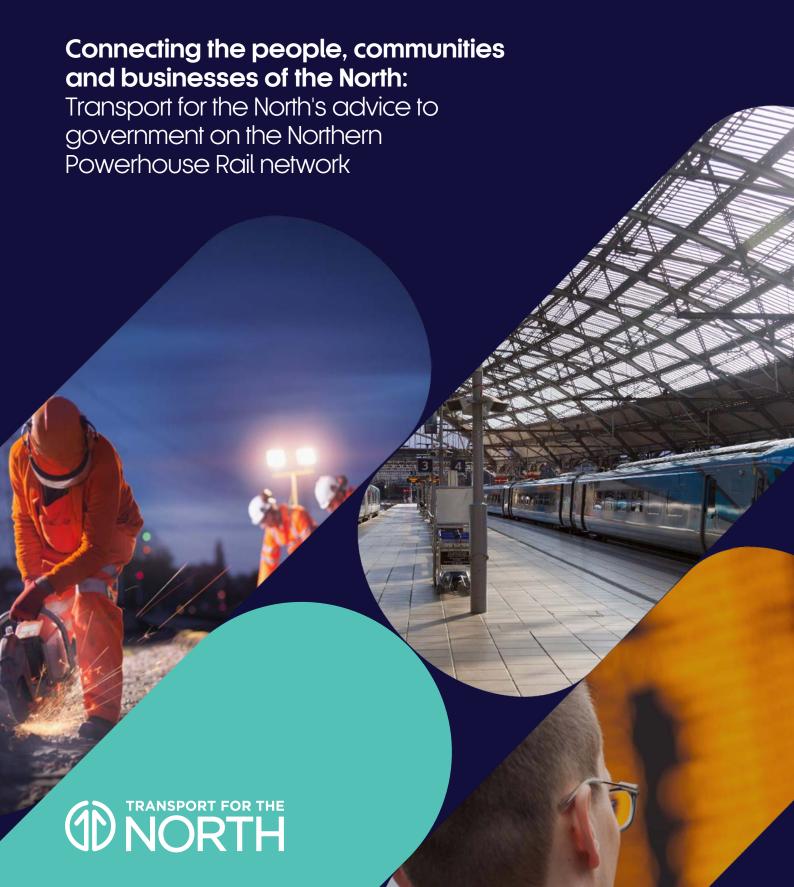
Northern Powerhouse Rail



Northern Powerhouse Rail

Northern Powerhouse Rail will deliver a step-change in connectivity, delivering transformational, clean, economic growth across the North of England Northern Powerhouse Rail will connect the major urban areas of the North with the aim of generating a revolution in inter-city economic activity in the region. By linking the east and west of the North of England, as well as HS2, Northern Powerhouse Rail will deliver vastly improved regional rail connections; and will provide modern, high-speed, low-carbon services which will improve passenger experience, and encourage people out of their cars and onto trains. Northern Powerhouse Rail will also release capacity in the existing rail network, supporting improvements in the local and freight services on which much of the North depends, as well as improving connectivity to international gateways including Manchester Airport.

Northern Powerhouse Rail will connect the major economic centres of the North as well as under-served communities, generating opportunity, attracting investment, creating jobs, and moving the North towards a more integrated economy that will 'level-up' the region and boost UK productivity.

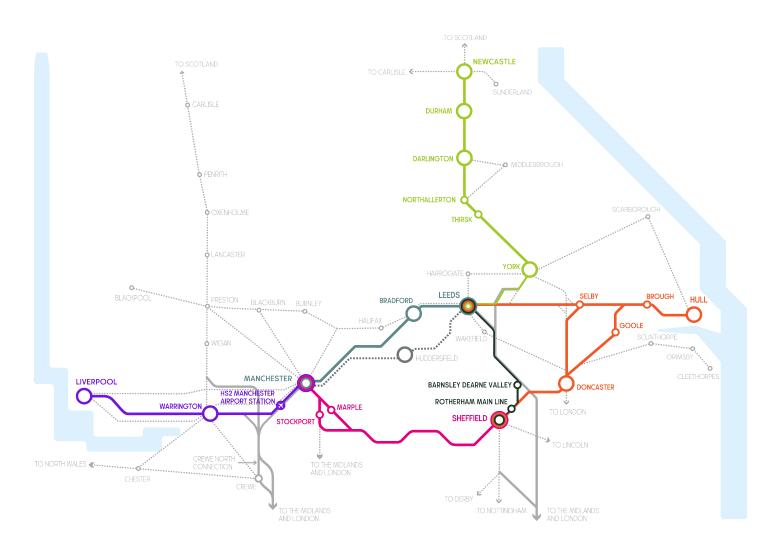
The North's economy will flourish with proper investment; regional strengths in advanced manufacturing and research have already attracted investment from Boeing in Sheffield and Siemens in Goole; recent announcements of the new UK Infrastructure Bank in Leeds and 'Treasury North' in Darlington, as well as the announcement of three freeports in the region in the 2021 budget, show confidence and ambition for the North. To maximise and expand upon this ambition, the North's creaking rail infrastructure must be improved.

COVID-19 has hit the North especially hard, in part because the economy and industry of the region hasn't allowed as many people to work remotely during the pandemic in comparison to the rest of the country. There is a strong case to invest in northern transport infrastructure; with the North less affected by potential changes to future working patterns, there is a likelihood that demand will bounce back quicker than elsewhere.

Together, Northern
Powerhouse Rail, HS2 and
the Transpennine Route
Upgrade will define the
North's economic future
for the rest of this century,
boosting jobs and
growth.

Northern rail infrastructure has suffered generations of under-investment, and achieving government's ambition of 'levelling-up' will come at a price. However, the potential of the North to not only thrive, but boost the national economic picture, is unparalleled.

This isn't a long-term ambition. Construction could start by the middle of this decade and the entire network could be up and running, and delivering benefits, in around 20 years.





The potential of the North

There is significant potential in the North of England to deliver transformational economic growth, whilst reducing the environmental impact of transport.

There is an opportunity within the North of England to deliver transformational, clean, economic growth, building on the huge potential of the region. At present, however, rail links are often old, slow, overcrowded and unreliable.

Investing in transport in the North will stimulate economic growth by improving access to labour markets and removing barriers to trade.

Investment in a reliable and resilient transport network will help attract investment and businesses to the North, ensuring it retains skilled workers, whilst improving the quality of life of its residents through greater accessibility to major cities and green spaces, and through the investment attracted by an increase in land values.

Northern Powerhouse Rail will deliver benefits to the UK as a whole, as well as the North.

Analysis of Transport for the North's preferred Northern Powerhouse Rail network shows it will deliver close to £5bn in economic benefit, by helping the North operate as a single economic unit, and £14.4bn in gross value added (GVA) by 2060. It will create a net gain of 74,000 new jobs in the North, and over 57,000 new jobs across the UK as a whole.

of the UK's 20 largest cities

£343bn

in economic output

international airports and 12 seaports

universities including 8 of the UK's top research institutions

of the 20 most affordable places to live in England

Northern Powerhouse Rail will generate tens of thousands of new jobs in the North

Investing in transport in the North will enhance the attractiveness of the North to both businesses and skilled workers:

- Increasing the number of new and existing companies locating in the North
- Increasing access to highly skilled jobs and creating a more attractive place to live
- Supporting the UK economy to sustainably rebuild and grow after COVID-19



The average speed between key cities in the North today by rail amounts to around 54mph only 9mph faster than by road



In 2011, almost 500,000
commuters travelled over 30km
to work in London daily double the number who
commute that distance across
all six major city regions in the
North



The current journey time from Liverpool to Newcastle takes almost 3 hours. In that time, you could fly from Liverpool to Lisbon

The future of transport must be sustainable

Climate change is the biggest challenge we all face, and so future transport investment must align with meeting environmental targets, and Northern Powerhouse Rail has the potential to deliver big environmental impacts. By providing the strategic transport spine that local integrated services connect to, Northern Powerhouse Rail can encourage a shift away from carbon-dirty road travel towards clean, electrified rail services.

Northern Powerhouse Rail has the potential to reduce road usage by 58,000 car trips per day, and to release freight capacity on the existing network to remove significant freight traffic from the roads. This will reduce the demand for road-space and relieve congestion, while reducing the amount of carbon emitted into the environment.

Northern Powerhouse Rail won't just deliver improved connectivity between major cities, it will also integrate with local transport and support our environmental ambitions. We will work with our partners across the North to make sure that it provides better transport at a local as well as regional level, and provide good connections from local communities to Northern Powerhouse Rail stations.

Reducing environmental impact

Northern Powerhouse Rail will deliver clean, modern, electrified rail services, significantly reducing the environmental impact of operating the network. We will make sure that rail construction work is as clean as can be, and the current network has been designed to minimise the need for new rail lines, to ensure that the network avoids new lines in, or near, sensitive areas and national parks, and treads lightly in our wonderful countryside.

What will Northern Powerhouse Rail deliver?

Economic regeneration

Northern Powerhouse Rail will bring benefits in terms of connectivity, investment, access to jobs and opportunity, as well as improving our environment; but by connecting previously underserved communities it also has the potential to bring wider social and regeneration benefits.

Communities living within a 5km area around the stations served by Northern Powerhouse Rail tend to have higher proportions of ethnic minorities, people on lower incomes, part time workers and students, and contain a higher proportion of deprived areas, relative to the rest of the North, and England as a whole. Better connections to the Northern Powerhouse Rail stations will help to stimulate significant inward investment around those stations and their hinterlands, driving jobs and skills growth.

Experience with HS2 and other new station schemes has shown that this type of investment leads to transformational development schemes in the areas around stations, in turn generating substantial wider benefits, including better health and wellbeing for those communities living nearby. Our analysis shows that a lot of the benefits could be experienced in lower-income communities.

Making our towns and cities nicer places to be as well as more prosperous business hubs is an important aim of Northern Powerhouse Rail. The new network will act as a catalyst to redevelop areas around our stations, including brownfield sites and the stations themselves, attracting jobs and investment for the benefit of everyone in the community.

Making sure the network is accessible too is important. Approximately 33 per cent of the population of the North will find it easier and more convenient to travel further within the same time as a result of Northern Powerhouse Rail, and with the capacity released in the existing network many more will also see improvements in local services. This puts far more people within easy, fast and convenient reach of better paid and more productive jobs.

Wider social benefits

Northern Powerhouse Rail will also contribute to wider social benefits in terms of access to education, healthcare and leisure facilities, both directly and through the capacity released for local services.

For the economy to grow in the North, these will be important factors in growing a skilled workforce, providing the population with the best opportunity to access the opportunities presented, and enhancing quality of life for all.

Connected Resilient Reliable

Investing in transport in the North will improve connectivity through a resilient and reliable transport network:

- Increasing opportunities for both workers and consumers
- Reducing disruption and improving capacity across the network
- Delivering better freight services and reduced conflict with other traffic

For such a large region with lots of big cities and towns, the North is poorly connected. The road system is congested, and the rail network does not have the capacity to significantly increase train size or frequency.

Northern Powerhouse Rail will deliver frequent, highspeed services, providing big improvements in capacity and avoiding some of the existing bottlenecks in the network.

With modern trains operating on a well-designed network, Northern Powerhouse Rail will provide a leap forward in reliability and resilience, and make it more pleasant to travel on the network.

Sufficient investment in a reliable and resilient transport network will attract investment and businesses to the North, ensuring it retains its skilled workers, which will ultimately lead to environmentally-friendly, sustained transformational growth. It can also improve northern residents' quality of life through greater accessibility to major cities and green spaces, and through the investment attracted by an increase in land values.



Sunderland to Warrington 50-55 minutes faster *



Preston to Hull

35-40 minutes faster



Preston to Darlington

35–40
minutes faster



Wakefield to Liverpool

25-30 minutes faster



Bradford to

75-80 minutes faster

^{*}Times shown are the improvement delivered by Northern Powerhouse Rail over a network which includes HS2 and Transpennine Route



Over 100,000 more jobs in our urban areas



GVA uplift valued at £3.4bn in 2040, rising to £14.4bn by 2060



Up to 20,000 additional businesses in the North by 2060

Faster and more frequent journeys

One of the overall benefits of Northern Powerhouse Rail is improved 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 for stopping services across the network are shown below.

Corridor	Preferred network options	Best current stopping service		Best potential stopping service with Northern Powerhouse Rail	
		Frequency	Minutes	Frequency	Minutes
Leeds - Newcastle	Infrastructure upgrades and use of HS2 (Stops - York, Darlington, Durham)	3	81-91	4	72.5
Leeds - Hull	Infrastructure upgrades (Stops - Selby, Brough)	1	56-63	2	46
Sheffield - Leeds	Infrastructure upgrades and use of HS2 (Stops - Rotherham Main Line/Barnsley Dearne Valley)	1	39-42	4	23.5
Sheffield - Hull	Infrastructure upgrades (Stops - Rotherham Main Line/Meadowhall, Doncaster, Selby/Goole, Brou] ugh)	76-84	2	67
Manchester - Sheffield	Infrastructure upgrades (Stops - Stockport/Hope/Dore)	2	49-57	4	34.5
Manchester - Leeds	New line serving central Bradford (Stops - Bradford)	4	48-61	6	30
Liverpool - Manchester	New line via central Warrington (Stops - Warrington, Manchester Airport)	4	35-51	6	29.5

Access to jobs

The full Northern Powerhouse Rail network will bring millions more people and thousands of additional businesses within reach of our key economic centres, than with TRU and HS2 alone



Liverpool

2 million

more people within 90 minutes

56,000

more businesses within 90 minutes



Hull

210,000

more people within 90 minutes

5,100

more businesses within 90 minutes



Sheffield

2.1 million

more people within 90 minutes

62,000

more businesses within 90 minutes



Manchester

3.1 million

more people within 90 minutes

69,000

more businesses within 90 minutes



Leeds

2.9 million

more people within 90 minutes

77,000

more businesses within 90 minutes



Newcastle

180,000

more people within 90 minutes

4,000

more businesses within 90 minutes

Increasing accessibility and economic mobility

Northern Powerhouse Rail will widen the job market for both employers and employees in and around the key stations: Liverpool, Warrington, Manchester, Sheffield, Bradford, Leeds, Hull, and Newcastle. For example, people who live in Bradford will be able to access the increased number of jobs in both West Yorkshire and Greater Manchester. There are also benefits for people in areas which don't have a Northern Powerhouse Rail station, such as Blackpool or Blackburn, where connecting onto Northern Powerhouse Rail and HS2 as part of their journey enables improved access to more than one of the North's main cities. With the North's key strengths in advanced manufacturing and digital sectors, access to skilled workers for new employers, and for skilled workers to new jobs, is vital to attract the necessary inward investment.

Northern Powerhouse Rail will make it easier to travel to several northern cities for its workforce. Over 25 per cent of workers in the North will be within 90 minutes of four or more northern cities. That's 15 per cent more than with the Transpennine Route Upgrade (TRU) and HS2 alone.

Taken together, TRU, HS2 and Northern Powerhouse Rail open up a much bigger market of jobs and opportunities than today.

Direct jobs and skills benefits

Northern Powerhouse Rail is a 20-year programme of work which will generate thousands of direct jobs as a result of the construction of the network and in the supply chain that supports it. Transport for the North is committed to working with our partners and suppliers to ensure as much of that benefit remains in the North as we can.

We will also work to ensure that Northern Powerhouse Rail leaves a legacy of highly-skilled and experienced workers in our construction sector, by investing in skills programmes and apprenticeships in partnership with our suppliers and partner local authorities.



of skilled workers in the North will be within 60 minutes of one of the North's core cities



of skilled workers in the North will be within 90 minutes of one of the North's core cities



of skilled workers in the North will be within 90 minutes of three of the North's core cities

International gateways

Northern Powerhouse Rail will improve the North's low carbon access to the world.

The North has three designated freeports in Liverpool, Humber and Teesside as well as important ports at Goole and in Tyne and Wear. By releasing capacity, and improving efficiency and speeds on the existing network between these areas, Northern Powerhouse Rail will have an important role to play in supporting clean, green, multimodal 'port to port' freight corridors, capitalising on the clean growth opportunities for the region and delivering on the government's Ten Point Green Industrial Revolution Plan.

Transport for the North believes that it is vital that the emissions from all flights from airports in the North meet the targets of the Paris Agreement. This means operating within defined carbon limits for UK aviation as part of wider international limits. Northern Powerhouse Rail can't decarbonise flights, but it can decarbonise the rail links to them.

Northern Powerhouse Rail will dramatically improve low carbon rail links to the North's primary international

gateways, such as Liverpool John Lennon, Leeds-Bradford, Newcastle, and Manchester airports. Manchester Airport sits at the heart of the integrated Northern Powerhouse Rail and HS2 Phase 2b network.

A new HS2/Northern Powerhouse Rail Manchester Airport station will provide faster, more frequent journeys between the airport and a wide range of destinations across the North. The impact of Northern Powerhouse Rail means that the population of the North that will be able to access the new Manchester Airport station within an hour increases from 0.5 million with only HS2 to 0.7 million with HS2 and Northern Powerhouse Rail; and within 90 minutes from 2 million with only HS2 to 4.3 million with HS2 and Northern Powerhouse Rail – a quarter of the North's population.

This better connectivity should mean northern air passengers will use northern airports, keeping the pressure off the constrained London system and reducing the need for long first and last mile car journeys to access London's airports.

Within 60 minutes of Manchester Airport



Within 90 minutes of Manchester Airport



0.5m
people

\(\delta \times \delta \times \delta \

Without Northern With Northern
Powerhouse Rail Powerhouse Rail



An unparalleled opportunity to level up the North

Our advice to government

Over the last few years, we have considered how to better connect the great cities of the North by rail. We have looked at over 130 different options, including upgrading the existing rail network, constructing new lines, or a combination of both. We have looked at different types of rail transport, including heavy and light rail options, and intercity versus local services. We have investigated this broad range of options, looking at their potential to level up the North through faster, more frequent and more reliable rail journeys, while balancing the social and environmental impacts, and narrowed the list down to a small number of better-performing choices.

In February 2021, the Transport for the North board, made up of elected and business leaders from across the North, agreed the Northern Powerhouse Rail network that reflects their ambition for a connected and prosperous North. The board issued statutory advice for government to consider. This statement sets a compelling vision for government before its awaited Integrated Rail Plan - due to set out plans for the North's railways - is finalised, demonstrating how Northern Powerhouse Rail will act as a catalyst for the economic recovery in the North.

Manchester - Leeds

A new line between Manchester and Leeds via the centre of Bradford is crucial to transforming the North's economic fortunes. These three big cities have the potential to act as a single economy, if better connected. Manchester and Leeds rely on an ageing rail network with a number of bottlenecks; only a new line will avoid the risk of introducing new bottlenecks along the corridor, whilst releasing capacity for local and freight services on the existing network. While Bradford is only 40 miles from Manchester, the journey currently takes over an hour by rail; these slow journeys limit the potential for inter-city commuting by their residents.

Bradford has one of the youngest populations in the UK but poor connectivity has held its economic prospects back, contributing to it having the highest levels of socio-economic disadvantage. It has also been particularly badly affected by COVID-19. Only through providing fast, frequent and direct services from Manchester to Leeds through Bradford, will we unlock the potential for Bradford to be a huge contributor to the UK economy. Northern Powerhouse Rail will enable residents of Bradford to reach Manchester Airport within around 30 minutes, down from 1 hour 40 minutes at present, and almost halve the journey time to Birmingham.

Transport for the North has worked with City of Bradford Metropolitan District Council and West Yorkshire Combined Authority (WYCA) to identify a new station site that could support the transformation of the city centre and unlock the regeneration of the 'Southern Gateway', a 100-hectare area adjacent to the city centre. A new station could be integrated with the existing rail network, connecting with the developing proposals for a mass transit network to be built in advance of Northern Powerhouse Rail, and releasing further land for economic development.

The WYCA growth strategy for Bradford sets out the wider complementary opportunities around skills, investment, innovation and regeneration of its urban spaces. Connecting England's seventh largest city to the Northern Powerhouse Rail network could generate up to £2.9bn in GVA uplift and bring over 27,000 additional jobs to Bradford by 2060. But these benefits can only be realised if Bradford is on the main line between Liverpool, Manchester and Leeds.

While upgrade options between Manchester and Leeds which don't serve Bradford could be constructed sooner, a delay to the commitment to a new line (which would already take ten years to start of construction) would keep Bradford on the sidelines and deny opportunities to this and future generations.

By the North, for the North

Liverpool - Manchester

The best way to connect these two cities to each other, and beyond, comes with a new line from Liverpool to Manchester via the centre of Warrington.

Only the new line options free up much-needed capacity on the West Coast Main Line and add resilience to an already strained part of the network; a new hub station in Liverpool will add capacity, reducing the impact of terminus stations, and support improvements in journey times. There will also be capacity released for potential future passenger routes between Liverpool and Runcorn, Chester and North Wales, and for shuttle services utilising the Chat Moss and Cheshire Lines Committee (CLC) lines

Relying on upgrading the West Coast Main Line and Liverpool Lime Street station could result in an unreliable network with frequent delays, including the possibility of late-running services. Upgrading existing lines would also mean lengthier disruption to rail users during construction.

The greatest improvements in journey time and reliability come from new line options which separate high-speed, local and freight services. New line options deliver better journey times for passengers, and will release capacity that could be used for rail freight routes to and from the Port of Liverpool, providing opportunity to take heavy goods vehicles off the road. New stations will increase the reliability and resilience of services, and where station capacity is increased this also improves the performance of the network.

Manchester - Sheffield

These two cities are close to each other, but poor road and rail links over the Pennines limit their interaction, meaning people struggle to access the job markets and international gateways (including Manchester Airport) required to drive growth and level up the economy. To protect and preserve the environment through the Peak District National Park, we are focusing on upgrades and journey time improvements to the Hope Valley route between Manchester and Sheffield.

We have more work to do to confirm the best way to approach Manchester city centre and opportunities will be looked at to speed up delivery of the Hope Valley upgrades. The current preferred option would result in a connection to HS2/Northern Powerhouse Rail infrastructure for onward journeys to Liverpool and Manchester Airport. This would provide wider benefits for northern cities, for example, significantly improving journey times and frequency between Sheffield and Liverpool. However, while the best way to approach Manchester is still under consideration, it is vital that we explore all options.

A commitment to a high-speed connection between Manchester and Sheffield could support a shift from road to rail and our path towards a zero-carbon economy. An investment in rail here could be offset by a reduced ambition for improved road connectivity, delivering environmental and economic benefits for the region.

Leeds - Newcastle

Reliable fast Northern Powerhouse Rail services to and from the north-east and on to Scotland depend on significant upgrades of the East Coast Main Line between Leeds and Newcastle (via York and Darlington) and reinstatement of the Leamside line, plus upgrades to the existing Northallerton-Stockton-Stillington route.

With average rail speeds comparable to those as for road, but with reliability of only 68 per cent, encouraging a shift to a more sustainable travel mode is difficult at present. The full reinstatement of the Leamside line, and the upgrades to Northallerton-Stockton-Stillington, would separate high speed passenger and freight services which could support an improvement in train reliability and performance, as well as releasing capacity on the East Coast Main Line which is needed to meet forecast future demand.

Northern Powerhouse Rail on this corridor brings the north-east closer; it improves the connectivity of Newcastle, Durham, and Darlington to the wider North, opens up business opportunities, and could support wider aspirations to improve connectivity for disconnected local communities across County Durham, Tees Valley, Northumberland and North Yorkshire.

Upgrading a number of stations (York, Darlington, Northallerton and Newcastle) is vital to linking these key economic centres. Work on these stations could be started by the mid-2020s and integrate well with other proposals for early improvements supporting the delivery of both HS2 and Northern Powerhouse Rail aspirations.

Sheffield - Leeds

Sheffield and Leeds are important economic and cultural centres on the Northern Powerhouse Rail network, contributing to the success of the North through their strengths in advanced manufacturing, finance and professional services. Despite this, there are only five existing rail services per hour with a journey time between 39 and 83 minutes to cover the 29 miles between the cities, and only one of these is a fast service. Reliability is also poor with only 62 per cent of services arriving on time.

Northern Powerhouse Rail will capitalise on the HS2 eastern leg infrastructure to provide a much-improved railway connection between Sheffield and Leeds. Four Northern Powerhouse Rail services per hour will be provided which will share HS2 infrastructure to Leeds and provide dramatically better journey times. Before joining HS2, an upgrade including the electrification of the conventional railway network north of Sheffield is proposed, where Northern Powerhouse Rail services will serve new intermediate stations at Rotherham Mainline and Barnsley Dearne Valley enhancing connectivity. These new intermediate stations will also significantly transform communities with high levels of deprivation and offer significantly improved access to employment centres in Sheffield and Leeds.

To provide capacity for Northern Powerhouse Rail services on the railway north of Sheffield, local services between Sheffield and Doncaster will be served by an extended tram train network. Building on the successful tram train pilot to Rotherham Parkgate, this will provide new local journey opportunities this will provide new local journey opportunities between Sheffield city centre and the supertram network and intermediate stations through Rotherham and Doncaster.

Leeds - Hull, Sheffield - Hull

Rail links to Hull are among the poorest between northern cities, with train service reliability of 60 per cent or lower, and it is quicker to travel between Leeds or Sheffield and Hull by road. While the Humberside economy is increasingly supplying renewable energy, poor rail connections to Hull and the ports do not encourage sustainable transport choices. Northern Powerhouse Rail proposes to electrify and upgrade the rail lines from Leeds to Hull via Selby, and upgrade the lines from Sheffield to Hull via Goole and Selby.

Electrification will permit cleaner, faster, and more reliable trains to run between these cities. Combined with track and signalling upgrades to provide further journey time benefits, access will be improved to jobs for the residents of Hull, one of the 10 per cent most deprived local authorities in England: a key strategic need identified in Hull's city plan.

Different levels of investment have been considered between Leeds/Sheffield and Hull, providing different journey times. Whilst the less transformative proposals would still greatly enhance the existing railway connections, the preferred network goes further, providing additional journey time savings. This is important to encourage passengers onto the railway from existing road links such as the M62 between Leeds and Hull.

The nature of the proposed improvements on routes to Hull means that rapid progress could be made toward a possible start of construction in the mid-2020s, delivering benefits to the region soon after.

Turning vision into action

Our advice to government on Northern Powerhouse Rail isn't limited to the proposed rail network, but also how we think it should be delivered

It is imperative that Northern Powerhouse Rail continues to be **managed as a single network** as:

- this delivers the most transformational economic impact;
- it has been designed as a network, with one route depending on the other routes to deliver benefits overall
- this is a long-term programme which needs to be delivered in separate projects which fit together to form the network

3

A **new client body** as a special purpose vehicle or subsidiary, should be created to oversee delivery of the whole Northern Powerhouse Rail programme, acting as a challenger client:

- providing continued delivery oversight, cost challenge, and risk mitigation for individual projects, ensuring that the integration risk between the projects is managed;
- with the capability to structure, commission and manage the projects in a coordinated way to deliver the desired programme outcomes (capacity and journey times) and benefits.

Transport for the North must have a continued role, as co-sponsor, in the formal governance of Northern

Powerhouse Rail. This would ensure that funding and strategy decisions about transport in the North are informed by local knowledge and requirements. We propose continuing to work with the Department for Transport to set the strategic direction and overall programme outcomes, and providing advice to government on Northern

Powerhouse Rail.

We've done the work together, now let's get on and deliver for the North together



Why Northern Powerhouse Rail?



Bringing an additional 3.8 million people within 90 minutes of four or more northern cities

Increasing land value and attracting regeneration in some of our more deprived areas





Increasing capacity to cope with forecast population growth

Removing up to 20,000 tonnes of CO₂e per year by 2040 by removing diesel trains from our network

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GVA uplift valued at £3.4bn in 2040 rising to £14.4bn by 2060



Taking 58,000 car trips per day off the road

More than doubling the number of people able to access Manchester Airport within 90 minutes



Allowing the North to function as a single economy

Over 100, 000 more jobs in our urban areas

Up to 20,000 additional businesses in the North by 2060

Benefits presented throughout this document are based on preliminary assessment, and are subject to change.

For updates on Northern Powerhouse Rail, or to find out more about our work, visit our website.

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June 2021

