.

**Table 21: Summary of accident impacts**

| | **Total** |
|---|---|
| Accidents | £5,500 |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

## Personal Affordability

13.9 Reductions to vehicle operating costs as a result of highway decongestion have been presented as a combined total in the Commuting and Other

users section above. To avoid double counting, they have not been reported separately in the personal affordability row below. The impact of rail fares on affordability has not been included in the monetised assessment.

### Summary

13.10 Table 22 below summarises the Social impacts:

**Table 22 Summary of Social Impacts**

| **Social Impacts** | |
|---|---|
| Commuting and Other Users | £354,811 |
| Reliability impact (Commuting & Other Users) | Not Assessed |
| Physical Activity | Not Assessed |
| Journey Quality | Not Assessed |
| Accidents<br>*MEC Derived Impact* | £5,500 |
| Security | Not Assessed |
| Access to Services | Not Assessed |
| Personal Affordability | See Commuting and Other Users |
| Severance | Not Assessed |
| Option and Non-use values | Not Assessed |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s). Where impacts have not been assessed in this phase, they will be examined in the next stage of development.

# 14 Public Accounts Impacts

## Introduction

14.1 This chapter outlines the impact of the Rail SDC programme on public accounts. These form the derivation of two key outputs described below: the impact on the Broad Transport Budget (which forms the **cost** represented within the Benefit Cost Ratio, BCR), and the indirect taxation impact on Wider Public Finances (HM Treasury, represented as an adjustment to the benefits within the BCR).

## Cost to Broad Transport Budget

14.2 As set out within the Financial Dimension and Chapter 9, the construction, maintenance and renewal costs associated with the Passenger Rail SOP have been derived through a cost estimation process, with reference to recent outturn project costs and in consultation with TfN partners.

14.3 For the Passenger Rail SOP, all Investment Costs have been assumed to be incurred in 2034, with all Operating Costs assumed to be incurred in 2035. No profiling of either Investment Costs or Operating Costs has been assumed within the economic appraisal.

14.4 With reference to the process set out in Chapter 9, Table 23 presents the Passenger Rail SOP scheme costs in the format of the DfT's CPSS Cost Proforma Summary Sheet. This shows the build-up of the scheme costs from 2018 Base Costs through to 2010 discounted market prices representing the SOP investment costs.

**Table 23: DfT's CPSS Cost Proforma Summary Sheet**

| Item | £m | Factor | Unit |
|---|---|---|---|
| Base Cost | 306 | | 2018 prices |
| O&M Uplift (10%) | 337 | | |
| Risk & Development (33%) | 505 | | 2018 prices |
| Inflation (4.2% p.a) | 989 | 1.96 | 2018 prices inflated to 2034 |
| GDP Deflator (1.65% p.a) | 626 | 0.63 | 2010 prices |
| Market Prices (19%) | 744 | 1.19 | 2010 market prices |
| Optimism Bias (31%) | 975 | | |
| Discounting (3.5% p.a) | 424 | 0.43 | 2010 discounted market prices |
| **PVC** | **424** | | **2010 discounted market prices** |

14.5 The forecast reduction in car passenger km under the Passenger Rail SOP will have a reduced impact on highway infrastructure costs, which accrue to Highways England and/or local government. These impacts have been monetised using the Marginal External Cost methodology described in Chapter 10, and the results set out in Table 24 below.

**Table 24: Monetised infrastructure impacts**

| | Total |
|---|---|
| Infrastructure | -£236 |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

## Indirect Tax Revenues

14.6 Implementation of transport interventions can result in a dual impact on HM Treasury tax receipts. The first effect results from changes in fuel consumption, from changes in travel distance and/or speed of mode shift to public transport, affecting the fuel duty received by HM Treasury. Secondly,

the shift in consumer (commuter and other) spending from the taxed economy into untaxed public transport fares results in a reduction in indirect taxation. An equivalent fares effect is not seen for business travellers as VAT on other expenditure is reclaimed by businesses, following assumptions laid out within DfT guidance.

14.7 Table 25 provides a summary of the Indirect Tax Revenues as estimated by the Marginal External Cost methodology, which in this case arise solely from loss of fuel tax as passengers change mode from highway to rail.

**Table 25: Indirect tax revenue impacts**

| Indirect Tax Revenue | Total |
|---|---|
| Wider Public Finances | £4,345 |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

## Summary

14.8 The relevant impacts are summarised in the form of standard DfT 'Public Accounts' tables for the SDC Programme (Table 26) under EDGE-estimated growth.

**Table 26: Public Accounts Table for the SDC Programme (EDGE-estimated Growth Scenario)**

| | **ALL MODES** |
|---|---|
| **Local Government Funding** | **TOTAL** |
| Revenue | 0 |
| Operating Costs | 0 |
| Investment Costs | 0 |
| Developer and Other Contributions | 0 |
| Grant/Subsidy Payments | 0 |
| **NET IMPACT** | **0** |
| | |
| **Central Government Funding: Transport** | |
| Revenue | 0 |
| Operating Costs | 0 |
| Investment Costs | 423,876 |
| Developer and Other Contributions | 0 |
| Grant/Subsidy Payments | 0 |
| **NET IMPACT** | **423,876** |
| **Central Government Funding: Non-Transport** | |
| Indirect Tax Revenues | 4,345 |
| | |
| **TOTALS** | |
| **Broad Transport Budget** | **423,876** |

| | |
|---|---|
| **Wider Public Finances** | **4,345** |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

# 15 Value for Money

## Introduction

15.1 A VfM appraisal of the Passenger Rail SOP has been undertaken with reference to DfT's Transport Appraisal Guidance for May 2018. This is no longer the current version, but it is the version used for the previous SDCs to remain consistent with the whole series of studies at this phase of development by TfN.

15.2 This chapter brings together the economic appraisal results presented in the preceding sections and considers their inherent uncertainty, other quantified and qualitative impacts, and distributional impacts. The Value for Money (VfM) assessment summarises the monetised and non-monetised impacts of the appraised corridor interventions with; highways, passenger rail and road & rail freight considered separately.

15.3 The chapter concludes by summarising the next steps for appraising the programme level impacts.

## Economic Appraisal

15.4 Monetised analyses from the Economic (chapter 11), Environmental (chapter 12), Social (chapter 13) and Public Accounts (chapter 14) impacts set out in this SPOC come together as the Economic Appraisal of the SDC Programme. DfT's BCR represents the ratio:

*net-non-transport-budget impacts : net-transport-budget impacts*

The latter being represented by the cost to broad transport budget from chapter 14 and the former by the sum of all other impacts, as set out in the following text. DfT's second VfM indicator is the Net Present Value (NPV); the sum of all monetised impacts.

### Transport Economic Efficiency

15.5 The travel time, cost and financial impacts on consumers and the private sector are summarised in the form of standard DfT 'Transport Economic Efficiency' (TEE) tables for the SDC Programme (Table 27) under EDGE-estimated growth. This table combines the impacts on *Commuting and Other Users* (Social impacts, from chapter 13) and on Business Users and Transport Providers (Economic impacts, from chapter 11).

**Table 27: TEE Table for the SDC Programme (EDGE-estimated Growth Scenario)**

| **Non-business: Commuting** | |
|---|---|
| ***User benefits*** | |
| Travel Time | 176,873 |
| Vehicle operating costs | |
| User charges | 0 |

| | |
|---|---|
| During Construction & Maintenance | 0 |
| **NET NON-BUSINESS BENEFITS: COMMUTING** | **176,873** |

| **Non-business: Other** | |
|---|---|
| ***User benefits*** | |
| Travel time | 177,938 |
| Vehicle operating costs | |
| User charges | 0 |
| During Construction & Maintenance | 0 |
| **NET NON-BUSINESS BENEFITS: OTHER** | **177,938** |

| **Business** | |
|---|---|
| ***User benefits*** | |
| Travel time | 106,326 |
| Vehicle operating costs | |
| User charges | 0 |
| During Construction & Maintenance | 0 |
| **Subtotal** | **106,326** |
| ***Local Authority provider impacts*** | |
| Revenue (toll charges) | 0 |
| Operating costs | 0 |
| Investment costs | 0 |
| Grant/subsidy | 0 |
| **Subtotal** | **0** |
| ***Other business impacts*** | |
| Developer contributions | 0 |
| **NET BUSINESS IMPACT** | **106,326** |

| **TOTAL** | |
|---|---|
| Present Value of Transport Economic Efficiency Benefits (TEE) | **461,137** |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

### Initial DfT Economic Appraisal

15.6 A standard DfT 'Analysis of Monetised Costs and Benefits' (AMCB) table is presented below for the Passenger Rail SDC Programme (Table 28) under EDGE growth. The AMCB table illustrates the calculation of the initial (Level 1) BCR:

- The Present Value of Benefits (PVB) equals:
  - TEE Impacts (from Table 27)
  - Monetised Environmental Impacts (Noise, Air Quality and Greenhouse Gases from Table 19)
  - Other monetised Social Impacts (Accidents from Table 22)
  - Indirect Tax Revenues (from Table 26: )

- The Present Value of Costs (PVC) equals:
  - Cost to Broad Transport Budget (from Table 26: )

**Table 28: AMCB Table for the SDC Programme (EDGE-estimated Growth Scenario)**

| | |
|---|---|
| Noise | 426 |
| Local Air Quality | 32 |
| Greenhouse Gases | 1,504 |
| Journey Quality | Not Monetised |
| Physical Quality | Not Monetised |
| Accidents | 5,500 |
| Economic Efficiency: Consumer Users (Commuting) | 176,873 |
| Economic Efficiency: Consumer Users (Other) | 177,938 |
| Economic Efficiency: Business Users and Providers | 106,326 |
| Wider Public Finances (Indirect Taxation Revenues) | -4,345 |
| Present Value of Benefits **(PVB)** | **464,253** |

| | |
|---|---|
| Present Value of Costs **(PVC)** | **423,876** |

| **OVERALL IMPACTS** | |
|---|---|
| Net Present Value **(NPV)** | **40,377** |
| Benefit to Cost Ratio **(BCR)** | **1.10** |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

## Appraisal Summary Table

15.7 An Appraisal Summary Table (AST) for the Passenger Rail SOP is presented in Table 29.

**Table 29: Comparative Appraisal Summary Table**

| | **EDGE-Estimated Growth Scenario** |
|---|---|
| **Economy Impacts** | |
| Business user benefits | 106,326 |
| Reliability impacts on business users | Not Assessed |
| Regeneration | Neutral |
| Wider Benefits (Level 2) | Slight Beneficial |
| **Environment Impacts** | |

| | **EDGE-Estimated Growth Scenario** |
|---|---|
| Noise | 426 |
| Air Quality | 32 |
| Greenhouse Gases | 1,504 |
| Landscape | Slight Adverse |
| Townscape | Slight Adverse |
| Historic Environment | Slight Adverse |
| Biodiversity | Slight Adverse |
| Water Environment | Slight Adverse |
| **Social Impacts** | |
| Commuting and Other Users | 354,811 |
| Reliability impact (Commuting & Other Users) | Not Assessed |
| Physical Activity | Not Assessed |
| Journey Quality | Not Assessed |
| Accidents | 5,500 |
| Security | Not Assessed following DI screening |
| Access to Services | Not Assessed |
| Personal Affordability | See Commuters and Other Users |
| Severance | Not Assessed following DI screening |
| Option and Non-use values | Not Assessed |

Note: All entries are present values discounted to 2010, in 2010 market prices (£000s)

## Value for Money Statement

15.8 The economic dimension includes the approach to costing interventions, including the treatment of optimism bias, and a summary of the overall cost of the programme, the approach to quantifying the impacts of the programme, including the forecasting of demand impacts and the processes of economic appraisal. DfT's Appraisal Summary Table format is used to show the SDC Programme's Economy, Environment, Social and Public Accounts impacts. The economic dimension concludes with a Value for Money (VFM) assessment which draws together the quantified and qualitative factors, the latter including consideration of the programme's alignment with DfT and TfN strategic objectives.

| Value for Money Assessment | | |
|---|---|---|
| **Established Monetised Impacts (journey times/operating costs):** | | |
| Established Monetised Impacts<br>£464m | Net Cost to the Transport Budget<br>£424m | Initial Ratio of Benefits to Costs<br>1.10 |
| Initial Value for Money Category | | Low |
| **Evolving Monetised Impacts (plus L2 wider impacts/reliability):** | | |
| Established + Evolving Monetised Impacts<br>Not Valued | Net Cost to the Transport Budget<br>Not Valued | Provisional Ratio of Benefits to Costs<br>1.10 |
| Provisional Value for Money Category | | Low |
| **Non Monetised Impacts:** | | |
| Alignment with Strategic Objectives:<br>The Rail SOP has been developed around TfN's objectives to develop and enhance connectivity and accessibility in the North, whilst promoting sustainable growth. Interventions were defined in accordance with the Desirable Minimum Standards in the draft Long Term Rail Strategy, which have demonstratable alignment to the pan-Northern transport objectives set out in the STP. The SOP has been designed to improve rail connectivity across the North of England. | | |
| Other Economy Impacts:<br>In addition to the monetised impacts above, the Passenger Rail SDC programme is expected to generate slight beneficial wider economic impacts. It is anticipated that investment in transport infrastructure will result in benefits to the North's economy, accelerating, maximising and more-widely distributing the transformational growth and benefits of the major infrastructure investment projects within the reference case. | | |
| Other Environmental Impacts:<br>Impacts to local air quality, noise, and greenhouse gases have been monetised as part of the assessment of Established Monetised Impacts. Impacts to Landscape/Townscape, Historic Environment, Biodiversity and Water Environment have been assessed to be Slight Adverse, based on a high-level assessment at programme level, for which there is a significant level of uncertainty. Impacts are likely to be localised to the off-line schemes in the SOP, mitigated by design and offset by beneficial impacts. | | |
| Other Social Impacts:<br>Impacts to accidents have been monetised as part of the assessment of Established Monetised Impacts. Other social impacts have not been assessed at this stage. | | |
| Analytical Certainty:<br>Transport for the North's Technical Assurance Group (TAG) has reviewed and approved all methodologies employed within the Rail SDC economic appraisal and derivation of benefits. The approach to appraisal is based on WebTAG guidance, although the Reference Case includes large, uncommitted schemes, which is not WebTAG compliant but has been approved by TAG. Scheme costs have been derived through a cost estimation process, referencing recent scheme outturn costs. However, as these costs are not based on a detailed assessment of current | | |

| Value for Money Assessment | |
|---|---|
| infrastructure constraints, nor the engineering interventions required to overcome them, there is a high degree of uncertainty at this stage.<br>Nonetheless, the appraisal methodology is considered sound and reasonable for the stage of scheme development which the Rail SOP is currently at, and no adjustment is required to the Value for Money categorisation as a result. | |
| Non-monetised Impacts conclusion:<br>The non-monetised impacts are not expected to be sufficiently material to justify a category shift to the initial Value for Money category. | |
| Adjusted Value for Money Category | Low |

15.9 Table 30 illustrates the likelihood scale for the Rail SOP VfM category. Whilst the adjusted VfM Category remains most likely, it is possible that this categorisation could be adjusted downwards, to Poor, or upwards, to Medium, as a result of greater certainty with regard to intervention capital costs. As described in the Analytical Certainty section of the VfM Assessment table above, the intervention costs were based on a process which is subject to a high degree of uncertainty, with the possibility that costs could be adjusted (in either direction) as individual schemes are examined in further detail as part of a further stage of development.

**Table 30 Likelihood scale for VfM categories**

| **Category** | Poor | Low | Medium | High |
|---|---|---|---|---|
| **Likelihood** | Possible | Likely | Possible | Unlikely |

## Next Steps

15.10 This Strategic Programme Outline Case completes the initial Strategic Development Corridor studies. TfN has commissioned work to review the current SDCs and Long Term Investment Programme, including the sequencing of schemes based on evidence and appraisal. The next stage of modelling will include transformational NPIER forecasts and the latest spatial planning information.

15.11 The appraisal will move to a single assessment tool for the North, able to report at pan-Northern and corridor levels, so removing of the issues of double counting of benefits. This approach will also better incorporate the multi-modal impacts of passenger rail and freight.

15.12 The reference case assumptions will be updated, so reflect the latest plans for the schemes such as NPR and Trans Pennine tunnel.

15.13 The initial work on the wider economic benefits (WITA) will be progressed, moving from Level 2 (static assessment) to Level 3 (dynamic assessment), and include the updates in WebTAG.

15.14 As more definitive scheme definitions emerge, scheme costings will be reviewed, and the environmental appraisal will adopt the more detailed WebTAG methodologies.

# Financial Dimension

The Financial dimension of a business case sets out to demonstrate is to set out the impact of the proposal on public sector capital and revenue budgets.

## 16 Introduction

16.1 The Financial dimension sets out the approach to estimating implementation costs for the Passenger Rail SOP of interventions. 'Whole life' costs are estimated, including ongoing maintenance, periodic renewals and - for Rail Passenger and applicable Freight Road and Rail only - operating costs. These costs, converted into suitable appraisal values, form a key input into the cost benefit appraisal, described in the preceding Economic dimension.

16.2 The programme-level cost estimating process is necessarily high-level at this time; combining interventions of different scales, natures and complexities. The approach taken has built-in consistency across the programme, effectively implicitly assuming reasonable balance in the variation above/below estimate. There are further advantages of programme delivery at this scale in respect of cost estimates; principally in terms of the ability to refine the programme as experience is accumulated and lessons are learnt, for example improving the efficiency of procurement and adjusting intervention delivery timings and specifications to maximise value for money.

### Approach to Financial Appraisal

#### Rail Intervention Costs

16.3 A similar 'unit cost' based approach was adopted for rail schemes, with unit rates in this case based initially on publicly available data. For route improvements, unit rates per mile were derived for bands based on the journey time saving, as a proportion, identified. Costs for new or substantially upgraded intermediate stations were also derived. Network Rail and DfT Rail were consulted about these rates, the cost per intermediate station being increased as a result. No other amendments to the rates were suggested, or alternative evidence provided; it is therefore assumed that cost estimates based on these rates are appropriate for the current stage of delivery.

**Freight Intervention Costs**

16.4 Intervention costs specific to freight have not been developed at this very early stage of work[51].

**Inflation**

16.5 Convention for the Financial dimension is to present costs in nominal terms (sometimes referred to as outturn or cash terms), that is inclusive of all inflation. Intervention cost estimates have been inflated to 2035 using BCIS cost inflation indices, for the purposes of the Economic dimension - where interventions have been represented as being implemented in a single year. Further inflation has been applied to costs presented within this Financial dimension, to represent in broad terms the anticipated phasing of intervention delivery.

# 17 Implementation Funding Requirement

## Introduction

17.1 The capital cost in nominal terms, suggests the total anticipated budget for the SDC programme. This represents a broad estimate at this stage, requiring further detail to be added in terms of scheme specification, cost and delivery programme. This detail will begin to become available as individual schemes are further delivered. The budget estimate should therefore be considered illustrative at this stage.

## Intervention Sequencing

17.2 The approach to quantifying the impacts of the Passenger Rail SDC programme, as set out in the ASR and summarised in Chapter 10 of this SPOC, for reasons of practicality adopts the proportionate approach of assuming a single opening year for all interventions (rather than the sequenced approach described in chapter 6 of this document). For internal consistency, within the Economic Dimension (but not the Financial dimension) of this SPOC the same approach has been taken, with implementation costs represented up to a 2035 assumed opening year and lifecycle costs from then onwards (over a 60 year appraisal period (2035 – 2094)).

**17.3** It is noted that this approach does not have any material effect on the results of the Economic Appraisal or the robustness of any conclusions based on that appraisal. In terms of implementation costs, this approach effectively assumes that the discounted cost would not change if it was assumed to be incurred in a different year, that is that the downward effect of discounting and the upward effect of real terms inflation and increasing uncertainty would cancel out.

[51] Other general highway intervention costs that would benefit road freight traffic are included within the highway cost assumptions.

## Funding Requirement

17.4 The illustrative SDC programme funding requirement for Core and Complementary interventions is set out in Table 31. Following the structure of the SPOC documentation, costs for highway interventions are provided for the four separated SDC corridors, whereas Passenger Rail and Road & Rail Freight costs are presented at a combined level.

17.5 Table 31 also shows a single TfN programme-level contingency allowance, for the purposes of illustrating the overall funding requirement. It is noted that contingency allowances suitable for individual interventions, nor for sub-packages of interventions (for example rail passenger schemes) would not necessarily sum to the overall programme-level contingency. This is a result of a level of overlap being required between separate contingency allowances, whereas the programme-level allowance reflects the assumption that not every intervention would require the full level of contingency allowed.

**Table 31: Illustrative Funding Requirement (£m nominal)**

| SPOC | Appraised Programme | Non-Appraised Programme | Full Programme |
|---|---|---|---|
| Highway: Central Pennines | £7,144 | £334 | £7,478 |
| Highway: Connecting the 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 |
| Highway: East Coast | £1,717 | £653 | £2,371 |
| Passenger Rail: North | £505 | £6,991 | £7,496 |
| Sub Total[52] | £15,682 | £10,119 | £25,801 |
| TfN Programme Level Contingency (5%)[53] | | | £1,290 |

[52] Double counting of interventions in more than one SDC removed.

[53] A single TfN programme-level contingency allowance has been applied for the purposes of illustrating the overall funding requirement. The programme-level allowance reflects the assumption that not every intervention or package of interventions would require the full level of contingency allowed.

| SPOC | Appraised Programme | Non-Appraised Programme | Full Programme |
|---|---|---|---|
| Total Base Cost (including programme contingency) | | | £27,091 |
| Illustrative Funding Requirement (allowing for inflation) | £40,000m to £50,000m | | |

## Funding Arrangements

17.6 A key element of the STP will be how the infrastructure proposed by TfN, as set out in the Long-Term Investment Programme, will be funded over the period until 2050. TfN has therefore developed a Funding Framework that will form the basis of the funding section of the STP as well as informing the business cases for Northern Powerhouse Rail and the interventions arising from the work on the SDCs.

17.7 The approach that TfN has adopted to the development of the Funding Framework has been grounded in the fundamental principles that were agreed by the Partnership Board in December 2016. KPMG was appointed in June 2017 to support TfN in this work.

17.8 The TfN Funding Framework was discussed at the Partnership Board on 31 July 2018 and amended to reflect the comments made by the members. In addition, it was presented to the Scrutiny Committee meeting on 30 August 2018, where it was endorsed and recommended for approval by the TfN Board (noting that it will need to consider the more detailed proposals as and when these are developed).

17.9 The TfN Funding Framework includes the following elements:

a) The Principles – which underpin a deliverable and appropriate funding arrangement

b) The Potential Funding Sources – demonstrating that TfN's funding requirement is reasonable

c) The Governance Arrangements that will enable funding allocated for strategic transport infrastructure in the North to be directed to TfN programmes

d) How Financial Risk is managed.

17.10 The Funding Framework also sets out the parameters within which the allocation and management of the financial resources required to deliver the objectives of the STP will be undertaken.

17.11 The key points to note within the TfN Funding Framework are as follows:

a) The total funding envelope identified by TfN is deliverable within the context of a reasonable expectation of what funding might be made available. This is consistent with the National Infrastructure Commission's position as set out in the National Infrastructure Assessment. TfN is therefore not making unreasonable financial demands on central government – the decision to fund TfN is a choice that can be made by government within existing paradigms, based on robust programmes.

b) TfN does not have the power to capture value created by its promoted interventions – where these powers do not sit nationally, they sit locally with TfN's Constituent Authorities or other local authorities. These local authority powers have principally been granted to fund activity on a local rather than a regional basis. Where local plans are sufficiently developed, it is clear that those local powers will be fully utilised funding transport infrastructure within authorities and cannot be expected to fund strategic (i.e. national) infrastructure.

c) The TfN Funding Framework will be integrated with the pipeline of programmes and projects that is presented by TfN in the STP and the accompanying long term Investment Programme. Further work is required to understand the impact of the timing of those projects and the resultant profile of proposed funding through to 2050, although there has been some initial work done for the pre-2027 period.

d) The TfN Funding Framework also identifies where residual risks sit in relation to the funding of TfN promoted interventions and how this will be managed. Neither TfN nor its Constituent Authorities are in a position to back stop the risks associated with TfN's proposals and therefore as things stand this role will need to be taken on by central government. However, TfN could become the owner of programme risks, which would mirror some of the effects of financial risk taking.

17.12 In the longer term, the TfN Funding Framework will provide the basis for further detailed work that will include the following activity:

- Engage with DfT, HMT and central government more widely to agree and define exactly what form the proposed budgetary decision-making control would take and demonstrate how it would enhance delivery of infrastructure in the North.
- Engage with Members and other stakeholders to further understand their ambition and consider any consequential impacts on TfN governance arrangements.
- Develop the detail of the proposed funding powers and associated risk management mechanisms and how these might be delivered.
- Consider how these powers and responsibilities would impact on TfN and its Constituent Authorities (including an assessment of potential financial impacts) and in particular, any additional resources that might be required to discharge them.
- Consider how the proposed changes would impact on DfT, partner bodies (including delivery agencies), and identify how new processes

could be adopted (including the transition to the proposed arrangements).

# 18 Operational Life Funding Requirement

## Introduction

18.1 In addition to the implementation costs (above) cost benefit appraisal takes account of future costs for maintenance and renewal, for example the delivery of additional infrastructure may place additional liabilities on the public sector to keep it in operational condition.

## Maintenance and Renewal

18.2 A present value equivalent to 10% of the implementation costs is applied, to represent highway maintenance and renewal costs, based on experience from across the project team. This is assumption is to be appropriate given the current stage of delivery.

18.3 The same adjustment, equivalent to 10% of implementation costs in present value terms, was made to represent passenger rail and freight intervention maintenance and renewal costs for consistency with highway schemes.

## Operating Costs and Revenue

18.4 A high-level estimate of rail operating costs was made based on changes in service km, noting that neither operating costs nor passenger revenues were included in the rail economic appraisal. This represents a prudent assumption, based on the constraint that revenue from any rail interventions must exceed service operating costs.

# Commercial Dimension

The Commercial dimension of a business case sets out to demonstrate that the proposals are commercially viable, outlines the applicable procurement options and introduces the approach for engaging with the market.

## 19 Introduction

19.1 The Commercial dimension sets out the procurement strategy to engage the market and the proposed approach to risk allocation. Given the programme is at a relatively early stage, this Commercial dimension seeks to further clarify TfN's role in procurement and risk acceptance, demonstrate that the various procurement options available and market capability are being considered, and establish that there is a clear procurement approach in place to deliver, as a minimum, the next phase of the study. The Commercial dimension will be developed in further detail at SOBC and OBC stage.

19.2 The short list of interventions in the Passenger Rail SOP forms a divisible programme of works. This provides flexibility in the scale and timing of delivery of the interventions. Given this flexibility, many routes to market are available. Due to the programme being both multi-modal and structured around a series of packages, it is likely that a number of separate scheme promoters and delivery contracts will be required, including both engineering contracts and franchise commitments for rail. Given the anticipated timescales for delivering such significant interventions, it is likely that the procurement options available to the scheme promoters, particularly in terms of specific contracts, will change during the lifecycle of the project. Therefore, the commercial and procurement strategy will evolve as the scheme design/scope develops.

## 20 Approach to Procurement

### Procurement Regulations Context

20.1 DfT, TfN and the delivery partners procure works and services in compliance with EU Procurement Directives and UK Regulations. DfT, TfN, Highways England and HS2 Ltd procure through the Public Contract Regulations whilst Network Rail qualifies as a Utility Company under the EU Utility Directive and procures works and services through the Utilities Contract Regulations.

20.2 For bespoke procurements, where the requirements are out of the scope of the frameworks, TfN and delivery partners undertake discrete Official Journal of the European Union (OJEU) compliant procurements.

20.3 Looking ahead, future work and services with respect to the SDCs will be procured by the agreed delivery body. TfN will lead on further business case development at the pan-northern / Strategic Development Corridor level. 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 SRN schemes, Network Rail and Local Transport Authority partners.

## Market Assessment

20.4 This section provides an overview of the capabilities and capacity of the supplier market, any gaps which exist between current capabilities and those likely to be required to deliver the programme, and considerations for engaging with the market prior to procurement. Market analysis is a key aspect, both in terms of informing the scheme design, operational/ maintenance requirements and the route to procurement. As the study moves forward, it will be critical to remain at the forefront of market developments, understanding lessons learnt from other major schemes as well as gaining an appreciation of who in the market has the capability to deliver the interventions and packages. The skillsets required to implement the schemes are similar to those required for other regional and national highway and rail projects.

20.5 The divisible nature of the programme provides flexibility if necessary to fit supplier availability. However, it is noted that TfN's wider programme is large and includes many interventions that will need to be delivered contemporaneously, including with large committed investments promoted and delivered nationally or otherwise outside TfN. TfN will work closely with delivery agencies as well as the broader transport industry to ensure a joined-up approach to skills. In delivering the Investment Programme, the focus will be on maximising social value for local areas, a sustainable pipeline of skills, and diversity within the workforce.

20.6 Where capability or capacity gaps are identified, options will be suggested for addressing them. These options could take broadly two forms:

- Increasing capability/capacity to close any gaps, including;
  - Working alongside the market and further education establishments to address skills gaps and release new capacity into the market.
  - Collaborating with the private sector to enhance innovation.
- Reducing/reprofiling the requirement to be deliverable by the existing market; including;
  - Working with infrastructure owners to identify more efficient way of working (for example enabling lengthier access to rail infrastructure, or combining enhancement work with routine maintenance/renewal activity.)

20.7 It is likely that a combination of these actions will be necessary.

20.8 The timing of the interventions (see Management Case) 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 and updated as technologies in construction and within the complementary industries develop.

## Sponsorship/Procurement Options Available

20.9 The multi-modal and divisible nature of the SDC programme provides an opportunity to select the best sponsorship and delivery model for each intervention/package of interventions.

20.10 Project sponsorship options include:

**DfT**

20.11 Under this option, DfT would retain sole accountability for the governance of a project and for ensuring that it meets the objectives set out in the Strategic dimension. A close working relationship with the delivery agent will be required, with clearly defined processes for decision-making, communications and escalation. Dependent on the preferred delivery model (see below), this option would have the advantage of building from prior experience and utilising an existing toolkit of project processes. DfT would require a means of monitoring that the long-term critical success factors (that is, making a positive contribution to the economic growth of the North of England).

**TfN**

20.12 Here, TfN would take sole accountability for the success (in terms of meeting both the short and long-term objectives) of a project, and take on the day-to-day Sponsor role during delivery of the infrastructure elements of the project. The advantages of this option include the geographic proximity of TfN's operations to the project site, the key linkages between the project's objectives and those set out in TfN's Strategic Transport Plan, and the existing communications processes between TfN and its partner authorities as key stakeholders.

**DfT & TfN Joint Sponsorship**

20.13 In this option, DfT and TfN would take on a joint Sponsorship role, collectively owning the business case and accountability for delivery of project objectives. This option has the advantage of being able to utilise DfT's organisational experience and tools, and TfN's communications management structures and North of England base. It also provides an opportunity for TfN to gain project Sponsorship experience without taking on sole accountability. A clear plan would be required setting out individual roles within the sponsorship team and lines of decision-making and escalation, to mitigate any risk associated with joint sponsorship.

**TfN Local Transport Authority Partner Sponsorship**

20.14 Following the principle of subsidiarity, where a TfN Local Transport Authority partner is best placed to act as Sponsor TfN will work with that Local Transport Authority to support further business case development, management of and delivery of an intervention or package of interventions.

This approach is most likely to be a preferred option for interventions on local transport / highway authority managed roads.

**Private Sector Sponsorship**

20.15 There could also be opportunities for private sector investment within the Programme, such as market-led rail proposals and a number of combined transport and energy proposals. Transport for the North will examine each of these proposals closely as and when the necessary information is available.

20.16 Delivery options include:

- Commissioning via agencies (Network Rail, HS2 Ltd and Highways England);
- Direct contractor appointment;
- Alternative mechanisms (franchising, alliancing, ODP)
- Commissioning via TfN's Partner Authorities

**Design, Build & Maintain (Network Rail/HS2 Ltd/Highways England)**

20.17 Under the Design, Build & Maintain model, the Sponsor would appoint an agent responsible for completing detailed scheme design and subsequent construction. Traditionally, Network Rail has undertaken this role for DfT, utilising sub-contractors where required. In this respect this option has the advantage of utilising a 'tried and tested' method, without the risks associated with a more innovative approach. It would also enable the 'lessons learned' from the delivery of recent enhancement projects to be embedded within the process for planning and delivering this scheme.

20.18 It is anticipated that many of the interventions will be delivered through framework and term maintenance contracts held by Network Rail, local authorities and Highways England.

20.19 It is likely that the schemes within the Passenger Rail SOP would not fall within the extant CP5 process for managing the delivery of enhancements. This creates a number of options for allocating key roles of project sponsor and delivery agent. A brief description of each option is set out below to inform further discussion.

*Assurance*

20.20 While not all interventions within the programme fall within the remit of Highways England and Network Rail, at this stage it is assumed that assurance stages will be consistent with the Highways England's Project Controls Framework (PCF)[54.] and Network Rail Rail Network Enhancement Pipeline (RNEP) processes, as relevant by intervention/ package. These

[54] https://s3.eu-west-2.amazonaws.com/assets.highwaysengland.co.uk/our-road-network/managing-our-roads/project-control-framework/The%20project%20control%20framework%20handbook%20v2%20April%202013.pdf

frameworks set out how Highways England and Network Rail, together with the DfT, manage and deliver major projects in phases/stages and are described in more detail in the Management Case. Both processes require a phased approach to procurement and approval, which can be applied separately by intervention/package as the programme moves through to later stages.

20.21 The process map in Figure 23 shows how the Strategic Transport Plan provides the multi-modal, strategic outline programme for the interventions that feature in the Investment Programme in line with current industry and regulatory processes:

**Figure 23: Investment programme development process**


## Next Phase

20.22 The work on the Strategic Development Corridors provides enhanced analysis and strategic programme cases for investment for each corridor, as well as an initial value for money assessment for the preferred package of interventions.

20.23 The interventions listed will then need to be subject to their own assessment and business case developments, either as individual schemes or, in the case of the rail journey time improvement programme, as a sub-programme, by the relevant Delivery Partner or scheme promoter, following the Rail Network Enhancement Pipeline or Highways England's Project Control Framework processes. These will all then align with the steps required for a HM Treasury compliant business case.

20.24 The new evidence, analysis and appraisal tools will be made available for scheme promoters to support the development of interventions, ensuring that Transport for the North is adding value to the process.

20.25 Transport for the North will work closely and collaboratively with Government and all Delivery Partners to ensure that this Investment Programme is delivered.

20.26 Transport for the North co-manages the Northern and TransPennine Express rail franchises, ensuring that the provisions of the two franchise agreements are delivered. Transport for the North is also delivering the Integrated and Smart Travel programme over the coming years.

## Market Engagement

20.27 DfT, TfN and delivery partners have established procurement frameworks and, as mature clients, have long-term relationships with their suppliers. Each organisation uses its market intelligence to inform their strategy for procuring works and services.

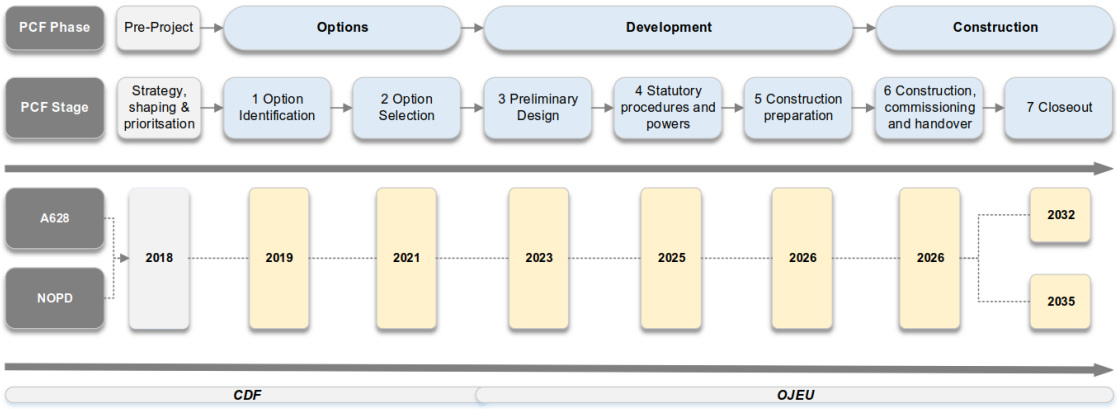
20.28 TfN encourages potential suppliers to register their interest using a form on the TfN website. TfN retains these contacts so that when projects are ready for launch, a potential supply chain is already in place.

20.29 For complex tenders, TfN regularly invites bidders to Supplier Engagement meetings at which bidders learn about what TfN is trying to achieve, and is also an opportunity for bidders to input into the Specification and the Procurement tender plan.

### Procurement timelines

20.30 Figure 24 illustrates the anticipated procurement timeframes, commencing with further programme refinement and SOBC development.

**Figure 24: Example from TPT**




# 21 Next Steps

21.1 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 Network Rail and local transport authority partners.

# Management Dimension

The Management dimension of a business case sets out to demonstrate that the proposals are deliverable, including describing proposals for:

- Programme governance
- Stakeholder engagement
- Risk and opportunities management
- Monitoring and evaluation

# 22 Introduction

22.1 The Management dimension assesses whether a proposed intervention is deliverable. It provides a clear understanding of what needs to be done, why, when and how, with measures in place to identify and mitigate any risks[55].

22.2 This section provides a high-level outline of the programme governance and the management systems put in place to oversee the development phase of the programme of investments. Additionally, this dimension presents an overview of the programme and the approach to stakeholder engagement, risk management and monitoring and evaluation to ensure the successful delivery of the programme.

22.3 As illustrated in the Strategic Dimension, TfN's Investment Programme outlines a range of multi-modal interventions varying in scale and scope distributed across the study area. Therefore, the programme will most likely be delivered in distinct phases. This approach will include a number of early 'priorities for delivery'.

# 23 Programme Governance

## Introduction

23.1 This section describes the governance arrangements necessary to oversee the SDC programme at various stages in its lifecycle.

## Governance Structure

23.2 As the body responsible for managing issues at a strategic level across the North, TfN is leading the development of a multi-modal package of schemes

[55] DfT. (2013). The Transport Business Cases. Available at: **https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/85930/dft-transport-business-case.pdf** [Accessed: 26/09/2018]

to implement in the study area. The Strategic Programme Outline Cases (SPOC) for the SDCs provide a key part of the evidence base for TfN's Strategic Transport Plan and Long-Term Investment Plan. This sets out TfN's proposals for investment in transport across the North.

23.3 TfN, as the statutory transport body for the North, is the voice of the North of England for transport - a partnership of elected and business leaders from across the whole of the North of England who collectively represent all of the region's 16 million citizens.

23.4 Reflecting TfN's governance arrangements, TfN's local authority partners have been engaged and have contributed to the development of the Passenger Rail SOP throughout its lifecycle. This includes participation in the infrastructure options sifting and economic appraisal processes. Specific information has also been sought from local authorities on development plans for their areas to understand the interactions between the Passenger Rail SOP and local development plans.

23.5 The Partnership Board includes representatives from the following organisations: combined authorities in the North, local transport authorities in the North, Local Enterprise Partnerships (LEPs) in the North, Department for Transport, Network Rail, Highways England, High Speed 2 Ltd.

23.6 Representatives from Department for Transport, Network Rail, Highways England and TfN's Transport Authority partners have provided direction, technical scrutiny and oversight throughout the development of the proposed set of interventions.

23.7 The Partnership Board has agreed on the governance structure for TfN including the establishment of an Executive Board including TfN and DfT to oversee the work of individual work streams. Programme boards and delivery groups have also been created to advise and support the work of the Partnership Board and its Committees.

23.8 For an overview of the governance structure, see Figure 25.

**Figure 25: SDC Governance Structure[56]**


23.9 Reflecting TfN's governance arrangements, partners have been engaged and have contributed to the development of the Passenger Rail SOP throughout its lifecycle. This includes participation and approvals during scheme identification, objective setting, sifting, option refinement and economic appraisal processes.

23.10 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. This board has provided direction, technical scrutiny and oversight throughout the development of the proposed set of interventions.

23.11 The Partnership Board has agreed on the governance structure for TfN including the establishment of an Executive Board including TfN and DfT to oversee the work of individual work streams. Programme boards and delivery groups have also been created to advise and support the work of the Partnership Board and its Committees.

[56] As of June 2019, Strategic Transport Plan Programme Board was renamed as the Strategic Oversight Group (SOG)

## Roles & Responsibilities

23.12 The Passenger Rail SPOC provides a key part of the evidence base for TfN's Strategic Transport Plan and Long-Term Investment Plan, which sets out TfN's proposals for investment in transport across the North.

23.13 Setting clear roles and responsibilities and single point accountability for different areas of work is vital to supporting effective project planning, delivery and decision making.

23.14 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 strategies.

23.15 TfN provides 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, Infrastructure and Projects Authority and other key governmental stakeholders. TfN is also responsible for managing the key strategic risks facing the programme and ensuring that the views of the local authority partners are represented.

## Programme Management Arrangements and Assurance

23.16 Within TfN, as the Senior Responsible Officer (SRO), the Major Roads Director is accountable for delivery of the SDC Strategic Outline Programme Case.

23.17 Following completion and TfN Board endorsement of the Strategic Programme Outline Case, TfN will maintain responsibility for owning and promoting the SDC programme. This will include the completion of further development work during 2019/20 to refine, package and sequence the proposed delivery of the Strategic Outline programme.

23.18 Through the governance structure TfN will work with partners to review and update the STP Long Term Investment Programme, and to determine which partner organisation will take lead responsibility for progressing business case development for specific interventions or packages of interventions.

23.19 As stated in the Commercial Dimension, assurance processes will be consistent with Highways England and Network Rail where relevant. These include Highways England's 'Project Control Framework' (PCF)[57] and the Network Rail 'Governance for Railway Investment Projects' (GRIP)[58] processes. According to these frameworks, a programme lifecycle needs to be clearly defined, broken into phases and structures around key

[57] Highways England (2017), The Project Control Framework Quick Reference Guide

[58] HM Treasury. (2018). A short 'plain English' guide to assessing business cases

milestones. Approval to proceed from one stage into the next must be given by the Senior Responsible Owner (SRO) and this is assessed at a stage gate assessment review (SGAR). The application of these proven 'Codes of practice' will ensure the effective assurance of the proposed programme of interventions.

# 24 Programme Lifecycle and Sequencing

## Introduction

24.1 The proposed programme of interventions across the Passenger Rail SOP 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.

24.2 This section presents the emerging delivery programme for the Passenger Rail SOP.

## Outline Delivery Programme

24.3 The programme of investments proposed for the Passenger Rail SOP includes a large number of schemes, which will likely be delivered over a number of years. This programme is in early stages of development and therefore this management dimension focuses on the development phase.

24.4 It is envisaged that a number of early 'priorities for delivery' will be taken forward to SOBC in 2019/2020 to be delivered between 2020-2027. Overall, a programme of short (up to 2027), medium (2027-2035) and long term (post 2035) interventions will be developed.

**Figure 26: High-level delivery programme**


24.5 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 Long Term Investment Programme, including the sequencing of schemes. The next stage of modelling will include transformational NPIER forecasts and the latest spatial planning information.

24.6 As in the first stage of the development of the SDCs, TfN will fully engage with DfT, local partners. national delivery bodies, transport operators and other key stakeholders. This will ensure that partners and stakeholders contributions inform and help shape our delivery programme.

### Interfaces with other schemes

24.7 As the programme is further developed, it will be key to consider how the proposed interventions interface with other schemes being planned for this geographical area. Key schemes to consider will include:

- HS2
- Great North Rail Project
- Highways England Road Investment Strategy and Strategic Roads Studies (Manchester North West Quadrant, Trans Pennine Tunnel, Northern Trans Pennine Routes and M6 to M1)
- Northern Powerhouse Rail
- Other major developments of national and regional importance, including schemes being identified and developed as part of the rail industry's Continuous Modular Strategic Planning (CMSP) process.
- Local schemes

24.8 The full list of schemes included in the Reference Case is available in the Strategic Dimension.

# 25 Stakeholder Management and Communications

### Introduction

25.1 Effective stakeholder management and consultation is fundamental to achieving the objectives of the programme. This section presents an overview of TfN's engagement with key stakeholders throughout the combined SDC development programme so far, as well as an overview of TfN's approach to future stakeholder engagement and communications.

### Stakeholder Engagement Plan

25.2 At the start of the development of the SPOCs, a Stakeholder Engagement Plan (SEP) was produced to map stakeholders and agree a communications plan throughout the option development process and preparation of the SPOC.

25.3 The SEP included:

- Aims and objectives
- Situation analysis
- Stakeholder mapping
- Engagement methods

25.4 Since the start of the development of the programme of investments in the SDCs and following the SEP, TfN has engaged with a significant number of national, regional and local stakeholders. These include:

- Local authorities
- Local Transport Authorities
- Local Enterprise Partnerships
- Combined authorities
- Highways England
- Network Rail
- HS2
- DfT
- Homes England
- Large private businesses, including rail, freight, port and airport operators
- National Parks
- Railfuture
- Historic England
- Transport Focus
- Chambers of commerce and other organisations representing businesses
- Tourism organisations

25.5 The purpose of this engagement was to define the outcomes to be achieved through investments in the SDCs and identify which multi-modal solutions are required to deliver these outcomes.

25.6 TfN held different stakeholder consultation sessions in the form of workshops and interviews throughout 2018. Details on the specific consultation sessions held to inform the options development and assessment process can be found in the Strategic Dimension. Further rounds of stakeholder engagement are planned in 2019 to share the outcomes of the SPOC.

# 26 Risk and Opportunities Management

## Introduction

26.1 The Strategic Development Corridors' risk management is undertaken in line with TfN's Risk Management Strategy (RMS). The Risk Management Strategy provides a framework for managing risks in a consistent manner by applying systematic methods and practices to the task of identifying and assessing risks and opportunities which in turn allows mitigation measures to be identified and implemented to reduce or optimise the effects. This provides a disciplined environment for proactive decision-making.

## Risk Management

26.2 The risk management approach is an iterative process through which risks are continually identified, assessed and managed by the programme team.

Adopting best practice, TfN's risk management process is sub-divided into six key steps listed below:

- Contextual Analysis
- Identification of Risk
- Risk Evaluation
- Risk Analysis
- Risk Treatment
- Monitor & Control

26.3 Collectively, these steps form a logical sequence, necessary for the adoption of a robust approach to the implementation of the risk management with the SDC programme.

26.4 The SDC team maintain an up-to-date programme risk register, which is reviewed and updated regularly and an on-going basis by risk and mitigation action owners. The programme has adopted a robust and rigorous bottom-up risk management reporting where emerging risks are proactively captured, existing risks reviewed and re-assessed, and new risks identified.

26.5 TfN's efficient and effective risk reporting process allows management to be informed on the key threats and opportunities that require attention at a higher level.

26.6 Figure 27 provides an overview of TfN's risk management process. A description of key stages is provided below.

**Figure 27: TfN's Risk Management Process**


## Contextual Analysis

26.7 This step requires the manager to collate the maximum amount of information with regard to the scope of the activity, thus enabling the identification of risks that may have an impact upon TfN's objectives.

Information collated will assist in defining appropriate probability and impact scoring.

**Identification of Risks**

*26.8* TfN will undertake a comprehensive contextual analysis to enable the identification of risks that may have an impact upon TfN's objectives. Based on the contextual analysis, threats and opportunities will be identified that inform the risk identification process. Identified risks will be summarised in a risk register which includes risk categories and risk descriptions. TfN will organise a comprehensive programme risk register and regularly update it with emerging risks being proactively captured.

**Risk Evaluation**

**26.9** The programme team will utilise designed a qualitative risk scoring criteria to enable the assessment of the risks and opportunities. This will generate a qualitative risk ranking (risk score) by multiplying the probability with the maximum of the impacts for each risk identified in the risk register. The risks with the highest risk scores will be prioritised analysed in more detail and reported for review and decision-making.

**Risk Analysis**

26.10 Risk analysis will be undertaken to determine the aggregated effect of the threats and opportunities on an activity. This will include consideration of any interdependencies or mutual exclusivity between risks.

**Risk Treatment**

26.11 For risk treatment/mitigation, a process for selecting the most suitable response strategy to the management of individual or groups of risks will be chosen. These are applied to both threats and opportunities. Appropriate ownership will be identified in the risk register for all risks, together with the associated mitigating actions.

**Risk Monitor and Control Stage**

26.12 This is an essential process step by which the risk planning measures are monitored and controlled. Usually conducted as part of regular risk reviews. The output of this process step will allow for corrective action to be taken should the risk planning measures be judged as not working effectively and thus further actions may be required.

# 27 Monitoring and Evaluation

## Introduction

27.1 The monitoring and evaluation of benefits is required to assess the extent to which the scheme meets its core objectives as set out in the strategic dimension. TfN will develop a thorough monitoring strategy and evaluation plan complying with DfT (HMT) requirements[59].

## Approach to Monitoring and Evaluation

27.2 Monitoring is the systematic collection and analysis of data as a project progresses, aimed at improving the efficiency and effectiveness of a project or organisation. This data can be fed back into implementation, current decision making and the appraisal process to improve future decision making. It requires the collection of data before implementation to act as a baseline.

27.3 The monitoring strategy for this programme will set out data requirements, potential data sources and how the data will be obtained and monitored at the start of the project (baseline) at various intervals during the project (milestones) and at the end of the project (target) to help assess the trajectory of outputs and impacts.

27.4 The evaluation plan, to be developed as the programme development progresses, will describe in detail the proposed evaluation approach and how it fits with the existing evidence base and monitoring strategy. The plan will be developed following guidance contained in the Magenta Book[60], the Government's guidance on evaluation. All interventions will require a decision on whether to carry out a formal independent evaluation or not. This decision will be based on the scale of the investment and the need for evaluation[61]. The evaluation plan may draw on existing evaluation processes where relevant, for example Highways England's Post Opening Evaluation Process (POPE) for road schemes.

27.5 To date TfN has undertaken some work into monitoring the current economic baseline across the North as evidenced in the Northern Powerhouse Independent Economic Review and the Draft Strategic Transport Plan. More work will be undertaken as the programme for investment in the SDCs develops. As TfN develops its process for monitoring and evaluation it is important that an assessment is made against the current metrics available to critically assess measurement validity.

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[59] HM Treasury. (2018). A short 'plain English' guide to assessing business cases.

[60] HM Treasury. (2011). The Magenta Book

[61] DfT. (2013). Monitoring and Evaluation Strategy

### Benefits monitoring and realisation

27.6 Transport for the North will also develop a benefits realisation strategy in the next phase. This will ensure that the key objectives for the scheme, as laid out in the strategic dimension, are met. An effective benefits realisation strategy will include:

- Creation of a benefits register that links the expected benefits from the programme to the overall strategic goals. This would include identification of the benefit and the proposed metric that will be used to measure it (for example, time savings, overall demand figures, etc).
- Nomination of the organisation or directorate that is accountable for realising the benefit. In some cases, such as public realm improvements or specific local interventions, this may be an organisation other than Transport for the North such as local authorities.
- Arrangements for ensuring that benefits monitoring is at the heart of scheme decision-making.
- Monitoring and updating, to ensure that the benefits are on-course to be realised.
- Consideration of how benefits from each individual scheme can be isolated and properly evaluated.

# 28 Management Dimension Summary

28.1 This chapter has discussed the deliverability of the proposed programme of interventions for the Passenger Rail SOP. It demonstrated that plans and governance structures are in place, as well as how they might change in future. It has also included a description of the arrangements for engaging with internal and external stakeholders and those for managing risks.

28.2 The Management Dimension also highlights the importance for effective risk management and monitoring and evaluation. Finally, the methodology for monitoring and evaluation of benefits was described. This is necessary to assess the extent to which the scheme meets its core objectives as set out in the Strategic Dimension.

# Glossary

| Term | Acronym | Definition |
|---|---|---|
| Benchmark | | tbc |
| Concept | | High level approach to delivering interventions (for example an offline bypass. |
| Enabling Capabilities | | The capabilities of the North which are additional to the prime capabilities: education; financial and professional services; and logistics. |
| Garden Village | | A self-contained community of between1,500 and 10,000 homes. |
| Gross Value Added | GVA | The measure of the value of goods and services produced by an area, industry or sector of an economy. |
| Intervention | | A potential (loosely defined) scheme which would deliver a benefit. |
| Local Enterprise Partnership | LEP | A voluntary, business-led, strategic partnership between local authorities and businesses, responsible for promoting and developing economic growth. |
| Major Road Network | MNR | A network of economically important roads vital for transformational growth |
| Northern Powerhouse Independent Economic Review | NPIER | Outlines the opportunities to transform the North. |
| Option | | A more specific approach to delivering an intervention (for example a three-lane offline bypass to the west of a city). Given our current level of development, we should talk in terms of 'concepts' and not 'options'. |
| Package | | A group of interventions that are linked by geography or technology. |
| Pan-Northern | | Refers to transport schemes which fit within TfN's remit |
| Phasing | | To do with a method of delivery for a package or intervention which sees its delivery staggered to release benefits / cause disruption over a certain timeframe. |
| Prime Capabilities | | The four areas where the North is highly skilled and globally competitive, as identified by the NPIER: advanced manufacturing; health innovation; energy; and digital. |
| Programme | | A large set of projects/packages/interventions, which for the purposes of our work are specific to an SDC. |
| Project | | A **project** could be an intervention on its own or a package, but in any case, would generally be defined in its scope by a decision to procure it from the market – as such, we will not be at a level of development where this is a useful term, and it is proposed not to refer to 'projects' in the SPOCs. |
| Rail North Partnership | | Acts on behalf of TfN and DfT to manage Northern and Trans-Pennine rail franchises |
| Reference Case | | The 'do-minimum' scenario developed by TfN including the likely future interventions that aim to increase connectivity across the region |

| Term | Acronym | Definition |
|---|---|---|
| Sequencing | | The process of establishing when packages/interventions should be progressed, and should generally follow the convention of 2020 – 2025, 2025 – 2035, 2035 – 2050. |
| Strategic Development Corridor | SDC | An area where evidence suggests investment in transport infrastructure will enable transformational economic growth. |
| Strategic Programme Outline Case | SPOC | Catch-all term to integrate the similar considerations that were to be taken forward as part of the SOP and SOC. |
| Strategic Road Studies | | Northern Trans Pennine Routes; Manchester North-West Quadrant; Trans Pennine Tunnel |
| Sub-national Transport Body | | A formal, legal entity designed to bridge the gap between national and local projects to plan and prioritise long term infrastructure investment in a specific region. |
| Transport Appraisal Guidance | WebTAG | An online tool which provides information on the role of transport modelling and appraisal, and how the transport appraisal process supports the development of investment decisions and business cases. |
| Transport for the North | TfN | The sub-national transport body for the North |

| Term | Acronym |
|---|---|
| Air Quality Management Areas | AQMAs |
| Appraisal Specification Report | ASR |
| Appraisal Summary Table | AST |
| Areas of Outstanding Natural Beauty | AONB |
| Association for the Advancement of Cost Engineering International | AACEI |
| Benefit Cost Ratio | BCR |
| Distributional Impact | DI |
| Exogenous Demand Growth Estimation | EDGE |
| Environmental Appraisal Report | EAR |
| Environmental Impact Assessment | EIA |
| Environmental Statement | ES |
| External Forecast Model | EFM |
| Full Business Case | FBC |
| Governance for Railway Investment Projects | GRIP |
| Great Britain Freight Model | GBFM |
| Gross Domestic Product | GDP |
| High Speed 2 | HS2 |
| HM Treasury | HMT |
| Independent Economic Review | IER |
| Integrated Sustainability Appraisal | ISA |

| Term | Acronym |
|---|---|
| Local Enterprise Partnership | LEP |
| Major Road Network | MRN |
| Million passengers per annum | mppa |
| National Character Area | NCA |
| National Nature Reserve | NNR |
| National Trip End Model | NTEM |
| Net Present Value | NPV |
| North of England Rail Model System | NoRMS |
| Northern Powerhouse Rail | NPR |
| Northern Transport Demand Model | NTDM |
| Official Journal of European Union | OJEU |
| Option Assessment Report | OAR |
| Outline Business Case | OBC |
| Post Opening Project Evaluation | POPE |
| Present Value | PV |
| Present Value of Benefits | PVB |
| Present Value of Costs | PVC |
| Project Control Framework | PCF |
| Public Transport | PT |
| Regional Transport Model | RTM |
| Sites of Special Scientific Interest | SSSI |
| Senior Modelling Group | SMG |
| Small to Medium Enterprise | SME |
| Special Areas of Conservation | SAC |
| Special Protection Area | SPA |
| Stage Gate Assessment Review | SGAR |
| Stakeholder Engagement Plan | SEP |
| Strategic Outline Business Case | SOBC / SOC |
| Strategic Outline Programme | SOP |
| Strategic Road Network | SRN |
| Strategic Transport Plan | STP |
| Trans-Pennine South | TPS |
| Technical Assurance Group | TAG |
| Transport Economic Efficiency | TEE |
| Value for Money | VfM |
| Value of Time | VoT |
| Variable Demand Model | VDM |
| Wider Economic Benefits | WEBs |

# Passenger Rail

# Appendices

# A Distributional Impact Screening Pro-Forma

| **Scheme Description:** | | | | |
|---|---|---|---|---|
| **Indicator** | **(a) Appraisal output criteria** | **(b) Potential impact (yes/no, positive/negative if known)** | **(c) Qualitative Comments** | **(d) Proceed to Step 2** |
| **User benefits** | The TUBA user benefit analysis software or an equivalent process has been used in the appraisal; and/or the value of user benefits Transport Economic Efficiency (TEE) table is non-zero. | Yes, positive | User benefits incurred across the study area | Yes |
| **Noise** | Any change in alignment of transport corridor or any links with significant changes (>25% or <-20%) in vehicle flow, speed or %HDV content. Also note comment in TAG Unit A3. | Yes, positive | Non-user benefits incurred across the study area | No, not anticipated to be material |
| **Air quality** | Any change in alignment of transport corridor or any links with significant changes in vehicle flow, speed or %HDV content:<br>• Change in 24-hour AADT of 1000 vehicles or more<br>• Change in 24-hour AADT of HDV of 200 HDV vehicles or more<br>• Change in daily average speed of 10kph or more<br>• Change in peak hour speed of 20kph or more<br>• Change in road alignment of 5m or more | Yes, positive | Non-user benefits incurred across the study area | No, not anticipated to be material |
| **Accidents** | Any change in alignment of transport corridor (or road layout) that may have positive or negative safety impacts, or any links with significant changes in vehicle flow, speed, %HGV content or any significant change (>10%) in the number of pedestrians, cyclists or motorcyclists using road network. | Yes, positive | Non-user benefits incurred across the study area | No, not anticipated to be material |
| **Security** | Any change in public transport waiting/interchange facilities including pedestrian access expected to affect user perceptions of personal security. | Not quantified | The effect of the Passenger Rail SOP on security is not assessed and will be considered at a later stage of development. | |
| **Severance** | Introduction or removal of barriers to pedestrian movement, either through changes to road crossing provision, or through introduction of new public transport or road corridors. Any areas with significant changes (>10%) in vehicle flow, speed, %HGV content. | Not quantified | Severance is focussed on the effect of changes to transport infrastructure on pedestrians. Given the scale of the Passenger Rail SOP and stage of scheme development, severance is not assessed and will be considered at a later stage of scheme development. | |

| | | | | |
|---|---|---|---|---|
| **Accessibility** | Changes in routings or timings of current public transport services, any changes to public transport provision, including routing, frequencies, waiting facilities (bus stops / rail stations) and rolling stock, or any indirect impacts on accessibility to services (e.g. demolition & re-location of a school). | Covered within Affordability | n/a | n/a |
| **Affordability** | In cases where the following charges would occur; Parking charges (including where changes in the allocation of free or reduced fee spaces may occur); Car fuel and non-fuel operating costs (where, for example, rerouting or changes in journey speeds and congestion occur resulting in changes in costs); Road user charges (including discounts and exemptions for different groups of travellers); Public transport fare changes (where, for example premium fares are set on new or existing modes or where multi-modal discounted travel tickets become available due to new ticketing technologies); or Public transport concession availability (where, for example concession arrangements vary as a result of a move in service provision from bus to light rail or heavy rail, where such concession entitlement is not maintained by the local authority[1]). | Yes, positive | User benefits incurred across the study area | Yes |