TRANSPORT FOR THE NORTH

Strategic Transport Plan

Transforming the North

Accessibility

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Contents

1.

Executive Summary

TfN's role and purpose of this Plan

An effective, efficient transport system is a fundamental part of everyday life. It connects people and places to services and opportunities including jobs, health, education and leisure. It connects businesses and allows the efficient movement of goods and services.

As **Transport for the North (TfN)**, we speak with one voice on behalf of the North of England for transport. We are a statutory body made up of elected and business leaders from across the whole of the North. We collectively represent the region's 16 million citizens and 1.1 million businesses.

Our role is to advise government on the strategic ambitions and priorities for the North's transport system, informed by our local knowledge, expertise and evidence and with a particular focus on connecting places across, into and out of the North. This, our second **Strategic Transport Plan (Plan)**, is a strategy for our region and provides the framework against which we will (separately) provide advice - with our partners - on how it is implemented and the required interventions. The Plan sets the vision, objectives and the North's long term strategic transport priorities to 2050, setting the direction for our work with government, local transport bodies and delivery bodies.

To reflect the North's diverse people, places and the scale of the transport challenges we face, we have developed this Plan with five key principles in mind:

- This Plan is a **user-centric**, **outcome-focused**, **place-based** strategy that is underpinned by **robust evidence**.
- This will be enabled by a **systems approach** which recognises the need to integrate transport solutions with energy, spatial planning and digital connectivity.

Our vision

By 2050 the North of England will have become a thriving, socially inclusive region. Our communities, businesses and places will all benefit from sustainable economic growth, improved health and wellbeing and access to opportunities for all. This will be achieved through a transformed, near zero-emission, integrated, safe, affordable and sustainable transport system, which will enhance connectivity, support mode shift and resilience and improve journey times for all users.

Our vision is supported by three clear strategic ambitions the North wants to achieve:

1. Transforming economic performance
2. Rapid decarbonisation of our transport system
3. Enhancing social inclusion and health

*'Near-zero' for TfN means less than 2% of our 2018 surface transport emissions. You can find more details in TfN's Decarbonisation Strategy, available **here**.

Figure 1.1

Our strategic ambitions are underpinned by three core TfN strategies that embrace the principles of this plan:

1

The Northern Powerhouse Independent Economic Review (NPIER), which identifies the economic prize of closing the productivity gap between the North and the rest of England (less London), would mean a Northern economy that is £118bn larger by 2050.

2

TfN's **Regional Decarbonisation Strategy** which sets the need to achieve near zero carbon emissions of surface transport by 2045*.

3

Connecting Communities, our **socially inclusive transport strategy** which builds on our ground-breaking work on **transport-related social exclusion (TRSE)**, aiming to remove the risk of TRSE for a million people across the North.

To achieve our vision and strategic ambitions, we need to address connectivity challenges by creating a transport system for the North that enables:

- Strong, interdependent and integrated labour markets working collectively to drive up productivity and growth through agglomeration
- Fast, frequent, and reliable connections between our economic centres for goods, people and business
- Strong outward facing connections to other parts of the UK and to our international gateways
- Acceleration of the decarbonisation of our transport system and reduced car dependency both within and between places
- Safe, reliable and accessible public transport networks, both at pan-regional and local level, which enable access to opportunities for all communities across the North.

Improvements in the transport system need to be considered as part of an overall solution to a complex set of economic, environmental and social challenges facing the North of England. When goods, services, knowledge and skills move more freely, greater collaboration and transformational economic growth will follow. This Plan identifies three connectivity needs for the North:

1. Pan-Northern connectivity, sustainably connecting the economic centres of the North through our seven Strategic Development Corridors and the delivery of **Northern Powerhouse Rail (NPR)** in full and the **TransPennine Route Upgrade (TRU)** to support the identification of a pipeline of investment and interventions

2. Connectivity between the North, other parts of the UK and internationally, recognising the North's critical role in connecting all parts of the UK and across the globe, not least for moving goods

3. Supporting our member authorities to transform local connectivity within all places of the North, including cities, towns, coastal and rural areas.

Poor road and rail connectivity is holding back the North, often acting as a binding constraint on growth, and exacerbated by current deficient performance of our rail network. The result is a dependency on private transport for many in the North, which acts as a barrier to opportunity and hinders efforts to decarbonise travel. The North's economic and social challenges manifest in lower-than-average wages for workers, which subsequently leads to multiple and adverse consequences such as increased benefit dependency, increased health and social care costs and cycles of worsening poverty and inequality.

The way in which businesses and people responded to the pandemic highlighted how the need to travel, and the way in which we travel, can change rapidly. It showed that there is nothing permanent about our current travel choices, and that such choices can be related to digital connectivity and other policy areas; which is why this Plan advocates for systems thinking, policy alignment and sustained investment. If we are to achieve national strategic outcomes - like decarbonisation - then we must harness such changes positively as they are transforming future travel demand and choice.

We recognise that future transport investment programmes must support the need for better outcomes. These include transport decarbonisation, improved health, inclusivity, biodiversity gain and a sustainable increase in economic productivity. The shift to this 'decide and provide approach' is essential to ensure our integrated transport system is fit for the future.

It is important we recognise that many aspects of the future are uncertain. Our future travel scenarios demonstrate four plausible options for how people across the North might travel in the future, incorporating a range of different assumptions behind the economic and social drivers of those travel behaviours. The scenarios enable us to test the effectiveness and resilience of proposed policies and interventions across a range of futures and use that analysis to inform the actions we take to deliver the vision set out in this Plan.


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Our strategic priorities across rail, road and local connectivity

Given the scale of these challenges, investment is required to provide increased capacity and connectivity locally, across the North, and between the North and the rest of the UK. That investment must recognise:

- Our rail network and wider connections must transform the access to opportunities for millions of people, recognising the need to move beyond the current deficient performance and take clear steps to create capacity for passenger and freight growth over a sustained period of investment.

- The delivery of the full (TfN preferred) NPR network and TRU are fundamental to transforming rail connectivity and capacity across the North of England, connecting our economic centres, for passengers and freight, to unlock the North's potential. This Plan reaffirms TfN's strategic priorities for rail including the need for commitment to our preferred NPR network which includes a new line from Liverpool to Manchester via Warrington and Manchester Airport, a new line from Manchester to Leeds via central Bradford and significant upgrades to the Hope Valley and East Coast Main Line routes (including the Leamside Line) to ensure effective services through to Sheffield, Hull and the North East.

- Our evidence base also shows that High Speed 2 (HS2) phases 2a and 2b were fundamental to transforming connectivity and capacity. So there remains a need to identify solutions in the absence of HS2 as planned, that will deliver a similar level of connectivity/capacity to and from the North.

- The critical importance of the North's highway network to our economy and supporting our modern society. Roads are a multimodal asset and provide the public space we all use to move around, whether that be on foot, by bike, bus or car and as such they are an essential community asset. We need to choose how the space available is used in order to meet needs to decarbonise, maintain access for freight and encourage active travel and only focus investment where truly needed.

- The importance of improving local connectivity and multimodal integration in providing door-to-door sustainable transport for people and goods.

- We need to ensure we maintain and grow an efficient multimodal freight network by improving gaps in connectivity, including to newly designated freeports and enable growth in freight flows. Delivered holistically, this will allow the economy of the North to be more productive, efficient and sustainable while at the same time improving the environment, health and wellbeing of Northern residents.

- Increasing the North's international connectivity to perform on a global stage will attract and facilitate businesses and entrepreneurs to work together and reach customers and suppliers across the North, the UK and the rest of the world. This will encourage outward and inward overseas trade and investment, which will facilitate economic growth.

A place based approach

The successful delivery of our strategic ambitions and headline objectives can only be achieved through a collective effort nationally, regionally and locally. This can be achieved through effective transport planning and ensuring a strong golden thread through key policies and implementation at a national, regional and local level.

Our People and Place Framework uses TfN's extensive evidence base and expertise to identify how policies might best support different types of people and places in the North to achieve our collective vision and strategic outcomes.

Implementation

Since being established in 2018, TfN has created a compelling reputation for clear forward thinking on transport issues, industry-leading technical expertise, local knowledge and relationships. The implementation of this ambitious and challenging Plan will require a concerted sustained effort across the North, in partnership with Government.

This Plan demonstrates the scale of change needed to deliver the strategic outcomes the North wants to see, as well as the significant challenges faced by the current state of the transport system. Creating a virtuous circle of investment

leading to greater choices and enabling mode shift for people and goods, more efficient use of road and rail networks, and greater public transport patronage, while delivering better outcomes for the North's places and communities requires a fundamental change in approach.

The evidence base assembled within this Plan demonstrates how investment in the North's infrastructure contributes to achieving agreed outcomes on reducing carbon emissions, improving health and achieving sustainable economic growth. This will require, at a minimum, alignment of decision making in transport investment with that in energy systems and digital connectivity. TfN's ground-breaking work on **Electric Vehicle (EV)** charging infrastructure demonstrates how we can build strategic partnerships to affect change.

The Plan sets clear metrics for measuring progress on critical issues, such as accessibility, clean air, road safety and performance. This includes mode shift 'right share' metrics that provide a minimum level of ambition necessary to achieve our vision. We commit to continue to work with our delivery partners, businesses, the transport industry and government to shape the priority investments, policies, interventions, and funding needed to deliver this Plan to ensure we are on track to deliver on our intermediate 2030, and long term 2050, ambitions.

Tackling the transport challenges in the North will also require fundamental reform in the way we plan, develop and deliver investment in infrastructure and services. While significant progress has been made by TfN, government and **Local Transport Authorities (LTAs)** since 2015, there is more to do.

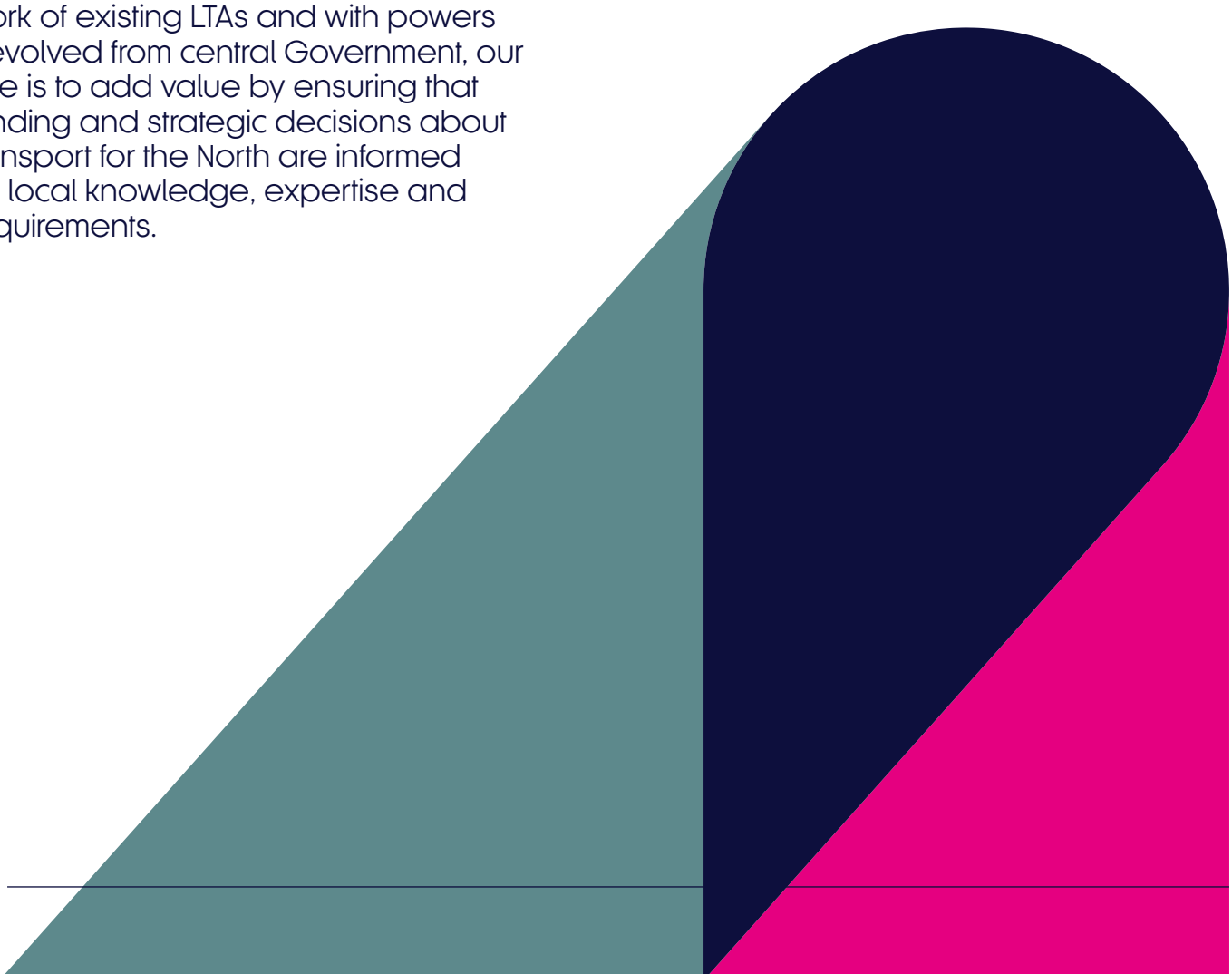
To achieve this Plan's strategic outcomes for the North there is a need for targeted investment in transport, combined with complementary policy and investment in areas such as education, health and economic growth. The NPIER demonstrates how a consistent long-term public-sector approach to policy and investment would lock in private sector capital and generate a positive return on government investment through additional tax revenues and lower spending on health interventions and welfare funding by 2050.

To support strategic planning of transport as part of a whole systems approach, TfN recommends that a 'five year plus five year' regional indicative funding envelope is established. Statutory advice on pan-regional infrastructure and service priorities, which are nationally controlled, could then be prepared within this envelope. This should be complimented by simplification of national funding streams and more devolution to the local level, building upon and extending initiatives such as the Greater Manchester Single Settlement. Indicative funding envelopes built into existing regulatory and statutory processes, would bring significant opportunities to accelerate decision making, reduce uncertainty and avoid duplication of effort at national, regional and local level.

2.

About Transport for the North

Transport for the North is a statutory partner of the Department for Transport. We are a body of elected and business leaders from across the North, who collectively represent the region's 16 million citizens and 1.1 million businesses. We provide one voice for the North's transport priorities. Complementing the work of existing LTAs and with powers devolved from central Government, our role is to add value by ensuring that funding and strategic decisions about transport for the North are informed by local knowledge, expertise and requirements.



2.1 Our role as a statutory body

Established in 2018, our statutory role (as set out by Government) requires us to develop a **Strategic Transport Plan (Plan)** that communicates pan-Northern priorities to the Secretary of State for Transport and explains how we will act as a statutory partner in enabling delivery of infrastructure and services on behalf of the North's 21 LTAs.

We work at a pan-regional level, focusing on improving strategic connectivity for and within the North. This Plan sets out the case and strategic outcomes for better connecting the places and economic centres of the North to unlock economic potential, increase opportunity and decarbonise our travel choices. Our work explicitly recognises that it is the whole 'door-to-door' journey that matters for people and goods. For our transport system to work efficiently and effectively, it is crucial that pan-Northern road and rail networks are well integrated with local roads and public transport, as well as walking and cycling networks. Local interventions will address important issues, such as reducing congestion and decarbonising local communities, but they are also important contributors to meeting pan-regional outcomes.

This is why we work closely with local transport partners to help create a more integrated, healthy and resilient overall transport system. We also work nationally with government, other **Sub-national Transport Bodies (STBs)** and the devolved administrations to ensure that investment in pan-Northern transport enhances connectivity across the UK and internationally.

2.2 Our stakeholder partnerships

Department for Transport, National Highways and Network Rail

We are a statutory partner of the Department for Transport (DfT) and provide statutory advice on strategic infrastructure priorities to the Secretary of State, using powers defined under the Local Transport Act 2008. TfN was established with the general functions:

- **A** To prepare a transport strategy for its area.
- **B** To provide advice to the Secretary of State about the exercise of transport functions in relation to its area (whether exercisable by the Secretary of State or others).
- **C** To 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.
- **D** 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.
- **E** To make other proposals to the Secretary of State about the role and functions of TfN.

TfN was also granted additional powers to support its partners in delivering proposals of pan-regional significance, such as the power to coordinate and deliver smart ticketing, partner in road and rail investment decisions and oversee franchised rail services with DfT.

We jointly manage with DfT the delivery of rail services provided through Northern and TransPennine contracts as part of the Rail North Partnership. We co-sponsor the NPR Programme, which TfN co-designed with DfT and Network Rail. We also provide advanced analytical services to DfT in support of NPR business case and scheme development.

We work closely with **Network Rail** and contribute to long-term strategic planning for the railways in the North. Network Rail also participates in the Rail North Partnership, which helps ensure that service and infrastructure development are aligned. We are working closely with Network Rail, DfT and the Great British Railways Transition Team to identify how together we can use the commitment to rail reform as an opportunity to build upon the rail devolution that already exists in the North.

We work collaboratively with **National Highways** (through the Highways North Board) to inform and influence the Road Investment Strategy. National Highways is responsible for the effective operation, maintenance, and improvement of the **Strategic Road Network (SRN)** in England. Their objectives, performance indicators and targets are reviewed and agreed on a five-year cycle through the development of Road Investment Strategies.

A joint engagement framework and action plan identifies areas for collaboration and ensures that the views and objectives of TfN and National Highways are recognised and considered in the development and delivery of each organisation's respective plans. As Chapter Five sets out, the approach to the SRN complements that for the **Major Road Network (MRN)**.

We work collaboratively with the North's 21 LTAs, who are responsible for managing and investing in local transport networks such as investment in local roads, cycling, walking, and buses, and in some cases light rail.

Our pan-Northern role means we are involved in many non-statutory partnerships to ensure we take a 'systems approach' to transport planning. Our strategic partnerships, which we continue to maintain and develop to ensure our plans and those of our LTA partners are informed by evidence, include:

- Links to ensure there is a strong business voice in our work. Until recently this has been through the 11 Northern **Local Enterprise Partnerships (LEPs)** who we engaged with individually and collectively through NP11. We will continue close engagement as successor arrangements are put in place following changes to the LEPs. We engage with other business representatives, including Chambers of Commerce on supporting regional economic development.

- Other pan-Northern bodies including Homes for the North, the Northern Powerhouse Partnership, the Northern Gas Network and other energy providers. We are represented on the Yorkshire Climate Commission, and have close links to bodies with a strategic interest in physical, digital and spatial planning.

- Our UK wide role as the only statutory STB, including our formal and strategic partnerships with Transport Scotland, Transport Wales and the other STBs across England. We have close links to the **National Infrastructure Commission (NIC)**, Rail Industry Association, Logistics UK and Rail Freight Group.

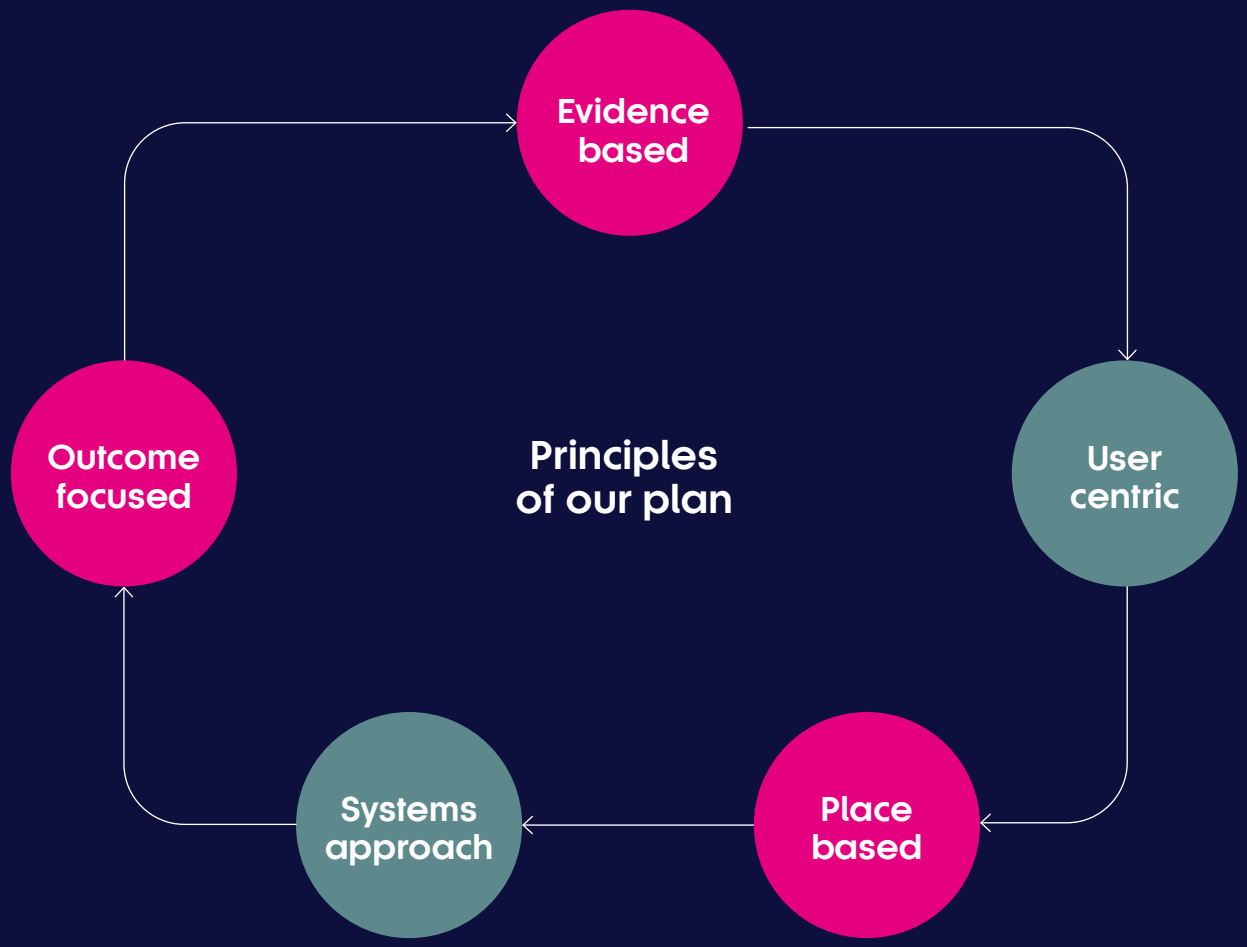
- Our links to academics and research through the N8 (a collaboration of the eight most research-intensive universities in the North of England), and also working with organisations such as the Institute for Transport Studies and **Institute for Public Policy Research (IPPR) North**. We established, and chair, the Northern Transport Academic Forum which brings together research interests to discuss key issues.

2.3 About the Strategic Transport Plan

Our Plan sets out the opportunities and challenges facing the North of England's economy, people and communities, demonstrating how improved transport links are needed to help the North achieve its true potential. The Plan recognises the North's diverse and unique people, places, transport infrastructure and business landscape. It sets out how better connecting the key economic centres across the North will transform economic performance, open opportunities for people, businesses and communities and facilitate the rapid decarbonisation of our transport system while recognising the impact of our transport choices on the environment.

Investment in the transport system must be considered as part of the solution to a complex set of economic, environmental and social challenges. This is why we are outcome-focused and place-based in our thinking to ensure that the transport networks of 2050 are planned and delivered as part of a coherent ecosystem. Transport can be a catalyst for change in people's lives, bringing opportunity and choice to communities and businesses. Our Plan therefore aims to maximise the opportunities of an integrated, decarbonised, and more productive North by delivering a modern, efficient, accessible, and affordable transport system. This Plan has been developed in response to that opportunity and is built on five principles:

Figure 2.1



Evidence based

Ensuring our plan and its asks are grounded in robust evidence.

User centric

Recognising that people and businesses need different things from the transport system.

Place based

Recognising that the North's geography is diverse and therefore the transport solutions available, scale and pace for change will vary.

Systems approach

Recognising that we need to work with a range of partners in different sectors to find appropriate solutions and overcome barriers to delivery, as transport solutions alone won't achieve our vision for the North.

Outcome focused

Including a clear set of headline SMART objectives & targets/end states.

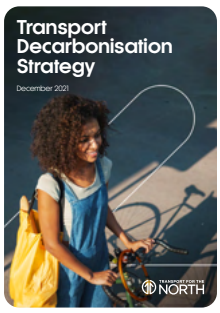
The Plan builds on the original vision in the Northern Transport Strategy 2015 and the first Strategic Transport Plan in 2019 of "a thriving North of England, where world class transport supports sustainable economic growth, excellent quality of life and improved opportunities for all" with a renewed focus on decarbonisation and social opportunity. This Plan is founded on the evidence, analysis, strategy development and policy thinking we have done since that time, which is summarised in Figure 2.2.

Figure 2.2: Hierarchy of TfN Strategies, Reports and Policy

Three "strategies"

April 2023

March 2023

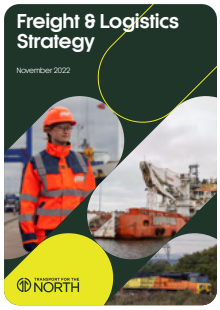


Dec 2021

Four thematic reports

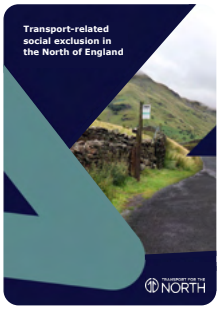
July 2023

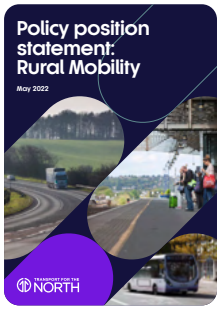
May 2023

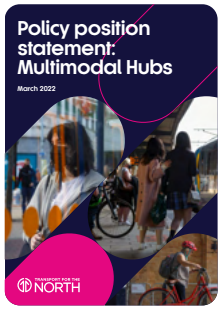


Nov 2022

Policy positions and evidence








KEEP YOUR DISTANCE
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KEEP YOUR DISTANCE

3.

Our vision and strategic ambitions

3.1 Our vision

By 2050 the North of England will have become a thriving, socially inclusive region. Our communities, businesses and places will all benefit from sustainable economic growth, improved health and wellbeing and access to opportunities for all.

This will be achieved through a transformed near zero emission, integrated, safe, affordable, and sustainable transport system, which will enhance connectivity and resilience, support mode shift and improve journey times for all users.

Enabling the North to grow its economy, decarbonise its transport system, and bring prosperity and wellbeing to its communities is a multi-decade project. It requires a clear, long-term, and sustained vision, supported by clear outcomes, to frame the choices and investment decisions across future political cycles.

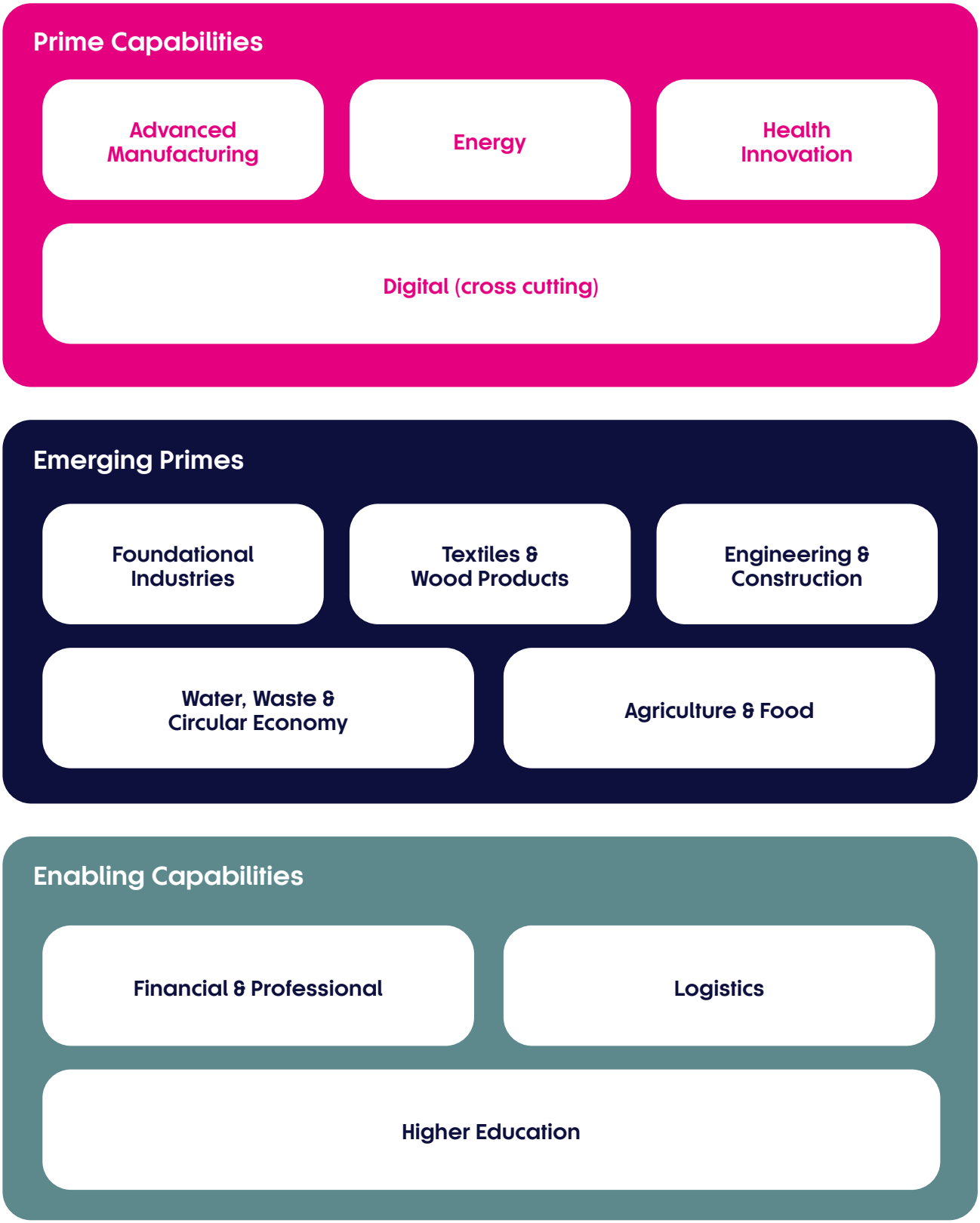
Our vision and strategic ambitions have been informed by our extensive evidence base, including the 2023 update to the NPIER (originally published in 2016), which was our first strategic long-term assessment of the North's economy[1]. This review identified seven key sectoral capabilities in the North that have the potential to support transformational growth through sustained investment in transport connectivity, skills, research and development (R&D), graduate retention, and inward investment.

The NPIER was instrumental in framing the scale of economic opportunity in our first Plan. It provides the strategic economic context for this Plan and is embedded in the transport plans and economic strategies across the region.

An update of the NPIER scenarios has been undertaken to support the development of this Plan, particularly to recognise changes since 2016, such as the policy importance of net zero and covid-19 impacts. The new assessment confirms the opportunity from, and continued importance, of the seven 'prime and enabling capabilities' of the North's economy, as well as emerging and wider sectoral strengths, including engineering, construction, food and agriculture.

The North's foundational economy is also significant, estimated to currently employ 67% of the North's workforce and generating 63% of all economic output[2]. The foundational economy describes businesses and organisations that provide essential goods and services, including transport infrastructure, health and social care, and food production.

Figure 3.1: The North's economic capabilities as identified in the NPIER

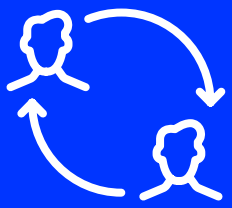


TfN's **Future Travel Scenarios**, which were developed and agreed with our partners, support our adoption of the 'decide and provide approach' to long-term strategic planning. These scenarios enable a better understanding of the potential range of challenges and opportunities ahead and how those might affect travel behaviours. As a tool, the Future Travel Scenarios therefore help us consider how different policies and interventions might play out in different plausible futures. That insight allows us - in conjunction with our analytical framework - to help shape, test, and refine transport interventions and solutions with our partners to deliver the vision set out in this Plan.

The scenarios consider future uncertainties from today to 2050, including:

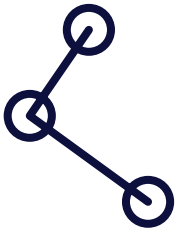
National Environment Policy

Economic Growth



Behavioural Change

Technological Change



Spatial Planning and Economic Distribution

By building an understanding of future uncertainty, we can explore different potential future travel patterns of people, businesses and goods. This enables us to test the effectiveness of the actions we might take, including potential policy levers in those plausible futures, and which interventions are needed in all futures and can be 'no regrets' investments. This approach aligns with the Government Office for Science Futures Toolkit[3]. Our current travel scenarios are set out below. We are updating them and expect to complete that work during 2024.

TfN's four Future Travel Scenarios

Just About Managing

This scenario sees a state of inertia, although this should not be taken as neutral. It sees a future where people do not alter their behaviours much from today, or give up certain luxuries, although there is a gradual continued trend towards virtual interaction. Economic growth continues at a moderate rate, but it is largely consumption-led and unequal, lacking agility and vulnerable to shocks. This scenario is led by markets, without much increase in political direction, with its biggest driver being economic.

Prioritised Places

This scenario sees a significant shift in political and economic direction to ensure that no place is left behind. Every area, including cities, towns and rural and coastal areas, has a bespoke local economic strategy, supported by investment in local assets, specialisms and economic and social infrastructure. Community, localism and place-making across the North is applied to build a sense of local identity to improve local economies. There is a focus on work-life balance and social equity within and between places. This scenario is led by a change in priorities, with its biggest driver being the push for a fairer redistribution of economic prosperity.

Digitally Distributed

This scenario sees a future where digital and technological advances accelerate, transforming how we work, travel and live. In general, we embrace these technological changes and the move towards a distributed, service-based transport system. Long-term climate change targets are met, but there is slow progress in the short-term due to a general preference for individualised mobility over traditional public transport. This scenario is led by technology, with the biggest drivers being technical advances and a willingness to embrace mobility-as-a-service and shared mobility in the long-term.

Urban Zero Carbon

This scenario sees a significant shift in public attitudes towards action on climate change, and a strong national Government response to meet it. There is a boost to economic productivity to levels consistent with the NPIER, primarily through a combination of urban agglomeration and place-making. Transport users demand and embrace publicly available transit and active travel options, as there is a blurring of the line between 'public' and 'private' with increasing shared mobility systems online. This scenario is led by attitudes to climate action and urban place-making, with the biggest drivers being strong Government policy and trends of urban densification.

By modelling our future scenarios, we can understand the scale of change in how and why we travel that we need to prepare for, especially the need for improved pan-regional connectivity. This includes:

- Preparing for potential doubling or even tripling of rail travel between now and 2050 for passengers and freight.
- Recognising that investing to increase the transport choices available will be essential for both our decarbonisation and growth ambitions. While the car is likely to remain a dominant mode for much of the North, particularly for rural communities, we must find the right balance that can work for different communities and places.
- Our freight flows need to grow significantly under all scenarios, reflecting the NPIER update. We can take advantage of the spare aviation and port capacity in the North to accommodate that growth.
- Infrastructure, technology and service improvements alone are unlikely to achieve the change across the transport system required to achieve our outcomes. We need significant national policy interventions (as outlined in the NPIER scenarios) and the right incentives in place to facilitate and encourage behaviour change.
- We need to take a place-based approach to developing solutions. While connectivity can be a major enabler of change, non-transport policy levers may be more important in certain situations and places.

3.2 Our strategic ambitions

Our vision is supported by three strategic ambitions for the North:

1. Transforming economic performance
2. Rapid decarbonisation of our transport system
3. Enhancing social inclusion and health

Each ambition requires transformational change for the North, requiring a combination of investment, policy change and behavioural shift to be achieved. To be successful, we must develop and agree holistic solutions across policy areas.

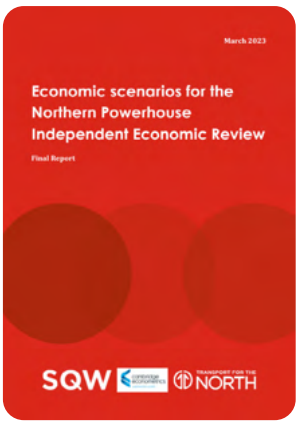
3.2.1 Strategic ambition: transforming economic performance

Transport for the North was established in recognition of the opportunity for the UK to create a more prosperous and productive North that builds on its economic strengths and assets, creating a stronger, more coherent and inter-connected economy.

We can realise the benefits of agglomeration by joining up economic centres. This reduces barriers to trade for businesses and expands job opportunities for people. This can help the region gain a size and scale of economic activity that can rival some of the largest and most productive places in the world and can ensure that the whole region is greater than the sum of its parts. Transforming connectivity is fundamental to transforming the North's economy, and this Plan sets out the strategic ambitions necessary in transport - aligned with other policy levers and investment (such as innovation, skills and health) - to enable that to happen.

The North has a historical productivity gap with the rest of England. Productivity gaps also exist across the North itself. The NPIER identified the lack of agglomeration as a key weakness of the North's economy, and identified poor transport connectivity as a key barrier to creating integrated labour markets that can drive sustainable productivity growth across the whole region.

Since 1981, the North's economic value per person (measured as Gross Value Added - GVA) has been typically 10-15% below the average for the rest of England, excluding London. The most recent available data for 2021 reveals that gap remains at 10.6% below the rest of England average (excluding London)[4].



March 2023

The NPIER identifies the fundamental need for transport investment to provide more (and faster) passenger and freight connections between the North's economic centres, as well as to other parts of the UK and international gateways, to unlock sustainable economic growth. However, it also highlights a widening of the productivity gap between the North and other parts of England (less London) since 2016. The challenge has grown, but the potential opportunity remains as strong as ever.

Alongside a baseline 'business as usual' scenario in the updated NPIER, the four other scenarios are:

- **A** A net zero scenario with a strong focus on green innovation and growth
- **B** Technology transformation, supporting research, innovation, entrepreneurialism and technology adoption
- **C** Inclusive productivity, interventions to support the health, well-being and skills of the Northern workforce
- **D** Development supply, designed to boost the supply of commercial property and domestic housing.

Modelling all four scenarios together gives the fully transformational scenario, which underpins the STP. Under this, GVA growth and job creation would surpass the ambitions we set for the North in the NPIER 2016. Productivity would also be higher (by 2050) than the rest of England (excluding London). This would result in an economy in the North that would be £118bn larger by 2050 than current forecasts. Significant additional investment could result in strong economic and fiscal returns to the UK economy and the public purse. The return on investment, excluding the wider societal benefits and those of achieving net zero, would be around 2.8 times the investment, with additional revenue back to the public purse of around £720bn[5].

To achieve the NPIER transformational scenario a step change in funding and outcomes is required across a range of policy areas including skills, innovation and transport. This plan sets out our connectivity requirements to support the North to reach the NPIER transformational scenario, more widely. We will continue to work with Northern partners to refine the evidence base and identify the other policy interventions necessary to achieve this economic ambition.

3.2.2 Strategic ambition: rapid decarbonisation of surface transport

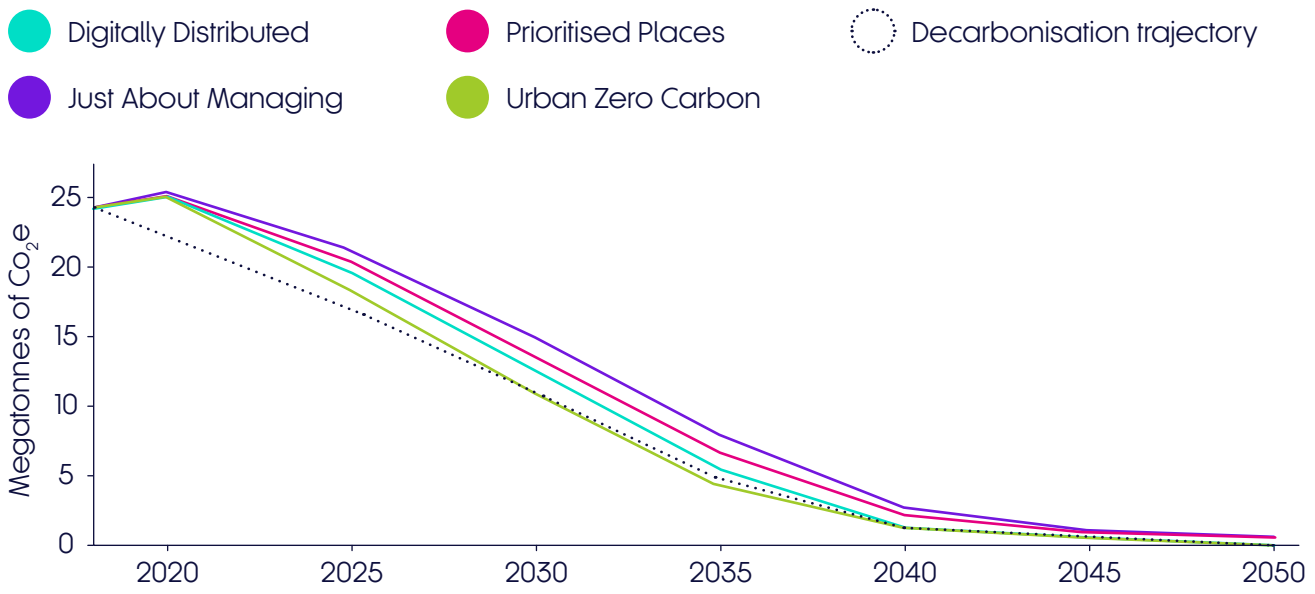
We are committed to a pan-regional near-zero carbon surface transport system by 2045. The North is ambitious in tackling carbon emissions and wants to go further and faster than Government policy.

The benefits of transport decarbonisation extend far wider than reducing greenhouse gas emissions and the effects of climate change. Decarbonising our transport system can drive clean economic growth, as well as unlocking health, natural capital and wider social value benefits.

TfN and our partners have committed to a regional near-zero carbon surface transport system by 2045, allowing a cumulative total of about 300 mega-tonnes of CO_2 equivalent (e) to be emitted between 2018 and 2045. We have set interim milestones including a 56% reduction in emissions by 2030 and a 96% reduction by 2040. Our projections show that without immediate action to reduce surface transport emissions faster than our current rate, we will exceed our carbon budget from around 2030. The level of commitment that will be needed to achieve our trajectory in this area is highlighted within our Decarbonisation Strategy (2021)[6].

Dec 2021

Figure 3.2: Total emissions by scenario compared to the decarbonisation trajectory



Many of our partner authorities have committed to achieving close to zero or net zero carbon targets prior to 2045. West Yorkshire Combined Authority and Greater Manchester Combined Authority have committed to a 2038 whole economy net zero target, while Leeds City Council and Blackpool Council have adopted 2030 dates.

Taking a systems approach to decarbonisation means we make best use of existing infrastructure and systems, ensuring the prudent use of natural resources and minimising the embodied carbon in our system. This emphasis on working with what we already have means that shifting towards more sustainable travel behaviours is one of the fundamental requirements to successfully hitting our decarbonisation trajectory. Where new infrastructure is required, it will be important to maximise the re-use and recycling of materials. While the North wants to go further and faster, that must be delivered in a fair way, reducing levels of car dependency and facilitating modal shift to public and active travel modes, whilst also recognising the additional challenges faced by our rural areas and their greater dependence on private vehicles for journeys. It is why this Plan provides a policy framework for interventions that can reduce private vehicle mileage in the context of place, to achieve the societal and environmental outcomes a prosperous North requires.

Furthermore, we must continually reassess how carbon and climate change effects are considered within scheme appraisal to ensure sufficient value is placed on these factors. A zero-carbon transport system must be at the core of public policy making and investment decisions. As the effects of climate change on our transport system grow, we will need an increasing focus on resilience and adaptation, in relation to both planned infrastructure and existing networks.

Alongside tackling the climate crisis, and intrinsically linked with it, is tackling the biodiversity crisis. We want to ensure that new infrastructure is designed to minimise any adverse impacts on the natural, historic and built environment. New infrastructure needs to deliver an environmental net gain through aiding local nature recovery, improving our green and blue infrastructure and developing nature-based solutions for reducing emissions. We also need to increase our infrastructure's resilience to the effects of climate change, recognising that access to the natural environment can improve physical and mental health too.

3.2.3 Strategic ambition: enhancing social inclusion and health

This Plan must deliver for everyone who lives and works in the North by delivering better access to opportunities, key services, the natural environment and community life. 3.3 million people in the North of England live in areas in which there is a high risk of TRSE. This equates to 21% of the population of the North, compared with 16% of the population in the rest of England. These issues have a fundamental effect on everyday life, such as limiting access to good quality work, education and healthcare services, and by placing excessive time, monetary and wellbeing costs on people[7].

Eliminating the persistent inequalities in transport between the North and the rest of England will reduce the number of people in the North living in areas at high risk of TRSE by one million and reduce the number of people living in areas with a very high risk of TRSE by 370,000 by 2050.

Our socially inclusive transport strategy has helped us understand the types and levels of transport infrastructure and services that are needed to deliver an inclusive transport system.

We need greater investment and faster improvements in areas where there is a high TRSE risk. Our research tells us that the high level of car dependency is the key driver of TRSE in the North. This has been exacerbated by declining bus service provision, which has reduced the travel choices for the most vulnerable people in our communities. This trend has been amplified by the impacts of the covid-19 pandemic, which has dampened demand for (and therefore the commercial viability of) many rural, and some urban, bus services.

The impacts of TRSE include the cost and time entailed in using the transport system, the linked stress and anxiety and how it acts as a barrier to jobs, training and healthcare. Together, these impacts can contribute to a vicious cycle of poverty, isolation and poor access to basic services.

To address TRSE we need to transform the quality, availability and cost of our local public transport services, alongside the rollout of safe, convenient, and accessible routes for walking, cycling and wheeling that connect communities to key destinations. A co-ordinated approach is required to ensure strategic and local transport investment programmes are aligned towards this aim, including complementary planning and digital connectivity policies. Equally, more opportunities for safe active travel, bring not only health and wellbeing benefits from more physical activity, but also greater economic opportunities. If people feel safer on a bus route or riding their bicycle to work, it could encourage behaviour change and open up more employment options.

TRSE is geographically concentrated, reflecting the combination of poor access to key destinations with the transport options available, high levels of inequality of access between transport modes, and high levels of vulnerability to social exclusion among the population. In the North, that risk is greatest in rural towns and urban fringes, with 35% of those living in these areas at a high risk of TRSE. Smaller cities and larger towns, outside of the major conurbations, have elevated levels too. Fragmentation, unreliability, and the affordability of public transport are contributory factors, with poor conditions for active travel, meaning these places see more forced car ownership.

As well as geographical concentrations, TRSE is also concentrated among specific population groups. Those on low incomes and in insecure work, people with disabilities and long-term health conditions, and carers are particularly likely to be affected. These populations face greater constraints on their transport choices, greater consequences when their journeys go wrong and often need to travel in ways that differ from the best served commuter routes. These inequalities have been exacerbated by rising inflation and falling real wage levels, with these populations facing further cost constraints and greater financial stress.

Our ambition is to reduce the inequalities entrenched in our current transport system, and to move to a system that delivers for all areas and communities across the North. The place-based approach that underpins this Plan is key to reducing TRSE across the North, underpinned by a framework of policy and investments required to tackle social exclusion at a local user level.

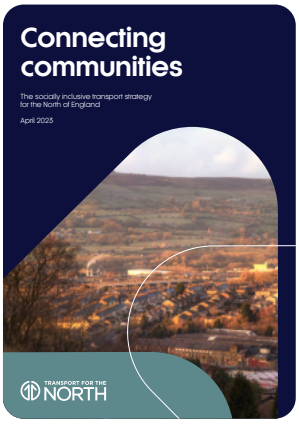
This means eliminating transport poverty, targeting investment in parts of the North with the greatest need, and enabling modal shift away from car dependency and towards enhanced public transport and active travel options. These enhancements require a combination of improved coverage, frequency, affordability and reliability, the transformation of car-dominated environments, the development of strategic active travel routes, and ensuring that the system is accessible from end to end. This will deliver sustainable increases in income levels, longer and healthier lives, and higher levels of community integration and wellbeing.

This approach to addressing TRSE will also support reductions in health inequalities and poor health outcomes linked to the transport system, which disproportionately impact deprived areas and communities. We want to eliminate harmful levels of nitrogen dioxide pollution on the MRN removing the need for air quality management areas (AQMAs) linked to nitrogen and particulate pollution from transport, transform levels of uptake of active travel, and eliminate deaths and serious injuries on the network. We also want to ensure reductions in noise pollution from the road and rail network and reduce severance effects caused by road and rail infrastructure. This will address the key drivers of poor health that come from the transport system, delivering improvements to the deprived areas and communities that are currently most impacted.

3.3 Our connectivity priorities

The North has several strong economic, social and environmental assets that are inter-linked and inter-dependent, and this Plan seeks to build upon and strengthen these linkages. Achieving transformational growth that is socially inclusive and meets the legal requirement to decarbonise the economy will require a strong focus on green innovation and growth, technological transformation, labour market participation, wellbeing and skills.

However, as the evidence shows, our current transport system is holding us back. Poor connectivity is constraining the movement of people, goods and services around the North and with other parts of the UK. While at a local level, our transport networks do not provide our cities, towns and rural communities with sufficient access to jobs, health and leisure without owning a private car.



April 2023

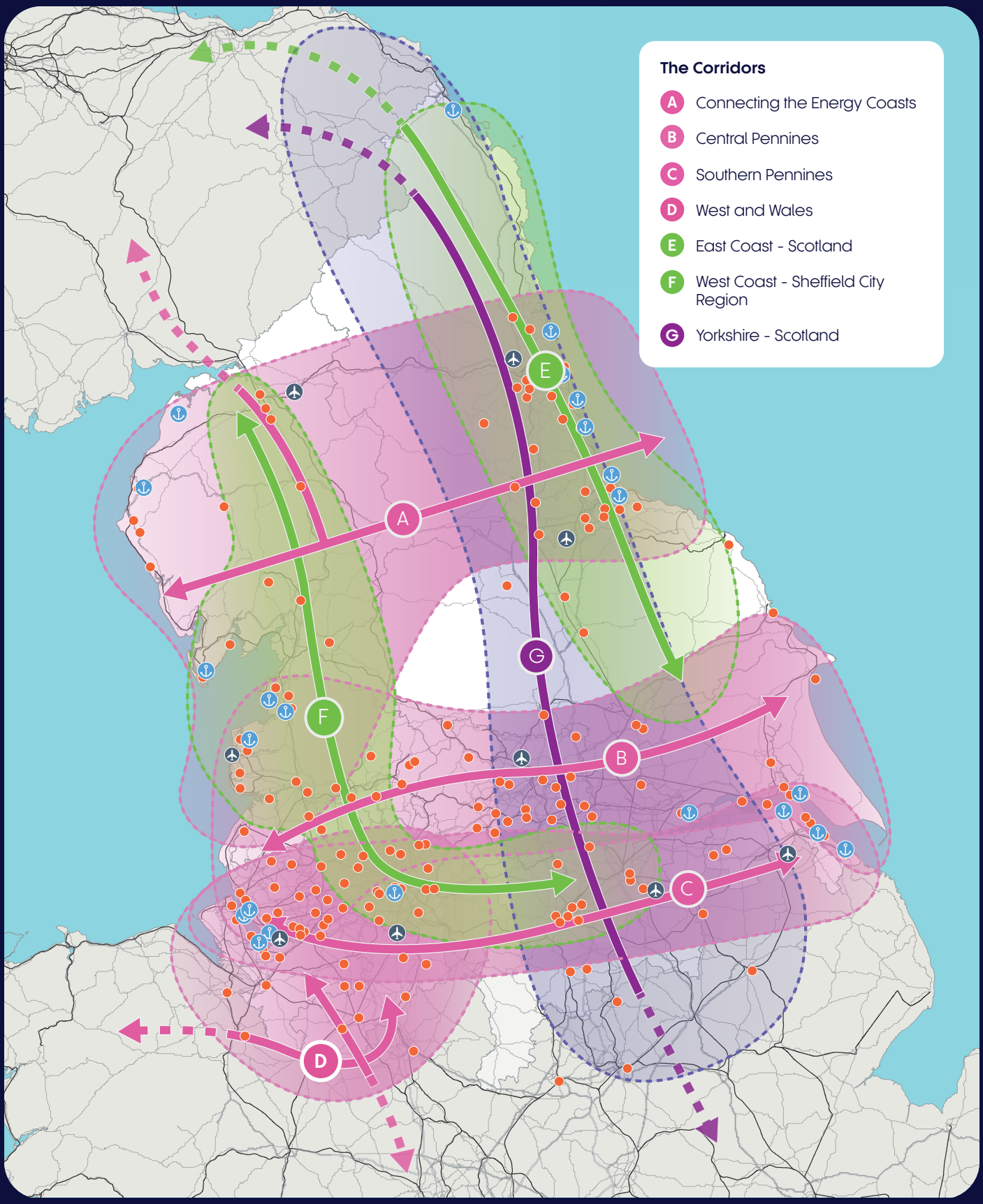
To achieve our vision and strategic ambitions, we need to address these connectivity challenges by creating a transport system for the North that enables:

- Strong interdependent and integrated labour markets, working collectively to drive up productivity and growth through agglomeration.
- Fast, frequent, and reliable connections between our economic centres for goods, people, and business; with equally strong outward facing connections to other parts of the UK and to our international gateways.
- Acceleration of the decarbonisation of our transport system; as well as reduced car dependency both within and between places.
- Safe, reliable and accessible public transport networks, both inter-city, intra-city and locally to open access to opportunities for all communities across the North.

TfN has three connectivity priorities:

- Pan-Northern connectivity
- Connectivity between the North and other parts of the UK, including international gateways
- Local connectivity within places

Connections across the North: We have identified seven **Strategic Development Corridors (SDCs)** which connect communities to the key economic assets and clusters in a sustainable manner[8].



Each corridor represents an area where our evidence identifies that investment in transport infrastructure will unlock and enable transformational economic growth - interlinking **local transport plans (LTPs)** with regional, national and international connectivity.

Our SDCs are individually designed to meet the needs of people and businesses from a regional perspective. They present multimodal transport corridors critical to supporting the North's ambitions for transformational economic growth according to our evidence base. They have shaped and informed our advice to Government since the first STP. This approach means TfN and partners can maximise the benefits of any significant new strategic infrastructure investment, ensuring that the pipeline of transport interventions aligns with national policy, and local transport and spatial plans including housing.

Strategic Development Corridor	Assets connected
Connecting the Energy Coasts	— Low-carbon energy and research assets — Visitor destinations — Economic centres and assets — Ports — Airports
Central Pennines	— Major economic centres — Aerospace manufacturing cluster — Ports — Airports
Southern Pennines	— Major economic centres — Visitor destinations — Ports — Airports — Low-carbon energy and logistics (e.g. Energy Estuary in the Humber)
West and Wales	— Economic centres and assets — International and key national transport hubs
East Coast Mainline – Scotland	— Advanced manufacturing clusters — Logistics assets — Energy industry — Economic assets and clusters — Visitor destinations — Ports — Airports
West Coast Mainline – Sheffield City Region	— Advanced manufacturing clusters — Visitor destinations
Yorkshire to Scotland	— Economic centres and assets — Airports — Rail hubs — Intermodal freight terminals

Connections to and through the North with the rest of the UK, including international gateways

As well as improving pan-Northern and local connectivity, in order to realise the North's economic potential we must also ensure our transport system enables our business community to compete on the national and global stage. It needs to be easier and more attractive for businesses and entrepreneurs to work together, and reach customers and suppliers across the North, the UK and the rest of the world.

TfN recognises the importance of our cross-border communities and economic areas, as highlighted through many of our SDCs, which extend into Wales, Scotland, and the Midlands. We also recognise the value of investing in places that aren't within the North but can help the logistics sector move goods more efficiently. This includes places like Ely where investment can help strengthen connectivity for freight flows from the North to the southern ports and Felixstowe.

The North is unique in having direct surface and sea connections with all three other countries of the UK, as well as providing the conduit for much of the traffic and goods that come into England from Scotland, Northern Ireland and north Wales. Tackling key Northern bottlenecks and building capacity for growth can unlock wider benefits for Scotland, Wales, Northern Ireland, the Midlands and other English regions.

The **Union Connectivity Review (UCR)** has shown how improved transport connectivity across the UK can support economic growth and quality of life in all parts of the UK. Like our SDCs, the UCR supports a multimodal corridor-based approach for network planning, connecting the major cities, economic regions, airports and ports across the nation. TfN supports the recommendation of the UCR to create a UK wide multi-modal strategic transport network.

Local connectivity needs

Our previous Plan outlined the importance of local connectivity and multimodal integration in providing door-to-door sustainable transport for people and goods. This will need to create a genuinely attractive alternative for car use for a wide range of journeys, including those that start locally but end further afield. This includes investing in sustainable surface access to international gateways for passengers and freight, recognising our ports and airports as key economic assets. This is one example of the need to align investment across our transport system to achieve an integrated, affordable and connected network, that enables consistent choice even for longer distance trips. That will require a mix of technology, behaviour change and mode-shift solutions. All of which need to be underpinned by significant investment in bus, rail and active travel networks to enable greater choice to the user.

4.

The case for change

4.1 The North today

To successfully plan for our region's future and unlock its full potential, we must first understand how it looks today. The North of England currently has a population of 15.6 million people, 23.2% of all people in the UK[9]. The North is a hugely diverse region in terms of both built and natural environments, as well as the types of communities and businesses that are found here. It is home to some of the largest conurbations in the UK, as well as large rural areas, with a mix of communities of diverse backgrounds and circumstances found in both. Poor connectivity between these places means our economy is underperforming and opportunities for the people of the North are constrained.

The North has outstanding natural assets and physical geography, as well as being home to a wide range of valuable landscapes, townscapes, coastlines and cultural heritage features. It has five of the UK's 15 national parks, six UNESCO world heritage sites, 168 listed blue flag beaches, 309 registered parks and gardens, over 5,000 scheduled monuments and nearly 70,000 listed buildings[10].

Large areas of ancient woodland can be found in the North, particularly in Cumbria, the Peak District and the North York Moors. The North's cities and historic towns are renowned for their culture, heritage, sport, leisure, and events offer. The North boasts several cities of culture including Liverpool (European Capital of Culture 2008 and Eurovision host 2023), Hull (UK City of Culture 2017), Leeds (Year of Culture 2023) and Bradford (UK City of Culture 2025).

The Pennines play a defining role in the region's physical and economic geography, creating the dramatic landscapes of our national parks and **Areas of Outstanding Natural Beauty (AONBs)**. They also shape the North's polycentric economic structure, its transport networks and its links to other parts of the UK. The North's towns and cities are distinctive in their size and spatial proximity when compared to concentrations in other countries[11]. Indeed, the North of England is arguably one of the most polycentric regions in Europe. Furthermore, with the Pennines acting as a geographical barrier to road and rail routes, the region's physical geography splits it into East and West.

Transport affordability is a significant part of the social exclusion challenge in the North, and constrains economic growth. Access to education and training, higher paying and more secure job opportunities, and access to childcare are all constrained by transport affordability. This creates a vicious cycle in which affordability challenges constrain income increases and the lack of income increases contributes to affordability challenges.

The transport affordability challenge in the North is long-running but has worsened in the last decade. Over this period, rail fares and driving costs, both of which skew towards higher income groups, have increased by 38.4% and 43.3% respectively. Concurrently, bus and coach fares, which are more commonly used by those on lower incomes, have increased by 58.4%. This is significantly above the level of average wage growth over this period of 42.3%[12]. This distributional impact has been worsened by a combination of real terms fuel duty cuts and cuts to government support for local bus services, and is highly regressive.

As well as these average increases, the fare structures in the public transport network often place higher cost burdens on lower income populations. For example, even where the distance is equivalent, a single stage trip between a suburb and city centre is usually cheaper than a multi-stage trip between neighbourhoods, or to a peripheral industrial or service area. This means that fare structures benefit trips disproportionately taken by middle- and higher-income groups, over those more commonly taken by lower income groups. Similarly, season tickets offer significant discounts to those with consistent commuting patterns and the ability to pay up front, which is more common among middle- and higher-income groups.

The poor active travel conditions and car-dominated environments widely present in towns and cities in the North also contribute to this affordability challenge. The quality of the environment, particularly streetscape and walking conditions, influences spending in local centres. These conditions are therefore part of a vicious cycle that has contributed to the loss of shops and services from local town centres into out-of-town centres that lock in car use. Consequently, low or no-cost active travel trips are replaced by relatively more expensive modes, and levels of forced car ownership increase.

Our evidence also shows that the current cost-of-living crisis has added to these issues of transport affordability and has led many to change why, where, and how they travel. As well as overall increases in levels of financial stress, falling real income levels have disproportionately fallen on population groups that were already facing greater transport affordability challenges. This includes those on low incomes and in insecure work, women, some ethnic minority communities, and disabled people[13].

4.2 The North's economy

In 2021, the North contributed almost £386bn GVA, equivalent to almost 19%, to the UK economy[14]. Over the last decade (2011 to 2021) the North's economy has grown by £100bn GVA, and the region continues to contribute strongly to the UK economy.

The region is home to around 1.1 million businesses, and the number of businesses increased by over 15% (or 141,000 between 2012 and 2022)[15]. In that period, the North's growth in total businesses also outperformed the rest of the UK.

Employment creation has been strong over the past decade - the NPIER 2023 reports that just before the covid-19 pandemic the number of jobs in the North had increased by almost 300,000 since 2016. In the North there are over 500,000 more people in employment since 2012, and employment is expected to continue to grow in the coming decades. At present 7.31 million people are in employment across the North[16]. TfN's research on labour markets and connectivity shows the limited access to skilled employment opportunities faced by many Northern graduates, compared to the millions of opportunities within the London and South East labour markets.

According to 2021 data, just 37.4% of the North's population are qualified to National Vocational Qualifications level four and above, compared to an average of 43.5% across England as a whole[17]. Employment growth may have been strong in recent years in the region, but many of these jobs are in relatively unproductive and low-wage sectors such as accommodation, food, service and hospitality along with parts of the care sector.

The North's economic strengths, as captured in the NPIER, are four prime and three enabling capabilities. These are highly productive and highly skilled sectors that with the right investment could deliver stronger growth and even higher productivity.

Figure 4.1: The prime and enabling capabilities of the North

Prime capabilities

Manufacturing

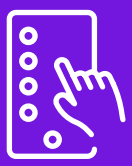
The North has strengths in advanced manufacturing, including through highly productive, automated and digital manufacturing techniques and processes. There is also a strong presence of automotive manufacturing in the North. These include expertise in textiles, research and design, and metallic and non-metallic production processes.

Energy

In 2022, the North generated more than half of England's total renewable electricity[105]. The North's energy strengths include offshore wind, nuclear research and processing, new technologies, including biomass and hydrogen and electricity distribution. Developing new technologies for energy security, production, distribution and storage is also crucial.

Health Innovation

The North has a strong health innovation presence, with pioneering clinical research particularly in life sciences, cancer and ageing.



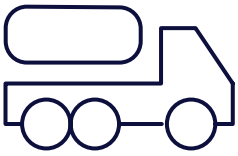
Digital

The North has strengths in cognitive computation, simulation/modelling, financial technology, cyber security, high performance computing, data analytics (big data) and media. Seven of the UK's 27 key tech clusters are in the North.[106]

Enabling capabilities

Financial and professional services

This sector provides key business, legal, insurance and financial services that support the North's prime capabilities and perform important day-to-day functions which keep the wider economy functioning.



Logistics

Through significant private sector investment and innovation, airports, ports, and wider logistics are delivering more efficient Northern infrastructure. The North has existing capacity to relieve demand, drive economic growth and enhance the UK's international connections and trade links.

Education (primarily higher education)

Research capability and technical expertise that underpins the prime capabilities provides access to global education and research networks, provides a supply of skilled labour, and attracts overseas students who maximise education providers' income.

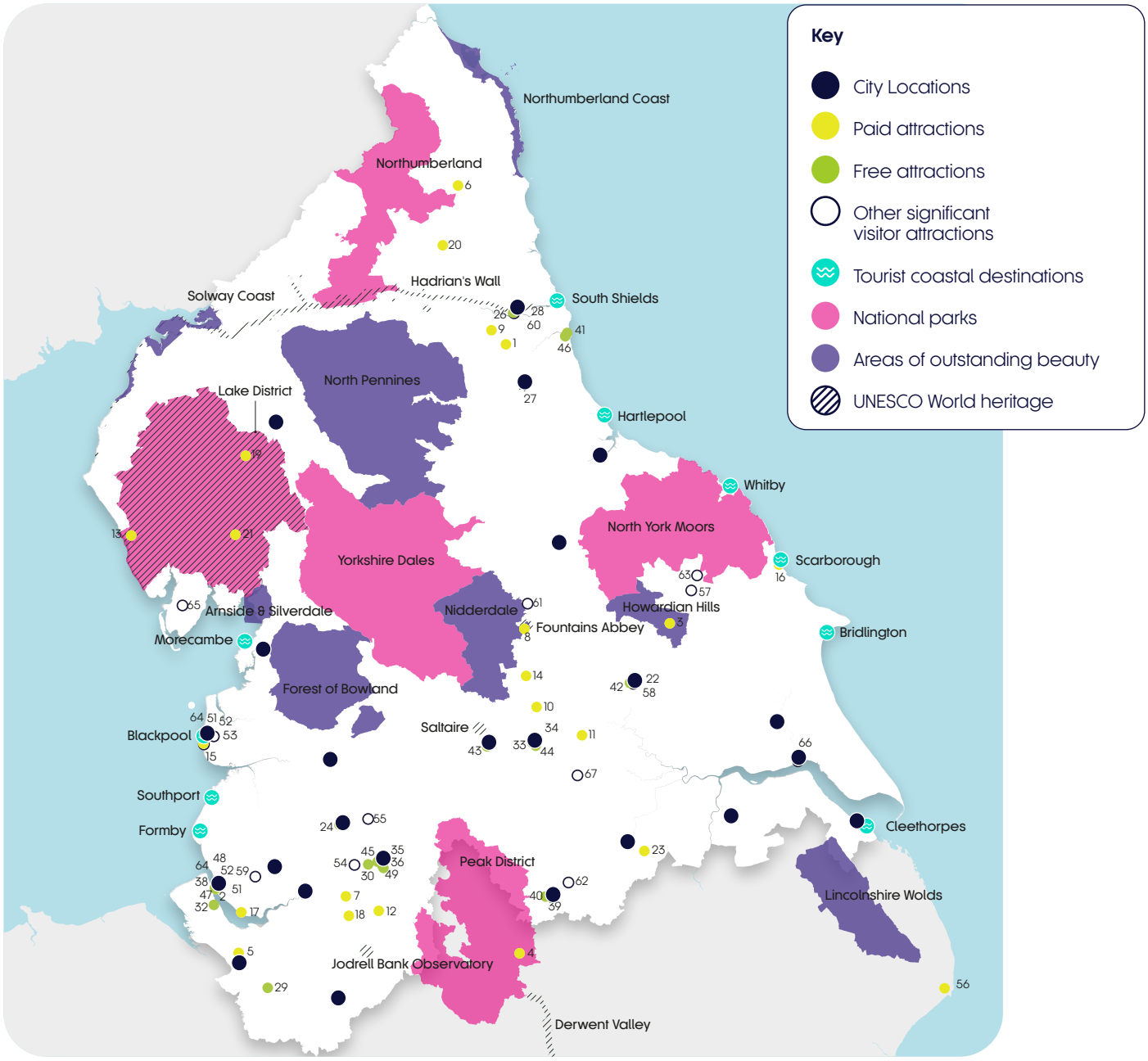
Figure 4.1 highlights the importance to the North's economy of its energy sector, particularly supporting green growth through green generation of energy, low carbon technologies and the development of carbon capture and storage solutions.

Research and innovation have been integral to the North's economic growth in recent decades. Over 20 universities across the North support research and innovation, as well as collaborate with public and private partners in areas like chemistry, materials, textiles, and process engineering[18]. The eight most research-intensive universities in the region collectively employ 119,000 people and attract £1.26bn to the North in annual research funding[19]. However, while the North has significant research capability, regional collaboration is only just emerging through hubs, as seen in other parts of the UK including the South East and Midlands, which could unlock further economic opportunities[19].

International connectivity is a key driver for economic growth in the UK and for the North. In 2018, aviation contributed £22bn to the UK economy while air freight and its supporting businesses contributed £7.2bn[20]. TfN's International Connectivity Report (February 2017) identified that international passenger connectivity contributed £5.5bn towards the North's GVA[21]. More recently, Visit Britain data from 2022 shows there were 4.2 million visits to the North by international visitors, generating expenditure of £2.5bn[22]. The North's seaports are also important for international freight connectivity, with further opportunities arising from the newly designated Freeports.

Alongside these prime and enabling capabilities, we have a range of cultural, historical, and natural assets across our diverse physical landscape. These not only enhance the quality of life for residents in the North, but means the region attracts high levels of visitors. The North's vibrant and varied visitor economy comprised approximately 39,000 businesses employing approximately 579,000 people in 2019, while also supporting additional businesses and jobs through the supply chain. It attracted 420 million visits in 2019, with visitor spend of £21.05bn, generating a total net GVA contribution to the North's economy of £12.33bn[23]. There are other benefits too, such as improving the recognition and image of the North nationally and internationally, encouraging inward investment and facilitating improvements to local amenities, urban realm and transport links which benefit residents and businesses as well as visitors.

Figure 4.2: The North's main visitor economy assets



Source: Atkins and The Leisure Consultancy (2021) Visitor Economy and Transport in the North of England, available here

National Parks	Areas of Outstanding Natural Beauty	UNESCO World Heritage Sites
Lake District	Arnside and Silverdale	Derwent Valley Mills
North York Moors	Forest of Bowland	Durham Castle and Cathedral
Northumberland	Howardian Hills	Hadrian's Wall
Peak District	Nidderdale	Jodrell Bank Observatory
Yorkshire Dales	North Pennines	Liverpool – Maritime Mercantile City*
	Northumberland Coast	Saltaire
	Solway Coast	Studley Royal Park
		The English Lake District

* At the time of this study (January – July 2021), Liverpool – Maritime Mercantile City remained designated as a UNESCO World Heritage Site

The North's Visitor Economy Assets

Paid attractions (>200,000 visitors per year)		Free attractions (>200,000 visitors per year)		Other significant attractions, without published attendance figures	
Number on map	**Attraction**	**Number on map**	**Attraction**	**Number on map**	**Attraction**
1	Beamish - The Living Museum of the North	24	Bolton Museum, Aquarium and Archive	51	Blackpool Pleasure Beach
2	The Beatles Story	25	Customs and Excise National Museum	52	Blackpool Tower
3	Castle Howard	26	Discovery Museum	53	Blackpool Zoo
4	Chatsworth	27	Durham Cathedral	54	Chill Factore
5	Chester Zoo	28	Great North Museum: Hancock	55	East Lancashire Railway
6	Cragside House, Gardens and Estate	29	The Ice Cream Farm	56	Fantasy Island
7	Dunham Massey Hall	30	Imperial War Museum North	57	Flamingo Land
8	Fountains Abbey	31	International Slavery Museum	58	JORVIK Viking Centre
9	Gibside	32	Lady Lever Art Gallery	59	Knowsley Safari Park
10	Harewood House Trust	33	Leeds Art Gallery	60	Life Science Centre
11	Lotherton Hall & Gardens	34	Leeds City Museum	61	Lightwater Valley Theme Park
12	Quarry Bank Mill and Garden	35	Manchester Art Gallery	62	Magna Science Adventure Centre
13	Ravenglass and Eskdale Railway Co Ltd	36	Manchester Museum	63	North Yorkshire Moors Railway
14	RHS Garden Harlow Carr	37	Merseyside Maritime Museum	64	SEA LIFE Blackpool
15	Sandcastle Waterpark	38	Museum of Liverpool	65	South Lakes Safari Zoo
16	Scarborough Cliff Railway	39	Museums Sheffield: Millennium Gallery	66	The Deep
17	Speke Hall, Gardens & Estate	40	Museums Sheffield: Weston Park	67	Xscape
18	Tatton Park	41	National Glass Centre		
19	Ullswater Steamers	42	National Railway Museum		
20	Wallington House, Gardens & Estate	43	National Science and Media Museum		
21	Windermere Lake Cruises, Bowness	44	Royal Armouries Museum		
22	York Minister	45	Science and Industry Museum		
23	Yorkshire Wildlife Park	46	Sunderland Museum and Winter Gardens		
		47	Tate Liverpool		
		48	Walker Art Gallery		
		49	Whitworth Art Gallery		
		50	World Museum Liverpool		

Source: Visit Britain Annual Survey of Visits to Visitor Attractions, 2019; additional attractions identified by desktop research and stakeholder feedback

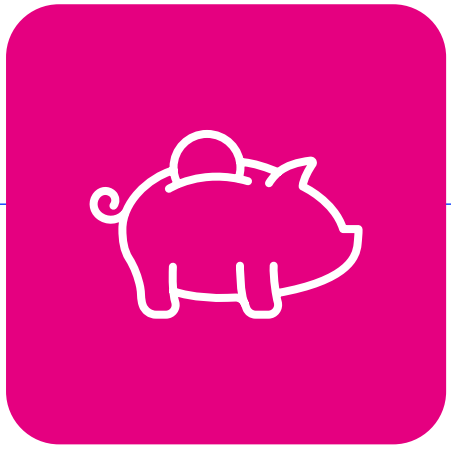
4.3 Economic and social constraints

As highlighted above (and detailed in the NPIER), the North's economic potential is enormous, and there are opportunities to leverage this potential to address social exclusion and decarbonisation challenges. However, the region is constrained by poor connectivity between its economic centres and many of its cities and towns are too small or isolated to fully take advantage of the positive externalities associated with agglomeration and market opportunities. Agglomeration enables firms to access a larger and deeper labour force, share inputs, access supply chains and infrastructure, and learn through the exchange of ideas and information. This matters for both city centre-based service sector businesses and in manufacturing clusters. However, if transport connectivity is poor, then these benefits cannot be realised, resulting in lower productivity.

Lower productivity results in lower wages and living standards. The latest figures for 2021 show that Gross Disposable Household Income (total income following tax and redistribution measures) in the North was £18,297, or 82.4% of the average for England as a whole[24]. The figure for the North East was over £600 lower, at £17,663.

This is exacerbated by:

- High levels of poor physical and mental health compared with the rest of England, which contribute to economic inactivity, unemployment, absenteeism among employees and lower productivity. This can form a vicious cycle, with poor economic outcomes also reinforcing poorer health outcomes.
- Entrenched socioeconomic and demographic inequalities linked to ethnicity, gender, disability, social class and age. These inequalities, associated with structural factors as well as to discrimination, constrain the ability of many in the North to access high quality education and employment opportunities.



The North has an ageing population and some of the youngest cities in Europe. It has some of the most and least economically deprived neighbourhoods in England, and is home to some of the most ethnically and linguistically diverse towns and cities in the UK.

This diversity is a key strength of the North's societal landscape, but significant inequalities are also present. The 2019 English **Indices of Multiple Deprivation (IMD)** show that the North has significantly higher levels of multiple deprivation than the rest of England - 43% of areas are in the most deprived three deciles, compared with 25% of the rest of England[25]. As detailed in section 4.2, underlying this are relatively worse outcomes in income, education and employment, the combination of which has accelerated post-industrial decline in many communities across the North.

The underperformance of the North's productivity is closely linked to the poorer outcomes across many indicators, including higher levels of poverty, lower skills, poorer health outcomes, life expectancy and low enterprise rates. Lower wage levels, as well as significantly lower physical, financial and pension wealth compared to the UK average, are holding back investment and spending of private households too, impacting communities and places across the region.

In parallel, the North's housing stock is amongst the oldest and least efficient in the UK. Poor energy efficiency and poor housing quality contribute to fuel poverty and greater prevalence of respiratory diseases, particularly for children and older people.

The combination of poor housing quality and deprivation in income and employment feeds into the high levels of health deprivation evident in the North. In the 2019 IMD, 54% of areas fell into the most deprived three deciles nationally on the measure of health deprivation, compared with 20% of areas in the rest of England. At a local authority level, 18 of the 20 most health deprived **Local Authority Districts (LADs)** in England are in the North. This reflects the combination of lower overall life expectancy and healthy life expectancy, greater prevalence of poor mental health, and a greater overall burden of chronic and acute morbidity[25].

The health challenge present in the North, and the economic and social factors underlying it, are highly entrenched. Indeed, analysis of health inequalities since the 2010 Marmot Review highlighted that "inequalities in life expectancy have increased since 2010, especially for women", that "there are growing regional inequalities in life expectancy", and that preventable mortality remains the highest in the poorest areas of the country[26]. These impacts are increasingly evident earlier in life, with chronic disease increasingly impacting younger people, forming a vicious cycle of health-related poverty and unemployment. Consistent with this, analysis by the Northern Health Science Alliance estimates that 30% of the productivity gap between the North and the rest of England is caused by poor health[27], and that poor health is a major contributor to the higher levels of economic inactivity evident in the North[28].

As well as a growing gap between the North and the rest of England, analysis of progress in the ten years following the Marmot Review highlighted growing inequalities within the North. The gap in life expectancy between the different sub-regions of the North has increased, with the most deprived areas of the North East further behind the most deprived areas of the North West and Yorkshire and the Humber in 2016-18 than they were in 2010-12[29]. This is consistent with the broader patterns of inequality within the North, with the North East affected by higher levels of overall deprivation.

4.4 Connectivity constraints

Lifting the region's economic and social performance is critical to unlock the North's potential. The connectivity challenges in our current transport system must be addressed if we are to achieve our 2050 vision. Our centres of economic and social activity are fragmented by poor transport links, compounded by the physical geography which constrains the movement of people, goods and services around the North and to other parts of the UK. Businesses in the region are also held back by relatively poor inter-city and intra-city connectivity, which restricts access to a wider pool of skilled labour, the frequency and efficiency of business interactions, as well as the movement of goods and services within the North, across the rest of the UK and globally. Together, it prevents the region being a more cohesive functional economic area, which is essential to unlocking its economic potential.

For example, only 27% of the North's population can access 500,000 jobs in under an hour by rail - significantly less than other parts of the UK. Analysis of the current transport networks indicates a significant disconnect between the North's major centres. For example, Washington in Tyne and Wear is currently the largest town in the UK without rail access. While 9.8 million (58%) of people in our region have access to at least one of the North's five largest cities or Manchester Airport within an hour by rail, only 7% of people can access a second destination within that time[30]. This reduces the labour pool available to Northern employers and limits opportunities for individuals, constraining productivity at a pan-regional level, and with wider consequences for social connections, education and the visitor economy.

There are also more specific connectivity constraints for the freight and logistics sector. Despite the availability of a wide range of freight assets, many are not being fully utilised due to several reasons such as lack of joined up infrastructure or attractive alternative logistics solutions. Gaps in connectivity prevail that urgently require investment.

Performance improvements are vital for freight. Great Britain depends on quick and efficient supply chains, and with the rail freight sector growing, we need to ensure that there is the capacity in place to meet that demand.

Increasing the amount of goods moved by our railways has important economic benefits, by reducing congestion on our roads, improving connectivity, and delivering cost, time and reliability benefits for freight customers. Increasing capacity and capability of the railways for freight will help accelerate modal shift of goods from road to rail; this will support a key part of the Government's decarbonisation strategy.

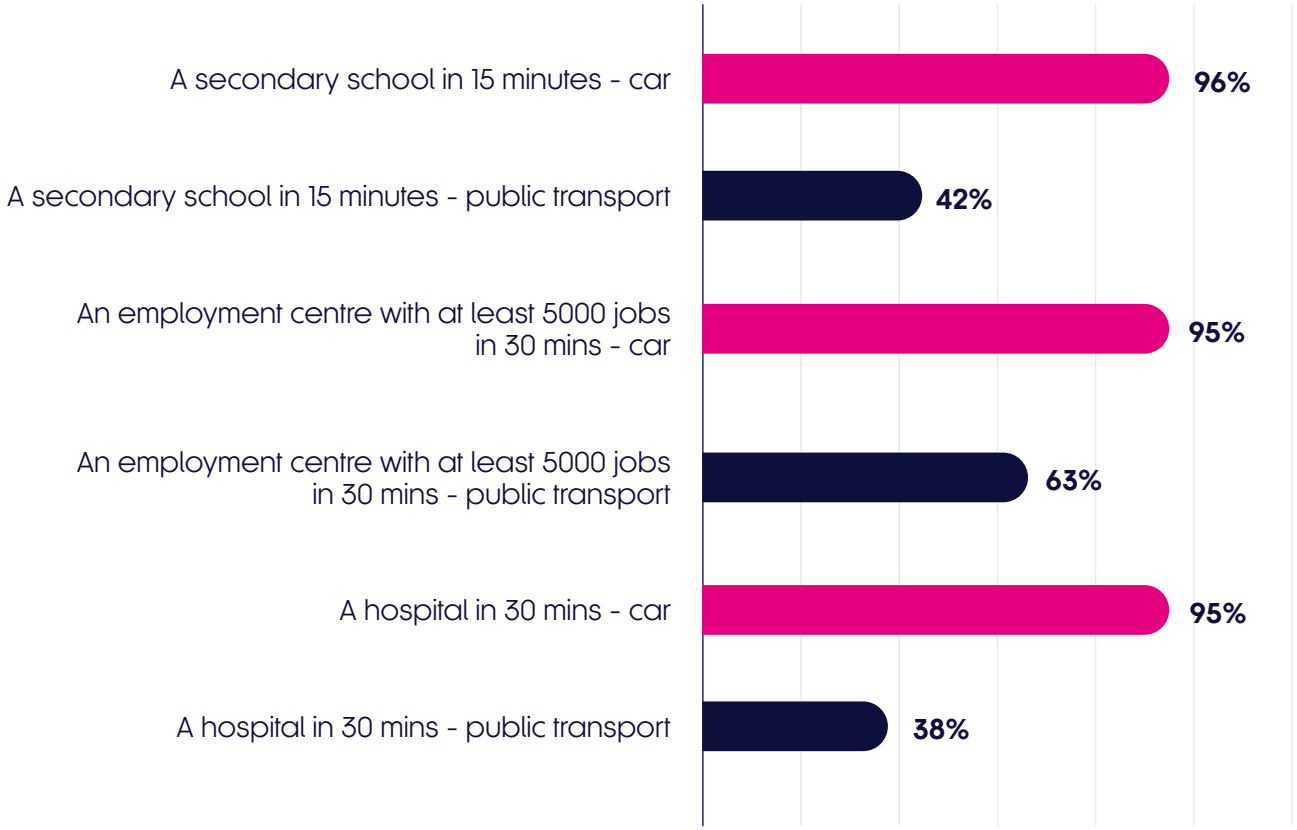
Additional infrastructure will be required to accommodate the extra services needed to cater for growth, to allow reliable operation, and to provide flexibility to the freight market to meet existing and future demand, thereby improving access to business opportunities across the North. Solutions will be required to resolve long-standing network issues which limit the use of rolling stock, constrain capacity, and prevent freight train operators from introducing new services for which there is demand.

Similar problems with connectivity are evident at a more local level. Only 63.3% of the North's population can access an employment centre (such as a town centre or industrial estate) with at least 5,000 jobs within 30 minutes by public transport, compared to 95.3% by car[32]. Inequalities in car ownership nationally compound this issue - with 40% of those in the lowest income quintile having no access to a car or van, compared with just 15% of those in the middle-income quintile[31]. This means that poor access to jobs by public transport disproportionately impacts those on lower incomes, constraining access to secure and high-quality opportunities, and with this the chance for increased incomes and quality of life.

Accessibility to healthcare and other key services is also often very poor: only 37.5% of the North's population can access a hospital within 30 minutes by public transport[32]. Given the well-established link between poor health, disability and poverty, and between poverty and car access, we can see that poor public transport acts as a significant constraint on access to healthcare among populations in need. It is essential that these key services are accessible through the region's public transport network, and that access should be by both sustainable and affordable means. The current accessibility gap reinforces car dependency and forced car ownership and constrains resilience and choice.


Flat Street bus stop
Sheaf Valley

Figure 4.3: Access to services for the North's population



4.5 How do people in the North travel now?

Alongside access to jobs and opportunities, the availability of travel options is a challenge in the North. Around 97% of all personal journeys are made using our roads, amounting to 88% of distance travelled, with 70% of all trips by car, bus and taxi equating to 126 billion vehicle kms per year[73]. Additionally, over 90% of freight lifted by tonnage is moved by road with the remaining by rail and inland waterway (2016 base figures)[34].

This over reliance on internal combustion engine vehicles, which is driven by a lack of reliable alternatives, has significant implications for carbon emissions. Cars, buses, vans and **heavy goods vehicles (HGVs)** within the North of England accounted for about 25 mega-tonnes (95%) of CO_2 emissions in 2018[33]. Nearly one quarter of the UK's total emissions from road users fall within the North of England[33]. Over half of our road emissions are generated by cars, with 28%, a relatively high proportion compared to the UK overall, generated by HGVs. Out of the 8 million registered cars in the North in 2018, nearly 25% were large cars or SUVs, generating typically higher emissions[33]. Emissions from bus and rail represent just 5% of total emissions, which more closely reflects the national picture[33].

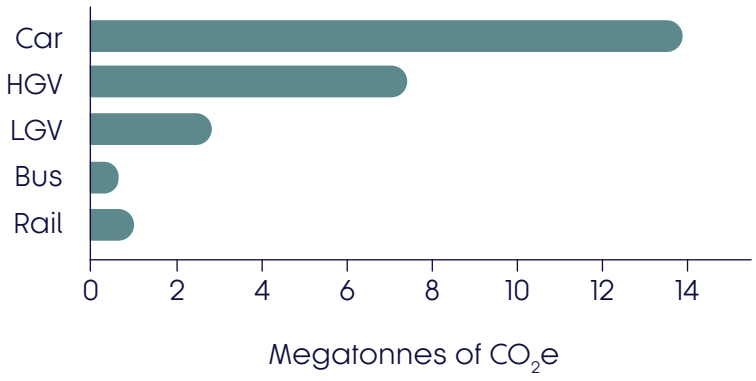
Around 97% of all personal journeys are made using our roads, amounting to 88% of distance travelled, with 70% of all trips by car, bus and taxi equating to 126 billion vehicle kms per year.

The development and deployment of low carbon technologies, such as electric vehicles and hydrogen fuel cells will significantly reduce emissions from road transport as the low and zero emission share of the vehicle fleet grows. Prior to and during this transition, however, substantial modal shift and management of road vehicle demand will be necessary to reduce emissions in the short to medium term, to stay within our carbon budgets.

Figure 4.4: Sources of surface transport emissions in the North in 2018[33]

25 million tonnes of CO_2e

Total megatonnes of CO_2e by vehicle type

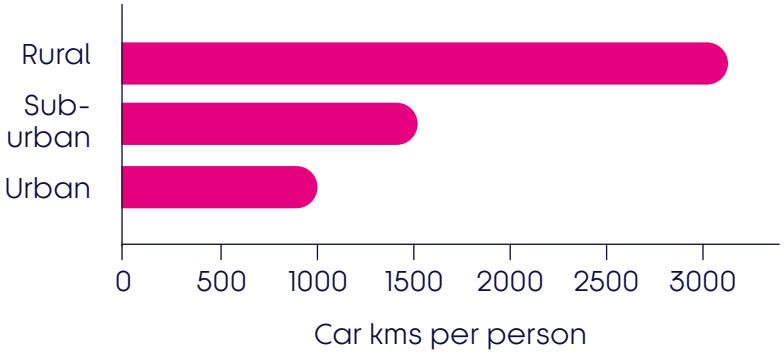


6% of total UK emissions

23% of UK road emissions

126 billion vehicle kms

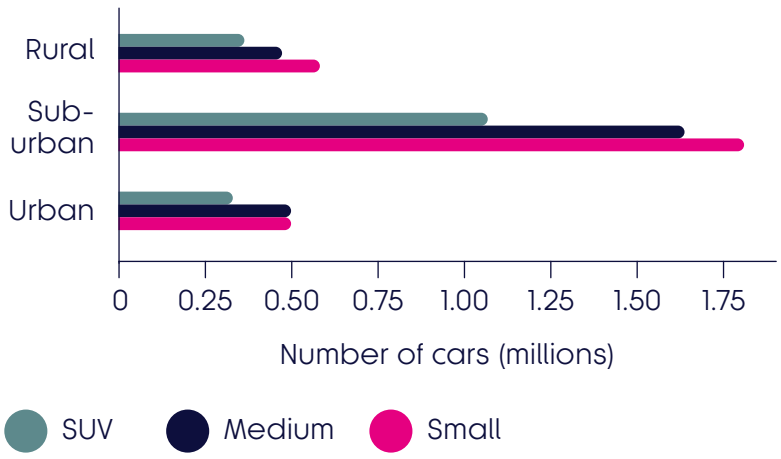
Car kms per person by area type



23% of vehicle kms in the UK (cars, LGVs and HGVs)

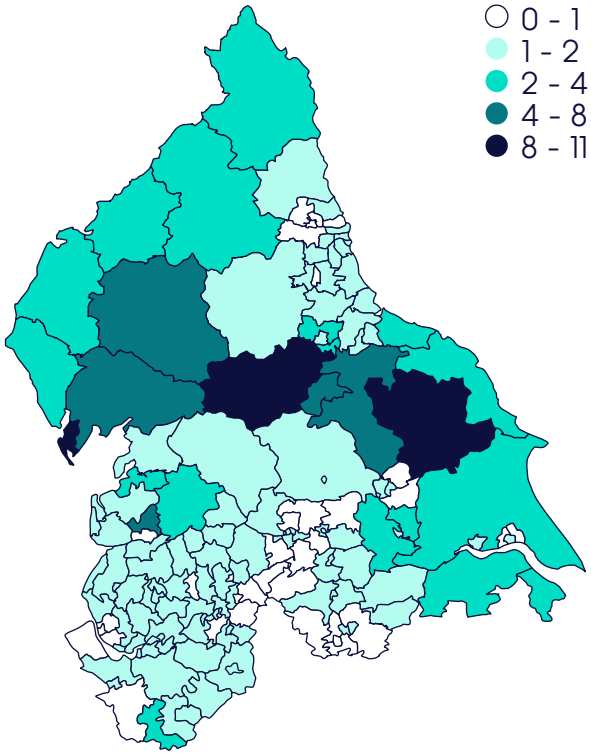
8 million registered cars

Car ownership by area type and segment



23% of registered cars in the UK

CO_2 Emissions (tonnes) per head of population



A significant proportion of our regional emissions emanates from car use, and there has been no evidence of modal shift away from car use over the last decade, as shown in Figure 4.5[107]. In fact, the number of car trips taken per person increased slightly and the number of public transport trips taken per person decreased, driven by the decline in bus patronage[33].

Emissions Intensity (gCO_2/km)

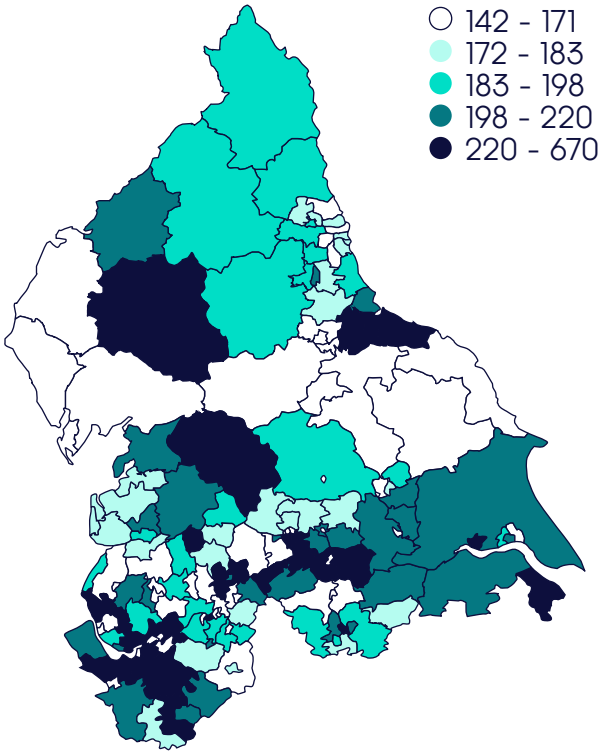
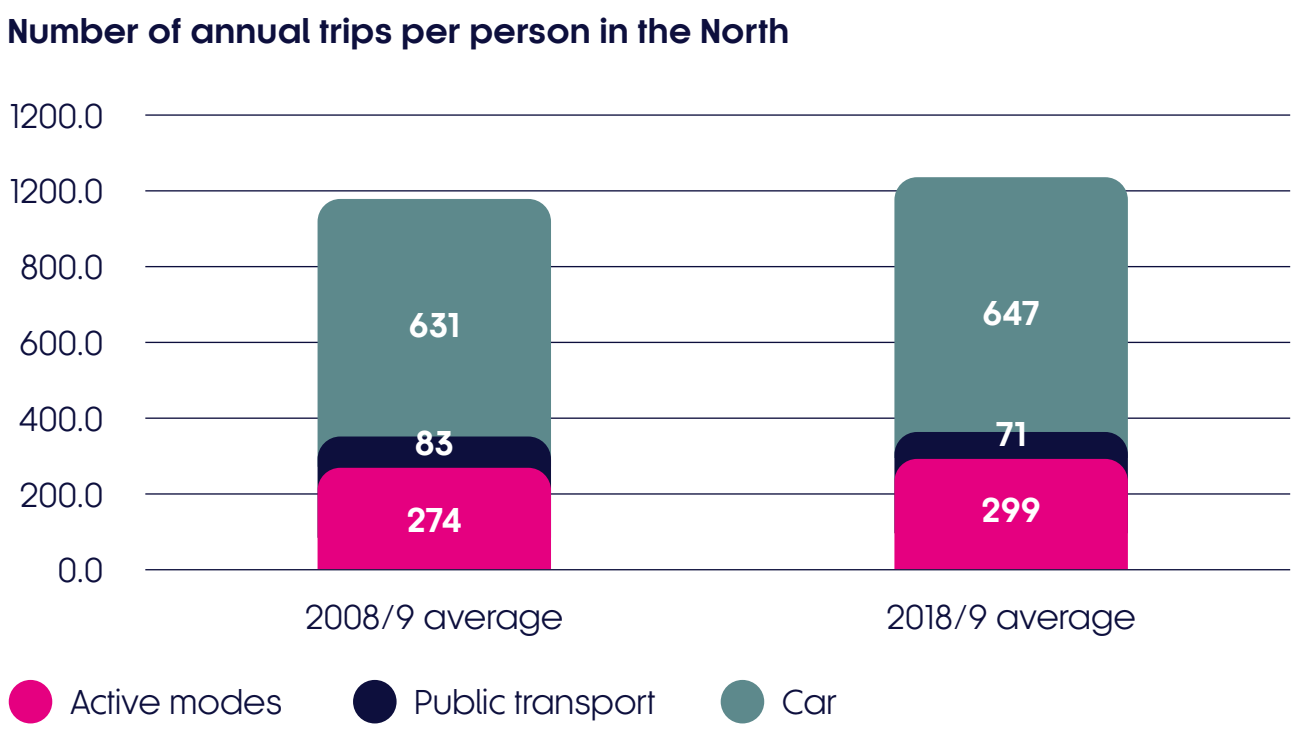


Figure 4.5: Average number of annual trips by modal category[33]



Light rail has the ability to provide a cost-effective and sustainable part of a local integrated transport system in some urban areas. There are light rail networks in Blackpool, Greater Manchester, South Yorkshire and Tyne and Wear. Proposals for a mass transit network are under development in West Yorkshire. In total there are over 200 km of light rail lines in the North:

System	2019/20 (pre-covid) patronage (millions)[35]	Track length (km)[35]
Blackpool Tramway	4.8	18
Sheffield Supertram	10.5	34
Greater Manchester Metrolink	44.3	103
Tyne and Wear Metro	33.1	78
Total	**92.7**	**233**

For a new system, a minimum ridership of more than 3,000 passengers/hour/direction) is usually necessary to ensure cost effectiveness, and this will still be dependent on a number of other factors[36]. Systems require a segregated alignment or to be heavily traffic prioritised. They can penetrate the centres of urban areas, which heavy rail does not.

Light rail can benefit all three of our strategic ambitions:

Decarbonisation

Supporting the transition to net zero carbon and contributing to cleaner air in cities. This is because light rail is one of the least polluting transport modes (and zero emissions at the point of use)[37]. Manchester Metrolink is powered exclusively by renewable energy. A recent (2021) study found that the Phase 3 new routes removed 38.8m car km/ year from the region's roads saving 6,700 tonnes of CO_2 per year[38]. It is estimated that Sheffield Supertram helps to save over 2,000 tonnes of CO_2 per year[37].

Economic Performance

Supporting growth in employment and economic activity in town and city centres in a way that minimises the negative impacts that growth in car traffic would bring, by facilitating redevelopment, regeneration and improved public realm. One study found that the Tyne and Wear Metro contributed around £290.6m to the GVA of the North East economy[37].

Social Inclusion

Contributing to the Government's levelling up agenda by providing better access to jobs, education and training. For example, in an Ipsos MORI study into the impact of a new Manchester Metrolink line on Wythenshawe, 84% of people said the tram contributed most to giving them access to a wider range of places with job opportunities[37]. Additionally, 67% of Tyne and Wear Metro journeys pre-covid were made by people who did not have access to a car[37].

Air quality, health and wellbeing

There are a number of ways in which the transport system impacts the health and wellbeing of people in the North, which reaffirm why we need investment and change.

- **Air pollution:** Transport - particularly road transport - is a significant contributor to asthma, diabetes, lung cancer and dementia. Nitrogen dioxide and PM2.5 (a type of fine particulate matter) pollution is estimated to cause 1.14 million and 1.33 million additional cases of disease respectively across England between 2017 and 2035[39]. Within the North, approximately 5.88 million people live in areas where nitrogen dioxide pollution poses an increased risk of early death[40]. The Department for Environment, Food and Rural Affairs (DEFRA) estimates' from 2019 reveal that background nitrogen dioxide concentrations in the North, align with those areas with the highest vehicle mileage and emissions intensity[41]. The vast majority of AQMAs in the North (132 out of a total of 138) are in place because of nitrogen dioxide emissions from road transport[42].

- **Incidents and safety:** Between 2017 and 2021, 2,041 people were killed and 28,519 were seriously injured in road traffic incidents in the North of England. Of those killed or seriously injured, 39% were drivers or passengers in cars, 24% were pedestrians, 18% motorcycle riders or passengers and 15% were cyclists. Together, this represents a significant burden of mortality and morbidity, with a disproportionate impact on those travelling actively. The most common cause of death among those walking, wheeling and cycling is collisions with cars, while nearly 40% of fatalities among car occupants and motorcycle riders are single vehicle incidents[43].

- **Access to healthcare:** Approximately 390,000 people in the North cannot access a GP surgery within 30 minutes by public transport and approximately 510,000 cannot access a hospital within an hour by public transport[32]. Poor access to healthcare can cause delays in seeking diagnosis and treatment, increases the level of missed healthcare appointments, and limits patient choice[44].

- **Noise pollution:** Noise pollution has a range of physiological and psychological impacts, and chronic exposure to noise pollution increases the risk of heart disease, high blood pressure and depression. These effects occur at a relatively low level of noise, with chronic exposure to traffic noise of only 55 decibels robustly linked with increased levels of coronary heart disease and hypertension[45]. This is equivalent to the level of noise from normal conversation or background music. Modelling undertaken for TfN indicates that approximately 2.5 million people in the North are impacted by harmful levels of road traffic noise, the vast majority of whom are in large urban centres. Noise associated with rail is also likely to contribute to poor health, however the impacts are significantly smaller in scale and more diffuse across the North[46].

- **Physical inactivity:** Physical inactivity is among the largest contributors to mortality, and increases the risk of heart disease, diabetes, musculoskeletal conditions and cancer[47]. The combination of poor-quality active travel infrastructure, car-focused urban design, road danger and high levels of car dependency is a significant limiting factor in levels of physical inactivity[48].

- **Maintaining independence:** Enabling independent travel is important to enable or maintain independent living. For an ageing population, living independently for improve health and well-being, thereby reducing demand on social and health care services.

4.6 Challenges of a changing climate

The **Intergovernmental Panel on Climate Change's (IPCC)** Sixth Assessment Report indicates that the Earth's average surface temperature is set to reach 1.5°C-1.6°C above pre-industrial levels by the early 2030s under all its modelling scenarios, and potentially up to 4.4°C by the end of the century under the highest emission scenarios[49].

Increased extreme rainfall events, storm surges and rising sea levels lead to impacts on transport infrastructure situated near rivers and along our coasts and estuaries, susceptible to direct flooding as well as ground movements caused by soil saturation and erosion. We have already experienced major transport disruption associated with these types of effects on our road and railway networks in recent years, particularly in Cumbria, North Yorkshire, Cheshire West and Chester, and the Yorkshire East Coast.

Equally, extreme weather events, on top of already higher average summer temperatures will see an increase in the number and severity of heatwaves, similar to that experienced across England in the summer of 2022. Increased thermal loading of highway bridges and surfacing can affect their operational structure, while extreme heat can lead to rail buckling and overhead power cable sagging on our rail network. Extreme temperatures could also affect maintenance schedules, with staff being unable to work outdoors.

The world is already seeing extreme weather and climate change cause large economic and societal disruption through impacts upon our built environment, natural resources, markets and supply chains. The IPCC warn of the danger of multiple climate hazards occurring simultaneously and interacting with non-climatic risks, 'cascading risks', compounding the overall effects, and making them increasingly difficult to manage. The latest UK **Climate Change Risk Assessment (CCRA3)** highlighted how such risks could affect our transport networks, for example by preventing repair of other critical infrastructure, or alternatively, failures in energy transmission cascading back into transport failures[50]. Similarly, the Climate Change Committee's Independent Assessment of UK Climate Risk (2021), developed for CCRA3 starkly outlines the risk to transport infrastructure within England as a whole (Figure 4.6), with all identified risks urgently requiring increased levels of investigation and action to start reducing those risks[51].

Figure 4.6: Assessment of risks to transport infrastructure from climate change[51]

Risk or opportunity	England	Northern Ireland	Scotland	Wales
Risk to infrastructure networks (water, energy, transport, ICT) from cascading failures	●	●	●	●
Risks to infrastructure services from river, surface water and groundwater flooding	●	●	●	●
Risks to infrastructure services from coastal flooding and erosion	●	●	●	●
Risks to bridges and pipelines from flooding and erosion	●	●	●	●
Risks to transport networks from slope and embankment failure	●	●	●	●
Risks to subterranean and surface infrastructure from subsidence	●	●	●	●
Risks to transport from high and low temperatures, high winds, lightning	●	●	●	●

The North has unique environmental and heritage assets. While these can pose some challenges for both the operation of the existing transport system and the development of new infrastructure, it also provides the opportunity for deploying robust nature-based solutions to combat the effects of climate change. Those same solutions can also have significant local economic, health and wellbeing and local nature recovery benefits.

Key:

- ● More action needed
- ● Further investigation required (as on the basis of available information, it is not known if more action is needed or not)

Local nature recovery and nature based solutions

The North's natural places are not only vital for our wildlife but also the health and wellbeing of our communities. They provide an opportunity to learn about nature, take part in sport and recreation, or simply relax. A fifth of the North's land area is covered by national parks, and the region has a large number of protected landscapes including six AONBs, as well as a large number of nationally and internationally designated habitats[52]. There are also a range of sites of nature conservation value designated at local authority and community level, including local nature reserves[53].

Although the North covers only a quarter of the total land area of England, it accounts for 70% of all wetland areas, 71% of all moor and heathland, 28% of all forests and 49% of all water courses (rivers and streams)[54].

The North's peat bogs (which comprise 92% of England's upland peat) help moderate our climate by storing vast amounts of greenhouse gases[55]. Those same bogs, along with our forests, wetlands and green spaces, play a vital role in improving our resilience against the worst effects of climate change by attenuating flood waters, providing soil stability and shade.

Therefore, it is unsurprising that, alongside the global climate crisis - and critically interlinked with it - there is a global ecological crisis. The North of England is no exception to this global phenomenon and the Environment Act 2021 gives it greater policy focus. The level of environmental protection enshrined within the Act is relevant to our transport system. It sets a requirement for achieving biodiversity net gain when developing new transport infrastructure, and the need to utilise existing practices and transport estate to help build a nature recovery network across the country.

Regional initiatives such as Nature North[56], the Northern Forest[57], Great North Bog[55], and Wild Ingleborough[58] are already creating new green jobs, enhancing our resilience to climate change, improving the quality of our water, supporting our wildlife and the mental and physical wellbeing of our communities. A step change is now needed in the way we utilise and maintain the significant amount of green and blue infrastructure within the transport estate, with the aim of not just mitigating harm, but also boosting our region's natural capital and creating linkages between our partners' local nature recovery areas.

Change is also required to ensure greater levels of access to nature for all, across the North, and to reduce inequalities in access to nature. The same decline and fragmentation of local bus services in rural areas and urban fringes that is a key cause of transport-related social exclusion is also relevant to access to national parks and other green spaces. Income inequalities linked to car ownership mean that these declines have particularly impacted access to nature for those on low incomes, further reinforcing health and wellbeing inequalities linked to income.

5.

Our strategy for the North's transport system

Unlocking the economic, social, and environmental opportunities requires a sustainable, inter-connected transport system. The North's transport system today is characterised in too many instances by poor reliability and low frequency of public transport services, severe congestion, unreliable journey times on key parts of the strategic and major road networks, and poor conditions for active travel in car-dominated environments.

May 2023

5.1 Our strategy for rail

Prior to the covid-19 pandemic, the rail network in the North accommodated more than 200 million rail trips per annum, accounting for 1.1% of all trips in the North, and around 7.4% by distance travelled, illustrating the importance of rail to longer distance travel.[59] Rail is also particularly important for access to and between towns, cities and economic centres, and has a higher mode share in those places. For example, Greater Manchester's City Centre Transport Strategy to 2040 shows that 28% of all trips made into Central Manchester in the morning peak pre-covid were made by rail (many of which originated in the city region). In the 20 years before the pandemic, the number of rail passengers travelling entirely within the North has grown at a rate of 5% per year (higher than the national growth rate of 3.4%), with the number of passengers increasing almost three-fold in this time[59].

Rail should be the fastest, most reliable and most sustainable option for many inter-urban journeys to carry significant numbers of people directly into city centres and economic clusters, and over longer distances. Rail is often the mode of choice for higher-skilled workers, who make seven times as many long-distance rail trips than other occupations, and younger people (some of whom travel double the distance by rail compared to any other group)[60]. It is also important for accessing social, employment and education opportunities, as well as many key destinations across the North which drive the visitor economy. We need to work towards a seven day railway that better reflects people's needs and the change in travel patterns post-covid (see our Strategic Rail Report).

Rail demand has recovered strongly in the North with capacity constraints and overcrowding already returning to many services[61]. The composition and timing of rail journeys in the North has changed, with fewer commuters and greater off-peak and leisure travel[62]. The consequences of this change include a reduction in demand during the traditional morning and late afternoon peaks, and an increase in the relative importance of weekend rail travel, rising from 16% of the total in 2019 to 21% in 2022[63]. Office based rail commuter travel has shifted towards Tuesdays to Thursdays, reflecting the increase in hybrid flexible working[64]. Whereas commuting to other forms of employment has recovered more strongly. Prior to the pandemic the North's railway was struggling to cope with peak demand, and we are beginning to approach this level of usage again. Without investment, the network does not have capacity to accommodate growth, and thus cannot play its full part in contributing to decarbonisation.

The rail network in the North needs investment to address both underperformance and lack of capacity. Turning around current indicators for train frequency, rail journey times, performance and physical accessibility at stations across the North would open up the pathway to meeting our economic, social and environmental ambitions.

Capacity constraints limit the potential for more frequent services, and reduce the viability of new services to areas not currently served. They also affect the resilience and reliability of existing services, particularly on crucial East-West links and at critical station hubs. On both the East and West Coast Main Lines, without additional investment in improving capacity, there is limited scope for growth in passenger or freight services. Connectivity between the North's major

population centres, in terms of passenger service frequencies, direct linkages and journey times is regularly very poor. This extends the perceived distance between centres and acts as a barrier to travel[65]. Services in the North are often hourly in less populated areas and usually compromise of a two or three car train. Meanwhile, only four in ten of stations in the North are served by at least two trains per hour in each direction[66].

Performance (defined by the proportion of trains arriving on time) has been historically poor and has now declined to unacceptable levels which has led to wider economic consequences for the North. In the three months from April to June 2022, those **Train Operating Companies (TOCs)** which operate in the North were almost uniformly performing worse than those which do not, Merseyrail being the exception[67]. Delays, cancellations, overcrowding and poor on-board facilities add to the challenges faced by passengers.

Poor performance is a deterrent to rail use (for both existing rail users and potential users) and could cause modal shift away from rail that may be hard to recover, thereby compromising rail's ability to support growth in the North. Rail station accessibility is also a concern for passengers and a constraint on growth.

Data published by Northern indicates that in 2020, of the 540 stations at which their services call, 60 had no step-free access to any platform, and a further 307 had only partial step-free access[68]. TfN's own assessment of 600 stations' facilities concluded that[69]:

- Only 288 (48%) had adequate step-free access to all areas, and the proportion of fully accessible stations is lower still
- 77 (13%) have level access by ramps and lifts to all areas
- 225 (38%) have physically accessible waiting shelters
- 521 (87%) have a fully adequate level of lighting
- 497 (83%) have customer information systems showing departing trains (needed by customers with hearing impairments)
- 463 (77%) have a public address system (needed by customers with visual impairments)

Accessibility is also a significant deterrent for non-users, with investment required to make the North's railway network fully inclusive. Network Rail's Access for All is a DfT-funded programme aiming to provide an obstacle free and accessible route onto and between train station platforms, but at its present rate will take many decades to bring the North's stations to an acceptable standard[70]. With further funding there is an opportunity to make faster progress.

Preparing for potential doubling or even tripling of rail travel between now and 2050 means increasing rail's share of freight, as well as improving passenger services. As set out in the case for change, rail freight and logistics are key to the North's economy and to decarbonising transport. The strategic outcomes required for our freight network to meet our ambition to treble rail's share of freight carried to 25.5% by 2050 are further detailed in section 5.3 on Freight and International Connectivity.

Our strategic priorities

The North requires a fit-for-purpose rail network with strong North-South and East-West connections. This would act as the backbone of a high-quality, reliable, resilient, and equitable passenger network, capable of supporting the future growth of rail patronage, and with the capacity and capability to adapt to modern freight requirements. That means:

- **Better connectivity:** Including frequency and journey time improvements, combined with better integration of different rail services, and between rail and other transport modes, which bring the North's economic assets and neighbouring regions closer together.

- **More capacity:** A 7-day railway providing the required services and capacity to meet existing and future passenger requirements, recognising the demand shift in use for leisure, as well as freight demand.

- **Improved customer experience:** A passenger network that is easy to navigate, accessible and predictable, with consistent and integrated fares and information available before and throughout journeys. The current complex fare system is hard for users to understand.

- **Greater opportunity for freight:** A network with improved reliability and punctuality, and the capacity, capability and flexibility to meet the fast-paced changing needs of the industry. This includes supporting development of appropriate freight terminals, encouraging safeguarding of sites and understanding exactly what the rail freight market needs to support a switch from road to rail and reduce first and last mile costs.

- **Supportive of communities:** A railway that meets the needs of the communities it serves, providing integrated and seamless journey opportunities, reducing TRSE and enhancing the public realm to create dynamic and attractive places, building on the valuable work already done by the North's community rail partnerships.

- **Cost-effectiveness:** An equitable, inclusive and affordable railway for all stakeholders, maintaining and enhancing the North's railway without compromising the quality of the service.

- **Integrated:** Our rail network must be seamlessly integrated into our region's wider public transport and active travel networks, facilitating sustainable multimodal door-to-door journeys. We also want integration of fares and ticketing, as well as timetabling, with multimodal hubs providing a crucial role in enabling connectivity.

- **Sustainable:** Equally important is enhancing rail's wider role in society and reflecting our global responsibilities, including the reduction of greenhouse gas emissions, the transition to sustainable energy sources and reducing the pollution caused by transport activities. Rail produces significantly less emissions than car travel, producing around 28% of the emissions of a petrol or diesel car for a single traveller, and lower if electric trains are used[71]. A single freight train can remove up to 129 construction HGVs or 76 petroleum HGVs, and can be an alternative to road for many types of freight traffic, thereby contributing to decarbonisation[72]. Electrification is crucial to maximise rail's contribution to lowering emissions from both freight and passenger traffic. Electrification will also lead to a more reliable and resilient railway.

- **Accessible:** TfN has developed minimum and desirable standards for station facilities as part of the Northern England Station Enhancements Programme. This includes requirements for multimodal and integrated access to stations such as bus interchanges, walking and cycling routes, cycle and car parking and taxi ranks. Our ambition is to make all stations accessible and in line with our required standards by 2050.

To achieve the changes required, three major programmes need to be delivered:

- **TransPennine Route Upgrade (TRU)**, being delivered now, will deliver faster, greener, and more reliable journeys, enhance passenger experience, capacity and accessibility, and crucially, unlock pan-Northern freight enabling intermodal container trains to cross the Pennines more efficiently, significantly reducing journey times and costs.

- **Northern Powerhouse Rail (NPR)** in full, ensures that the major cities of the North are connected to each other, and to Manchester Airport with fast frequent services through a combination of new lines and significant upgrades.

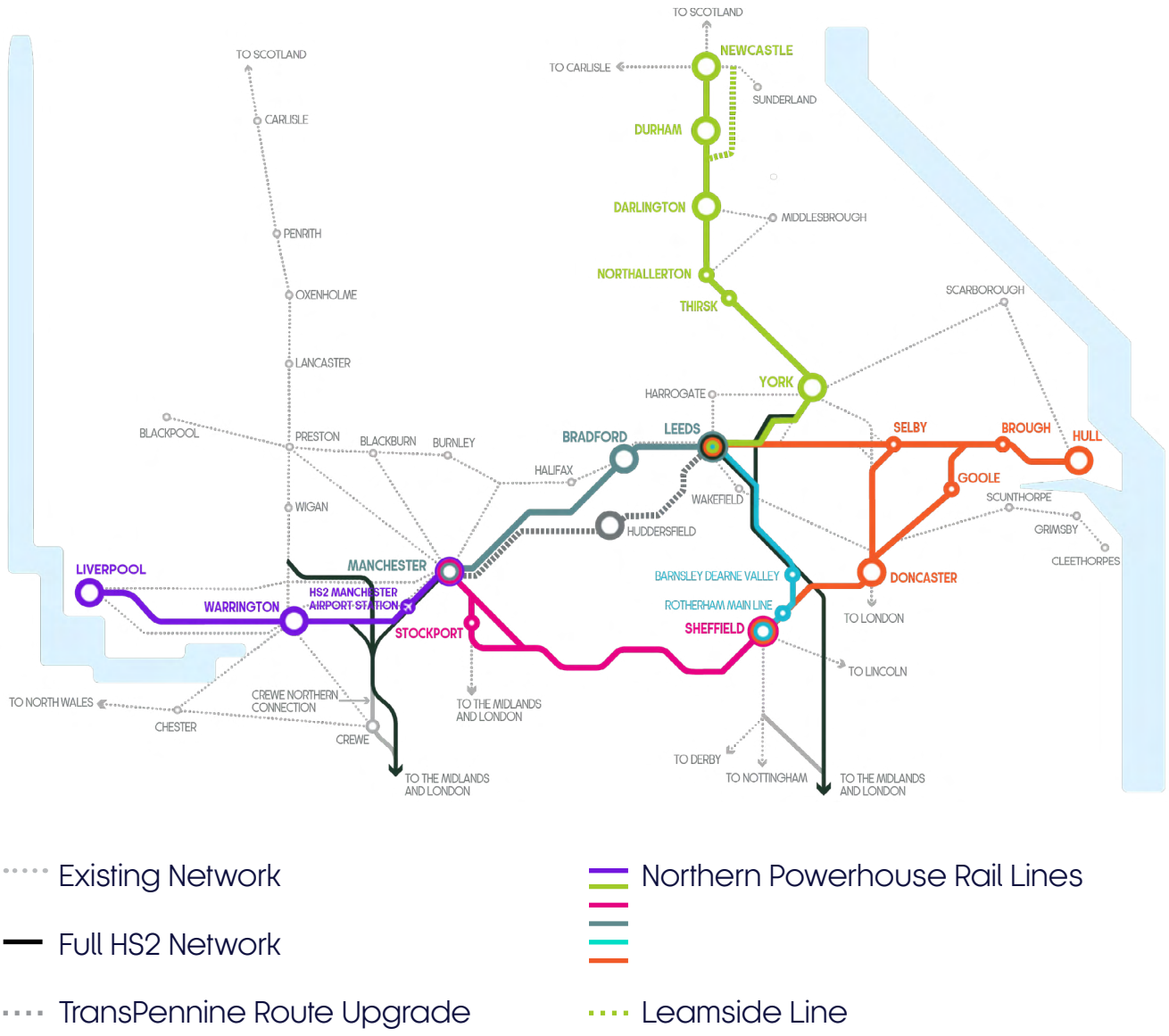
- **Solutions that deliver the same levels of connectivity and capacity** that would have come from **High Speed 2 (HS2)** to link key economic centres inside and outside the North for both passengers and freight.

Together these network transformations are fundamental to delivering our vision of a thriving North of England, where world class transport supports sustainable economic growth, facilitating the connections between key economic centres, and creating the interconnected labour markets required to fully develop the North's most productive sectors. Network transformations would open up access to new opportunities for millions and create a viable alternative to private transport for longer distance journeys.

The TfN preferred NPR network was developed in response to the evidence base and was the vision agreed by the TfN Board. It comprises:

- A new line to be constructed from Liverpool to Manchester via the centre of Warrington and Manchester Airport, including an underground station at Manchester Piccadilly.
- A new line to be constructed between Manchester and Leeds via the centre of Bradford.
- Significant upgrades and journey time improvements to the Hope Valley route between Manchester and Sheffield.
- A combination of new lines (including a new station at Leeds), significant upgrades, and new stations at Rotherham and Barnsley Dearne Valley, to improve the network between Sheffield and Leeds.
- Significant upgrades and electrification of the rail lines from Leeds and Sheffield to Hull.
- Significant upgrades of the **East Coast Main Line (ECML)** from Leeds to Newcastle (via York and Darlington) and restoration of the Leamside Line (providing an alternative route from the ECML south of Durham into Newcastle).

Figure 5.1: Northern Powerhouse Rail: TfN Preferred Network



The delivery of the full (TfN preferred) NPR network and TransPennine Route Upgrade are fundamental to transforming rail connectivity and capacity across the North of England. The evidence underpinning this STP also shows that proposals are needed to address other connectivity and capacity constraints between key economic centres for both passengers and freight to unlock the economic potential of the North. The levels of connectivity and capacity that would have been delivered by HS2 phases 2a and 2b (East and Western legs) would have helped achieve this. So there remains a need to identify solutions that will deliver similar levels of additional connectivity and capacity, including between Handsacre and High Legh.

Specifically, there remains a need to:

- Create alternative connectivity and capacity for the West Coast to enable more frequent North-South passenger services (to enhance Union connectivity), enable greater use of rail freight and improve reliability and resilience of all services.
- Address capacity constraints on the ECML (including consideration of the role of the Leamside Line) to improve connectivity and enhance Union connectivity.
- Alternative options to catalyse the economic potential of Crewe and its immediate area, including capacity improvements through Crewe and addressing constraints to the south of Crewe.
- Remove existing constraints (such as those around Chester station) to improve the North Wales Main Line.
- Resolve long-standing 'bottlenecks' through the Castlefield and Stockport corridors, to improve reliability, resilience and frequency (passenger and freight).
- Address capacity and access constraints at Manchester Piccadilly and Sheffield stations to realise the full benefits of NPR and TRU, and improve access to Manchester Airport.
- Achieve a step-change in the capacity layout at Leeds station to resolve the limits on current infrastructure to meet passenger demand now and in the future.
- Undertake the required work for alternative options to the Golborne Link to provide essential connectivity and capacity to/from the West Coast Main Line.

Until there are alternative proposals, the safeguarding associated with HS2 should remain in place and only be lifted where there is agreement with the relevant local transport authorities. A clear pipeline of network interventions is required to realise our ambitions for rail across the North. Alongside the major schemes, there is urgent need for investment in improving capacity, reliability and resilience (including the need for electrification of passenger and freight services) as part of a rolling programme of work through the next decade. There are also smaller scale schemes that will support local connectivity and performance. This investment pipeline needs to include the schemes that will flow from the Integrated Rail Plan, and the delivery of major schemes currently in hand, such as TRU and also Midland Main Line electrification to Sheffield, which is another important priority for the North.

TfN will work with its partners to develop this pipeline, ensuring that it is supported by evidence, and continue to champion the case to industry partners and DfT. This must be informed with a shared understanding of how rail passenger and freight services will evolve in coming years, ideally with a 'single version of the truth', as well as to improve the accessibility, connectivity and user experience at our region's stations. TfN will support the industry in developing this, through use of our extensive evidence base and continuing to act as broker for partners' priorities where necessary.

TfN – through the Rail North Agreement – will also work to ensure that the strategic outcomes in this plan are reflected in the business plans of operators.

Rail reform offers an opportunity to build on existing devolution arrangements in the North provided by this Agreement, including the role of Regional Business Units that increase the voice of partners within city-regions. We will continue to advocate strongly for 'double devolution' with decisions made at City Region or other local area level where appropriate.

5.2 Investing in our road network

As set out in our Major Roads Report, our highways and roads are at the heart of our communities, made up of a combination of footways, cycle ways and roads, enabling our residents and businesses to go about their daily lives[73].

Every journey involves a highway at some point, and to meet our ambitions highway investment needs to appropriately balance the needs of 'place' and movement. We know the quality of place is critical, particularly for local streets and where major roads run through cities, towns and villages.

Our highways are fundamental to the movement of people and freight - and will continue to be so, they should therefore be reliable, resilient, safe and conducive to movement by all travel modes. This means that improvements to facilities for pedestrians, cyclists, and public transport should be equally important as for the movement of cars, vans and lorries.

More than two thirds of all distance driven takes place on just 7% of our roads[73]. These are the motorways, and major 'A' roads connecting cities, towns and other important economic centres within our region and across the United Kingdom. The SRN, operated by National Highways, makes up approximately 2% of these roads, with the remainder comprising 'A' roads managed by local authorities[73].

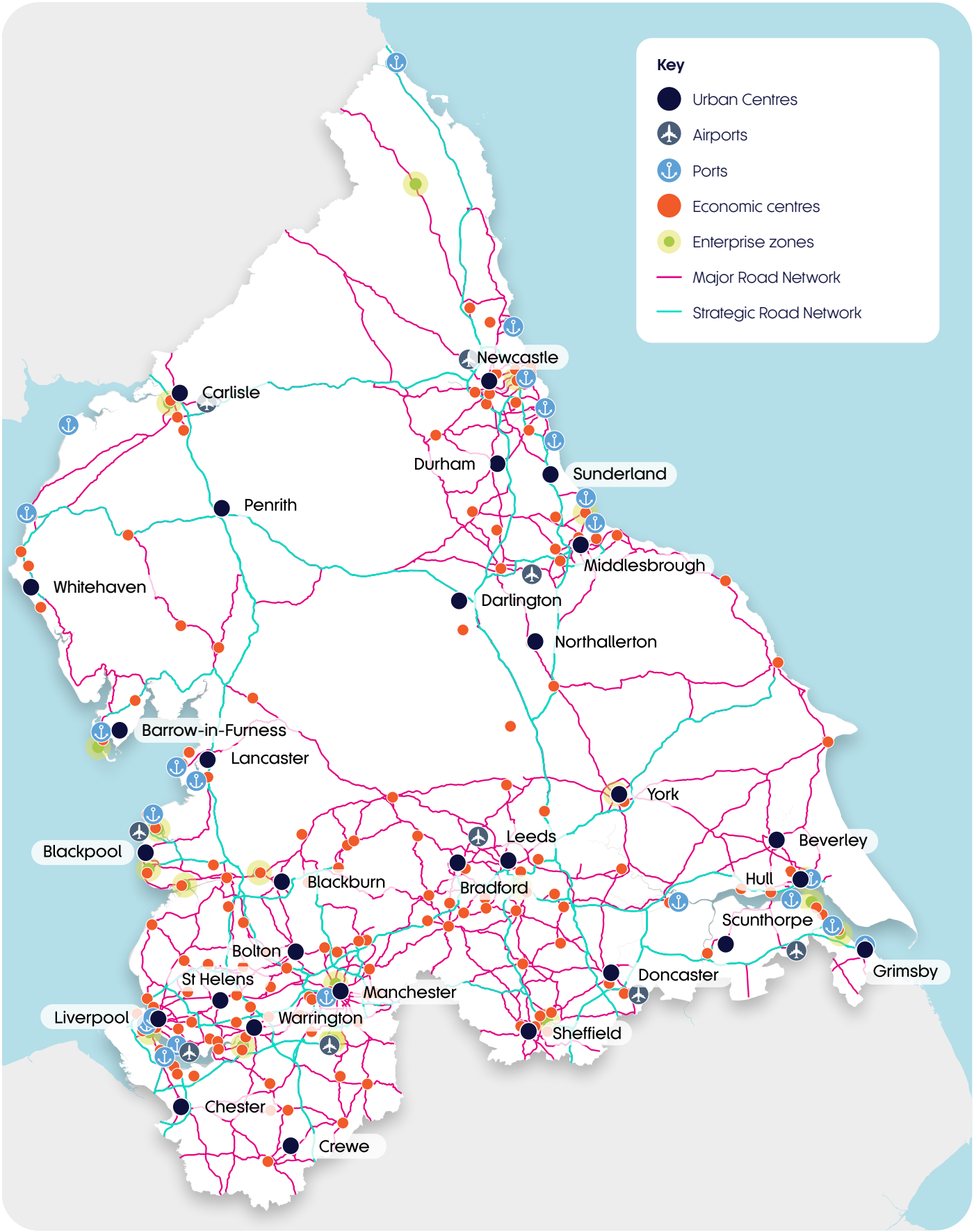
Dec 2021

On the road network, traffic growth and reliance on a few key strategic routes is placing increasing strain on journey time reliability, particularly on sections of the M1, A1, A19, M62, M60 and M6. However, there are hotspots with poor journey time reliability across the network, with impacts on freight, travel to work and the visitor and leisure economy. Around a third of the North's roads experienced poor journey time reliability for at least one hour during weekday peak times (35.4% for weekday morning peak and 33.2% for weekday evening peak)[74]. With 83% of sections of the network experiencing poor journey time reliability for at least one hour at the weekend[74]. This has knock-on impacts for all users, including freight traffic and on bus users due to its impact on the reliability of bus services[75].

Poor road connectivity is also an issue in some areas of the North, for example, in West Cumbria, parts of East Lancashire and East Yorkshire communities suffer from relatively slow and unreliable transport connections to the core road and rail networks, even outside of peak times.

Latest traffic flows are now at around 97% of pre-pandemic levels, with HGV **and light goods vehicles (LGV)** freight flows now at around 108% of 2019 levels[76]. The pandemic accelerated the existing growth in road freight traffic, with much of this attributed to the increasing number of **National Distribution Centres** and **Regional Distribution Centres** in line with the increase in online retailing and the move towards next-day delivery of a wide variety of goods.

Figure 5.2: Map of the North's Major Roads



Wider challenges for the major road network include:

- The **urgent requirement to decarbonise our transport system**, with road transport responsible for the vast majority of transport related carbon emissions. In 2018, cars were responsible for 14.46 megatonnes (Mt) of CO_2 equivalent greenhouse gas emissions in the North, HGVs 7.21 Mt and LGVs 2.71 Mt, compared to just 0.63 Mt for bus and 0.77 for rail[33]. Planning for future road investment, including the approach to business case appraisal, must be aligned with policy commitments to achieve close to net zero carbon emissions and based on evidence for example, evidence based documents such as the DfT's Transport Decarbonisation Strategy and TfN's Decarbonisation Strategy.

- The **need to improve safety, reliability and resilience for all travel modes** using the MRN and wider road network. The cost of road traffic on the UK economy has been estimated at 1.6% of GDP or £31.9bn per year, through increased collision risk, noise, local air pollution, trip suppression and reduced accessibility[77]. In 2022, 2,871 car occupants, 897 cyclists and 1,661 pedestrians were killed or seriously injured on the North's Road network[78]. These harms fall disproportionately on vulnerable road users - particularly those travelling actively - and in the vast majority of cases involved collisions between or with vehicles.

- The UK is seeing a **growing number of electric vehicles (EVs) on the road**, with EVs accounting for more than one in four new car registrations in August 2022[80]. However, both the pace of transition to EV and availability of charging infrastructure is lagging compared to other parts of the UK. Current data indicates the North has an average of 49 installed public charging devices per 100,000 of population, well below the UK average of 66 devices per 100,000 population[79]. Our assessment is that 162,000 charging points will be required by 2030 and 177,000 by 2050[80].

- The **importance of maintaining and renewing existing highway assets**, ensuring our roads are safe and resilient, in particular adapting to the impacts of climate change which will be essential in mitigating for increased frequency and severity of severe weather events. The Environment Agency estimated the UK-cost of the 2015-16 floods alone as £121m for rail and £220m for road[81] and National Highways highlights the need to prepare for increased risks of erosion, floods, embankment failure and temperature damage[82].

To achieve our 2050 vision, we need the MRN to act as a seamless network of roads, enabling safe, reliable and resilient multimodal journeys. We want better outcomes for communities living alongside major roads, biodiversity gains, and faster action towards achieving a fair transition to near net zero for transport. That means:

- **Enabling sustainable growth** in key employment and housing growth sites. Supporting agglomeration economies by providing rapid and reliable journeys to bring people and businesses closer together. This includes delivering a more integrated network supporting safe and efficient travel between the SRN, the wider network of major local roads and local transport networks, including public transport options such as park and ride.

- **Enabling efficient journeys** across multiple transport modes, contributing to improving access to opportunities for all citizens of the North. Our strategy recognises that in-car and wider technologies offer huge opportunities for improving the customer experience, for better integration across transport networks and for more efficient and effective management of our transport system.

- **Encouraging and facilitating mode shift** to sustainable modes, reducing traffic flows, relieving congestion and reducing car dependency to unlock social benefits. This could include increasing provision for and giving priority to pedestrians, cyclists and public transport to encourage more sustainable travel behaviours, as well as supporting mode shift to rail freight.

- **Enabling international connectivity** through providing good access to airports, ports and associated economic clusters.

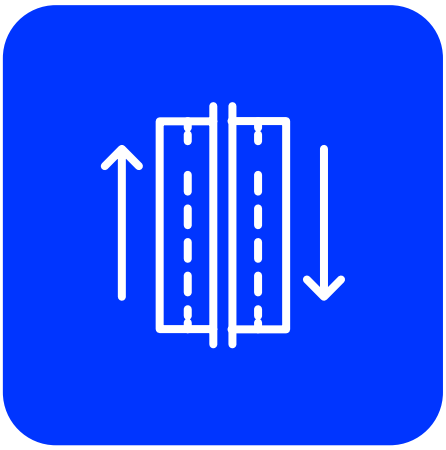
- **Being resilient and adaptive** to mitigate for severe weather events, improving network resilience. This will require substantial increases in maintenance funding, to deal with a significant road maintenance backlog, particularly on local authority managed roads, and to implement new adaptions to climate change impacts.

- **Delivering substantial improvements in safety** on the network. TfN commits to a vision for zero deaths and serious injuries on the major and SRN in the North by 2040, and to reducing the disproportionate impacts of road danger on older and younger people, people with disabilities and people living in deprived communities. Prioritising improvements in road safety, particularly in severely congested and rural areas, will be key for increasing active travel uptake.

- **Enabling the rapid transition from internal combustion engines** to low and zero emission vehicles. The North's road and energy networks are critical key enablers in meeting our near zero carbon transport targets. The growth of clean energy opportunities in the North will contribute to increased efficiency, reliability and resilience of the road network. Consequently, we will support the decarbonisation of road transport by providing intelligence and supporting collaboration towards the roll-out of **electric vehicle charging infrastructure (EVCI)**.

- **Delivering net gains in biodiversity, improving air quality, lessening noise impacts and reducing severance effects** of heavily trafficked major roads, recognising that the transition from internal combustion engine to low and zero emission vehicles, alongside other improvements will also contribute to inclusivity, health and access to opportunities through improved air quality, physical health and mobility levels.

Roads are a critical asset for the nation and for our communities that rely on safe, efficient, and reliable connectivity for the delivery of goods and to access jobs, education and other services that underpin quality of life.



Future investment in the MRN should therefore be considered as part of a 'whole journey' and 'total network' approach to improving transport outcomes, encompassing all travel modes and integrating local and strategic highway planning. This would open opportunities to optimise the benefits of investment through shared ownership of a locality-based strategy, delivering complementary policies and investment. This will ensure that investment in new road capacity is targeted only where the evidence shows it is essential, for example enabling access to new employment and housing growth sites, improving safety and resilience and/or providing vital transport links for industries and businesses dependent on good road connectivity.

While there may still be instances where we need to invest in additional highway capacity to realise our economic ambitions for the North, those economic ambitions primarily need to be achieved through changing the way we use our highways, providing genuine sustainable travel choices - especially as we look to accelerate decarbonisation.

Alternative Fuels - Systems approach in action

Reducing the environmental impact of road transport is critical if we are to meet UK legal requirements for decarbonisation. Our region's roads are by far the largest transport emitter of carbon emissions (23% of UK road emissions; 6% of total UK emissions)[33].

One of the key solutions to reach transport decarbonisation targets will be the uptake of electric vehicles, supported by a rapid rollout of EVCI, which are more suited in specific places. Our EVCI framework sets out the scale and pace of charging infrastructure deployment, required across our region, to support a rapid and consistent transition to electric vehicles that supports our regional decarbonisation trajectory[80].

Working with the private sector to target the required investment, we can help support the case for EVCI investment and deliver the right density and coverage of charge points to meet user needs.

Our whole network, whole systems approach provides the means to better assess the many social and spatial considerations associated with EVCI. That is why we have made our EVCI framework openly available and will continue working collaboratively with public and private stakeholders across transport, energy, and spatial sectors to unlock delivery and investment.

Battery electric is unlikely to be the zero-emission solution for all types of vehicles, which is why TfN is working in collaboration with gas distribution network operators to understand potential hydrogen refuelling demand in the North from heavy duty transport, merging with the energy sector's plans for early hydrogen supply and gas grid conversion. The outputs of this work will be available for our partners in the future, to further enrich the evidence TfN can supply to facilitate local authority zero emission vehicle infrastructure strategies.

5.3 Freight and international connectivity

Nov 2022

Our Freight and Logistics Strategy explains the sector's importance to the North's economy, with our transport system playing a vital enabling role for our industries and businesses, particularly those in our prime economic sectors of advanced manufacturing and health innovation. Our International Connectivity Policy Position then articulates the economic opportunity of connecting our ports and airports sustainably into our surface transport networks.

Today, over 33% of goods enter through the Northern ports and airports, while 25% of national freight starts in the North, with the same proportion of journeys ending in the North. By 2050 the sector could be worth over £30bn and employ more than 500,000 people, providing the backbone for economic growth and decarbonisation across a range of industries and sectors[83]. The North of England's freight transport system encompasses rail, road, inland waterways, sea and airport infrastructure, in addition to a significant volume of warehousing. Combined, the North boasts a wealth of freight assets that underpin our region's strong multimodal freight capabilities and provide increasingly important capacity at a national level.

Airports in the North serve a range of destinations both domestically and internationally, with Manchester Airport being the busiest outside of London, based on passenger numbers, and providing employment for 19,000 people directly on the site[84]. Manchester Airport is well connected by European carriers serving Europe, as well as various long haul operators serving locations including the Americas, the Middle East and Asia. Commercial air services to Europe and other parts of the UK also operate from a network of airports across the North, including Newcastle, Liverpool, Leeds Bradford, Teesside International and Humberside International. Both Newcastle (Emirates) and Liverpool (Lufthansa) also support interchange to key international hubs, facilitating global connectivity for passengers and freight. Several airports in the North also support access to offshore energy infrastructure in both the North and Irish Seas, including at Humberside International and Blackpool.

The major Northern ports serving Hull and Humber, Teesport/Hartlepool and Port of Tyne provide global connectivity. The largest UK port by tonnage is Port of Immingham which is well served by highway and rail links but is constrained by access onto the East Coast Mainline.

Recent expansion of the Port of Liverpool means the North can serve calls from larger post-Panamax vessels (which have increased freight volumes), while also maintaining connectivity with Northern Ireland, Ireland and the Isle of Man.

Peel Ports, who run the Port of Liverpool, have recently made acquisitions in the area, expanding their reach into Ellesmere Port which can offer additional bespoke cargo solutions, reducing road mileage in transporting cargo.

It is critical to strengthen the North's economy to provide connectivity to, from and between all the UK's ports and airports, not just those in the North. This is because the global supply chain works on a wider basis: goods and materials arrive at various locations to be utilised in factories or stored in warehouses prior to delivery to the customer but their point of entry into the UK will be decided by much wider market forces, such as handling charges, where they originated from, and shipping routes. Also, whether the ships are larger deep-sea vessels calling at deep seaports which mainly include the ports in the South or whether they are short sea ships shuttling between European and UK ports.

Enhancing our freight network

Highways play a critical role in moving goods, with road transport by far the dominant mode for the movement of freight (an 87% mode share by tonne km in 2016)[83]. To effectively plan for decarbonisation, we need to ensure a clear understanding of re-fuelling needs across a range of alternative fuels. To complement and enhance this understanding, we need to strengthen our understanding of first and last mile deliveries that encompasses the newer approaches in domestic parcel deliveries and the growth in this area. This needs to cover the development and delivery of networks that can make use of cargo bikes, pedal deliveries and postal services and where these can be complemented by any new approaches to light rail.

The North is also an important hub for rail freight, with 56% of UK rail freight passing to, from, or within the North[83]. There are several branch lines in the North of England which are specifically used for the movement of goods, such as to the Port of Immingham or Swinden Quarry, North Yorkshire.

The freight and logistics sector is highly dependent on effective inter-regional connectivity. This means appropriate and accessible infrastructure for rail freight, including gauge cleared rail routes that connect key economic centres including ports and airports, both within and outside of the North, to support the needs of existing and emerging supply chains.

The rail freight network also needs to be strengthened with greater resilience measures, including the provision of diversionary routes that do not add unnecessary delay or journey times to minimise the impact on industry.

It will be important to open up more freight paths and opportunities for intermodal traffic. The latter can be enabled by new strategic rail freight interchanges (SFRIs) and other multimodal connections. We have examples across the North, such as iPort in Doncaster, where such interchanges have been achieved within existing infrastructure to enable growth, as well as new locations to support the delivery of bulk and intermodal cargoes. Aswell as paths and opportunities, we need to build our understanding of how micro consolidation activity and the increase in parcel deliveries affects the location and sites that are appropriate for future development.

The North also has a network of inland waterways which offer opportunities to enhance connectivity, such as the Manchester Ship Canal and the Aire and Calder Navigation. Whereas inland container vessels have specific requirements to access the waterway networks, bulk cargoes such as aggregates used in construction can access the waterways more easily. These opportunities need to be explored further as they can support decarbonisation.

Proposals to expand these operations are being explored. Manchester Ship Canal offers opportunity to reduce the reliance on road-based transport from Merseyside and the Wirral into Manchester. The Aire and Calder offers the opportunity to move bulk and aggregates from the Humber Port complex into Leeds. Investment along the Aire and Calder, for example, would ensure the bridges are tall enough for Euro 2 barges to transport containers on the Navigation.

There is a growing market for short sea shipping routes that connect the major deep water European ports, for example Rotterdam and Antwerp, to East coast ports. For this to be most effective, improvements in the road and rail network nationally need to be considered. This is especially important at Ely to allow trains from Felixstowe to access Northern markets.

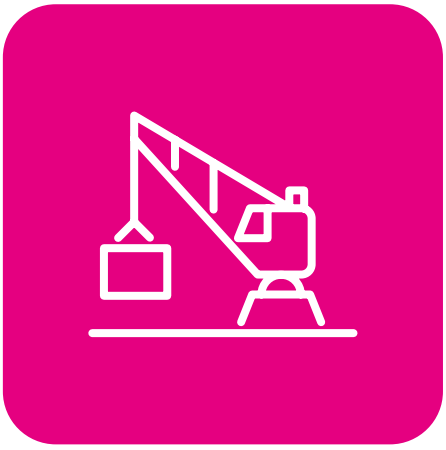


Figure 5.3: TfN ports, airports and warehouse density

Issues and opportunities for our freight network

Despite these extensive assets being available, many are not fully utilised, constraining our region's economic, environmental and social potential. This is due to:

- A lack of joined up infrastructure - particularly in rail connectivity where gaps in gauge clearance, track capacity or electrification are limiting timely and direct freight journeys. This presents a challenge, because most rail freight runs on lines where passenger and freight services run together.

- There are bottlenecks in the network, particularly through Manchester, the West Coast Main Line between Crewe and Weaver Junction, the West Coast Main Line north of Golborne, the ECML two track section through Durham, and the Midland Mainline through Sheffield. These are already heavily congested passenger service routes, leading to limited freight paths and delays in services.

Increasing rail capacity for passenger and freight services would widen access to ports and airports. For example, having more rail paths available on the ECML would open more opportunities to transport freight by rail, allowing ships to make ports of call in the North and using rail to access the national markets. Improved rail access could see the east coast ports reduce the pressure on the southern ports and the Channel Tunnel.

To maximise the impacts of our freight and logistics sector in delivering sustainable economic growth we require an efficient and integrated multimodal freight network, directly linked to our ports and international gateways, and with well-connected warehousing and consolidation sites. We also need investment in rail freight, both capacity and capability, which will support economic growth, create capacity on routes to ports and SFRIs and remove HGVs from our region's roads.

There are capacity constraints relating to terminals at certain locations in the North, most notably for intermodal terminals. SFRIs offer the opportunity to provide large multi-purpose rail freight interchanges, linked with large scale distribution centres and the MRN and SRN. SRFIs require sufficient land availability, as well as suitable gauge clearance ability to accommodate maximum length trains and a competitive funding and cost regime. Proximity to workforce should also be considered to reduce carbon from commuting.

Air travel and air borne freight produce a large amount of carbon emissions relative to other modes. For this reason our International Connectivity Policy Position, strikes an important balance between optimising the economic opportunities from aviation for the North, including the development and production of Sustainable Aviation Fuels (SAF), reducing

Sept 2022

local environmental effects associated with aviation, and operating within a carbon budget aligned with recommendations of Climate Change Committee. In contrast, rail freight moved by diesel trains currently produces 76% lower CO_2 emissions than road freight moved by diesel or petrol HGVs, so encouraging mode shift by alleviating bottlenecks and improving price competitiveness would deliver large decarbonisation benefits[85].

Increasing the North's international connectivity to perform on the global stage can attract and facilitate businesses and entrepreneurs to work together and reach customers and suppliers across the North, the UK and the rest of the world. This will encourage outward and inward overseas trade and investment, which will facilitate economic growth.

This plan recognises the importance of integrated multi-modal connectivity to allow seamless journeys, particularly for domestic trips within the UK. Future strategic infrastructure investment in nationally significant schemes such as NPR are vital to enhance the UK's domestic connectivity and support low carbon travel. This will increase the attractiveness of rail travel for domestic journeys within the UK. We also view the importance of policies that focus on improving the relative cost and convenience of land based public transport relative to the cost of flying, making these modes more attractive for domestic travel.

There are economic opportunities presented by the decarbonisation of aviation. By priming itself as an early-mover, the North should capitalise on the significant regional growth opportunities created by production of SAF and the development of zero emission aircraft.

At the same time, TfN supports better utilisation of the existing unused runway capacity at Northern airports to cater for growth as part of a national strategy for rebalancing use of existing capacity. We also recognise that increases in aviation demand need to be accommodated within a national cap on demand growth of 25% by 2050 and the need for the rapid development of a national capacity-management framework. This would allow decisions on existing and planned runway capacity proposals across the UK to be made in compliance with the cap and the aviation sector's progress against its own decarbonisation pathway as set out in the Jet Zero Strategy[86]. A predominantly technology led approach to reducing aviation emissions (as per national Government's current policy) is unlikely to deliver material emissions reductions prior to 2035 and introduces a significant level of risk to aviation decarbonisation should those technological options not fully deliver.

We recognise that the evidence base around aviation is evolving and as new research emerges, we will work with our partners to consider the implications on our position as required.

Strategic outcomes required for our freight network

- Developing port to port zero-carbon multimodal corridors, with a focus on maximising the economic potential of freeport status to ports and their hinterlands, as well as the potential to produce and use green fuels in our ports including HGVs, rail and maritime.
- Three Northern ports - Humber, Teesside and Liverpool City Region - were successful in bidding for Freeport status. They are expected to bring huge economic benefit for the areas selected, will support growth in the logistics sector, and help us achieve our near zero decarbonisation ambition. We will work with the ports and companies located within the areas to support their development and growth.
- Improving the multimodal North-South and East-West connectivity and capacity across the North, particularly focused on rail. This means increased electrification (including infill) and gauge clearance of the network, including the full delivery of the TRU and the development of rail alternative freight priority routes as well as investment from freight operating companies.
- Optimising the efficient flow of goods on our road networks through improved flow of traffic supported by technology.
- Decarbonising road haulage through identifying partnerships to expedite opportunities for both battery electric charging and hydrogen refuelling of HGVs in the North.
- Supporting effective spatial planning, well-connected warehousing, consolidation centres and efficient local distribution networks. This will include looking at sustainable 'last mile' connectivity and working with local transport authorities to develop multi modal hubs.
- Reducing the impact of air pollution and noise from freight movements on the health of local communities.
- Maximising the utilisation of our rail and inland waterway networks, improving multimodal connectivity and local distribution hubs to improve efficiency, and encouraging modal shift from road to rail/water, to support decarbonisation and improved air quality.

5.4 Local connectivity

Identifying local connectivity needs is the responsibility of city-regions and local authorities. A well-designed system of local connectivity can deliver affordable and sustainable door-to-door journeys that match user needs. Local connectivity includes bus, taxi, light rail and active travel modes, integrated via multi-modal hubs and connected mobility (smart travel) technology.

Providing local connectivity to social, education, health, and economic amenities brings different challenges across neighbourhoods, towns, cities and rural communities. This is shaped by each place's context, location, and scale, and needs locally determined and delivered solutions. However, what is common across all places is a need to ensure access to key destinations in a reasonable amount of time, appropriate to the journey purpose via all modes. Pan-regional working and knowledge-sharing can support local authorities as they work towards these similar goals.

TfN defines local connectivity as "the way in which people and freight move around a localised area across all modes of transport".

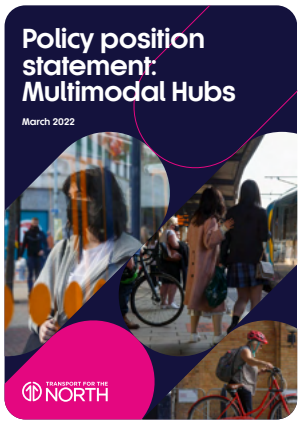
Frequent local transport use is essential for opportunities, key services, and community life. However, the nature of our current transport system means that the necessary level of transport use is unaffordable for many. Evidence gathered through several TfN projects shows that two types of affordability challenges are widely present in the North:

1. In rural, peri-urban, and suburban areas in particular, we see forced car ownership. This occurs where car use is a prerequisite for accessing the key destinations necessary for everyday life, but where the costs of car access cause significant financial hardship. This includes debt, financial stress, and foregoing other necessary expenditure in order to fund car loan repayments, fuel costs, insurance, and maintenance.

2. In more urban areas, we see significant public transport affordability challenges. As well as being unable to afford fares for necessary journeys, this also manifests in being unable to afford to travel for leisure, recreation, and other discretionary purposes. Engagement with impacted populations reveals that these travel reductions have negative impacts on social and mental wellbeing.

Underpinned by:

March 2022



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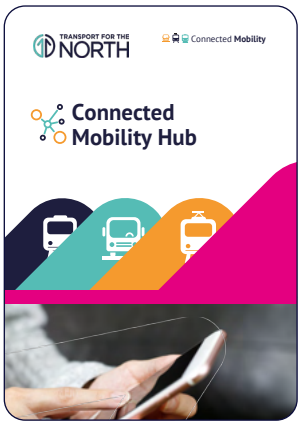

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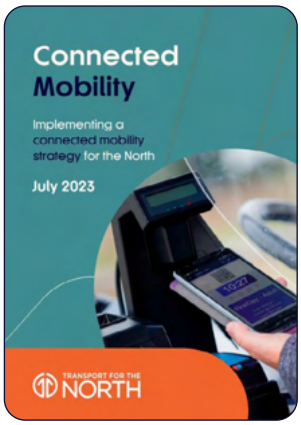
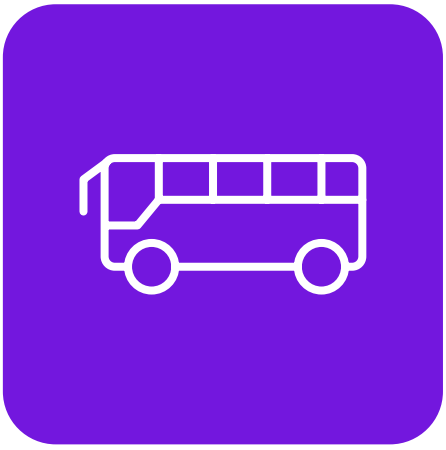


July 2023

Buses account for the majority of public transport journeys across the North of England[87]. Buses are the foundation of our public transport system, providing accessible, affordable and sustainable access to jobs, learning and local services. A fast, frequent and integrated bus network is vital to the North's economic success. Buses also play a key role in reducing social isolation and catalysing social mobility in rural communities, alongside supporting low income, younger/older and disabled passengers.

However, too often bus journeys can be fragmented and confusing, acting as a barrier to usage. Passengers often require multiple tickets, even on the same routes, as operators do not accept each other's ticketing products or facilitate trips across local authority boundaries. Timetables are not integrated, particularly with the wider rail network, leaving gaps in services and elongated journey times.

Increased traffic congestion has made bus services slower, journey times unreliable and more expensive for operators to run. Compounded by a reduction in patronage following covid-19, there has been a significant reduction in the North's bus network coverage, as fewer routes can operate on a purely commercial basis. This is of most significance for rural and sparsely populated areas who often have no viable public transport alternative.



Safety and accessibility are also a fundamental requirement, determining how people use and perceive the transport system. This is relevant to local public transport, but is especially significant to active travel trips. However, many of our areas are starting from a low base when implementing active travel schemes. Pavement parking, severance, a lack of dedicated infrastructure, inconsistent rules for taking bikes on trains/trams and between different operators, all contribute to active travel infrastructure not offering the safe, direct, accessible and consistent experience users require.

Light rail and mass transit also have a key role to play in local connectivity across the North. South Yorkshire is currently piloting new technology which allows trams to travel on the heavy rail network as well as conventional tram networks. This has the potential to extend the reach of existing light rail networks and allow integration with heavy rail networks. There is potential for further tram-train operations in South Yorkshire and Greater Manchester - the conversion of existing heavy rail routes to tram-train could be a cost-effective way of reducing congestion and freeing up additional capacity around pinchpoints on the heavy rail network (e.g. Sheffield Station and Central Manchester). The Tyne and Wear Metro has shared running with heavy rail between Pelaw and Sunderland, and a scheme to extend running onto part of the former Leamside heavy rail line serving the major centre of Washington is under development.

There are other potential technologies that could play a role in making existing heavy or light rail systems more efficient. They include Very Light Rail which is a technology under development in the UK for use on lightly-used heavy rail lines. It uses lightweight, modular vehicles that can run on hybrid or electric power and operate on line of sight (similar to light rail) thereby reducing complexity and cost. This mode is likely to have the greatest potential for existing branch lines that don't have a significant interface with the rest of the network or for new/restored railways. There are also other lower cost Very Light Rail systems being developed that could run on streets in urban centres.

Central to realising improvements to both local and regional connectivity is the North's shared strategic ambition for greater integration between modes and place - this ambition exists not only for our existing transport networks but also supports the integration of emerging modes and technologies with them.

TfN's Connected Mobility Strategy defines the North's vision for a seamlessly interconnected mobility ecosystem where all transport modes are effortlessly accessible to passengers in networks relevant to local markets. Across three core thematic areas, around Ticketing, Data & Infrastructure and Future Mobility, the strategy sets out 30 strategic outcomes for the North that are intended to make transport more appealing, easier to use and affordable[88].


CHILDREN UNDER 5 AND
DOGS MUST BE CARRIED
TICKET
73

We will therefore work with our partners in the following areas to better support local connectivity:

Buses present the quickest, easiest and most effective way to enact radical changes to our public transport networks. Bus routes can be rapidly reconfigured to match user travel patterns, and support sustainable access to new housing or employment developments.

Demand responsive services can dynamically fill network gaps to meet user needs outside of traditional operating hours and across rural communities, while reallocation of existing road space for bus priority can unlock significant time savings and user benefits. Many partner authorities, particularly in Mayoral Combined Authority areas, are taking the first steps towards greater control of their bus networks. This includes franchised bus services in Greater Manchester, as part of the delivery of the Bee Network. We will work together with partners to support bus reform in the North and increase bus patronage.

Active travel should be a natural choice for many journeys, particularly for shorter everyday trips. Providing this natural choice requires safe, accessible, and consistent routes between neighbourhoods, key local destinations, public transport links and central hubs. It also requires secure storage for bikes and mobility aids, and allowing these on a greater range of public transport journeys. If delivered at pace and scale, active travel can play a key role in improving the health of our communities, contribute to decarbonisation and help address transport affordability challenges. We will need to identify strategic active travel corridors, including those enabled by e-bike and micro-mobility technologies, to deliver modal shift. This will enable local transport authority partners, who have responsibility for local transport strategies and their delivery, to implement more ambitious and longer-term schemes.

We will support an accelerated transition to a fully zero-emission bus network, which is essential to meet national Government, TfN and partners' decarbonisation targets. Buses provide the fastest and most significant opportunity to decarbonise road transportation.

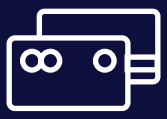
TfN will support local partners to identify and invest in opportunities for multimodal hubs (including bus park and rides, interchanges, community transport and car clubs), supporting efforts to increase the number of multimodal journeys in the North. Well located and designed hubs can be critical in enabling sustainable trips across the North, transforming and revitalising communities through supporting increased density and mixed-use development, and enhancing the attractiveness of public and active transport trips across all parts of the North.

Integrated and smart ticketing is key to encouraging sustainable travel. Our work on Connected Mobility is providing LTAs with additional specialist capacity in developing and deploying digital and ticketing initiatives at a local level.

On fares, we will develop modelling tools to support fares reform that reduces complexity, increases affordability, and supports multimodal integration. On Pay as You Go; we will bridge the gap between national strategy and local delivery, supporting partners in delivering fare capping quickly and efficiently.

We will advocate for Data & Infrastructure enhancements that deliver more connected mobility for passengers including embracing the use of open data and greater data standardisation. Increased integration will support behavioural change and support the seamless provision of nearby station departures, parking availability, or onward bus arrival times.

We will make the case for joined up funding and explore how support can be provided to authorities in the procurement of innovative technologies in a way that enables agile development and systems iteration.



Flexible and integrated multi-operator, multimodal and cross border ticketing is an essential requirement, making public transport easier and simpler to use. Ensuring our bus network is fast, frequent, reliable, affordable and seamlessly integrated within the North's public and active transport networks can provide an attractive and viable alternative to using a private car. This must include proactively supporting the development of simpler and more affordable fare structures for passengers. We will also explore the viability of demand responsive transport versus the viability of traditional bus services in both rural and urban communities or as a means for first / last mile solutions to keep communities connected to key services and opportunities.

Light rail and related technologies can play a significant role in supporting mode shift to sustainable modes. Whilst light-rail is likely to be most appropriate in urban areas, tram-train and other modes could play a role in other locations too. TfN will support partners to develop existing or new light rail networks as part of integrated systems with a focus on supporting integrated ticketing and integration with other modes. TfN will also work with partners to develop options for additional tram-train services with an emphasis on where these could offer a more cost effective alternative than providing additional capacity at congested points on the heavy rail network.

Spatial and transport planning must work symbiotically for sustainable, inclusive growth. Through integrating public transport corridors, hubs and interchanges with residential and commercial development, we can create inclusive and sustainable places in the North that unlock new opportunities for bus, rail and active travel use.

Our framework for spatial planning identifies how greater densification in the North's urban areas can increase active travel usage and remove community severance, whilst strategic employment and residential sites should be located close to public transport corridors, removing over-reliance on private car travel and reducing TRSE. We will work collaboratively to support local partners to prepare inclusive spatial plans that are sustainable, practical, and well-designed.

We will work to ensure that rural communities are well connected to places and opportunities across the North. In rural areas, we will work with local partners to understand their needs and how to enhance access to opportunities for our rural residents, organisations and tourists. We will collaborate with other STBs and DfT to understand funding requirements for strengthening the public transport offer in rural areas and reducing car dependency. We are advancing our analysis and evidence for rural mobility and collating best practice to assist partners to identify place centric schemes and support innovative interventions that will support the North's rural communities.

5.5 A place based approach

The successful delivery of our strategic ambitions and outcomes can only be achieved through a collective effort nationally, regionally and locally. This needs effective transport planning with a golden thread from national policy, regulation and legislation, to our regional Plan, through to LTPs.

As TfN, our role is to present the collective, strategic priorities and ambitions for the North with a specific focus on pan-Northern connectivity. However, for the North to thrive, we require efficient, high-quality local connectivity to create an inter-connected, decarbonised strategic transport system for the entire region. We need to undertake a place-based approach to strategic transport planning.

To better understand the diversity of the North's people and places, TfN has used data and evidence to develop a comprehensive and bespoke Northern people typology and a Northern place typology. The two typologies considered together help ensure that transport policies, strategies and interventions are mindful of and tailored to the specific needs of different population groups and place types within the North. This People and Place Framework is published in full alongside this Plan and can be used to support better representation and diversity in transport planning.

The Framework includes nine distinct place types and nine distinct people (or household) segments across the North that can be used by our LTA partners as evidence to inform their own LTP process. Ultimately, within this policy context, the North's LTAs through their own LTPs will make a final assessment as to what the right mix of policies is for any given area.

For local connectivity, there is a need to balance major infrastructure and long-term investments in road and rail, with local decisions around streets, junctions, stations and service patterns. Therefore, our focus for local connectivity considers all modes of transport across all place typologies, as well as identifying relevant policy gaps in our evidence base as areas for further research.

Our Clean Mobility research has shown us that by achieving reduced car vehicle mileage through modal shift, we can accrue significant wider societal and economic benefits, but more reliable and efficient travel choices and options are needed to drive the behaviour change required. This research has also shown further work on demand management options would be helpful, as well as what can work for our rural areas[89].

While many of the policy priorities could be applicable to a range of places in the North, we have strived to identify the principal policies or areas of focus while also ensuring that these are distinctly different for each place type.

In the same way, where there is a need to consider certain environmental aspects for a place type in particular, these have been drawn out within the policy priorities. However, it will be important across all place types, where new or updated infrastructure and services are proposed, that the integrity of the historical, visual and natural environment in those places is maintained and delivery authorities consider opportunities for enhancing those environmental assets wherever possible.

This section summarises the composition of each place type and describes the potential impacts of the principal policy priorities identified for each place type on the kinds of people (e.g. Hard Pressed Living 1) that can be found there. Several local authorities will fall into more than one category. 'People type' definitions and further detail on the supplementary policies that underpin each principal policy priority can be found in the full People and Place Framework[90].

Commuter Towns

Commuter Towns are highly reliant on transport infrastructure to provide accessibility to employment opportunities across the North, including strong linkages to neighbouring Large Conurbations and strategic employment sites.

Car usage is particularly common for local and commuting trips due to the absence of viable and cost-effective public transport, and longer distances between housing and employment locations. Some commuter towns, such as Warrington, may generate a large amount of outbound commuting trips, but also inward commuting trips from surrounding towns that need to be accommodated by the transport system.

Delivering reliable multimodal hub and spoke transport options will provide sustainable and low carbon access to opportunities to and from Commuter Towns. For short and often multistage journeys within Commuter Towns active travel and reliable bus services should be the natural choice. A holistic approach to spatial and transport planning should seek to reduce car dependency in Commuter Towns with road reallocation, decoupling parking provision from development and new green and blue infrastructure all providing opportunities for change.

What impact might these policies have on the North's people?

Commuter Towns feature a mix of people types, with Small Town Suburbs (42%) and Hard Pressed Living 1 (24%) being predominant. Small Town Suburbs travel further distances overall than almost any other segment, travel some of the longest distances to work and are highly car dependent. This segment would benefit from faster and cheaper public transport options for commuting as an alternative to the car. Improved public transport services and active travel infrastructure would also benefit those in Small Town Suburbs and Hard Pressed Living 1 who do not commute to neighbouring cities, by improving connectivity to local employment opportunities and facilitating essential and leisure journeys, particularly for those who have low qualifications and/or do not own a car.

Large Conurbations

Large Conurbations contain 51% of the North's population, can be places of great variation and often face challenges around deprivation and poverty. They also benefit significantly from economic agglomeration and generate greater productivity than the Northern average.

Large Conurbations increase their public transport demand closer to the city centre, as population density increases. As such, there are many public transport and active travel trips within cities, and a fair share of private vehicle usage to nearby towns, between other towns and to-and-from the city centre. Large Conurbations are also the areas which often face the most acute air and noise quality issues, particularly around arterial routes, and the strategic and major road networks.

Our Large Conurbations should be attractive, lively, and exciting places that people want to spend time in, drawing in visitors from across the North to work, shop and socialise. Policies to encourage sustainable transport are critical to supporting economic growth and ensuring equitable development. Integrated and affordable public transport will allow the implementation of demand management policies that can provide short- and medium-term increases in modal shift, away from private car use. Densification can also support reducing travel distances in urban areas. Within urban locations, interventions which promote increased reliability and efficiency across the transport system, as well as shorter travel distances are most likely to benefit businesses in these areas. Decarbonising transport fleets is key for achieving national decarbonisation targets.

What impact might these policies have on the North's people?

This place type has one of the most diverse arrays of people. Policies which support viable sustainable travel options and improved connectivity in Large Conurbations will therefore benefit a wide range of people segments (including Hard Pressed Living 2, Metro Suburbs, Multiculturals, and Urbanites, among others) by connecting them to employment and education opportunities and facilitating essential and leisure journeys, while reducing congestion, air pollution and noise. Large Conurbations are home to high shares of Multiculturals, Constrained City Dwellers and Inner City Cosmopolitans - who have the lowest car ownership (around 50%) and rely heavily on public transport and active travel.

Rural Villages and Dispersed

Rural Villages and Dispersed locations are generally characterised by long distances, poor accessibility and high levels of car dependence, which create difficulties for implementing and encouraging more sustainable travel modes. The 'right share' for this typology will be different to the pan-Northern target set in the Plan's vision and objectives, as private vehicle is still likely to have the biggest modal share.

Rural Villages need to become places with a wider range of transport options as they have typically not been well-served by public transport. This needs to be addressed through spatial, transport and digital solutions. Public transport needs to be an attractive and affordable alternative to cars, serving the communities favourably in terms of reliability, journey times and coverage. Community based transport will play a key role in connecting Rural Villages and Dispersed with their commuting and leisure needs, and with the existing transport infrastructure, for access to wider services and amenities. Recognising the high private vehicle usage, it is important to ensure an equitable transition to zero emission vehicles in these places. Policy aims should look to make private vehicle travel more sustainable, for example by switching to electric vehicles, community-led car clubs, and government subsidies to support the shift in agricultural vehicles. Behavioural nudges to uptake new travel options will be needed, whilst also encouraging public transport patronage where available. Active awareness campaigns, training and fare incentives should be considered for car clubs, demand responsive transport and scheduled bus services.

What impact might these policies have on the North's people?

Rural Villages and Dispersed is the most concentrated place type in terms of people segments present, with Rural Residents accounting for 80% of the population. Rural Residents travel greater distances than any other segment and are the most car-dependent, with 89% of overall distance travelled by this segment attributed to car travel. A focus on the transition to electric vehicles and community-led car clubs will provide more sustainable options for Rural Residents who travel by car, particularly for commuting purposes, while more extensive and reliable public transport connectivity, demand responsive transport and community-based transport services will provide more options for everyone, encouraging modal shift and providing significant economic and social benefits for Rural Residents without access to a private car.

Rural Town and Fringes

Rural Town and Fringe areas include rural areas that are within closer proximity to nearby towns and cities. Unlike Visitor Destinations, Rural Town and Fringe areas rely less on the tourism sector for employment, with a broader mix across sectors.

Low population densities pose a challenge to connecting residents to economic and social opportunities. An ageing population is likely to travel less, by all modes, due to physical accessibility and health issues. Consequently, there is a high amount of the population living at high risk of TRSE. Levels of local transport services, particularly bus services, have declined in the last decade, leading to increased car dependency and severance due to major road infrastructure contributing to the risk for TRSE.

These places are close to other towns and cities. Therefore, they could benefit from improved transport connectivity through demand responsive bus services and integration to urban services. These may need to be publicly funded to maintain the levels of service needed to support sustainable transport options to help deliver near zero emissions in these areas.

Transport has the potential to improve the health of rural communities, through encouragement of active travel primarily for leisure trips rather than commuting given the distances between key centres.

Walking and cycling infrastructure should be designed inclusively, particularly considering the ageing population, as car usage decreases dramatically for these groups.

Making roads and pavements safer needs to be a priority, particularly for active travellers, as they are the most vulnerable users of the road and considering that across the North, retired people make an average of 19.5% of their journeys on foot. Implementation of new travel opportunities must simultaneously address the reliability and resilience of the road network, as Rural Town and Fringe areas often have one road access making accessibility vulnerable to infrastructure failures.

What impact might these policies have on the North's people?

Rural Town and Fringe place types have a more diverse mix of people segments than Rural Village and Dispersed, including Hard Pressed Living 1 (36%), Rural Residents (27%) as well as Small Town Suburbs (25%). These people segments are highly car-dependent, with a high risk of TRSE for those experiencing forced car ownership due to a lack of viable travel alternatives, and for those without access to a private car. For each of these segments, increasing the range of viable travel options, centred around public transport services and active travel, will provide more sustainable access to a greater range of employment, education and leisure opportunities and key services such as healthcare, both locally and in neighbouring towns and cities.

Transformational Places

Due to the variation within Transformational Places several represent dynamic and successful local economies, whilst other places face a variety of economic and transport constraints and market failures.

Given their often semi-rural and dispersed geography, Transformational Places are highly reliant on their transport infrastructure. Infrastructure must facilitate sustainable and flexible commuting flows to key employment sites and neighbouring Large Conurbations, as well as catering for high levels of logistics delivery trips due to low population densities. Ensuring that transport connectivity is sufficient to continue to attract investment remains a key issue for many Transformational Places and their economic sectors, particularly improving links to international gateways for export-related firms in advanced manufacturing.

Transformational Places provide a significant opportunity for rapid transport decarbonisation. Transport policy focus on reducing car dependency, particularly for new residential and industrial sites, through planning that builds active travel and public transport into the fabric of communities. Given the higher levels high car ownership, policies are required to increase the convenience and attractiveness of public transport, relative to private car use. At the same time, with higher economic outputs, there is a greater propensity for early adoption of electric vehicles, local policymakers should consider supporting this transition with adequate charging infrastructure.

To support continued inward investment in advanced manufacturing, consolidation centres should be situated adjacent to the strategic rail or road network with direct access to key gateway ports and airports for exports to international markets; helping to reduce unnecessary trips by shortening supply chains.

What impact might these policies have on the North's people?

Reflecting their variety and wide geographic spread across the North, Transformational Places are home to a varied mix of suburban and rural people segments, including Small Town Suburbs (38%).

Rural Residents (27%), Urbanites (18%) and Hard Pressed Living 1 (14%). Most of these segments are highly car-dependent and would benefit from opportunities to take up electric vehicles and/or car clubs to make their journeys more sustainable, particularly for commuting purposes. Better public transport options are also needed to encourage greater use of rail and bus for commuting.

Urbanites for example already demonstrate comparatively high use of rail for commuting.

For segments such as Hard Pressed Living 1, who have lower levels of qualifications, and travel shorter distances, improvements in transport infrastructure would improve access to economic and education opportunities, particularly with improved access to locally significant employment sites in isolated locations.

Other Urban

Other Urban areas have the second highest population density of all the typologies across the North, with lower population growth of 1% compared to the Northern average of 1.5%. They are distinguished from Industrial Places by having a low number of people working in traditional industries (3.4%) and a high number of people working in the Public Sector (38.7%), similar to Towns within Metropolitan Counties. Like Industrial Places and Towns within Metropolitan Counties, Other Urban areas have a low percentage of people with level four qualifications or above, a small percentage of people working in knowledge intensive business services and have an above average unemployment rate (though not quite as high as industrial areas).

Effectively, they represent a more geographically focused version of Towns within Metropolitan Counties, with a similar employment breakdown, but more geographically isolated and further from the Larger Conurbations.

What impact might these policies have on the North's people?

In common with Former Metropolitan Counties, Other Urban areas have a mix of predominantly suburban-based, car-dependent people segments, including Hard Pressed Living 1 (35%), Small Town Suburbs (27%) and Urbanites (16%) and share somewhat similar economic challenges to Former Metropolitan Counties and Industrial Places. Policies to complement the existing rail network in Other Urban areas with affordable public transport provision and active travel infrastructure will provide better and more sustainable connectivity to economic and social opportunities for residents and improve their quality of life, particularly when coupled with other urban regeneration initiatives.

Visitor Destinations

While all parts of the North have key visitor destinations or attractions our definition of Visitor Destinations is focused on rural destinations and towns that attract large numbers of seasonal tourists each year. They tend to be within and surrounding national parks and Areas of Outstanding Natural Beauty or areas of historical significance and some coastal resorts.

The seasonal nature of visitor destinations requires a careful consideration for the transport infrastructure and modal splits in these areas. Consequently, there are two different but equally significant user groups: tourists and local population.

Policies must accommodate the seasonal demand of tourists whilst also supporting the needs of the local population, particularly addressing the above average risk of TRSE.

Visitor destinations are attractive places for tourists. Therefore, policies should be mindful of the need to conserve and enhance both the natural and historic environments which generate tourism demand, as well as enhancing local transport provision and encouraging local regeneration to benefit residents. To support this policies should consider safer roads and footpaths for all users combined with better path finding to encourage sustainable first and last visitor mile trips whilst preserving the natural environment, landscape and the historic and cultural assets of visitor destinations.

Due to high car dependency and low density, the 'right share' for this typology will be different to the pan-Northern target set within this Plan, including different splits between tourists and the local population. However, the policies aim to encourage tourists to arrive to Visitor Destinations by public transport.

What impact might these policies have on the North's people?

In keeping with their predominantly rural character, the most common people segment in Visitor Destinations is Rural Residents (39%), but they also have notable shares of Hard Pressed Living 1 (35%), Small Town Suburbs (27%) and Urbanites (16%). The benefits that these groups of residents could derive from the above policies will therefore vary, but most will enjoy a better quality of life from the reduction in congestion and negative environmental and social externalities arising from tourist visits.

Better transport connectivity within Visitor Destinations and to neighbouring towns and cities will offer broader and more sustainable access to employment and social opportunities, whether locally or further afield, to all segments, with particularly beneficial impacts for the segments with lower qualification levels such as Hard Pressed Living 1.

Town within Metropolitan Counties

Towns within Metropolitan Counties face a similar set of challenges as Industrial Places around attracting business investment and improving skills. Due to the major roads near and in towns within Metropolitan Counties, there is severance and negative environmental externalities. There is a strong case for improving their town centres to attract more business investment, increasing job opportunities.

Due to their proximity to Large Conurbations and high percentage of commuters, there is an opportunity for connectivity to large urban centres (with stronger employment markets) to support labour supply effects and address the risk of transport-related social exclusion linked to basic service access in these areas. More efficient bus services and active travel upgrades can sow the seeds for future densification. Many towns in these areas already benefit from well-used railway stations. This needs to be balanced with local regeneration and improvement of town centres to avoid excessive amounts of commuting in peak hours and encourage more local trips. The first policy recommended in the full People and Place Framework therefore focuses on 15/20-minute neighbourhoods for this place type. To further local regeneration in the future, densification should be a long-term goal.

What impact might these policies have on the North's people?

Towns within Metropolitan Counties are predominantly comprised of suburban-based people segments which are closer to Large Conurbations, including Metro Suburbs (28%), Hard Pressed Living 2 (28%) and to a lesser extent also Urbanites (17%). Among these segments there is a comparatively high prevalence of commuting to neighbouring city centres. Improved rail and bus connectivity to these employment centres would provide residents with sustainable access to a potentially wider range of economic opportunities and facilitate better skills-matching. At the same time, investment in local public transport and active travel infrastructure would support local regeneration, providing more economic opportunities locally as an alternative to commuting to nearby cities (particularly benefitting groups such as Hard Pressed Living 2 who tend to travel shorter distances to work) and supporting essential and social journeys in the local area for all segments.

Industrial Places

Industrial Places are areas where employment is focused around 'traditional' industries, with typically lower levels of productivity and higher levels of economic inactivity and unemployment. Typically located surrounding Large Conurbations such as Liverpool, Manchester and Sheffield, together with other large urban areas such as Hull and Carlisle.

Industrial Places face several challenges around encouraging inward business investment, particularly in their potential strengths in advanced manufacturing and encouraging greater labour market participation. Improved connectivity to employment centres and regenerating neighbourhoods is required to both attract investment where existing accessibility is poor (provided other, complementary investment is made in skills and training), and support labour supply effects where they better connect regions to areas with high employment densities and job vacancies.

These types of places generate significant volumes of business and freight traffic, largely due to a greater proportion of employment within the manufacturing, logistics and distribution sectors which rely on the highway network. Policies focused on protecting, enhancing and improving access to historical assets and townscapes, which form part of the transport infrastructure network such as stations and viaducts, are essential for this place type.

Tackling TRSE is a priority in this typology as 40.7% of the population live in high-risk areas. This requires significant investment in local public transport to employment centres, education and health services, including out of town locations.

Public transport should operate sufficiently within evenings and weekends, enabling access to work with irregular hours, including shift work. This will ensure everyone, including non-car users and vulnerable groups, are able to access opportunities, which will have economic as well as social and wellbeing benefits.

What impact might these policies have on the North's people?

Industrial Places are the most diverse place type in terms of people segments represented, with a quarter of the population accounted for by the Hard Pressed Living 1 segment and the remainder split relatively evenly across the other segments. This means that the potential benefits from transport improvements will vary depending on each segment's socio-economic characteristics and proximity to economic and social opportunities, however given that over 50% of the population in Industrial Places are in the more economically deprived people segments, these groups would benefit from better accessibility to employment and education opportunities locally and to nearby larger employment centres, coupled with policies intended to encourage local economic regeneration. Investment in sustainable, reliable, and affordable local transport connectivity will also help reduce transport-related social exclusion, which many of these segments are at a high risk from.

Our place-based approach enables a focus on outcomes, and how better connectivity can create more liveable communities facilitating greater opportunities for decarbonisation, and improving health and wellbeing for all. Aligning spatial and transport planning, by providing better accessibility to services, is critical to achieving those outcomes.

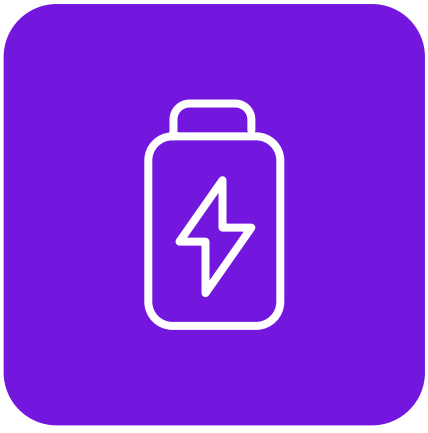
We need to change the way we plan for, develop and deliver transport infrastructure and services. While transport investment can be a catalyst for change, it is not sufficient alone and alignment with investment in other areas of public policy is needed including in skills, housing and place making.

TfN has an enabling role in spatial planning by providing the wider infrastructure context, as to ensure pan-Northern connectivity and support cross-boundary development, within which local plans can be prepared. TfN's innovative analytical tools are rapidly opening up new areas of collaboration with the energy, housing and planning sectors.

The opportunity now is to align spatial plans to ensure they unlock new housing, work and leisure sites that are active and public transport focused.

This Plan reinforces our key role in working across sectors to promote the clean growth opportunities from developing and producing alternative low carbon fuels and emerging low carbon technologies. This includes partnering with our energy distribution networks and industry to understand the feasibility and infrastructure requirements to create a viable low carbon refuelling network for both light and heavy-duty transport users. This is demonstrated through TfN's EVCI framework and data tool, as well as our ongoing work to visualise a pipeline-supplied Northern hydrogen refuelling network.

TfN's spatial planning framework provides a mechanism for partners to consider the transport objectives of the Plan within their own spatial plans and development strategies. We can help by supporting a 'bottom-up' assessment of the development impacts on neighbouring local planning authorities and the level of accessibility of the proposed development via all transport modes. Using our analytical framework, we can help align strategic planning outcomes and integration opportunities to deliver our combined economic, social and environmental vision for the North.



5.6 Bringing it all together

To deliver our vision, we need our transport system, whether national, regional or local to work efficiently and effectively together. It is crucial that pan-Northern road and rail networks are seamlessly integrated with our national networks, local roads and public transport networks; that spatial planning at all levels supports effective multimodal hubs, as well as walking and cycling networks. Fares must be integrated, smart, affordable, and simple to understand.

Interventions to support local roads, local public transport modes, walking and cycling are primarily the responsibility of our local transport authorities. They are important enablers to reduce congestion, encourage shift to sustainable modes and are essential in creating a more integrated, healthy and resilient overall transport system. As such, they are vital to achieving our collective ambitions and decarbonisation outcomes.

Given the scale of these challenges, investment is required to support pan-Northern connectivity, inter-regional connectivity and local transport networks. That investment must recognise:

- Our rail network and wider connections must transform the access to opportunities for millions of people, recognising the need to move beyond the current deficient performance and take clear steps to create capacity for passenger and freight growth over a sustained period of investment.
- The critical importance of the North's road network to our economy and supporting our modern society. Roads are a multimodal asset and provide the public space we all use to move around, whether that be on foot by bike, bus or car, as such they are an essential community asset. We need to choose how the space available is used in order to meet our need to decarbonise, maintain access for freight and encourage active travel.
- The importance of local connectivity and multimodal integration in providing door-to-door sustainable transport for people and goods. There is a need to invest in improving local connectivity. This will address the extent to which our current transport system too often acts as a barrier, and represents an opportunity to decarbonise transport.

There is also a clear need for public transport modes to work together in a way that creates a genuinely attractive alternative for car use for a wide range of journeys. It is important to invest in surface access to international gateways for passengers and freight, recognising our ports and airports as key economic assets. We need to align investment across our transport system to achieve an integrated, affordable and connected network - that requires a mix of technology, behavioural changes and mode shift solutions.

To avoid the risk of increasing private vehicle mileage, we need to focus on reducing the need for car travel and supporting a higher proportion of travel by public transport. This will support our transport objectives of reducing congestion, increasing operational efficiency, and improving air quality and health.

Following the lead of other transport bodies in the UK, we are proposing a 'right share' metric that will support efforts to reduce car dependency and create the capacity required to accommodate growth on our public transport networks, so that:

- → The share of trips made by sustainable modes (public transport and active travel) increases to 51% by 2050 (currently 36.4%).
- → There is zero overall regional increase in car and taxi vehicle mileage on the North's road network to 2045, against a baseline of 61.1 billion in 2019.
- → The share of freight (measured as tonne km) carried by rail trebles from 8.5% to 25.5% by 2050.

Achieving these metrics will only be possible with significant investment to improve public transport and active travel choices, which this plan advocates for, and through bold action in our cities and larger centres where there is greater density and therefore greater opportunity for change.

Through our evidence base and analytical tools, we will provide support to our local authority partners in the preparation of their LTPs and defining the 'right mix' of modal targets for their different places. Our Clean Mobility tool[91] and Quantified Carbon Reduction dashboard[92] will help to identify those interventions most likely to support mode shift and reduce vehicle mileage for different places and the intensity of interventions required.

6.

Action and impact framework

This Plan has demonstrated the scale of change needed to deliver the strategic ambitions and outcomes the North wants to see, as well as the significant challenges faced by the current state of the transport system. The implementation of this ambitious and challenging Plan will require a concerted, sustained effort across the region working with national and local partners to:

- **Move at pace to secure the funding (capital and revenue) and deliver the investments** in infrastructure and services that improve connectivity, particularly to meet the requirement to achieve near-zero carbon.
- **Change the way we plan for, develop and deliver transport** infrastructure and services.
- Work to **align investment in transport with other strategic infrastructure** investment to achieve the North's ambition.

Action and impact framework

Since being established in 2018, TfN has developed a strong reputation for clear forward thinking on transport issues, industry-leading technical expertise, local knowledge and relationships that allow us to be:

- A **centre of technical excellence** for the North - building analytical tools that are available to all partners.
- A **source of trusted information** - holding and collating information that is available to all our partners locally, regionally and nationally as a foundation on which to develop solutions.
- A **strategic thought leader** and champion of strategic transport planning - one that ensures the linkages between transport, digital and energy systems are reflected in decision making.
- An **enabler of accelerated delivery** - applying our capability and capacity in support of our partners as they bring forward solutions for implementation.
- A **trusted collaborator** - working with partners (nationally and across the North) to maximise activity to the benefit of our communities and businesses.

As a statutory body a key role for us is to articulate the strategic direction and ambition of the North, providing evidence based recommendations that can underpin decisions on funding, sequencing and implementation of transport investment. To support that we will introduce a series of processes that will enable a holistic approach to providing regular progress updates and reporting on the impact of this Plan to the TfN Board. We will also ensure the assessments feed into our other processes, such as our annual business plan.

We will work with our delivery partners, businesses, the transport industry, and government to support the delivery of schemes, influence policy and ensure we are on track to deliver on our intermediate 2030 and long term 2050 ambitions.

Our action and impact approach brings together several processes at TfN to assess progress against the strategic ambitions, using a range of objectives, metrics and **Key Performance Indicators (KPIs)**.

Together, these processes provide a robust framework to measure performance against this Plan, they will help us to identify any of our metrics where there is underperformance. That intelligence will enable us to work with our Board to reconsider our approach to ensure we are doing everything we can to deliver on our collective vision, and inform any subsequent advice to the Secretary of State and arms-length bodies.

TfN Monitoring and Evaluation Framework - consists of a series of headline, core, and supplementary metrics developed in collaboration with partners that can be used to monitor the effectiveness of this Plan.

Action plan and KPIs - our action plan will form part of our annual business planning process, clearly setting out what TfN will do as an organisation to support delivery of our collective vision. Through our monitoring and evaluation dashboard we will articulate how the North is performing against the headline and core metrics and include a summary of this in our annual report.

Monitoring and evaluation

One of the key principles of this Plan is to be outcome focused. Our Monitoring and Evaluation Framework provides a mechanism to do that through a series of headline, core and supplementary metrics, developed in collaboration with our partners. We will monitor the effectiveness of this Plan, reporting against the Monitoring and Evaluation Framework. This will allow us to monitor progress towards our Vision on an annual basis. It should be noted that these are pan-Northern metrics and we recognise that different places may perform differently or have nuanced targets depending on their unique circumstances.

These pan-Northern metrics are split into the following categories:

- **Headline objectives (19 metrics)** Ambitious, long term, transformative and linked to targets and trajectories. These represent the highest profile, public facing objectives that will drive TfN's strategic focus.

- **Core metrics (60 metrics)** Provide key evidence required to monitor the road and rail networks in the short to medium term and will form a fundamental part of monitoring our Plan. Here a 'good is' target is usually sufficient rather than specific targets.

- **Supplementary metrics (20 metrics)** Provide supporting evidence to understand the wider context of the transport system.

For each ambition there are several sub-themes which together represent relevant aspects of the objective and an overview of the best current available metrics. TfN's metrics are designed to complement and inform KPIs of delivery bodies such as National Highways and Network Rail and partner authority LTP objectives.

It is important to note that these are ambitious pan-Northern targets or end states which clearly align to the outcomes the North wants to see delivered as set out throughout this Plan. However, given the geographic and social differences across parts of the North not all these targets will translate down to a local level. As set out earlier in this Plan, partners' own LTPs will set their own priorities which may see some of our partners committing to go further and faster than these pan-Northern targets, whereas in other parts of the North the full suite of targets may not be applicable.

The table below provides a summary of the headline (2050) and interim (2030) objectives (where applicable) included as part of this Plan. A more detailed version of this list can be found in the TfN Monitoring and Evaluation Strategy[93].

Table 6.1: STP ambitions and supporting metrics

Transforming economic performance

Medium term pan-Northern target (2030)	Long term pan-Northern target (2050)	Baseline (year)
Begin to close the productivity gap between the North and the average for the rest of England excluding London	Close the productivity gap between the North and the average for the rest of England excluding London by 2050	11% (2019)[4]
	37% of the North's population can access 500,000 jobs by rail within 60 minutes by 2050	27% (2018)[94]
68% of the North's population can access an employment centre with at least 5,000 jobs by public transport within 30 minutes by 2030	75% of the North's population can access an employment centre with at least 5,000 jobs by public transport within 30 minutes by 2050	63% (2019)[95]
Improve overall journey time reliability compared to 2019 levels; primarily achieved through a strong emphasis on encouraging modal shift to public transport, rail and active travel	Reduce the proportion of the Strategic and Major Road Network experiencing excessively unreliable journey times during the weekday peak by 2050	Morning peak 35.4%, Evening peak 33.2% (2019)[74]
	Reduce the proportion of the Strategic and Major Road Network experiencing excessively unreliable journey times during the weekend by 2050	83% (2019)[74]

Decarbonising surface transport

Medium term pan-Northern target (2030)	Long term pan-Northern target (2050)	Baseline (year)
56% reduction, to 11 million tonnes annually by 2030	Reduce annual Northern surface transport CO_2 emissions to near zero by 2045	25 million tonnes (2018)[71]
Share of trips made by sustainable modes (public transport and active modes) increases to 43% by 2030	Share of trips made by sustainable modes (public transport and active modes) increases to 51% by 2050	36% (2018) - Active modes 29%, Rail 1.5%, Bus and Coach 5.5%[96]
Zero overall regional increase in car and taxi vehicle mileage to 2030	Zero overall regional increase in car and taxi vehicle mileage on the North's road network to 2045 compared to 2019	61.1 billion (2019)[97]
Overall increase in rail freight mode share	Treble rail's share of freight carried to 25.5% by 2050, measured as tonne km	8.5% (2018)[83]
Uptake of public EV charging points at scale and pace across the North to support TfN's regional decarbonisation trajectory to 2045, increasing to at least 123,500 by 2030	Uptake of public EV charging points at scale and pace across the North, increasing to at least 141,000 by 2050	6400 (2022)[80]
All new major transport infrastructure development to aid local nature recovery by achieving 10% biodiversity net gain, for projects gaining approval from 2025 (in line with the Environment Act 2021)	All new major transport infrastructure development to aid local nature recovery by achieving 10% biodiversity net gain, for projects gaining approval from 2025 (in line with the Environmental Act 2021 and biodiversity strategies from other transport bodies)	

Enhancing social inclusion and health

Medium term pan-Northern target (2030)	Long term pan-Northern target (2050)	Baseline (year)
Public Performance Measure (PPM) of at least 91.2% for both TransPennine and Northern by 2028, returning to levels last seen prior to 2018		TransPennine 87.2% (2022)[99] Northern 84.0% (2022)[99]
Reduce the number of people in the North living in areas with a 'high' risk of TRSE by 200,000 by 2030	Reduce the number of people in the North living in areas with a 'high' risk of TRSE by 1,000,000 by 2050	TRSE 3.31 million (2019)[100]
Reduce the number of people in the North living in areas with a 'highest' risk of TRSE by 74,000 by 2030	Reduce the number of people in the North living in areas with a 'highest' risk of TRSE by 370,000 by 2050	TRSE 0.81 million (2019)[100]
Local and national road investment continues to deliver road safety improvements, including through the Safer Roads Fund, and supported by targets such as National Highways target reduction of at least 50% by the end of 2025 against the 2005-09 average baseline	Vision zero: reduce the number of people killed and seriously injured in traffic incidents to zero by 2040	Vision zero: 6,429 (2018 & 2019 average)[78]
Physical station improvements continue to be delivered as part of Network Rail's Access for All programme. By 2030, there is a plan in place to deliver the step change in physical station accessibility the North needs to meet 2050 targets.	All rail stations in the North to meet TfN's desired accessibility standards by 2050	54% (2021)[69]
Reduction in AQMAs in the North through improved air pollution levels	Eliminate the need for Air Quality Management Areas in the North announced due to NO2 or PM10 to zero by 2045 by bringing air quality within legal limits	AQMAs 132 (2022)[42]
Reduction in Nitrogen Dioxide exposure across the Major Road Network network in the North	Reduce to zero the proportion of the North's Major Road Network by length that exceed WHO Nitrogen Dioxide exposure limits by 2045	57% (2019)[101]

Interim milestones

This Plan aims to set out actions for the coming decades, and requires fundamental reform and investment which will take years to design, deliver and implement, it also recognises the significant changes we need to see in the coming years including:

- The opportunity to make significant progress on local transport networks, restoring services and rebuilding the confidence of the travelling public in buses and trains. This should include the development of active travel networks as part of transforming local transport networks. Through rail reform there is the opportunity to transform how services are run for the benefit of passengers.

- Our Decarbonisation Strategy already recognises the need for urgent progress towards near zero, and there is significant progress that can be made in supporting fleet transition for passenger cars, LGVs and HGVs through providing adequate electric vehicle and hydrogen charging infrastructure.

- Rail reliability improvements, including TRU and Hope Valley line upgrades, possible to make further progress on electrification for passengers and freight. During this period, further progress on NPR will also be possible, and while full delivery is likely to take into the 2040s, initial upgrades could be delivered by the early 2030s. We can also expect places can start to benefit from the anticipation and certainty that NPR will be delivered.

This is important as it further reinforces the case that if the North is to achieve an integrated transport system fit for the future, then we need investment not just for strategic pan-Northern schemes that derive benefits in the long term but also funding to support local connectivity which will help us deliver the outcomes this Plan seeks in the short to medium term. Actions must be complementary and be planned in such a way that we have an integrated transport system.

Our action plan

A realistic plan needs to recognise what is practical in the short term, while laying the foundations for future investment and reform of the system. We will therefore follow a three-stage approach in the coming years to deliver this Plan:

- Maximising the impact of committed investment in the North with a focus on capacity, resilience and reliability, and support the growth of travel markets crucial for economic, social and environmental transformation. At local level, we will be a positive catalyst for change, supporting authority partners with their ambitious plans for local transport networks and place making, including making available tools, evidence and support for local transport planning.

- Communicating clear road and rail investment and policy priorities for the next two funding periods within the existing funding envelopes that can accelerate transformation in the 2020s. While some of the pan-regional schemes that are fundamental to transform the North have been referenced in this Plan, we will - with partners - provide further, more detailed advice on priority interventions, funding and investment.

- Setting out and agreeing with government the wider roadmap for securing the longer-term investment needed at pan-regional level - including the completion of the full NPR rail network - while putting forward positive proposals for reform of transport planning and funding in the North. This includes further devolution of decision making and accountability. Initially, we expect to provide advice to government on system reform in 2024.

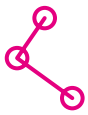
Consequently, there are some key actions for TfN to undertake to support the delivery of this Plan, which are set out in Table 6.2. We are now working with partners to define the specific deliverables over the short, medium and long term.

Table 6.2: TfN Required Actions

Policy Area	We will...
Decarbonisation 	→ Reflect the need for an increasing focus on resilience and adaptation to climate change, in relation to both planned infrastructure and existing networks, within both our decarbonisation workstreams, but more generally across all our activities at TfN. → Update TfN's Decarbonisation Strategy to review our carbon baseline and decarbonisation trajectory, revisit our assumptions on zero emission vehicles. → Contribute to Northern based Nature Recovery Networks by taking advisory and promotional roles, facilitating engagement with transport operators and Infrastructure delivery bodies, and considering where appropriate in new TfN policy positions. → Continue the 'whole network, whole system' approach as set out in the EVCI Framework to foster partnerships and solutions to ensure charging infrastructure is planned and delivered in an efficient and cohesive manner across transport, energy, and spatial sectors.
Transport Related Social Exclusion 	→ Work with partners to advocate that investment in the major roads, rail, and local public transport networks deliver reductions in transport-related social exclusion. → Develop an evidence based pathway for reducing TRSE across the North by 2050. This will include interim targets for different area types, and analysis of the consequences of different rates of change. → Develop investment options to achieve our ambition for 2050, linked to the minimum service standards. This will include analysis of investment options across TfN's Future Travel Scenarios. → Develop minimum transport service standards. These standards will define the level of service necessary in different elements of the transport system to deliver on our ambition for 2050 across different place and population contexts.

Policy Area	We will...
Rail 	→ Work with partners to secure full delivery of the preferred NPR, completion of the TRU, and alternative proposals to deliver the outcomes that HS2 would have provided, building on the committed investment in the Government's Integrated Rail Plan and Network North. → Work with industry and DfT to secure a common set of service development proposals against which a pipeline of infrastructure investment can be more coherently developed to ensure an effective and joined-up approach across these schemes and programmes. → Actively work with partners to bring all stations in the North up to minimum suggested standards as quickly as possible and meeting desirable standards by 2050. → Use the Rail North Partnership to rebuild the confidence of rail passengers in the North's rail services, promote further strong growth in patronage and ensure the next generation of passenger service contracts can meet the needs of the North's communities and businesses.
Roads 	→ Work with National Highways and DfT on making the case for improvements to the SRN delivered through the Road Investment Strategy programme. → For the SRN, MRN and local roads we will work with government, National Highways, our partner local authorities to develop a robust evidence base underpinning recommendations and TfN support for targeted investment in roads. This includes recommended investment in electric vehicle charging and hydrogen refuelling infrastructure, improved infrastructure for active travel and public transport, new digital technologies enhancing customer experience, and freight interchanges. We will also continue to seek investment for road safety measures and highway schemes opening up major new developments in housing and employment. Our focus being on how road investment contributes to TfN's ambitions for substantially improved economic, social and environmental outcomes.

Table 6.2: TfN Required Actions

Policy Area	We will...
Freight and Logistics 	→ Develop our freight appraisal/modelling capabilities and tools within the TfN Analytical Framework to support the case for investment in freight and logistics. → Develop and strengthen key stakeholder relationships, including opportunities for collaboration on data and modelling, sharing evidence to strengthen the case for investment/policy asks, and prioritising key schemes for investment. → Provide 'thought leadership' on new/emerging areas relevant to freight and logistics policy, such as SFRIs, to support partners and provide advice to government as necessary.
Connected Mobility 	→ Develop a programme of work, targeted interventions and policy positions with partners and government that realises the 30 strategic outcomes defined by the Connected Mobility Strategy. → Embed a systems-wide approach to the use of data and standardised systems in delivering integrations and innovation across geographic boundaries, across modal silos and to encourage more holistic and affordable journey provision for passengers.
Local Connectivity 	→ Utilise our extensive pan-Northern evidence base to provide localised evidence to partners to support the planning and delivery of LTPs that improve social outcomes, inclusion, equality, and decarbonisation. → Proactively work with Active Travel England, DfT and local authority partners to secure investment to enhance the provision, accessibility, and safety of active modes to deliver modal shift, including opportunities through strategic active travel corridors. → Enhance TfN's rural evidence base and analytics to better support the case for local connectivity investment within rural communities, enabling our local partners to progress applicable interventions and solutions. → Undertake further work to build the evidence base on the affordability of transport and work with our partners to explore options for developing a suitable policy position if necessary.

Policy Area	We will...
Buses 	→ Support partners to improve bus journey times, frequency and reliability, by making use of any powers included in the Bus Services Act 2017 through the implementation of Bus Service Improvement Plans, using our analytical capabilities to deliver bespoke support to different typologies. → Develop targeted policy advice that collates evidence on and considers what is required to increase patronage across the North.
International Connectivity 	→ Proactively influence Government to encourage a greater use of the North's airport capacity, within a national aviation carbon budget approach consistent with CCC recommendations. → Continue to work with the Northern airports and ports to identity and support connectivity needs where appropriate.

Delivering our connectivity needs sustainably

In delivering transport interventions, we proactively encourage delivery authorities to avoid and mitigate any significant local environmental or social effects in line with the principles set out within the Government's planning guidance and ensuring consistency with the Green House Gas trajectory required to achieve net zero. The new strategic infrastructure investment required within the strategic development corridors also provides opportunities to enhance our wider environment. That means improving local air and water quality, and reducing noise, vibration and light pollution. We will also need to manage change within those parts of our transport infrastructure that form part of our historic environment so that they can be adapted and used to respond to society's needs whilst retaining their value as heritage assets. We already have some great examples in the North, such as the revitalisation of Hull Paragon Interchange and the renewal of Preston Bus Station.

Investment in infrastructure also allows us to respond to the requirement to achieve Biodiversity Net Gain. Delivery agencies have already set targets for achieving Biodiversity Net Gain and effective implementation will promote sustainable infrastructure development. It is important to embrace lessons learnt from past infrastructure development, and ensure that the measures that enhance aspects of our environment are not lost through value engineering processes.

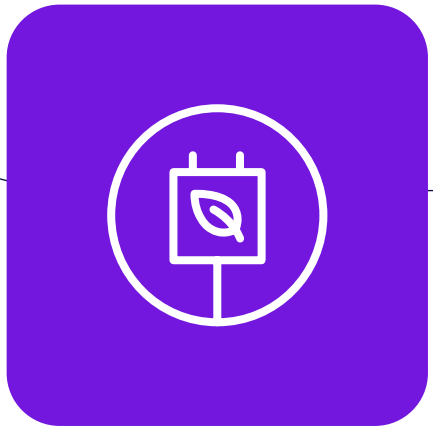
Our linear transport infrastructure, both existing and proposed can play a vital part in supporting and enhancing our partners' Local Nature Recovery Strategies and in complementing our decarbonisation ambitions through the development of nature-based solutions for climate change mitigation and increased infrastructure resilience, for example, through working with local stakeholders to support Nature North's 'Green Northern Connections' investable proposition[102]. The amount of embodied carbon associated with the construction and maintenance of transport infrastructure needs to be an important consideration within scheme appraisal and developing techniques and materials to minimise it will need to be a key area of action for delivery authorities.

TfN's participation in a DecarboN8 study into embodied emissions associated with the multimodal corridors proposed in our SDCs, demonstrated the difficulty and resource intensiveness of calculating the likely embodied carbon footprint of major infrastructure developments at a conceptual level of design or when the scheduled design and construction of the infrastructure is many years or decades in the future[103].

Delivery authorities have the core responsibility for working towards low and ultimately zero carbon scheme delivery. National Highways has adopted a 2040 net zero for maintenance and construction emissions target and was accredited with **Publicly Available Specification (PAS)** 2080 'Carbon Management in Infrastructure' in December 2022[104]. As part of these commitments, National Highways has published net zero road maps for materials (concrete, steel, and asphalt) and a 'Low Carbon Opportunities' register for low carbon material and delivery options, along with their applicability to the SRN and commercial viability. The register will be linked with National Highways' innovation projects and supplier carbon returns to form a best practice repository that suppliers can both input to and learn from.

While there will be a need for new infrastructure and new services, delivery authorities and service providers will also need to consider how to minimise the use of natural resources for construction and maintenance activities. Where possible, they should look to achieve policy priorities through the re-use and upgrading of existing infrastructure and vehicles, alongside using recycled materials and reducing fuel usage.

TfN will work with delivery authorities, facilitating knowledge sharing and best practice, and continue to raise embodied infrastructure carbon as a core issue with government.



Reform required to deliver a systems approach

Tackling the transport challenges in the North will also require considerable reform of the transport system, and while significant progress has been made by TfN, government, and our partners since 2015, there is more to do. Recognising that transport alone will not achieve our collective vision, we need to work with a range of partners to find appropriate solutions and overcome barriers to delivery.

To meet government policy priorities, transport investment, must therefore be grounded in delivery of strategic outcomes and not predicated on more easily monetised **Benefit Cost Ratio (BCR)** calculations based on a narrow 'predict and provide' model of how to adapt to traffic growth. To achieve this there is an urgent need for the simplification of funding streams, thereby removing cost and inertia from the delivery of investment, as well as greater flexibility in the application of the funding available, to ensure that it is targeted towards the delivery of outcomes. The evidence base assembled within this Plan demonstrates how investment in the North's infrastructure contributes to achieving strategic outcomes on reducing carbon emissions, improving health and achieving sustainable economic growth. This will require, at a minimum, alignment of decision making in transport investment with that in energy systems and digital connectivity.

Further, the economic scenarios to refresh the NPIER also indicate that to fully achieve the potential of the North investment in other areas of public sector policy (including education, health services and R&D) needs to be aligned with investment in infrastructure.

The NPIER shows that in the transformational growth scenario, the Government's investment would be recovered through additional tax revenues from higher growth in the North, and lower spending on health intervention and welfare funding by 2050. The scenarios also detail how private sector investment would be incentivised by a consistent long-term public-sector approach to policy and investment.

Fundamentally, to achieve the strategic ambitions for the North there is a need for targeted investment in transport, as identified in this Plan, combined with complementary policy and investment focused on education, health and on supporting key sectors of the economy.

As set out in our **Northern Transport Charter (NTC)**, it is clear there is consensus across the North of England about what is required to create a long-term funding settlement and pipeline for the North of England, based on three **fundamental building blocks:**

- The ability to put together long-term multimodal investment pipelines and integrate with mode specific delivery programmes.
- Funding arrangements that can look across modes and take a programme approach with certainty about the longer term.
- An investment and decision-making framework that works for the North.

The NTC identified the need for an appraisal system that works for the North. Investment in the North of England (and other regions) has been constrained by a government appraisal and decision-making process that fails to reflect the wider economic, social, and environmental objectives which TfN was established to deliver.

The Government has revised the Green Book to put strategic objectives at the heart of decision making and place greater weight on wider evidence within appraisal. While this represents a positive, significant shift in approach, we have yet to see the new Green Book translate into investment decision-making. A bespoke Northern approach, which recognises the different policy drivers in our region compared to London and the South East is still required. We need to ensure that the full environmental, economic, and social benefits of transport investment are reflected in decision making.

TfN's Analytical Framework provides unique tools and models that fully represent the economic and environmental benefits from investing in the North's economy. This includes mechanisms to better represent social and distributional impacts of transport investment. Critically this provides us and government with the capability to undertake the weighted, multicriteria approach and to deploy the Analytical Framework systematically across the transport appraisal process, business case development, assurance frameworks and scheme prioritisation. This is fundamental to TfN's core focus of establishing a new and different approach to investment decision making and delivering better outcomes.

Change will take time to realise but is urgent - driven fundamentally by the legal obligation to decarbonise our transport system. A realistic plan needs to recognise what is practical in the short term (including the likely constraints on spending in the next Parliament), while laying the foundations for further investment and reform of the system.

This activity will ensure we can accelerate and bring forward the critical investment and policy changes needed to deliver the intermediate objectives and metrics in this Plan. Through our short and medium-term activities to start investment flowing, we can then start to see the foundations of market growth and increased patronage and revenues, mode shift and decarbonisation consistent with the ultimate delivery of our 2050 vision and strategic ambitions.

The evidence presented in this Plan makes the case that system reform is needed if we are to deliver an integrated transport system fit for the future.

To achieve this there is an urgent need for the simplification of funding for local and regional transport, building on City Region Sustainable Transport Settlements, Local Transport Fund allocations and Single Settlements. To achieve the Government's legal net zero commitments and to address the challenges of social exclusion within the North, we need to be able to bring policy makers across disciplines together to find innovative solutions, pooling expertise and funding streams to deliver meaningful change at scale and pace. The NIC has recommended the need for greater certainty of local government budgets including local transport authorities. A 'five year plus five year' settlement for LTAs would remove cost and inertia from the delivery of investment, as well as greater flexibility in the application of the funding available, to ensure that it is targeted towards the delivery of outcomes.

TfN also recommends that a similar indicative funding envelope for pan regional and nationally significant transport infrastructure should be established, within which statutory advice on infrastructure and service priorities is then prepared. Regional funding envelopes should then be linked directly to the advice of the NIC. This Plan provides the basis for us to provide our advice to the Government on both the need for investment and the prioritisation of available funds.

Indicative funding envelopes accompanied by longer term notional envelopes and built into existing regulatory and statutory processes, would bring significant opportunities to accelerate decision making, reduce uncertainty and avoid duplication of effort at national, regional and local level. This will:

- Enable TfN to make clear recommendations to the Government about the long-term capital and revenue requirements for pan-regional and nationally significant transport infrastructure and services of the North, all with a clearer line of sight back to the relevant government funding streams. This would complement wider approaches to local and third-party contributions to infrastructure funding, with TfN working with the private sector to maximise the leverage achievable through public sector investment.
- Allow TfN to promote a programmatic whole network approach to considering options for future transport investment at the pan-regional level, and to support wider long-term planning of energy, digital and housing needs.
- From an industry perspective, increase certainty and confidence in a sustainable pipeline, reducing costs, attracting talent and skills and speeding up delivery.
- Perhaps most importantly, it would enable our local partners and wider authorities to plan and deliver effective place-based solutions, moving away from the expensive, multiple competitive bidding processes frequently identified as a barrier to change.

TfN is not prefixed to the mechanisms to achieve the reforms needed, rather we commit to continuing to work with the Government and our local partners to make the case for devolved/combined funding points that break down the silos that act as a barrier to delivery of our outcomes. Recognising that to deliver different outcomes we need the mechanisms, funding and powers to do things differently.

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