TRANSPORT FOR THE NORTH

Written Submission
HS2 Review – September 2019

Introduction

TfN's long-term aim is transformational connectivity, maximising the opportunities of HS2 and Northern Powerhouse Rail, both of which will lead to a step-change in rail's offering, benefitting many areas of the North for both passengers and freight for future-generations.

HS2 will enhance the North's connectivity with the rest of the UK, whilst Northern Powerhouse Rail will transform connectivity between major Northern city regions, helping to redefine the economic relationships within and beyond the North, whilst securing modal shift from road transport for major interurban flows.

Areas the Transport for the North response covers as set out in the Terms of Reference for the Review include:

- Capacity changes both for services to cities and towns on HS2 and which will not be on HS2
- Connectivity
- Economic transformation including whether the scheme will promote inclusive growth and regional rebalancing
- Environmental benefits, in particular for carbon reduction in line with net zero commitments
- The risk of delivery of these and other benefits, and whether there are alternative strategic transport schemes which could achieve comparable benefits in similar timescales.
- Whether the assumptions behind the business case, for instance on passenger numbers and train frequencies, are realistic, including the location and interconnectivity of the stations with other transport systems, and the 11 implications of potential changes in services to cities and towns which are on the existing main lines but will not be on HS2
- Whether any improvements would benefit the integration of HS2, Northern Powerhouse Rail and other rail projects in the North of England or Midlands

Summary of the key points in Transport for the North's response

As set out in Transport for the North's (TfN's) Strategic Transport Plan, investment in transport could support improved economic performance in the North could bring the following significant benefits to the UK economy by 2050:

- £97 billion (15%) increase in GVA.
- 850,000 additional jobs.
- 4% higher productivity than in a 'business as usual' scenario.

Over the last two decades, the North's railway has experienced substantial growth in passenger numbers despite a legacy of underinvestment. Much of that growth has been accommodated within pre-existing capacity, but this is no longer possible on many routes, affecting the quality of its offer. Most of the North's key rail hubs are now also at capacity. The North's rail network lacks sufficient capacity for growth and is severely constrained by on-train congestion, low journey speeds and poor punctuality. HS2 is, and must be, a key factor in supporting this growth and ambition.

The need for a step-change in the role and expectations of the rail network across the North is clear, and the Strategic Transport Plan, and the associated Long Term Rail Strategy, provide a basis for that change.

For context:

- Rail accounts for a very small share of trips in the North, with only 1.1% share of total trips, but around 7.4% by distance travelled.
- The number of people using the railway network in the North is nearly three times the number 20 years ago (207% increase from the mid-1990's), which is a greater increase than other regions over the same period.
- Also, over the past 20 years, the number of rail passengers travelling entirely within the North has grown at a rate of 6.3% per annum, which is greater than the national growth rate of 4.2%.

It currently takes longer to travel by rail between Liverpool and Hull than it does to travel twice the distance between London and Paris, and trains between Manchester and Sheffield travel at less than half the average speed of services between Milton Keynes and London.

TfN analysis shows that by 2050, total demand for rail travel in the North could be up to four times higher than today, which would mean an increase in the current total number of rail trips to around 760 million trips.

To truly rebalance Britain, and energise the Northern economy, HS2 will play a major role in achieving our ambitions and improving the quality of life across the North. It will expand the existing rail network, regenerate railway stations and their surrounding areas, and support the delivery of Northern Powerhouse Rail, which will free up much-needed North-South and East-West capacity in a system that is struggling to perform.

HS2 also provides exciting opportunities for the North and the Midlands economies to work better together. With our complementary programmes around Northern Powerhouse Rail and the Midlands Hub being led by Midlands Connect, with HS2 joining the two, we can demonstrate considerable benefits and opportunities for using the new and upgraded infrastructure. This includes services serving previously unconnected markets.

Alongside faster journeys, HS2 delivers substantial benefits for capacity release for both passenger and freight services by allowing the existing West and East Coast (south of York) Mainlines, and the Midland Mainline, to be used in different ways, for passengers and importantly freight, growing the overall capability of the rail network to meet our needs.

Through the outcomes of expanded labour markets in TfN's innovative analysis, improved business to business connectivity, and greater access to ports and airports, Northern Powerhouse Rail and HS2 can help drive inclusive, transformational economic growth. More people will have access to opportunities, opening up a wider range of jobs that better match their skills. Businesses will be able to grow their supply chains and labour markets, making it easier to be able to seek out opportunities across a wider range of markets in the North and beyond.

Our Northern Powerhouse Rail proposals are aimed at radically transforming connections between the North's six largest cities, Manchester Airport, and the major economic centres in between. We have developed the Northern Powerhouse Rail proposals in complete lockstep with HS2, utilising the planned HS2 infrastructure to offer better value for money, jointly agreeing changes to the original Phase 2b proposals where this would be of benefit for both schemes and providing regional connectivity which will maximise the benefits of high speed rail.

Northern Powerhouse Rail is described as being the lintel on top of HS2 – providing an integrated network. It is therefore not a case of Northern Powerhouse Rail and HS2 against each other, but it is categorically we need both. As some of the works are on existing lines, Northern Powerhouse Rail can be ready for investment, and works to commence, from 2025 onwards. For the Transpennine Route Upgrade, TfN supports the proposal to utilise HS2 East of Leeds (Thorpe Park) to York as an opportunity to commence construction of HS2 Phase 2b in the North as early as possible, so the benefits can be delivered at the same time as the Transpennine Route Upgrade scheme.

Both Northern Powerhouse Rail, and HS2 are integral parts of the North's rail network and it is essential that they are planned as part of the network and not in isolation to it, within the approach to strategic rail defined by TfN's Long Term Rail Strategy and the Strategic Transport Plan. There is now a clear opportunity to ensure that, alongside Transpennine Route Upgrade and East Coast Mainline Upgrade, HS2 and Northern Powerhouse Rail deliver a transformation in rail that can be spread across the whole of the North by integrated planning.

A summary of some of the benefits of Northern Powerhouse Rail using HS2 infrastructure, which should be included in any refresh of the HS2 business case for Phase 2b, include:

- Access to city centres is radically improved, increasing the population catchments of the largest cities by between 30% and 40% for most cities, over and above the planned and committed improvements. Compared to today, around 3 million more people will have access to Sheffield within 90 minutes, 4 million will have access to Leeds and 3 million to Manchester.
- By 2050 1.6 million will be able to access multiple places within an hour by 2050 compared with just 52,000 today. At 90 minutes, nearly 10 million people (over half of the North) will have that access, against just 2 million today.
- Manchester Airport sits at the heart of the integrated Northern Powerhouse Rail and HS2 network. A new airport station will provide faster, more frequent journeys between the airport and a wide range of destinations across the North.
- Northern Powerhouse Rail is likely to release rail capacity that can be utilised for freight transportation purposes. Through released capacity, increased volumes of freight will be able to be transported in a more efficient way. This will lead to environmental benefits, increased inward investment, and housing and land release, which will each have a positive overall impact on the economy.
- If you increase the opportunity for putting more freight on the railway across the entire network, including Northern Powerhouse Rail, shipping lines could make greater use of Northern ports. Having more containers being moved by rail will reduce congestion on the existing crowded road and rail infrastructure, especially on the East-West routes.
- Northern Powerhouse Rail has the potential to bring forward new commercial and residential development by making places more attractive for private sector investment through improved accessibility.
- Innovative new research by the Institute for Transport Studies has demonstrated the improvements in rail accessibility to employment. This could strengthen the value of place, creating uplifts in residential property in the region of up to 5.4% for local areas that are very well connected by rail to employment across the North. The total expected uplift or increase in value in the residential property market is estimated at £2.9 billion in a single year (based on 2017 property values).
- Northern Powerhouse Rail aligns closely with the development plans of the towns and cities being served by the network. Some of these locations already have significant commercial and residential development already in place or planned where existing stations are already located or build off the development of planned new HS2 stations. Northern Powerhouse Rail is now being embedded into local economic plans, HS2 Growth Strategies and Local Industrial Strategies. Further investment in local and pan-Northern connectivity set out in TfN's Investment Programme is needed to

fully connect Northern Powerhouse Rail to the North's economic assets and clusters to support the delivery of the Strategic Transport Plan.

For the wider rail network across the North, the Long Term Rail Strategy sets out how TfN wants to deliver high quality rail services right across the North, with more frequent and better integrated services, faster journeys and improved reliability on modern trains, with high quality facilities alongside an efficient and attractive rail freight offer.

With these enhancements to the wider classic rail network, this will ensure people can connect in to the enhanced new infrastructure that Northern Powerhouse Rail and HS2 provide.

TfN wants to see an intuitive and accessible fares structure implemented on the rail network that is fit for purpose. TfN is currently working to introduce new initiatives that will improve the experience for passenger across the North by making travelling on public transport easier to find out about and quicker and easier to pay for. TfN wants to work with HS2 Ltd on this going forwards.

TfN recognises that successfully delivering inclusive, healthy, and sustainable growth is dependent upon protecting and renewing the high-quality environment in the North. A reduction in carbon emissions will require investing in heavy and light rail networks, which have zero emission at the point of use and increase efficiency in operation, especially electrification. This is a part of a greener and cleaner way to move people and goods around the North, and support a modal shift. Travelling on HS2 could emit about 7 times less carbon emissions per passenger kilometre than the same journey by car and 17 times less than the equivalent domestic flight. As part of the Government's wider decarbonisation agenda, and those being undertaken by our Northern authorities, HS2 can and should be a key part of reducing carbon usage on the transport network for generations to come.

As set out in our statutory regulations approved by Parliament in 2017, TfN's main function to date has been to advise Government through the development of a long-term transport strategy for the North of England. TfN's Board would like to see in the future:

- TfN representation on decision-making bodies within the delivery partners, including HS2 Ltd
- Vertical integration of track and trains through the creation of sub-national infrastructure bodies
- Longer arrangements to provide a greater incentive for investment
- Requirement for delivery partners to provide accurate/up-to date information on progress, including HS2 Ltd
- Alteration to TfN's statutory responsibilities to include a "General Power of Competence"
- Changes to the TfN governance structure to reflect the new responsibilities.

Why investment in rail is needed across the North

Context of the North and Transport for the North (TfN)

TfN 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 15.4 million citizens.

The people of the North are at the heart of TfN's Strategic Transport Plan. This was adopted unanimously by TfN's Board in February 2019 as statutory advice for Government, which they must take in to account when making future decisions for the North. 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 employees, 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 both the North and the UK.

Alongside local political leaders, our Board also has representatives from the Department for Transport and national delivery partners (Network Rail, Highways England and HS2 Ltd) and works closely with our neighbours at the Welsh Government, Transport Scotland, and Midlands Connect.

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 road and rail 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 local transport and highway authorities.
- Prioritise investment on the transport network.

The North is home to around 1.1 million businesses, more than 7.7 million jobs, and over 15 million people, with population growth of 6.7%. The North's economy is around £343 billion, 19% of UK total. If the North were a country, it would be the 27th largest in the world. However, overall productivity in the North still trails behind the UK average. For the last 30 years, the North's economic value per person (measured as GVA) has been consistently around 15% below the average for the rest of the UK. Most recent data reveals that gap has widened further, with the economic value (GVA) per person in the North now 18% below the UK average. The widening gap can be attributed to the North

generally experiencing slower GVA growth rates over the last decade compared to the UK average.

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.

At the heart of strong regional economies, are strongly performing towns and cities. The benefits of a large economy are only achieved when combined with the concentration of economic activity in specific places, such as towns and cities. Therefore, the fundamental challenge for the North's economy is to improve the economic interaction between the key economic assets and clusters of the North to improve the sharing of knowledge, supply chains, resources, and innovation to drive agglomeration benefits and productivity.

A lack of agglomeration is frequently cited as a reason for the North's performance gap with the rest of England, with Northern cities unable to take full advantage of positive externalities from the spatial concentration of economic activities, such as increased supply chains and labour demand. Creating more dynamic places where people and businesses thrive will be an important factor in boosting productivity and jobs, and realising the economic opportunity of the North's economy.

The scale of the economic opportunity for the North was set out in the Northern Powerhouse Independent Economic Review, which includes a bold vision of economic transformation for the North that will rebalance the UK economy and increase international competitiveness. It concluded that improving economic performance in the North could bring the following significant benefits to the UK economy by 2050:

- £97 billion (15%) increase in GVA.
- 850,000 additional jobs.
- 4% higher productivity than in a 'business as usual' scenario.

Recent analysis of the North's current and future labour markets, undertaken by TfN, provides projections that disaggregate the transformational scenario by high level occupation and by local authority area.

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. Conversely, under the business as usual scenario, the number of medium and low-skilled occupation jobs is projected to decline consistently throughout the whole period (by 3,500 and 6,400 jobs each year, respectively).

By 2050, the annual demand for high-skilled occupations is expected to rise significantly, with an additional 45,000 high-skilled workers required each year compared to 2015 levels to meet the aspirations of the transformational scenario.

	2015	2050 Business As Usual scenario	2050 Transformational scenario (baseline for TfN)
Low-skill jobs	2.1 million	1.8 million	2.1 million
Medium-skill jobs	2.5 million	2.4 million	2.5 million
High-skill jobs	3.0 million	4.1 million	4.6 million
Total jobs	7.6 million	8.3 million	9.2 million

Source: TfN Connectivity and Labour Markets in the Northern Powerhouse

East–West connectivity is a significant barrier for future growth in the North, and a key constraint to agglomeration and transforming the North's economy. Over the last two decades, the North's railway has experienced substantial growth in passenger numbers despite a legacy of underinvestment. Much of that growth has been accommodated within pre-existing capacity, but this is no longer possible on many routes, and most of the North's key rail hubs are now at capacity. The North's rail network lacks sufficient capacity for growth and is severely constrained by on-train congestion, low journey speeds and poor punctuality. HS2 is, and must be, a key factor in supporting this growth and ambition.

TfN's initial Investment Programme that accompanies the Strategic Transport Plan identifies a funding requirement for strategic transport of around £60-70 billion during the period to 2050, including £39 billion for Northern Powerhouse Rail. Based on current estimates therefore, an average of £2.0-2.3 billion will need to be spent on strategic road and rail infrastructure in the North per annum to deliver the required interventions to the transport system that will allow it to facilitate transformational economic growth.

This scale of the investment is in line with the fiscal remit for the National Infrastructure Commission of 1.2% of GDP set by HM Treasury, which is itself benchmarked against other countries' commitment to strategic infrastructure. TfN's Investment Programme, including the £39 billion for Northern Powerhouse Rail, represents around 0.7% of the North's GDP. However, increased investment in strategic transport infrastructure needs to be matched with an increase in spend for transport within towns and cities, in line with the

Commission's proposals for devolved cities and non-urban local transport to receive a significant uplift in funding from 2025 onwards.

The Investment Programme also assumes that HS2, as a national and Northern project, is delivered in its entirety, ensuring that the wider rail and road interventions benefit onward connectivity from high speed services arriving in the North.

Rail in the North

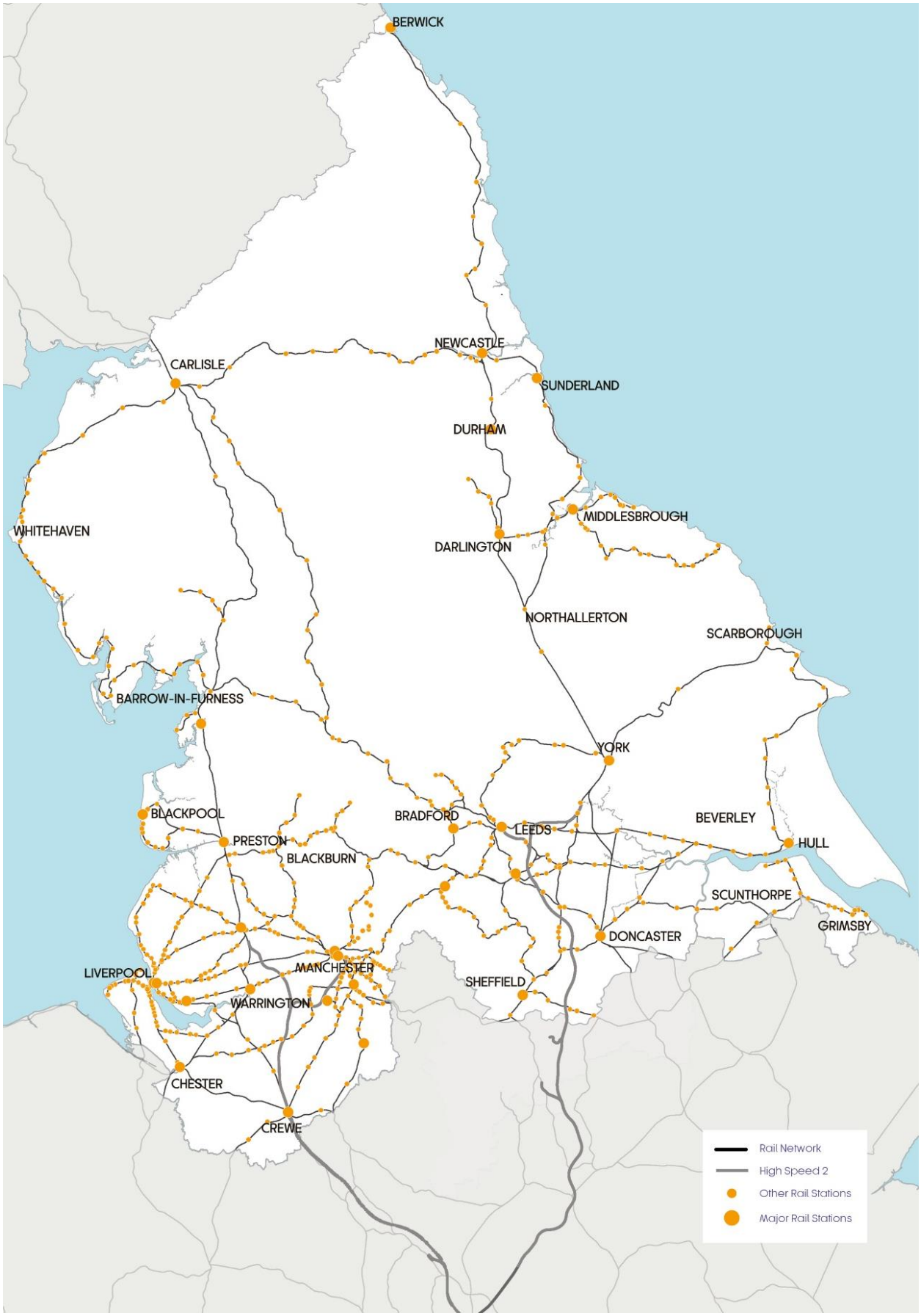
To realise the benefits of agglomeration and economic mass, the North requires faster, more efficient, reliable, and sustainable journeys on the rail and road networks, and potentially the major inland waterways. It also needs capacity for the increased passenger, business and freight demand that growth will bring. The starting point is an understanding of the existing network's challenges and opportunities.

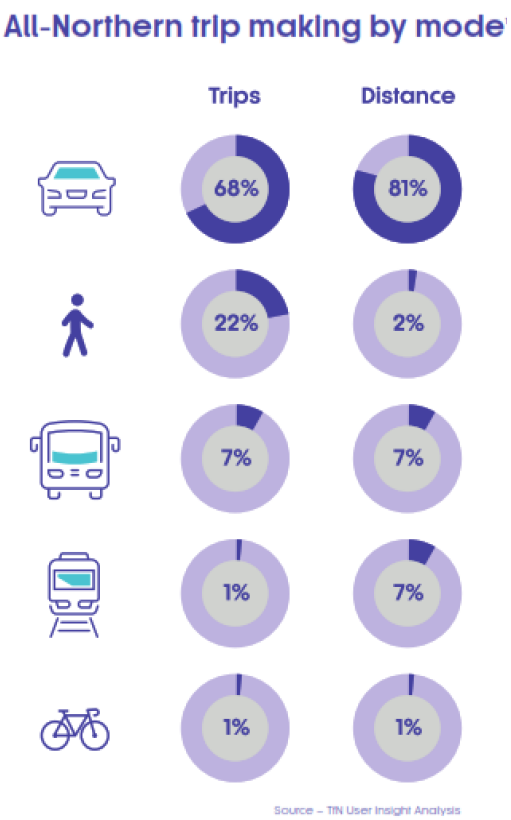
Over the last two decades, the North's railway has experienced substantial growth in passenger numbers despite a legacy of underinvestment. Much of that growth has been accommodated within pre-existing capacity, but this is no longer possible on many routes, and most of the North's key rail hubs are now at capacity. The North's rail network lacks sufficient capacity for growth and is severely constrained by on-train congestion, low journey speeds and poor punctuality.

Despite the relatively low proportion of travellers that use rail on average across the North compared to the road network at this time, there is significant potential in the North for rail to increase its share of the growing demand for transport needed to unlock transformational economic growth.

Rail already holds good market share between town and city centres, and in to the largest urban areas, but performs poorly where its offer has not kept up with roads investment or where strategic network gaps exist. However, the North's existing rail network lacks the resilience needed and sufficient capacity to accommodate all the journey types and lengths demanded of it, which is affecting the quality of its offer. The need for a step-change in the role and expectations of the rail network across the North is clear, and the Strategic Transport Plan, and the associated Long Term Rail Strategy, provide a basis for that change.

Map - The North's existing rail network and HS2





As detailed in TfN's User Insight and Labour Market Analysis, individuals with a higher occupational status typically travel significantly further and make significantly more longer distance trips than those in other occupations, especially by rail. People within the top 20% income band within the North travel 250% greater distance annually (210% more by car and 330% more by rail) than those within the bottom 20% income band. Most of this is accounted for by longer trip distances, rather than making additional trips.

The UK is very car-dependent; the same is true of dependency on road-based freight. The North has broadly followed trends that have been observed nationally.

- Rail accounts for a very small share of trips in the North, with only 1.1% share of total trips, but around 7.4% by distance travelled.
- The number of people using the railway network in the North is nearly three times the number 20 years ago, which is a greater increase than other regions over the same period.
- Also, over the past 20 years, the number of rail passengers travelling entirely within the North has grown at a rate of 6.3% per annum, which is greater than the national growth rate of 4.2%.
- More recent trends show that five Northern cities have seen rail passenger growth of more than 20% over the last 5 years – Leeds (31%), York (25%), Manchester (24%), Sheffield (21%) and Newcastle (21%).
- 8.8% of all trains in to Leeds, Manchester and Sheffield are overcrowded during the morning peak period.

- 12% of all rail passengers arriving into Leeds station during rush hour (8-9am) have to stand.
- Average speeds of rail travel across the Pennines and between the major northern cities are below 50mph.
- Since 2010, capacity on trains, measured as morning peak seats, has decreased while morning peak demand has also increased. This has led to significant overcrowding on most routes in the North.

For the rail network, existing East–West services and routes are slow and lack capacity. It also takes half an hour longer to get from Hull to Sheffield than to travel the same distance from Brighton to London. These historic issues impact on freight as well as passenger services, limiting connectivity to the North's 9 major ports and 7 international airports, and their markets.

Future market for rail in the North

The transport system in the North already has significant challenges to overcome and opportunities to exploit to achieve agglomeration benefits. Transformational economic growth in the North would also be expected to lead to far-reaching changes in transport demand and travel patterns compared to today. There is also potential for significant changes in transport accessibility to transform the economic geography of the North. Improved transport infrastructure will stimulate new travel patterns, with individuals adapting their behaviour to take advantage of enhanced connectivity and accessing new employment opportunities.

Employers in the North draw more workers from smaller areas than those in the South. In 2011, almost 500,000 commuters travelled over 30km to work in London – double the number who commute that distance across six largest city regions in the North, although the longer distance commuting in the South East is due in part to the cost of living and affordability of housing in and around the capital. This 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.

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.

It currently takes longer to travel by rail between Liverpool and Hull than it does to travel twice the distance between London and Paris, and trains between Manchester and Sheffield travel at less than half the average speed of services between Milton Keynes and London.

Transport investment in the North, and the UK as a whole, has historically been made on a 'predict and provide' approach where future demand for travel is forecast based on historic trends and transport interventions are then designed

to meet this demand. Increasingly, there is a movement towards a 'vision and validate' approach through which TfN, local transport authorities and Government can actively shape and influence how people travel to meet joint economic, transport, environmental, and social objectives.

To help understand future transport demand and develop the Strategic Transport Plan, TfN has produced a Northern Transport Demand Model that estimates how changes in employment, population and the transport network could affect travel patterns across the North. The model uses the transformational growth in population and employment from the Northern Powerhouse Independent Economic Review to forecast transport demand on the road and rail networks in 2050.

To reflect uncertainty regarding key factors affecting travel demand, TfN has developed four future scenarios representing the potential variation in travel markets in the North by 2050. By 2050, total demand for rail travel in the North is expected to be up to four times higher than today, which would mean an increase in the current total to around 760 million trips.

The strongest growth in rail demand is between the largest urban centres in Greater Manchester, Liverpool, Sheffield, Leeds, Hull and Humber, the North East, and the North of Tyne. In 2015 approximately 43 million trips were made between these centres. By 2050 this is forecast to increase to between 105 and 281 million trips, which is between two and six times the level today. In a more connected and integrated North, the level of rail commuting could increase by up to eight times.

Using the forecasts from the recent research into the North's labour market, further analysis has been undertaken to understand how improved transport connectivity could change commuting patterns and labour markets across the North. The analysis considers alternative patterns of spatial clustering of jobs, either clustered around town and city centres or more dispersed across urban areas, and how jobs are undertaken, using either face-to-face interaction or digitally, in the four scenarios described above.

Across the four demand scenarios, analysis suggests an increased propensity for people who live in the North to commute to work outside of their home local authority. This is driven by the strong growth projected for high skilled workers in the transformational scenario through to 2050 and the assumption that high-skilled and high-paid workers are much more likely to commute and travel longer distances than lower-paid workers.

Knowledge-intensive jobs have a high propensity to locate in urban centres, with a secondary tendency emerging for clusters of specialised activity based around specially designated urban fringe sites, such as science innovation and research parks. Further growth in such town and city centre jobs will also support growth in other sectors (such as leisure, retail and culture). Commuting to urban centres is typified by longer journeys and a greater propensity to use public transport, particularly rail.

In addition, the four scenarios suggest that compact urban centres and travel-friendly transport infrastructure could result in a greater shift towards commuting between the local authority districts of the North, as opposed to job dispersion or digital working. Therefore, commuting patterns in the Compact & Travel Friendly transformational scenario appear the most different from those in the business as usual scenario.

The majority of the North's workers live and work in the same local authority district. Without transformational investment in the North, these commuting patterns are not expected to significantly change in the future. However, in a transformed North, the proportion of workers taking employment outside of their home district is expected to markedly increase, from around 35% of workers in 2015 to almost 60% by 2050. The greatest change is expected for highly skilled workers, which could see cross boundary commuting increase to over 70% of workers. These forecasts are a result of transformational investment in the transport system, but also growth in the North's prime and enabling capabilities, which support the benefits of agglomeration.

Whilst each city is already in relative proximity to each other (around 40-50 miles apart, with the exception of Newcastle), at present there is limited interaction between cities in the North. Increasing the effective density of each individual city, through improved transport links for example, could help foster greater agglomeration and boost productivity in those cities. Doubling the size of a city alone can increase productivity by 3-8%. Creating more dynamic places where people and businesses thrive will be an important factor in boosting productivity and jobs, and realising the economic opportunity of the North's economy.

Delivering agglomeration benefits in a polycentric system that also has significant rural areas is a challenge, as each area would ordinarily compete for growth and investment, driven in part by existing governance and competitive funding regimes. It is also a challenge to ensure that transport networks do not produce unacceptable environmental and social impacts.

Strengthening the North's evidence base

As the Strategic Transport Plan sets out, TfN requires strong evidence and analysis to make the case for transformational investment in the North's strategic transport network. Working with Partners and the Department for Transport, significant progress has been made in developing a new Analytical Framework.

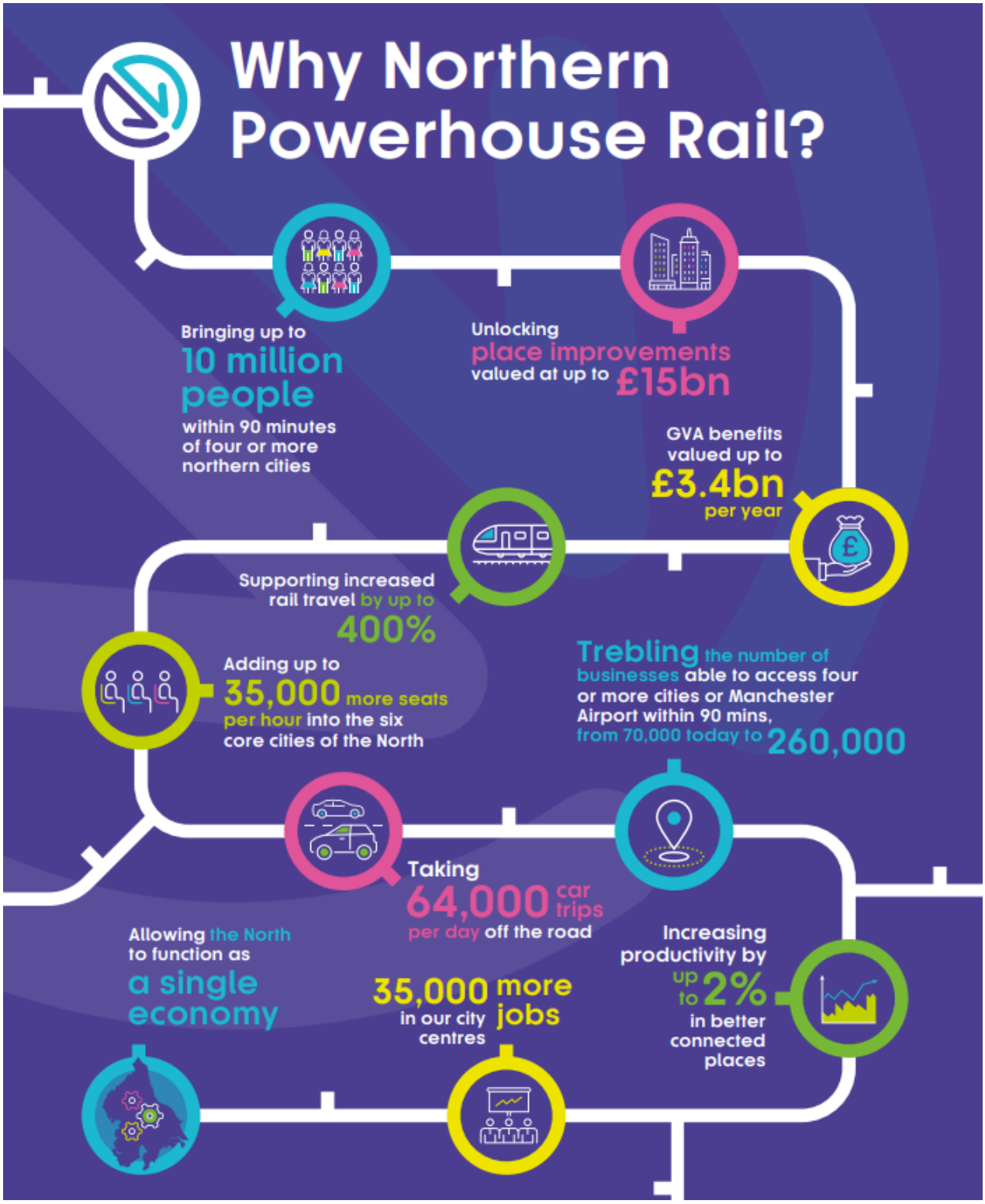
Creating compelling evidence that shows how transport infrastructure investment can transform the North's economy requires existing modelling tools to be strengthened and also augmented with new approaches that help to present the case for a transformed Northern economy. Modelling within the Analytical Framework focuses on two key tools:

- Northern Economy and Land Use Model (NELUM).
- Northern Transport Modelling System (NorTMS).

In establishing and using the Analytical Framework, TfN will continue to be guided by the HM Treasury Green Book and the Department for Transport's WebTAG for programme and scheme development, to ensure consistency of approach with the Department and other promoters. TfN will also ensure the development of the Rebalancing Toolkit is dynamic and considers interventions more strategically. This is something HS2 must fully include in any work to develop its Business Cases for HS2 in the North.

TfN wants to embed sustainable return on investment and social value in the procurement and development of any transport intervention. This should be an element of a total value approach as part of a more sustainable way of developing, constructing, and operating infrastructure.

What investment is needed to support inclusive economic growth across the North



The Development of Northern Powerhouse Rail

In recent years, the concept of the Northern Powerhouse has been developed by central government and Northern authorities in clear recognition of the opportunity to create a more prosperous and productive North that builds on its economic strengths and assets, and create a more strengthened, more coherent economy.

The Northern Powerhouse Independent Economic Review, published in 2016, defined that opportunity, building on the earlier work on the Northern Way and on the work of the local economic plans and strategies developed by City Regions and local enterprise partnerships. The Northern Powerhouse Independent Economic Review is at the heart of the Northern Powerhouse Rail business case and provides both the strategic rationale for investing in northern transport infrastructure, as well as an analytical framework for assessing the impact of economic transformation.

A number of recent reports have made the case for improved connectivity to revitalise the North's economy, starting with Sir David Higgins' HS2 Plus report (2014). This argued that HS2 should be a catalyst for improved east-west links across the Pennines, fully integrated into local and regional transport plans.

Northern leaders responded later that year with One North, a new strategic approach to improving transport connections between the economic centres of the North. Critically, this report established comparisons with successful areas elsewhere in Europe and the role of infrastructure in those locales. One North first defined the "Conditional Outputs" as the rail journey times between the "core cities" of Leeds, Liverpool, Manchester, Newcastle, Hull and Sheffield needed to drive growth. The conditional outputs have been updated and refined over time to include more places, but the vision and ambition of the One North conditional outputs have remained at the heart of Northern Powerhouse Rail throughout its development.

In 2015, the Northern Powerhouse One Agenda, One Economy, One North report set out the North's case for a transformation in connectivity across the North, with dramatically reduced journey times by rail. It focussed on transforming the North into the unified economic area described earlier, attractive both to the business investors and workers upon which the knowledge economy relies.

What is Northern Powerhouse Rail

Northern Powerhouse Rail is a transformational programme of rail investment that will build on current and planned investments to radically improve journey times and service frequencies between some of the major cities and economic areas in the North, which unlocks capacity and capability to deliver a much more effective rail network overall.

As the Strategic Transport Plan sets out, a step change in the level of rail connectivity between some of the North's largest cities is required to support

agglomeration, access to opportunities for all, and provide choices to the next generation of workers and businesses.

Access to multiple economic areas is central to achieving the collaborative, unified economy needed to grow the North and rebalance the UK economy. Analysis by Network Rail of city to city commuting patterns in the UK shows that the level of commuting between the Northern cities demonstrate lower than expected proportion of commuting. The analysis also demonstrates the disparity between access to jobs in London compared with other cities. At present connectivity between the North's towns and cities, and beyond, restricts growth and opportunities. Commuting between Manchester and Leeds is 40% lower than expected when compared to city pairs that are similar distances apart in the UK, with cost identified as the biggest driver. The market for rail travel between other cities in the North is even less developed. For example, the number of journeys between Manchester and Sheffield, and Leeds and Sheffield, is relatively small given the size of these cities at just 500 and 2,000 rail commuters per day, respectively. The average number of jobs accessible within 60 minutes by rail available to someone living in the North West is 187,000 compared to 1.7 million available to someone living in London.

Northern Powerhouse Rail can help deliver the integrated Northern labour markets that is central to achieving economic transformation, unlocking investment potential and creating opportunity and new economic choices for millions of people across the North as set out in TfN's Strategic Transport Plan.

Through the outcomes of expanded labour markets, improved business to business connectivity, and greater access to ports and airports, Northern Powerhouse Rail can help drive inclusive, transformational economic growth. More people will have access to opportunities, opening up a wider range of jobs that better match their skills. Businesses will be able to grow their supply chains and labour markets, making it easier to be able to seek out opportunities across a wider range of markets in the North and beyond.

Northern Powerhouse Rail is described as being the lintel on top of HS2 – providing an integrated network. It is therefore not a case of Northern Powerhouse Rail and HS2 against each other, but it is categorically we need both. As some of the works are on existing lines, Northern Powerhouse Rail can be ready for investment, and works to commence, from 2025 onwards.

The Northern Powerhouse Rail development programme is considering a number of options including:

- Faster and more frequent links between Liverpool and Manchester Piccadilly via Warrington and Manchester Airport, including integrated hub stations at both Liverpool City Centre and at Manchester Airport serving HS2, Northern Powerhouse Rail and local services. This link will also facilitate faster Liverpool to London services, maximising the benefits of the Crewe North Connection.
- A new hub station at Manchester Piccadilly, including Northern Powerhouse Rail.

- Faster links between Manchester and Leeds, via a new line serving Bradford.
- Significant upgrades along the corridor of the existing Hope Valley Line between Sheffield and Manchester (via Stockport).
- Leeds-Sheffield delivered through HS2 Phase 2b and upgrading the route from Sheffield to/from the North.
- Leeds-Newcastle via a junction off HS2 and significant upgrades to the East Coast Mainline corridor (via York, Darlington and Durham).
- Significant upgrades to the existing lines from Leeds to Hull (via Selby) and Sheffield to Hull (via Doncaster).

Alternative concepts will continue to be assessed between Liverpool–Manchester, Manchester–Sheffield and Manchester–Leeds as part of taking forward the Strategic Outline Business Case for the programme. Map shows only railway lines which interact with Nothern Powerhouse Rail. TfN is currently assessing concepts with Sheffield City Region Partners for a parkway serving South Yorkshire.

One of the overall benefits of Northern Powerhouse Rail is to improve journey times between major economic centres in the North, bringing more people within the catchment area of one or more Northern cities. The current forecast frequencies and journey times across the network are shown below:

	Corridor concepts under consideration	Best current		Best potential with Northern Powerhouse Rail*	
		Frequency	Minutes	Frequency	Minutes
Newcastle - Leeds	Significant infrastructure upgrades	3	88-95†	4	58
Leeds - Hull	Significant infrastructure upgrades	1	57	2	38
Sheffield - Leeds	Significant infrastructure upgrades and use of HS2	1	39-42	4	28
Sheffield - Hull	Significant infrastructure upgrades	1	80-86	2	50
Manchester - Sheffield	Significant infrastructure upgrades	2	49-57	4	40
Leeds - Manchester	A new line serving Bradford via Parkway or centrally Diggle upgrades akin to new line	4	46-58	6	25
Liverpool - Manchester‡	A new line, or Fiddlers Ferry upgrade, serving central Warrington or a new line via a Southern Parkway	4	37-57	6	26‡

* Journey times will depend on the final engineering options, the strength of the business case, and what can be timetabled in practice.
† Typical journey times via York, Darlington and Durham. Fastest current journey time is 81 minutes.
‡ Liverpool - Manchester via Warrington, journey time includes a call at Manchester Airport. A non-stopping service would take 21 minutes.

The Strategic Outline Business Case demonstrates the scale of that potential in more detail. Fully realised, Northern Powerhouse Rail represents a transformation of the North's rail connectivity, resulting in reduced journey times, improved frequency and reliability for millions of people across the North. Unique accessibility analysis undertaken by TfN demonstrates the step-change in access to economic opportunities, investments and jobs. It demonstrates that:

- Access to city centres is radically improved, increasing the population catchments of the largest cities by between 30% and 40% for most cities, over and above the planned and committed improvements. Compared to today, around 3 million more people will have access to Sheffield within 90 minutes, 4 million will have access to Leeds and 3 million to Manchester.
- By 2050 1.6 million will be able to access multiple places within an hour by 2050 compared with just 52,000 today. At 90 minutes, nearly 10 million people (over half of the North) will have that access, against just 2 million today.

- Manchester Airport sits at the heart of the integrated Northern Powerhouse Rail and HS2 network. A new airport station will provide faster, more frequent journeys between the airport and a wide range of destinations across the North.
- Northern Powerhouse Rail is likely to release rail capacity that can be utilised for freight transportation purposes. Through released capacity, increased volumes of freight will be able to be transported in a more efficient way. This will lead to environmental benefits, increased inward investment, and housing and land release, which will each have a positive overall impact on the economy.
- If you increase the opportunity for putting more freight on the railway across the entire network, including Northern Powerhouse Rail, shipping lines could make greater use of Northern ports. Having more containers being moved by rail will reduce congestion on the existing crowded road and rail infrastructure, especially on the East-West routes.
- Northern Powerhouse Rail has the potential to bring forward new commercial and residential development by making places more attractive for private sector investment through improved accessibility.
- Innovative new research by the Institute for Transport Studies has demonstrated the improvements in rail accessibility to employment. This could strengthen the value of place, creating uplifts in residential property in the region of up to 5.4% for local areas that are very well connected by rail to employment across the North. The total expected uplift or increase in value in the residential property market is estimated at £2.9 billion in a single year (based on 2017 property values).
- Northern Powerhouse Rail aligns closely with the development plans of the towns and cities being served by the network. Some of these locations already have significant commercial and residential development already in place or planned where existing stations are already located or build off the development of planned new HS2 stations. Northern Powerhouse Rail is now being embedded into local economic plans, HS2 Growth Strategies and Local Industrial Strategies. Further investment in local and pan-Northern connectivity set out in TfN's Investment Programme is needed to fully connect Northern Powerhouse Rail to the North's economic assets and clusters to support the delivery of the Strategic Transport Plan.

In February 2019, TfN's Board agreed to move forward and submit proposals to invest up to £39 billion as set out in the Strategic Outline Business Case (SOBC) submitted to Government.

With options including significant upgrades and new railway lines, work on the transformational network could start as early as 2024. In approving the business case, the TfN's Board issued clear, statutory advice to Government to:

- Signal full commitment to Northern Powerhouse Rail, ensuring long-term capital investment is assigned in the next Spending Review;

- Commit long-term development funding to ensure Northern Powerhouse Rail develops toward detailed consent stage by the early 2020s, enabling first phase construction from 2024;
- Consider a significantly strengthened role for TfN in design and implementation of HS2 Phase 2b, Transpennine Route Upgrade and the Network Rail renewals programme in the North, ensuring all rail investment can be designed and delivered cohesively; and
- Recognise the critical role of Northern Powerhouse Rail in regeneration and growth, working with the North's 11 Local Enterprise Partnerships (NP11) to refresh the Northern Powerhouse Strategy and provide funding to develop Northern Powerhouse Rail Growth Strategies.

HS2 and Northern Powerhouse Rail

HS2 will be transformational for the North. It will expand the existing rail network, regenerate railway stations and their surrounding areas, and support the delivery of Northern Powerhouse Rail, which will free up much-needed North-South and East-West capacity in a system that is struggling to perform.

To truly rebalance Britain, and energise the Northern economy, HS2 will play a major role in achieving our ambitions and improving the quality of life across the North. It will bring much needed network capacity, regenerate railway stations and their surrounding areas, and support the delivery of Northern Powerhouse Rail. Over 850 business in the North are already providing services to HS2 Phase 1 between London and the West Midlands that is now under construction

Alongside faster journeys, HS2 delivers substantial benefits for capacity release for both passenger and freight services by allowing the existing West and East Coast Mainlines, and the Midland Mainline, to be used in different ways, growing the overall capability of the rail network to meet our needs. How this released capacity can be used effectively to help the North's rail offer support the economy will be investigated through TfN's Long Term Rail Strategy and the development of Northern Powerhouse Rail as integral components of a modern, dependable and responsive rail network.

HS2 also provides exciting opportunities for the North and the Midlands economies to work better together. With our complementary programmes around Northern Powerhouse Rail and the Midlands Hub, with HS2 joining the two, we can demonstrate considerable benefits and opportunities for using the new and upgraded infrastructure. As well as services serving previously unconnected markets, such as Leeds – Bedford, we can also increase frequency and a turn-up-and-go service for passengers. As our neighbours at Midlands Connect have shown, there is currently no regular direct rail service between Leicester and Leeds, with passengers having to change at Derby, Chesterfield or Sheffield. As a result, just 15% of journeys between Leicester and Leeds are taken by rail, compared with 32% between Derby and Leeds, where there is a regular direct service. HS2 and Northern Powerhouse Rail can work to address this.

HS2 will reduce journey times significantly between London and major cities in the North including Manchester, Leeds, Sheffield, Crewe, Newcastle and Liverpool. It will also significantly reduce journey times between the North and the Midlands.

Alongside faster journeys, HS2 delivers substantial benefits for capacity release for both passenger and freight services by allowing the existing West and East Coast (south of York) Mainlines, and the Midland Mainline, to be used in different ways, growing the overall capability of the rail network to meet our needs.

Improving connectivity between the North and London is an important factor in making those cities attractive locations for people and businesses to locate. As indicated in the HS2 Phase 2b command paper, there is spare capacity on both the Western and Eastern legs of HS2 that could be used to deliver wider regional connectivity. In October 2017, the Chancellor announced £300m to ensure that HS2 is future-proofed for future regional services including Northern Powerhouse Rail and Midlands Connect.

HS2 infrastructure is essential to the delivery of Northern Powerhouse Rail outputs with the addition of junctions and shared running on the network to provide:

- Improved capacity and connectivity for Liverpool, Warrington and Manchester Piccadilly by connecting Northern Powerhouse Rail onto the HS2 Manchester spur (with 16km of shared running between Manchester Airport and Piccadilly. This will also significantly reduce journey times between Liverpool and Manchester Airport and provide a faster route between Liverpool, Warrington and London for HS2 services.
- Connections from Liverpool and Warrington to London via HS2 will be served by the Crewe Northern Connection, a proposed connection between the West Coast Main Line and the HS2 alignment north of Crewe. The Crewe Northern Connection would connect Crewe to the Northern Powerhouse Rail network and allow HS2 services to stop at Crewe Station and re-join the HS2 network to head north. The Crewe Northern Connection has a number of additional benefits, including:
    - More HS2 services at Crewe, with up to 5 southbound and 7 northbound trains per hour, as the Birmingham-Manchester and Birmingham-Scotland HS2 trains could call.
    - Creating the opportunity for HS2 to serve Preston (direct) and Lancaster from Crewe, avoiding the constrained Winsford-Weaver section of the West Coast Main Line; and;
    - Further opportunities for capacity release and journey time improvements from routing Crewe-Manchester/Airport and Crewe-Birmingham services over HS2;
- Improved journey times and service frequencies between Sheffield and Leeds using the HS2 eastern leg, including the opportunity of a new Parkway station in South Yorkshire. A junction at Clayton has already been included in the scope of HS2 Phase 2b to enable future Northern Powerhouse Rail and HS2 services at Sheffield Midland station to connect onto HS2 to travel towards Leeds (on 32km of shared running), the North

East and Scotland (using 15km of shared running between Garforth and Ulleskelf). The inclusion of the Sheffield Spur, the Midland Mainline upgrade/electrification, Sheffield Midland Station upgrade and Northern Loop will support HS2 and Northern Powerhouse Rail services. This infrastructure will not only support Sheffield – Leeds/Newcastle services, but also interact with Sheffield-Manchester and Sheffield-Hull Northern Powerhouse Rail services, further demonstrating the synergies between the two programmes.

- Connectivity into Leeds from the South, either via a new HS2 junction at Stourton which would enable services through Leeds to the North East and Scotland, or by including additional capacity at the HS2 station in Leeds for terminating services.
- A junction at Garforth to enable Northern Powerhouse Rail services from the West to connect onto HS2 to the east of Leeds, thereby connecting Manchester and the North West to the North East.
- A new integrated hub station at Manchester Piccadilly including Northern Powerhouse Rail.

Overall HS2 will add around 152km of new rail infrastructure for the North (Eastern Leg – 58km / Western Leg – 94km). This may be an addition of just 4% in total kms to the total rail network in the North, but will have a significant benefit in terms of the services and passenger capacity it will take, supporting the delivery of the Northern Powerhouse Rail ambitions, as well as the wider benefits it will have on the existing rail network through released capacity.

Both Northern Powerhouse Rail, and HS2 are integral parts of the North's rail network and it is essential that they are planned as part of the network and not in isolation to it, within the approach to strategic rail defined by the Long Term Rail Strategy and the Strategic Transport Plan. There is now a clear opportunity to ensure that, alongside Transpennine Route Upgrade and East Coast Mainline Upgrade, HS2 and Northern Powerhouse Rail deliver a transformation in rail that can be spread across the whole of the North by integrated planning through the Long Term Rail Strategy and the Strategic Transport Plan. This will be achieved in several ways:

- Regional and local rail services extend the reach of HS2 and Northern Powerhouse Rail by offering connections via hub stations to places not directly served.
- Taken together, HS2 and Northern Powerhouse Rail will make significant direct contributions to the connectivity and capacity themes and will provide new high speed services across and from the North that better meet customer expectations. It is also likely that significantly enhanced rail services will lead to a growth in use.
- Northern Powerhouse Rail will provide faster east-west connectivity across the North with more capacity. HS2 will provide fast long-distance connections from the North to London, the Midlands and Scotland;
- Northern Powerhouse Rail will provide the principal city to city networks using new or upgraded infrastructure. This will free capacity on the

existing rail network to accommodate new or additional regional and local services and for freight.

- Northern Powerhouse Rail will have potential for innovation and investment, for example in stations, ticketing and in the rail supply chain.

TfN will work with its local and national partners to ensure integration of the wider transport network through the implementation of the Strategic Transport Plan and the full TfN Investment programme. TfN's Strategic Corridor Studies have assessed what further pan-Northern solutions might be required to fully maximise the investment in Northern Powerhouse Rail. At local level, TfN partners will assess how best to ensure local connectivity to station hubs by local rail services, light rail, bus and promoting active travel.

Northern Powerhouse Rail will provide faster East-West connectivity across the North with more capacity, while HS2 will provide fast long-distance connections from the North to London, the Midlands and Scotland. These improvements benefits will be felt beyond the immediate cities and intermediate markets directly served by Northern Powerhouse Rail and HS2. It reinforces the message that to maximise the impact of Northern Powerhouse Rail, HS2 and Transpennine Route Upgrade, the three schemes must be designed and delivered as a single programme to maximise the benefit to passengers.

Examples of potential journey times within the North:

It should also be made clear that HS2, Northern Powerhouse Rail, and investment on the wider rail network will offer greatly improved connectivity opportunities, for example:

Journey	Now	With Northern Powerhouse Rail and HS2	Difference
Liverpool - Newcastle	185	140	45
Crewe - Newcastle	215	150	65
Crewe - Leeds	110	60	50
Crewe - Hull	210	140	70
Bradford - Birmingham	167	70	97
Leeds - Birmingham	118	49	69
Bradford - East Midlands Hub	N/A	55	N/A
Bradford - London	170	109	61

*Assumes a 10 minute interchange time – numbers of subject to further work on service specifications and further infrastructure design

TfN is very clear that HS2 is only part of the solution in the North – the major complementary investment needed is in east-west connections. Our Northern Powerhouse Rail proposals are aimed at radically transforming connections between the North's six largest cities, its largest airport and the major economic centres in between. We have developed the Northern Powerhouse Rail proposals in complete lockstep with HS2, utilising the planned HS2 infrastructure to offer better value for money, jointly agreeing changes to the original Phase 2b proposals where this would be of benefit for both schemes and providing regional connectivity which will maximise the benefits of high speed rail.

For the Transpennine Route Upgrade, TfN supports the proposal to utilise HS2 East of Leeds (Thorpe Park) to York as an opportunity to commence construction of HS2 Phase 2b in the North as early as possible, so the benefits can be delivered at the same time as the Transpennine Route Upgrade scheme. TfN continues to call for the SDO2a option to be delivered for the North, which will deliver the key high level strategic outputs in full. The £2.9 billion of funding for Transpennine Route Upgrade should be considered as Phase 1, with design and implementation of Phase 1 followed by a follow-on investment in Control Period 7 to secure the high level strategic outputs in full

The North also needs to see significant investment on stations and interchanges on the West Coast and East Coast Mainlines to ensure they are HS2 ready. Therefore, integration with the current proposals of Northern Powerhouse Rail and HS2 is critical with investment is required at rail stations including Preston, Lancaster, Oxenholme, Penrith and Carlisle to increase capacity, promote economic growth, and make the most of the opportunities provided by HS2.

The full benefits of HS2 to the economy will only be realised if stations are well integrated into local transport networks. Work between Local and Combined Authorities, Local Enterprise Partnerships and other local stakeholders, Network

Rail and the Ministry for Housing, Communities and Local Government are key to developing these plans in the coming years, and TfN will provide supporting evidence as required.

Wider connectivity potential

The Long Term Rail Strategy sets out how TfN wants to deliver high quality rail services right across the North, with more frequent and better integrated services, faster journeys and improved reliability on modern trains, with high quality facilities alongside an efficient and attractive rail freight offer.

Minimum standards for the rail network TfN want to see:

- All passenger routes to be served by a minimum two trains per hour.
- Long distance services to achieve average journey speeds of at least 80mph.
- Inter-urban services to achieve average journey speeds of at least 60mph.
- Local and suburban services to achieve average journey speeds of at least 40mph.
- The North's rail network to accommodate the evolving needs of the freight market, supporting longer and heavier trains, increased path availability and enhanced infrastructure, and ensuring additional room between freight trains and clearance of structures on the network (also known as gauge clearance). This should also include support for the operation and delivery of major employment sites.
- Direct connectivity between economic assets and clusters and Manchester Airport.
- Rail to directly serve each of the North's international airports, with direct services to economic centres within the airport's catchments.
- Direct connectivity between tourist destinations and economic centres in their catchments.
- Infrastructure to be available to enable a weekday interpeak level service on Sundays and public holidays.
- Capacity provision aligned to demand patterns during holidays and for events.
- Major ports in the North to be served by a network that will support movement and future growth of rail freight.
- A 50% improvement in the average speed of freight services by 2028.

With these enhancements to the wider classic rail network, this will ensure people can connect in to the enhanced new infrastructure that Northern Powerhouse Rail and HS2 provide.

For rail users, multimodal travel must become easier. Rail can deliver large numbers of passengers to, from, and within the North, especially in peak periods. The overall journey experience is an important factor in each passenger's decision to use rail. It is important to provide a journey experience and a pricing strategy that encourages passengers to choose rail over their car

for both shorter and longer journeys. To improve journeys, enhance onward connectivity and offer greater choice, opportunities for interchanges between modes of travel need to be improved. Stations should also be transformed where applicable to cope with increased passenger numbers with the introduction of wider platforms and gateline provisions, while additional lifts and escalators should be added to ensure accessibility for all. Facilities and customer experience need to be improved so that journeys involving more than one train or multiple modes of transport are safe, reliable and pleasurable. This is also important and reinforced by the Government's Inclusive Transport Strategy, to ensure the transport network is inclusive and accessible for all.

Connecting the North internationally

The arrival of HS2 and Northern Powerhouse Rail at Manchester Airport also offers the opportunity to create a brand new station that both respects the natural setting and creates a new diverse neighbourhood with homes, offices and hotels, as well as the potential for 20,000 new jobs over the next ten years. This will also connect in with the ongoing £1 billion investment at the Airport's terminal. The combined impact of HS2 and Northern Powerhouse Rail will mean that the population of the North are able to access the new Manchester Airport Station within an hour increases from 2 million today to 4.7 million with HS2 and Northern Powerhouse Rail, and within 90 minutes by 4 million to 8.7 million - over half of the North's population. Northern Powerhouse Rail will improve access to the world via dramatically improved links to its primary international gateway. Northern Powerhouse Rail will not only encourage the further development of long-haul and business routes from Manchester, both in terms of new destinations and greater choice and frequencies to existing destinations, but also mitigate pressure on the constrained London system and transport networks by reducing leakage of air passengers from the North.

There were around 2 million return business-related air trips to and from the North in 2016, with business productivity brought about through direct international air connections accounting for £5 billion GVA.

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.

The Independent International Connectivity Commission found that, of the additional 12 million passengers generated under the transformational growth scenario, there would be 1.5 million more business trips than the business as usual scenario, adding over £4 billion to the economy. If the existing capacity available at Northern airports is supported, business-related air passengers would make up a higher share of the North's travel market than today, but improved surface access and connectivity for inward and onward journeys is also required. Enabling this growth would more than double the economic contribution of Northern airports, reaching £13 billion (from £5.5 billion in October 2016).

Increasing the range of global destinations and the frequency of direct international services to and from the North will boost efficiency, encourage entrepreneurship, enhance employment opportunities and increase foreign direct investment, inward investment and trade opportunities. Securing international routes to new destinations relies on demonstrating sufficient passenger and goods demand. This means that good surface access to increase airport and port catchment areas is crucial.

Manchester Airport has identified that surface access is currently the largest constraint on the airport's development, which is why bringing HS2 and Northern Powerhouse Rail services directly to the Airport will be so important.

This surface access can also make new air routes appealing. For example, since a direct Manchester to Beijing flight was introduced there has been:

- A 38% increase in the number of Chinese visitors to the North - a growth rate higher than both London and the UK average.
- A 94% increase in the average spend per visit in the North West to £2,167, which is now 5% higher than the national average.
- A 114% increase in the number of Northern students gaining Chinese internships, with more than 70% now coming from low income backgrounds.
- An increase in export values from Manchester Airport to China of 41% to £1.29 billion in the two years after route launch.

With enhanced sustainable surface access to the North's airports through HS2 and Northern Powerhouse Rail, there are opportunities to increase the benefits of new air and trade links from the North, and the positive economic benefits for people and businesses in the North and the UK as a whole.

Moving goods around the North

The strength of the North's logistics sector is its true multimodality. The Enhanced Freight and Logistics Analysis shows a 33% increase in tonnes lifted within the North by 2050, which will play a significant role in providing goods and materials to achieve the GVA growth outlined in the Northern Powerhouse Independent Economic Review.

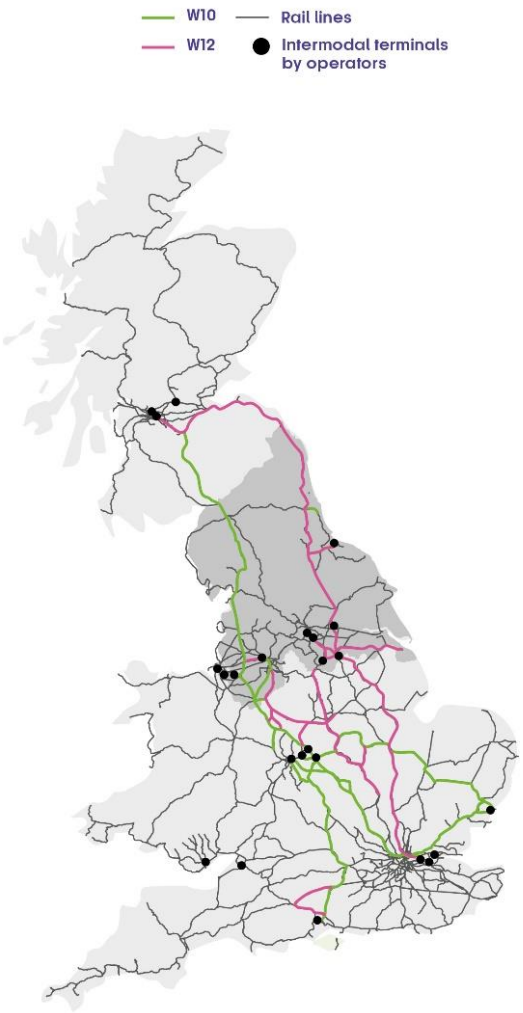
For infrastructure programmes such as HS2 and Northern Powerhouse Rail, huge bulk movements of aggregates and steel will be required to deliver the enhancements. Quarries within the North can provide the volume of materials needed, and rail would be the most efficient means of transportation. Northern steel plants produce over 1 million miles of rail, which is another example of the North as a centre for excellence.

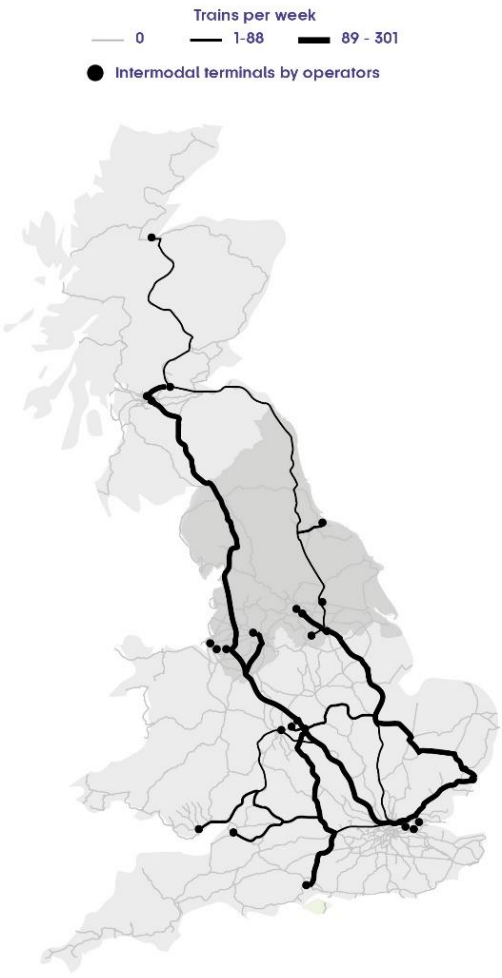
Until now, where modal shift from road to rail has occurred, it has often been driven by unreliable journey times on key congested road routes, with a shift to a reliable timetabled rail freight service from origin to destination that more closely meets customer needs. Actively supporting modal shift to rail will reduce road congestion, free up capacity, enable businesses to make sustainable

choices and reduce emissions, but the constraining factors affecting rail as the mode of choice for freight must be addressed.

The availability of suitable freight paths on rail routes across the Pennines is also limited, and there is currently no East-West rail route anywhere in the North that is cleared for W10 and W12 gauge and therefore capable of taking containers. The map opposite highlights the lack of W10/W12 clearance East-West in the North. To carry a modern container on a standard rail wagon across the Pennines, only the Leicester–Nuneaton and Edinburgh–Carstairs routes can currently be used. In contrast, approximately 18,000 Heavy Goods Vehicles (HGVs) and an additional 20,000+ light goods vehicles per day cross the Pennines on the M62, adding to worsening congestion and air quality concerns. These issues increase the cost of rail journeys and prevent the growth of a market-based on East-West import and export using Northern ports.

Where modal shift from road to rail may not currently be seen as economically viable, there is the opportunity to create the right conditions for a paradigm shift in the way that freight is viewed in the North. To achieve this, freight routes must be direct and not circuitous, which is a significant constraint at present. Freight routes and paths must be planned alongside passenger rail, rather than as an afterthought. That is why the opportunities that HS2 unlocks on the West and East Coast Mainlines is so important for sustainable growth in the future.





Place, housing and regeneration opportunities

HS2 must fully consider the housing needs of the future, just as TfN is doing. Homes for the North has reviewed the current identified housing need and tested whether sufficient housing has been identified to meet economic expectations. They state that:

- At least 500,000 additional homes are required in the North during the next 10 years
- 70% of the 500,000 to be located in the seven City Regions
- Over the next 10 years: - 75,000 homes needed in the North East - 195,000 homes needed in Yorkshire - 230,000 homes need in North West
- A housing need of 48,675 - 50,365 homes per year

HS2 will also transform places in the North through improved connectivity. The proposed HS2 Crewe station offers potential for transformational connectivity which will lead to substantial economic opportunity. TfN has been working with Cheshire East and Cheshire West and Chester councils, as well as Network Rail and HS2 Ltd, on the proposals for an integrated hub at Crewe. TfN believes that

to maximise the opportunity of the Crewe Hub, the 5-7 HS2 services per hour scenario is needed to provide the level of connectivity needed for this Northern gateway. In addition, a Northern junction is needed to provide a link from Crewe to Manchester, the North West, and Scotland, as well as to facilitate Liverpool–Birmingham/London trains via HS2. This could also facilitate Crewe, and possibly Chester, to be connected to the Northern Powerhouse Rail network. It is therefore critically important that the Crewe Hub is planned at the outset as part of the wider rail network and not in isolation to it.

Crewe is a significant freight node, and the ability to accommodate growth is currently constrained, especially on the West Coast Mainline. Introduction of additional capacity associated with HS2 offers opportunities to address these constraints.

Cheshire East Council has developed a comprehensive HS2 Framework and Masterplan Vision for Crewe which demonstrates its vision for the town to capitalise on the opportunity that HS2 and a Crewe Hub station provides. The Masterplan Vision covers some 120 hectares of land around the proposed hub station and provides a framework to reinvigorate the town centre, create a new commercial hub around the station housing over 350,000 square metres of new commercial floorspace and delivering an additional 7,000 new homes by 2043. This is a cornerstone of the Constellation Partnership, involving seven local authorities and the two Local Enterprise Partnerships in Cheshire and Staffordshire seeking to deliver 100,000 new homes and 120,000 new jobs by 2040.

The arrival of HS2 at Manchester Piccadilly is a great opportunity for new development, not only for the transformation of the station itself into a fully integrated transport hub, but also the surrounding areas. The once in a century opportunity to regenerate the area around the station will create a new mixed-use neighbourhood and include new offices, new homes and significant new public spaces.

Investment in HS2 will not only make Manchester Piccadilly one of the best connected and productive locations in the North, it is also estimated to create 40,000 new jobs, 13,000 new homes and close to a million square metres of commercial development in the area. This could be further increased with the arrival of Northern Powerhouse Rail. Greater Manchester has developed the 'stops are just the start' Growth Strategy. This emphasises the importance for Manchester Piccadilly as a 'build it once and build it right' transport hub for the future; maximising the benefits at the same time as minimising the disruption.

The arrival of HS2 and Northern Powerhouse Rail at Manchester Airport also offers the opportunity to create a brand new station that both respects the natural setting and creates a new diverse neighbourhood with homes, offices and hotels, as well as the potential for 20,000 new jobs over the next ten years. This will also connect in with the ongoing £1 billion investment at the Airport's terminal.

New integrated stations at Manchester Airport and Manchester Piccadilly linking HS2 and Northern Powerhouse Rail will mean Greater Manchester becoming a

truly integrated transport hub linking international, national, regional and local passengers with fast interconnected public transport networks including planes, trains, trams and buses.

Leeds City Council, in partnership with West Yorkshire Combined Authority and the wider rail industry, has developed an integrated Masterplan for Leeds Station to accommodate HS2 and Northern Powerhouse Rail. Delivery of the Masterplan will:

- Create a world class gateway for the City Region that is at the heart of the UK's rail network.
- Accommodate the planned doubling of growth in passenger numbers using the station over the next 30 years.
- Enable a step-change in rail connectivity and capacity in the North of England, which better connects people and businesses to jobs and markets.
- Deliver a new internationally significant district in Leeds city centre, with the potential for 300,000 square metres of commercial development.
- Be a catalyst for accelerating the regeneration of South Bank Leeds, which is one of Europe's largest city centre regeneration initiatives and will double the size of the city centre economy.

The North East's Combined Authorities and the North East Local Enterprise Partnership (NELEP) are working to ensure high speed rail supports the region's future. HS2 to the region will be delivered utilising the East Coast Mainline serving Durham and Newcastle stations. To achieve this, there is a need to explore reopening/upgrading parallel lines. By delivering HS2, this will open up the possibility of not just regenerating the immediate areas around the two stations it serves, but of wider economic benefits in delivering the increased jobs across the North East.

The Sheffield City Region have developed an integrated rail plan, building on their HS2 Growth Strategy programme, which identifies the interventions, whether sectoral, infrastructure and/or public realm, and will need to be implemented before, during and after construction of HS2 to ensure that the maximum economic benefits are secured. The plan identified the need for extensive masterplans around both Sheffield and Chesterfield Stations to identify how both stations and their surrounding areas can be improved and developed to achieve safe, efficient and pleasant public transport interchanges, as well as identifying opportunities for commercial and residential development to maximise economic and land value uplift. The Growth Strategy also looks at the interface with future Northern Powerhouse Rail services in the Sheffield City Region, leading to proposals for improvements at Rotherham Station and an integrated station in the Dearne Valley to fully unlock the economic and regeneration potential of South Yorkshire.

TfN is working with Partners to ensure the benefits of HS2 continue to be realised where services continue North along the West Coast Main Line and East Coast Main Lines, including spurs of the mainline to destinations such as Chester, North Wales, and Stockport. This includes the delivery of

comprehensive masterplans for stations at Carlisle, Preston, Durham, Newcastle, and Darlington, and the potential split and joining of Scottish services in Carlisle, as well as train service specifications that can deliver real benefit and better services across the North. TfN will also seek to ensure that north of Wigan and York, where release capacity has not been identified to date, steps are taken to ensure there is sufficient capacity to serve HS2 and Northern Powerhouse Rail, but also improvements to other services and freight which will need to share train paths with HS2 services.

The function and growth of the whole local and pan-Northern rail network relies on this, which is also vital to the realisation of the benefits of HS2, Transpennine Route Upgrade and Northern Powerhouse Rail. This investment is of local, pan-Northern, and national importance, given the effective operation of the network around Leeds has wider operational impacts.

Integrated ticketing and fares

It is important that the North's transport network delivers a future mobility which is right for the customer. People should be able to have a seamless travel experience, including improved ticketing and better journey information. Currently, integration is poor and information and ticketing systems are fragmented and complex. This improved travel experience must be made not just on pan-Northern routes, but nationally.

TfN wants to see an intuitive and accessible fares structure implemented on the rail network that is fit for purpose. TfN is currently working to introduce new initiatives that will improve the experience for passenger across the North by making travelling on public transport easier to find out about and quicker and easier to pay for. This will enhance choice and ensure passengers pay prices that are fair for the collection of journeys they have made. By doing this, it will support an increase in the number of people travelling by public transport, broadening people's access to jobs.

At the moment, four out of every five travellers use paper tickets, while only one in ten use tickets on their mobile phone. Meanwhile, 78% of all debit cards are now contactless, and nine out of ten passengers use rail travel primarily to commute to work on a regular basis. These facts highlight the opportunity for this ambitious programme.

Customers can already use a smartcard, contactless bank card or their smartphone to pay for travel on some public transport in the North. Using emerging technologies, the Integrated and Smart Travel programme will deliver modern payment methods and mobile travel information right across the North, in line with what passengers now want and expect from today's public transport system. Paying for journeys will become quicker, easier and more convenient.

Joint working with HS2 Ltd and TfN should look to explore how we can integrate HS2 fares with Northern Powerhouse Rail and other services, especially on common routes.

Active travel

To ensure a seamless travel experience, the 'first and last mile' of the journey will be taken into consideration as part of the impact assessments on the North's transport network, seeking a suitable standard for the passenger throughout their whole journey. For many people, choice and the ease of the 'first and last mile' connection is the main determinant of which mode to use, which is why complementary improvements in local transport infrastructure and services are needed to underpin the more strategic interventions. This includes making sure active travel is a viable option for a complete journey or as part of a journey made by public transport. This could be assisted by ensuring there are safe and accessible cycle and walking routes to transport links and central hubs, together with regular joining points, as well as having safe and secure lockers for bicycles or allowing bicycles on public transport where possible.

HS2 and the environment

TfN recognises that successfully delivering inclusive, healthy, and sustainable growth is dependent upon protecting and renewing the high-quality environment in the North, which is a significant asset and a reason why many people and businesses chose to live in and visit the North.

Climate change and social inequalities are widely seen as some of the key defining challenges of the 21st Century. To date, the way in which transport interventions are developed often leave social and environmental considerations towards the end of the process. Continuing in this way will not address the need for rapid carbon reduction or social inequalities.

The declaration of climate emergencies across the North is a failure of the transport investment to date, but is no longer something that can be ignored. An acceleration towards a zero carbon transport network must be at the heart of public policy making and investment decisions.

The key challenges to transport posed by climate change include protecting rail assets and the road network from flooding, managing heat on public transport, and maintaining service reliability in periods of extreme weather. A resilient transport network in the North is one of the objectives of TfN's Strategic Transport Plan, as without action the North's road and rail networks could be affected.

TfN and Partners, working with stakeholders, will seek to ensure that the North's transport system is resilient to the impacts of severe weather and climate change, so that services can respond effectively to extreme weather events while continuing to operate safely and reliably. It should not be under-estimated that HS2 new infrastructure is being designed to 1 in 1,000 year flood resilience, ensuring the country continues to move in decades to come regardless of the natural challenges it faces.

Being the largest greenhouse gas emitting sector, accounting for 28% of all UK greenhouse gas emissions in 2017, transport has a significant role to play in

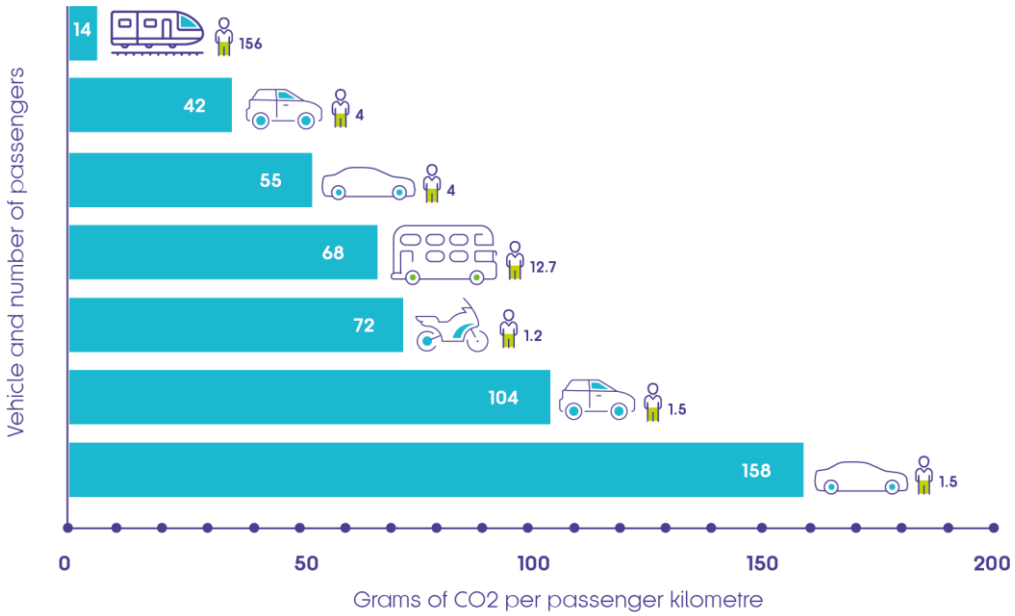
meeting commitments to reduce greenhouse gas emissions, in particular carbon emissions. The transport network must be decarbonised to support a shift to a low carbon economy.

For a zero carbon, greener transport network, this includes supporting policy measures in the following areas:

- Working towards a Paris Climate Change Agreement trajectory that is more ambitious than current UK policy, ensuring that the transport networks total emissions fall further and faster as future interventions are delivered, technology and travel behaviours change, in order to deliver an absolute zero carbon network before 2050.
- Minimising the impact of transport on the historic and natural environment, and whenever possible seeking to deliver environmental enhancements and biodiversity net gain.
- Decarbonising rail travel through electrification, more efficient trains and low carbon emissions. This includes removing diesel trains from the North's railway network no later than 2040. TfN also wants to embrace new rail traction technology to reduce the dependency on diesel-powered rail units and reduce the overall running costs of the railway. This should result in all users of the rail network, both passengers and freight, seeing tangible benefits to their journeys.

Reducing carbon emissions and improving air quality is now imperative for the freight and logistics sector. The Government's Clean Growth Strategy includes the desire to work with the industry to reduce the impact of freight emissions and improve air quality across all modes including road, rail and shipping. There is a need to understand the different options for the North to move towards delivery of alternative fuelling and associated operations.

At present, there is a direct proportionality between the relative energy consumed by different modes of transport and their carbon intensity, as shown in the chart below. The higher the energy consumed the higher the carbon emissions. Therefore, electrified rail offers the greatest opportunity to get people out of cars on to a high quality, efficient and reliable railway network.



Source: EEA Report Term 2014

A reduction in carbon emissions will require investing in heavy and light rail networks, which have zero emission at the point of use and increase efficiency in operation, especially electrification. This is a part of a greener and cleaner way to move people and goods around the North, and support a modal shift.

Travelling on HS2 could emit about 7 times less carbon emissions per passenger kilometre than the same journey by car and 17 times less than the equivalent domestic flight. As part of the Government's wider decarbonisation agenda, and those being undertaken by our Northern authorities, HS2 can and should be a key part of reducing carbon usage on the transport network for generations to come.

A fundamental aim of TfN and Partners will be to protect and enhance, where possible, the natural and historical assets of the North. This includes National Parks and their landscapes, historic towns and their assets, rivers and their rich biodiversity and habitats. Green and blue infrastructure should be designed and incorporated into the grey transport infrastructure, which in turn should also deliver a net biodiversity gain, with positive impacts on people's lives and communities.

HS2 has been described as the biggest environmental project in the UK, through the substantial new biodiversity it is adding. Northern Powerhouse Rail and HS2 could be the biggest environmental projects for the North. Around 7 million new trees and shrubs will be planted on Phase 1, with over 33 square kilometres of new wildlife habitat. TfN will want to see the same level commitment for the ~152km of new HS2 infrastructure in the North.

TfN endorses the work being undertaken by HS2 through its Design Panel to work towards delivering the best sustainable design through infrastructure development.

Realising the opportunities for natural capital and green infrastructure to enhance transport infrastructure resilience and performance through both the

integration of green, blue and grey infrastructure, and the delivery of green infrastructure-based natural solutions to aid mitigation requirements. The latter includes carbon reduction, clean air and flood risk management, as well as other placemaking and visitor economy objectives.

Maximising the opportunities for transport interventions to contribute towards major new initiatives, including Nature Recovery Networks and large-scale woodland creation ambitions such as the Northern Forest, which will comprise over 50 million trees over 25 years between the Mersey and Humber estuaries.

Supporting Natural England's work on the Green Transport Corridors and Green Infrastructure Agreements, as well as their recommendations of the Linear Infrastructure Network, ensuring that within or adjacent to existing and new rail networks green infrastructure can deliver biodiversity gains, ecological connectivity and ecosystem services.

How strategic transport can be better delivered in the North

The future role of TfN

As set out in our statutory regulations approved by Parliament in 2017, TfN's main function to date has been to advise Government through the development of a long-term transport strategy for the North of England that will help to rebalance the UK economy and drive economic growth. This has been done in the form of the Strategic Transport Plan, published in February 2019.

TfN's Board have agreed that the time is right to look towards the next evolution of the organisation, both as an organisation and its relationship with Government and its delivery partners including HS2 Ltd, as well as what additional powers and responsibilities may be sought from Government.

The key areas for development will be:

- Producing a trajectory for the North's transport network to deliver an absolute zero carbon network before 2050
- Developing a pipeline of strategic transport projects across the North
- A devolved Northern budget for strategic transport schemes
- An appraisal system that will target investments that support transformational economic growth, environmental and social benefits
- A golden thread of accountability for the North's rail network
- Flexibility for local areas to determine procurement and ownership models.

Through the ambitions set out in the Northern Transport Charter, the Board would like to see:

- Requirement for delivery partners to provide accurate/up-to date information on progress, including HS2 Ltd
- TfN representation on decision-making bodies within the delivery partners, including HS2 Ltd
- Alteration to TfN's statutory responsibilities to include a "General Power of Competence"
- Development of an Assurance Framework that is agreed with HM Treasury
- Vertical integration of track and trains through the creation of sub-national infrastructure bodies
- Longer arrangements to provide a greater incentive for investment
- Changes to the TfN governance structure to reflect the new responsibilities.

Annex 1 - Transport for the North's statutory powers

Transport for the North is England's first Sub-National Transport Body, formed to transform the transport system across the North of England, by providing the infrastructure needed to drive sustainable economic growth. As a partnership, Transport for the North brings together the North's twenty local transport authorities and eleven Local Enterprise Partnership leaders together with Network Rail, Highways England, High Speed Two (HS2) Ltd, and Central Government. This partnership enables the North to speak with one voice on the strategic transport infrastructure investment needed to drive transformational economic growth.

Transport for the North will not replace or replicate the work of existing local transport bodies. Transport for the North's role is to add strategic value by ensuring that funding and strategy decisions about transport in the North are informed by local knowledge and requirements.

Under the Local Transport Act 2008, amended by the Cities and Local Government Devolution Act 2016, Transport for the North has been established as the first Sub-National Transport Body; the regulations establishing Transport for the North became effective on 1 April 2018. Transport for the North's Board, the decision-making body of the organisation, is chaired by John Cridland CBE.

TfN is a Statutory Partner in the Government's investment decision making processes, engaging with the Department for Transport to ensure that the North's priorities are understood and recognised in national decision making. Through this process, TfN can also enhance and strengthen the way in which constituent authorities engage with the Department for Transport, identifying connectivity to pan-Northern, strategic priorities and providing additional information on how local schemes could provide wider economic and transformational growth benefits for the North.

Transport for the North's (TfN's) Strategic Transport Plan (it's statutory plan and advice to Government published in February 2019) sets out an ambitious vision for how transport can support transformational, inclusive growth in the North of England through to 2050. The accompanying Investment Programme comprises TfN's advice to the Government on the long-term, multimodal priorities for enhanced pan-Northern connectivity.

TfN's role and powers

- Established under Section 102E of the Local Transport Act 2008 and pursuant to the Order made of the Sub-National Transport Body for the TfN area.
- TfN will act as a Statutory Partner to the Secretary of State in both road and rail investment processes and will be responsible for setting the objectives and priorities for strategic road and rail investment in the TfN area.

General functions

- Prepare a transport strategy for the North, in the form of the Strategic Transport Plan, in accordance with Section 102I of the Local Transport Act 2008.
- Provide advice to the Secretary of State for Transport about the exercise of the transport functions in relation to the North.
- Co-ordinate the carrying out of transport functions in relation to its area that are exercisable by different constituent authorities, with a view to improving the effectiveness and efficiency in the carrying out of those functions.
- If TfN considers that a transport function in relation to its area would more effectively and efficiently be carried out by TfN, to make proposals to the Secretary of State for the transfer of that function to TfN.
- Make other proposals to the Secretary of State about the role and functions of TfN.

Capital grants

- To pay Capital Grants under Section 56(2) of the Transport Act 1968 to support the funding and delivery of joint projects.

Ticketing schemes

- Make an advanced ticketing scheme under Section 134C(1), and to make other kinds of ticketing schemes under Section 135(1) of the Transport Act 2000.

Rail franchising

- TfN will take over the role and functions of Rail North Limited and, through a Rail Partnership Agreement, with the Secretary of State for Transport, will exercise management functions in relation to the Trans Pennine Express and Northern Franchise Agreements.
- The right under Section 13 of the Railways Act 2005 to be consulted over the grant of a rail franchise agreement for passenger services within, to and from the TfN area, and the right to enter into arrangements with the Secretary of State relating to the management of rail franchise agreements.

Highway Functions exercisable jointly with the Secretary of State

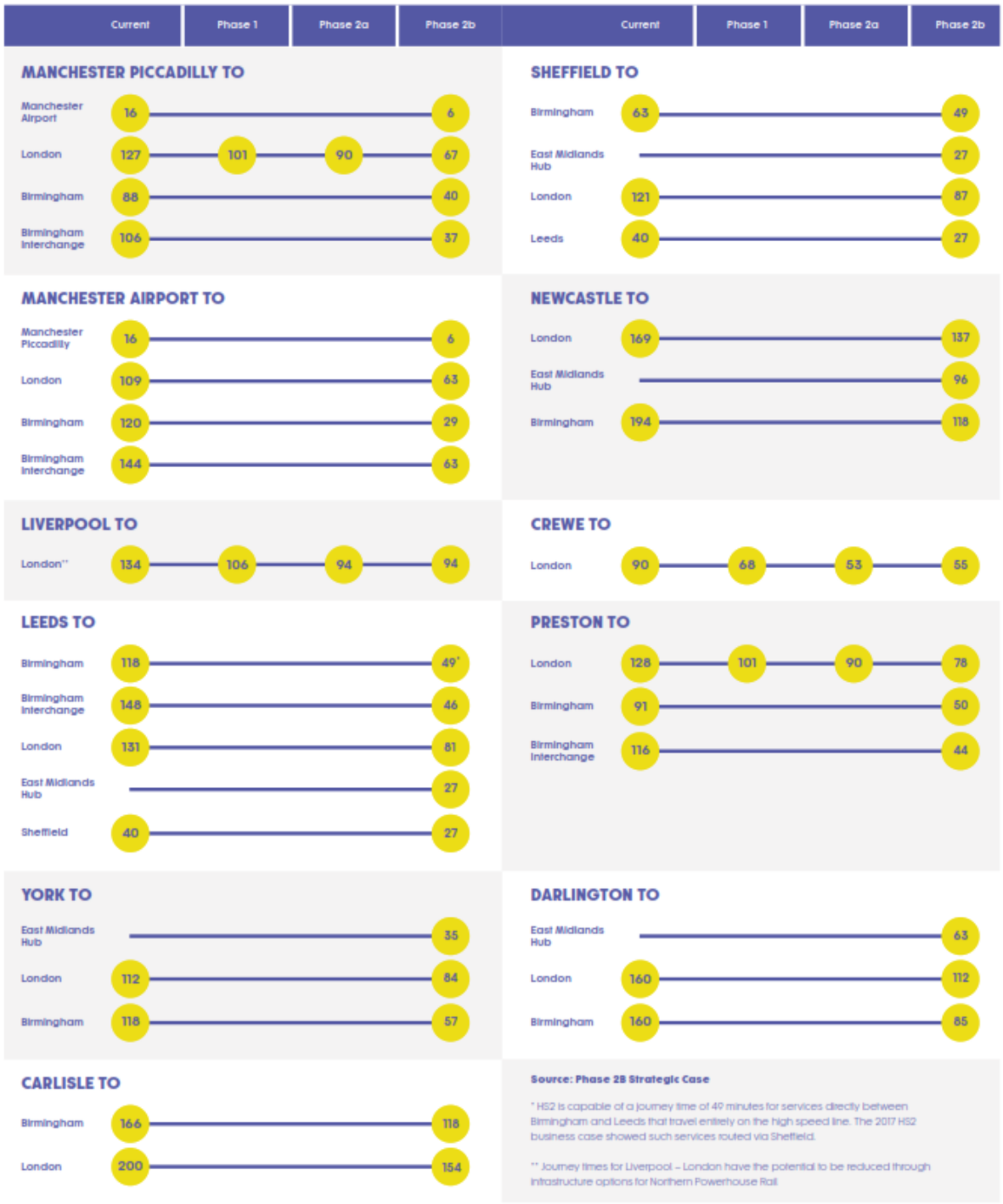
- Enter into agreements with local authorities under Section 6(5) of the Highways Act 1980 for the construction or improvement of a trunk road.

Highway functions exercisable concurrently with Local Highway Authorities

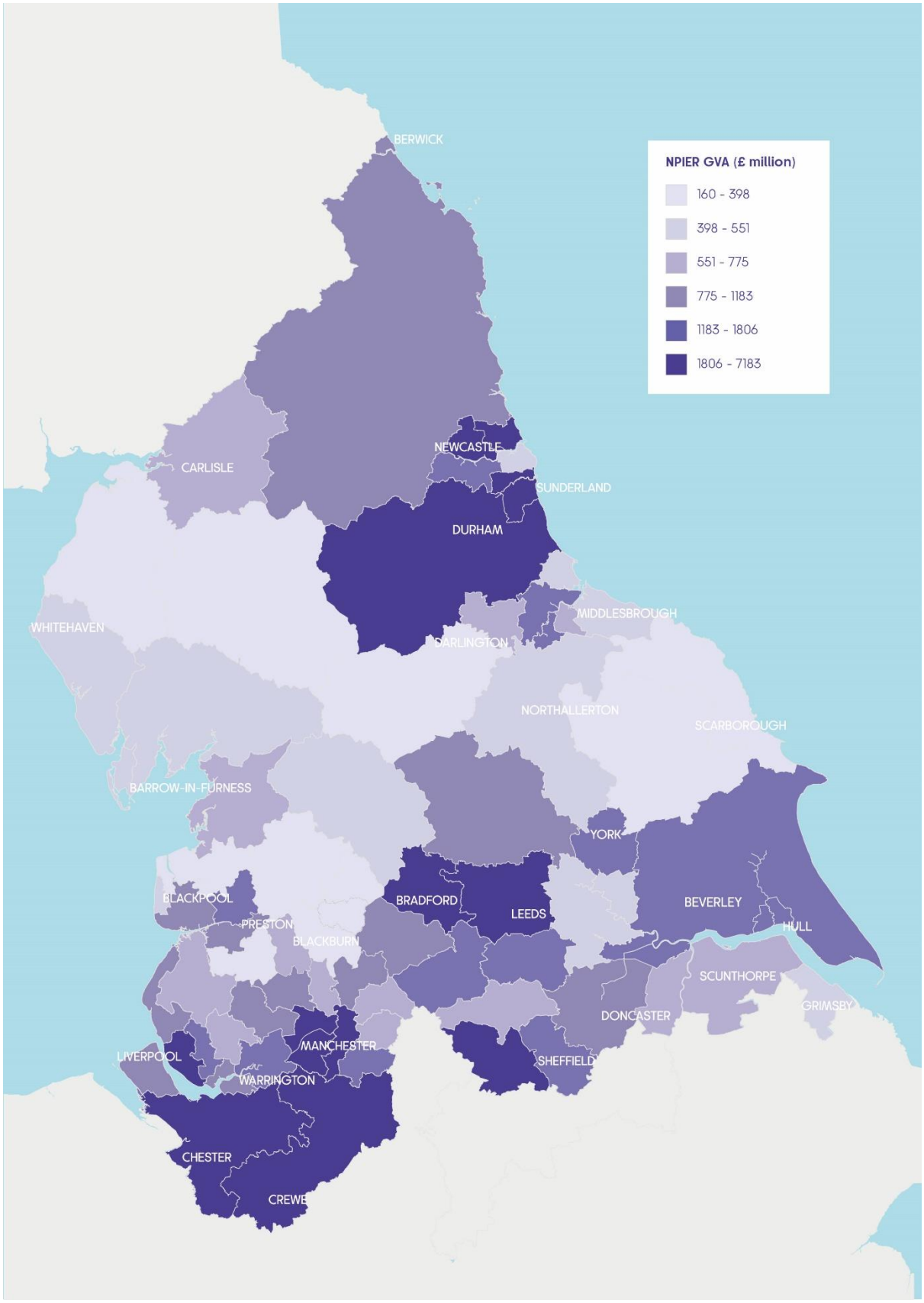
- Enter into agreements under Section 8(1) of the Highways Act 1980 with highway authorities and third parties for the construction, improvement or maintenance of a highway other than a trunk road.
- To construct new highways under Section 24(2) of the Highways Act 1980.

- Under the provisions of Regulation 14 of the Order, TfN may not exercise the function in Section 24(2) of the Highways Act 1980 unless the manner in which it proposes to exercise the function has been approved by each Council through whose area the road is to pass, the authority which is to be the highway authority for the road, the highway authority for any highway with which the new road will communicate, and the Secretary of State.
- Under the provisions of Regulation 15 of the Order, TfN may not exercise any of the other concurrent highway functions unless the manner in which it proposes to exercise the function has been approved by the local highway authority for the area affected.

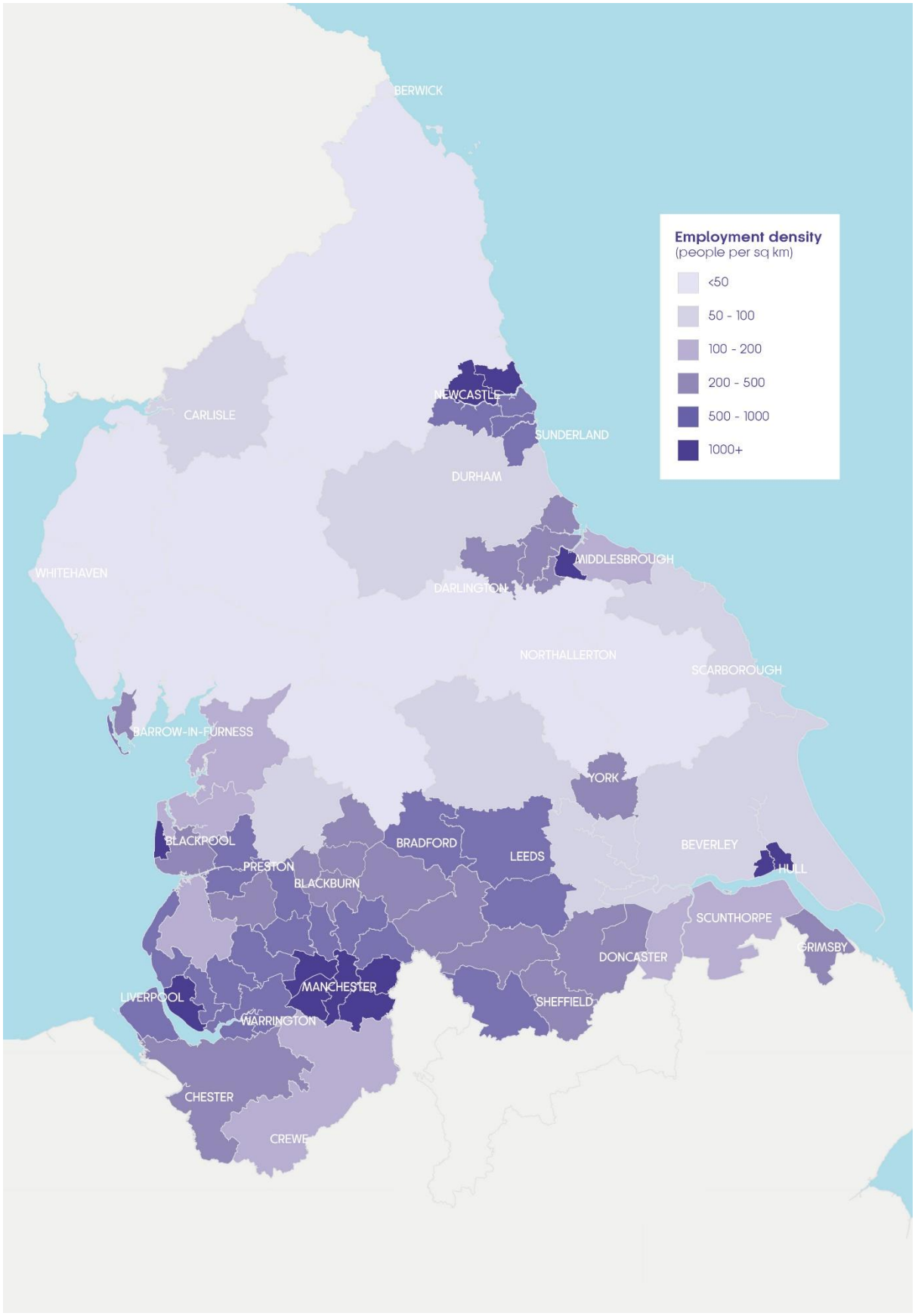
Annex 2 – HS2 Journey Times from Northern locations



Annex 3 – Transformational economic growth across the North in 2050



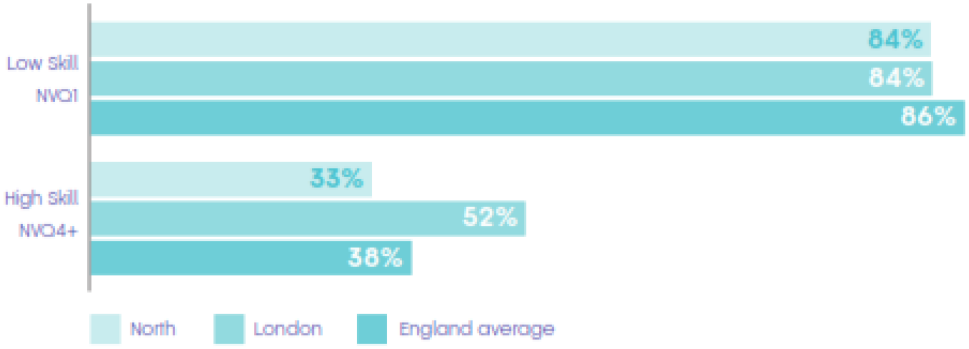
Annex 4 – Employment density across the North (2016)



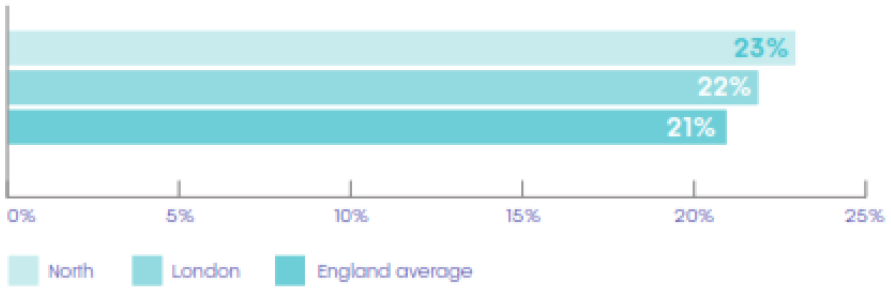
Annex 5 – Comparator economic and educational statistics for the North

Average annual earnings[36]

Educational attainment[37]



Economic inactivity[38]



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