Major Roads Report: Summary

TRANSPORT FOR THE NORTH

Our highways are at the heart of our communities, including as they do our footpaths, cycle ways and roads.

They are critical to a modern functioning society, connecting people and places with services and opportunities. Each and everyone of us use some part of the highway when making a journey.

An efficient, reliable and safe highway network is essential for modern supply chains: enabling raw materials to be received, finished goods to be dispatched, food stores to be supplied, office complexes to be serviced.

In the last century motorised transport revolutionised our way of life, and as we move towards the second quarter of the 21st century our highways will continue to be a fundamental part of our transport system.

However, as we look to address climate change we will need to make choices about how we use the available highway space, with greater priority given to pedestrians, cyclists and public transport.

New highways will continue to be built, needed to provide access to new housing and employment sites. We will continue to invest in our highways, ensuring that existing roads are maintained, and that new roads are designed and delivered in ways that minimise their impact on our environment.

And we will need to consider and agree on how we will pay for that investment and indeed on how we pay to use our roads. The electrification of road vehicles means that as a nation we will lose the revenues from Vehicle Excise Duty and fuel duty that pays for new roads. We need to do things differently but at the same time ensure that our way forward does not disadvantage those for whom travel by car is the only practical option. If we're to have that debate then we must seize the opportunity to look at how the relative cost of motoring, bus travel and rail travel influences the choices we make. For only by looking at transport in the round will we be able to ensure that our investment choices are sustainable for the longer term.

This Major Roads Report outlines the critical role that the North's major roads play in enabling our residents and businesses to go about their daily lives. It sets out the scale of the challenge as we look to enhance their safety and reduce their environmental impact.

Our highways will continue to be at the heart of our communities: they will continue to be an essential component of a sustainable, connected transport system.
As the 'one voice' for the North, TfN is committed to ensuring that our roads are fit for purpose. We will work with Government and its agencies to identify a way forward that is fair and sustainable, as part of a multi-modal transport system that is truly fit for the 21st century.

Martin Tugwell
TfN Chief Executive

Contents

About Transport for the North

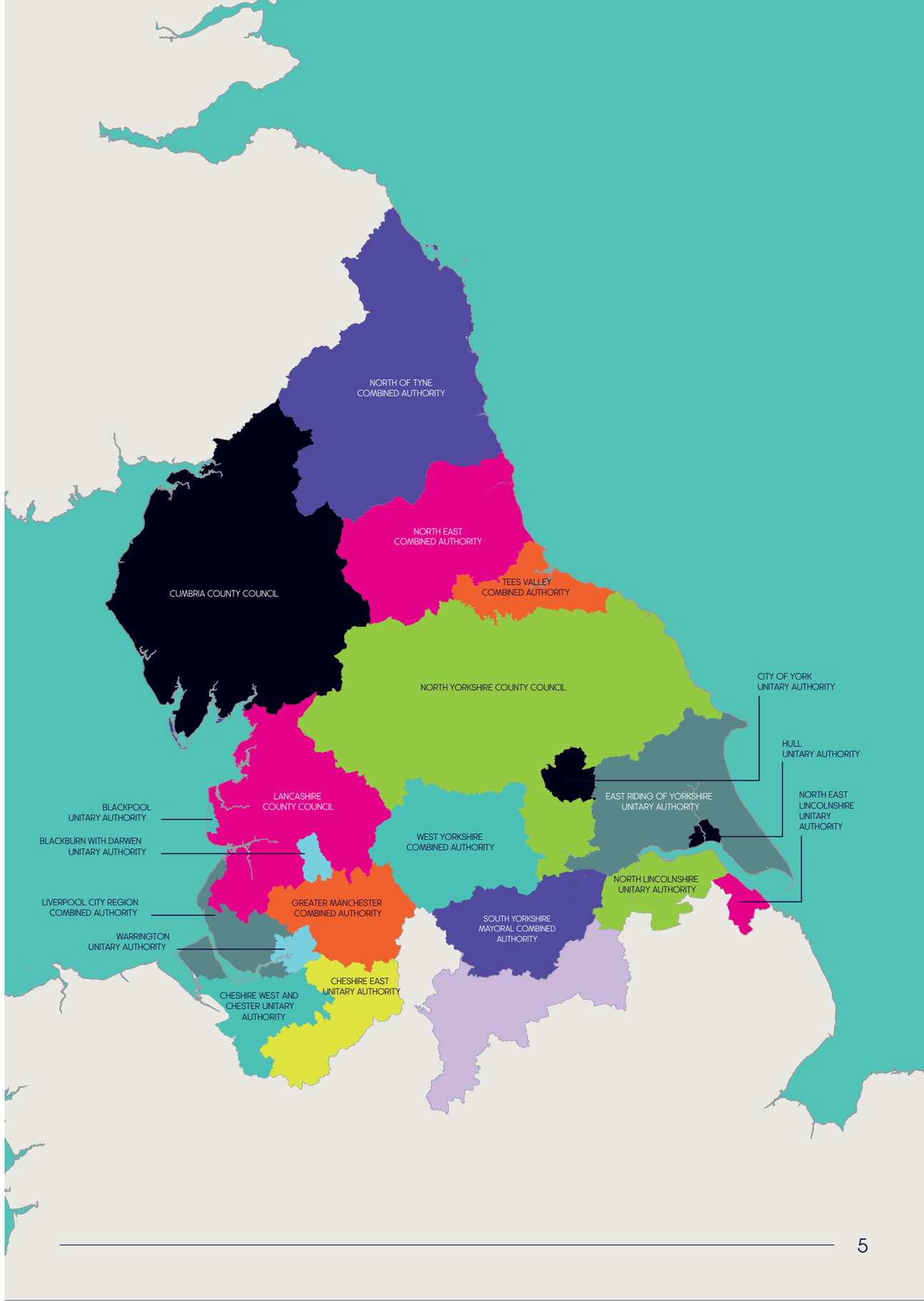
Transport for the North (TfN) is a Sub-national Transport Body (STB) with a statutory requirement to advise UK Government on the transport priorities for the North of England.

Our role is to add value through statutory advice to UK Government, ensuring value-for-money funding and strategic decisions regarding transport in the North are informed by our local knowledge, expertise, and needs. Our advice reflects the views of our Members, bringing the region's political and business leaders together to consider transport solutions which connect the economic assets across the North, both internally to create an economic mass, and also externally as part of a global marketplace.
We published our Strategic Transport Plan (STP) and Investment Programme in February 2019. The STP set out TfN's vision of:

"A thriving North of England, where world class transport supports sustainable economic growth, excellent quality of life and improved opportunities for all."

Supporting this vision are four pan-Northern transport objectives, which shape TfN's work programmes:

- → Transforming economic performance
- → Increasing efficiency, reliability, integration, and resilience in the transport system
- → Improving inclusivity, health, and access to opportunities for all
- → Promoting and enhancing the built, historic, and natural environment



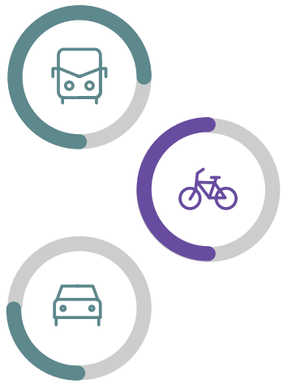
Introduction

Through our statutory powers, TfN acts as ‘one voice’ for the North, communicating pan-Northern priorities to the Secretary of State for Transport. We have a clear remit to identify the transport infrastructure required to support transformational economic growth in the North, and to provide evidence, data, and insight to help prioritise that investment. This places TfN and partners in the unique strategic position of being able to identify the transport infrastructure and policy measures that are required to help our region’s people and businesses achieve their ambitions through the support of a reliable transport network.

Developed as a position statement to support TfN’s statutory function, the Major Roads Report focuses on the role of major roads in achieving TfN’s ambitions and objectives. This document provides a summary of the Major Roads Report (MRR). The report also reflects upon the Government’s Road Investment Strategy 2 (RIS2) announced in 2020, and the Major Road Network (MRN) programme.

With 97% of personal journeys and 88% of freight movements in the North made using our highways, roads are central to our way of life. And with close to 70% of all vehicle kilometres on the Major Road Network, our major roads have a vital role in underpinning economic activity, opening up access to jobs, goods and services and in enabling growth in new employment and housing.

To function well the Major Road Network must be seen as a fundamental part of an integrated transport network where people and businesses can make well informed choices on the best forms of transport for their journey, and where for many journeys there are a range of good quality options in place of travel by private car. TfN promotes a ‘total network’ approach to improving transport, and sees improvements for pedestrians and cyclists, investment in rail, light rail and bus, as critical to delivering more efficient and sustainable transport choices for people and businesses in the future.



Key Messages

97%

of all personal journeys are made using our highways, amounting to 88% of distance travelled:

- 61% car and taxi
- 26% pedestrian
- 9% bus
- 2% cycle

88%

of freight movements are by road

2%

of roads (by length) in the North are managed by National Highways and classed as part of the Strategic Road Network (SRN).

Two-thirds of freight kilometres are on the SRN.

There are 8 million registered cars in the North and 126 billion vehicle kilometres travelled per year.

There are substantial differences in travel behaviours across income and age groups. On average, higher earners and those aged 30-60 travel further, have greater access to employment and services, and through their travel generate higher carbon emissions

Commuting and business trips account for around one-third of carbon emissions from cars, with trips for shopping, leisure and other purposes making up two-thirds of car-based emissions.

In the North, more than 95% of the 26 million tonnes of transport-related carbon emissions per year are from road transport.

On average, rural residents drive more than twice as far per year as people living in urban areas and are more dependent on private transport to access jobs, education, and other essential services.

Just under 90% of car trips are under 10 kilometres; there should be significant potential to switch a proportion of these to less polluting travel modes.

However, the 37% of car trips over 10 kilometres generate 54% of car emissions, so adoption of zero emission vehicles is a critical element in the strategy to reduce transport-related emissions.

More than two-thirds of all vehicle kilometres are on Local Authority roads.

Strategic context

Inclusive and more balanced growth is a key priority for the Government and Local Authorities in the North. As the country emerges from the profound economic and social impacts of the Covid-19 pandemic, the Government has reiterated its commitments to 'building back better' and the levelling up agenda.

Future investment in the North's transport network must be considered within the context of the UK's productivity challenge; the long-term opportunities for a more inclusive and balanced UK and Northern economy; and, critically, the need for rapid and concerted action on reducing transport carbon emissions.

In an era of climate emergency it may seem counter-intuitive to be investing in the future of our roads. However, as can be seen from the evidence in this report, the majority of journeys now and in the future will continue to be on our roads – whether this is through driving zero emission vehicles, walking, cycling, or getting the bus or tram.

The North has around 1.1 million businesses and prior to the impact of Covid-19 around 7.4 million jobs[3] and is currently home to more than 15.5 million people[4]. For the last 30 years, the North's economic value per person (measured as Gross Value Added, GVA) has been consistently around 15% below the average for the rest of the UK, excluding London[5]. Most recent data reveal the gap has widened further, with the economic value (GVA) per person in the North now 18% below the UK average[6].

The Northern Powerhouse Independent Economic Review (NPIER), published in 2016, highlighted the clear links between transport investment and the productivity and performance of the North's economy, identifying the potential, by 2050, for the North's economy to generate an additional £100 billion GVA and 850,000 additional jobs. The report shows there are major opportunities for growth in Advanced Manufacturing, Energy Sector including low carbon technologies, Health Innovation and Digital sectors and in Logistics, Education and Financial & Professional services. Advanced Manufacturing, Energy Sector and Logistics businesses are particularly reliant supply chain movements by road, whilst all sectors require good road connectivity for business travel and access to labour markets.

Strategic Transport Plan (STP)

TfN published the North's first Strategic Transport Plan (STP) and Investment Programme in February 2019. The STP set out TfN's vision of

"A thriving North of England, where world class transport supports sustainable economic growth, excellent quality of life and improved opportunities for all."

Plus four pan-Northern transport objectives, which shape TfN's work programmes:

- → Transforming economic performance
- → Increasing efficiency, reliability, integration, and resilience in the transport system
- → Improving inclusivity, health, and access to opportunities for all
- → Promoting and enhancing the built, historic,and natural environment

Alongside TfN's vision and objectives, TfN's Board Members have developed and agreed the Northern Transport Charter, which will underpin TfN's work in four key areas:

Championing an inclusive and sustainable North

Long-term Northern funding settlement

Leading strategic transport delivery

Putting rail passengers first

Decarbonisation of road transport

While good transport connectivity is fundamental to achieving our vision for a thriving North of England, that must be balanced against environmental goals, the most urgent being the need to deliver rapid and substantial reductions in carbon emissions.

Transport is the largest contributor to UK domestic greenhouse gas (GHG) emissions, contributing 28% of emissions. TfN's analysis of surface transport emissions in the North shows that 26 mega-tonnes of carbon dioxide (CO_2) were emitted from surface transport in 2018, representing nearly one-quarter of UK road emissions and 6% of total UK emissions. Over half of those emissions were generated by cars, with HGVs and vans producing 28% and 11% of surface transport emissions respectively. Bus and rail, on the other hand, represent just 5% of emissions.

26 million tones of CO_2

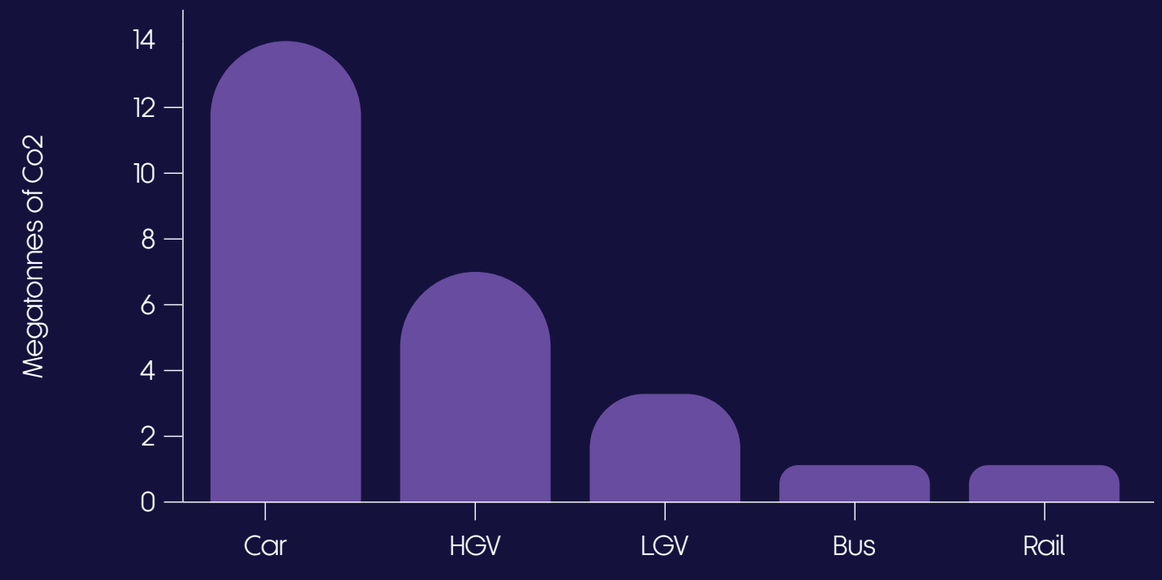
→ **6% of total UK emissions**
→ **23% of UK road emissions**

126 billion vehicle kms

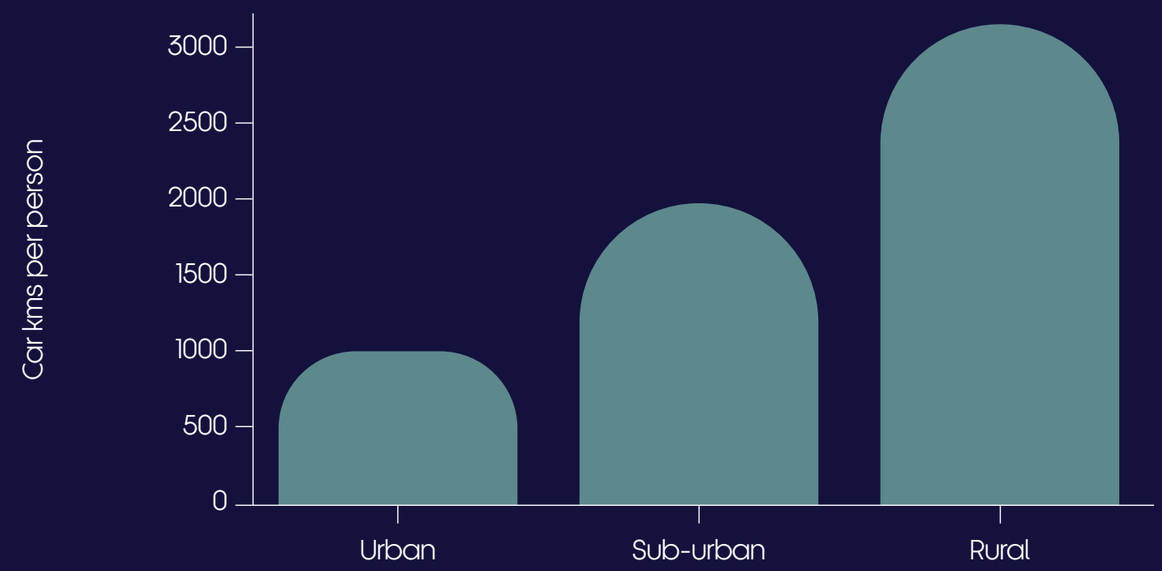
→ **23% of vehicles kms in the UK**
(Cars, LGVs, HGVs)

Figure 1: Headline figures related to surface transport emissions in the North in 2018.

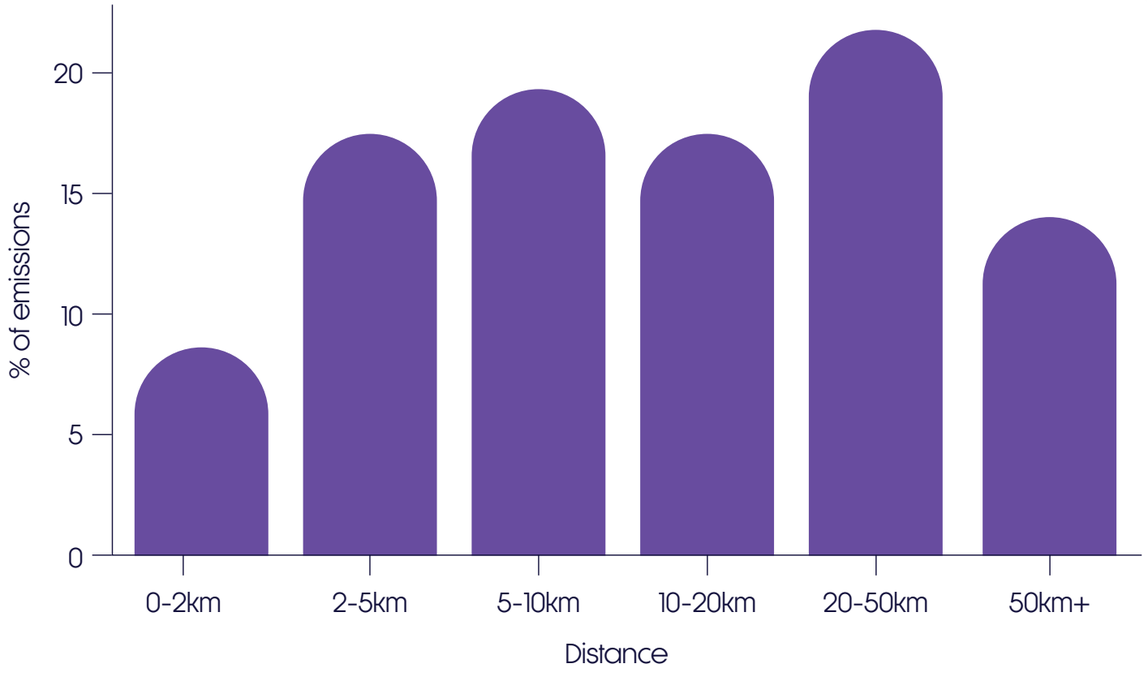
Total megatonnes of CO2 by mode



Car kms per person by area type



% share of car emissions by distance



Reducing greenhouse gas emissions from the transport network is a key priority and on **[24 November 2021]** TfN's Board adopted our Decarbonisation Strategy for the North.

This sets out a decarbonisation trajectory and set of TfN actions towards achieving a near-zero date of 2045 for carbon emissions from surface transport in the North.

Policy measures to reduce travel by car and future investment to make the use of our roads less carbon intensive will be vital in meeting emission reduction targets. TfN analysis of what is required demonstrates that we will need:

- → **55% of all new car sales to be zero emission vehicle (ZEVs)by 2025.**
- → **To reduce distance travelled by car, van and HGV.**

Reductions in distance travelled by road are particularly important in delivering the earlier reductions in emissions needed to keep within the overall carbon budget, with our evidence suggesting car kilometres in 2030 need to fall by between 3-14% relative to baseline growth. Achieving this in a sustainable and inclusive way is critical to achieving TfN's ambitions.

TfN is committed to ensuring that our recommended investment programme for road & rail is aligned with commitments in our transport Decarbonisation Strategy.

How roads support people and communities in the North

People rely on our roads to access jobs, homes, services, leisure facilities, and visit friends and family. Most goods are transported by road, and many businesses are dependent on reliable deliveries to support 'just in time' supply chains.

Case studies:
The importance of roads for people in the North

Rural residents make up 8% of the North's population

David and Sara live in North Yorkshire. Sarah works full time in the agri-food sector and Peter works part time for the National Park Authority.

They live in a medium-sized village with just two buses per day, so both use a car to commute to work and drive to get to shops and other services. Although they would like to drive less they can't see any way they could use public transport more often. Recently they and their neighbours have started ordering more shopping online, reducing their personal car mileage, though increasing the number of vans traveling to/from the village.

Access by car is always likely to be important to rural residents like David and Sara. Measures which would support reductions in vehicle kilometres include improved rural bus services, integrated public transport tickets and reasonably priced fares, shared mobility options, good broadband connectivity enabling home working and online shopping, and encouraging the provision of local shops and other key services. Incentives to promote use of a low or zero emission vehicle could help reduce transport-related carbon emissions. TfN will work with local authority partners on developing the evidence to support new measures and investment to improve options for rural mobility.

Case studies are fictional examples based on the lived experiences of people in the North.

Around 13% of the population live in similar circumstances to Matt and Rebecca

Anthony and Rebecca and their three school-aged children live in Sunderland. They own one car which Anthony uses to commute to his production line job in the manufacturing industry. Rebecca walks with her younger children to the local school, then continues to her part-time job at a local retail park. Their teenage son catches a bus to secondary school. Shopping is done at the local supermarket, a 10-minute drive from home. At weekends they sometimes drive to the coast for a family day out. Car ownership is a significant cost to the family, reducing levels of disposable income for other activities, however it is seen as essential in reducing travel time to work and providing more freedom for family leisure and shopping trips.

For people like Anthony and Rebecca, reliable access to a car through a car club could be an alternative to personal ownership, particularly if improved public transport and/or active travel routes provide good access to Anthony's workplace, the school, local shops, and other facilities. The transition to electric or hydrogen vehicles could be an opportunity to encourage higher levels of car sharing, and the greater utilisation of more efficient low or zero emission vehicles. TfN will work with local authority partners on developing the evidence to support new measures and investment to improve travel options within urban and metropolitan areas, and strongly support further devolution of funding for delivery of local transport improvements.

Keith is close to retirement age and lives alone on the outskirts of Halifax. Although there are bus services through the day, he finds it more convenient to travel by car, particularly when visiting friends in Leeds. At weekends he likes to travel further afield to the Peak District and Yorkshire Dales.

People like Keith might also benefit from access to a car club, and the introduction of a simpler, better integrated public transport ticketing system might persuade him to drive less, particularly if local authorities introduce measures to discourage cars from entering urban areas.

Around 13% of the population live-in small-town suburbs

Visitor economy

The North of England boasts five National Parks, significant areas of Outstanding Natural Beauty (AONB) and nationally important coastal areas and resorts.

Research prior to the Covid-19 pandemic identified that the North of England attracts 369 million visitors annually, comprising 4.54 million overseas overnight visitors, 28.88 million domestic overnight visitors. and 336.17 million-day visits.
Many of the North's key natural landscapes have relatively poor access to public transport, with the majority of visitors traveling by car. For example, 93% of those who travel to the National Parks do so in their own car.

The five National Park Authorities (Lake District, Northumberland, North York Moors, Peak District, and the Yorkshire Dales), face an ongoing challenge in balancing the need to accommodate millions of visitors with the ambition to minimise the impact of visitor traffic on the environment and local communities.

The car is likely to continue to be the dominant mode of travel to and within National Parks. Measures to reduce car reliance being considered or trialled in some locations include: improved rail and bus services linking urban areas to National Parks; development of 'gateway' destinations where visitors can transfer from private car to bus, coach or car sharing; investment in substantially improved active travel facilities coupled with improved sustainable travel options; and increased parking fees in some locations.

The Lake District National Park has set a target of reducing the percentage of people arriving by car from 83% to 64% by 2040.

Business travel

Business-related travel is particularly reliant on the road network, with evidence from 2018[7] showing that, for the average weekday, there were 1,194,272 trips by road and more than 32.4 million kilometres travelled by road for business purposes between 7am-7pm, with an average distance per trip of 27.1 kilometres.

Business sectors that are heavily reliant on private cars or vans for business travel include[8]:

- Agriculture, forestry and fishing
- Mining and quarrying
- Manufacturing
- Electricity, gas, steam and air con supply
- Water supply, sewerage, waste managementand remediation
- Information and communication
- Construction
- Health and social work

The impact of the pandemic has reduced overall levels of business-related travel, though sectors most reliant on travel by car/van, such as those listed, are less able to switch to remote working. Some of these, for example manufacturing and quarrying, are more prevalent in the North than the UK average. TfN user insight research completed in 2021 shows business to have a mixed set of expectations in terms of future travel. Further details are provided in TfN's User Insight Phase 3[9] report.

Measures to reduce the amount, and impact, of business travel, should include support for remote working, for example through improved digital connectivity, and improved rail and express inter-urban bus services, integrated with local transport provision.

Freight and logistics

In the UK a total of 1.65 billion tonnes of freight are lifted by all modes per year, with a little more than of a third of freight activity taking place in the North of England. Around 90% of the tonnage lifted is moved by road in the North.
For commodities such as food products, including beverages and tobacco, textile, leather and wood products, and machinery and equipment and consumer durables (such as furniture), more than 98% of movement is by road.

The North is directly served by a number of major international gateways – both ports and airports – which play a major role in facilitating trade and exports, for the North and the UK as a whole, as well as generating significant local employment. There are also a growing number of national and regional distribution centres serving a wide variety of commodities including fast-moving consumer goods (FMCG), construction, and support for the energy supply chain.

Sections of the road network carrying the greatest volumes of freight are the M6 south of Warrington, the M62 between Manchester and Leeds, the M1 south of Sheffield, and the A1(M) in Yorkshire.

Measures to reduce the environmental impacts of freight movements are particularly challenging. In 2018 the National Infrastructure Commission (NIC) report 'Future of Freight' emphasised the importance of regulatory certainty and consistency in driving positive innovative changes in the freight and logistics sector. Uncertainty on future freight regulations, such as the type of alternative fuels technology to adopt, creates significant challenges for both freight industry and planning of infrastructure.

Given these uncertainties, investment to enable more freight to move by rail and measures to improve efficiency of road freight movements are critical to achieving short term reductions in carbon emissions, these include improved aerodynamic design, eco-driving training, development of freight consolidation centres and better use of data to support combined shipments and greater utilisation of spare freight capacity. Better utilisation of space is particularly important with light goods vehicles (LGVs), which have grown rapidly in number in recent years.

Combined with the measure above there is a need to stimulate Zero Emission HGV/LGV sales, and with strengths in renewable energy (e.g. off shore wind) and in process industries producing hydrogen the North is well placed to support both electric and hydrogen technologies.

Roads are, and will remain, critical to the functioning of our society, and within this context national policy on phasing out of all petrol and diesel vehicles means Government must consider new fiscal models for generating the lost tax revenues from fuel duty and Vehicle Excise Duty and on how revenue raised is used for investment in our transport networks. TfN is ready to work with Government on considering new approaches to taxation and how revenues can be used to fund improvements across all modes of an integrated transport system. Transparency and public trust in a fair system of charging and the allocation of tax revenues should be key measures of success for a new approach to taxing and funding transport.

We believe this is an opportunity to ensure customers are better informed of the true cost of a journey via different modes, enabling people to make better choices on which forms of transport to take, resulting in more efficient and environmentally friendly journeys.

Major Road Network

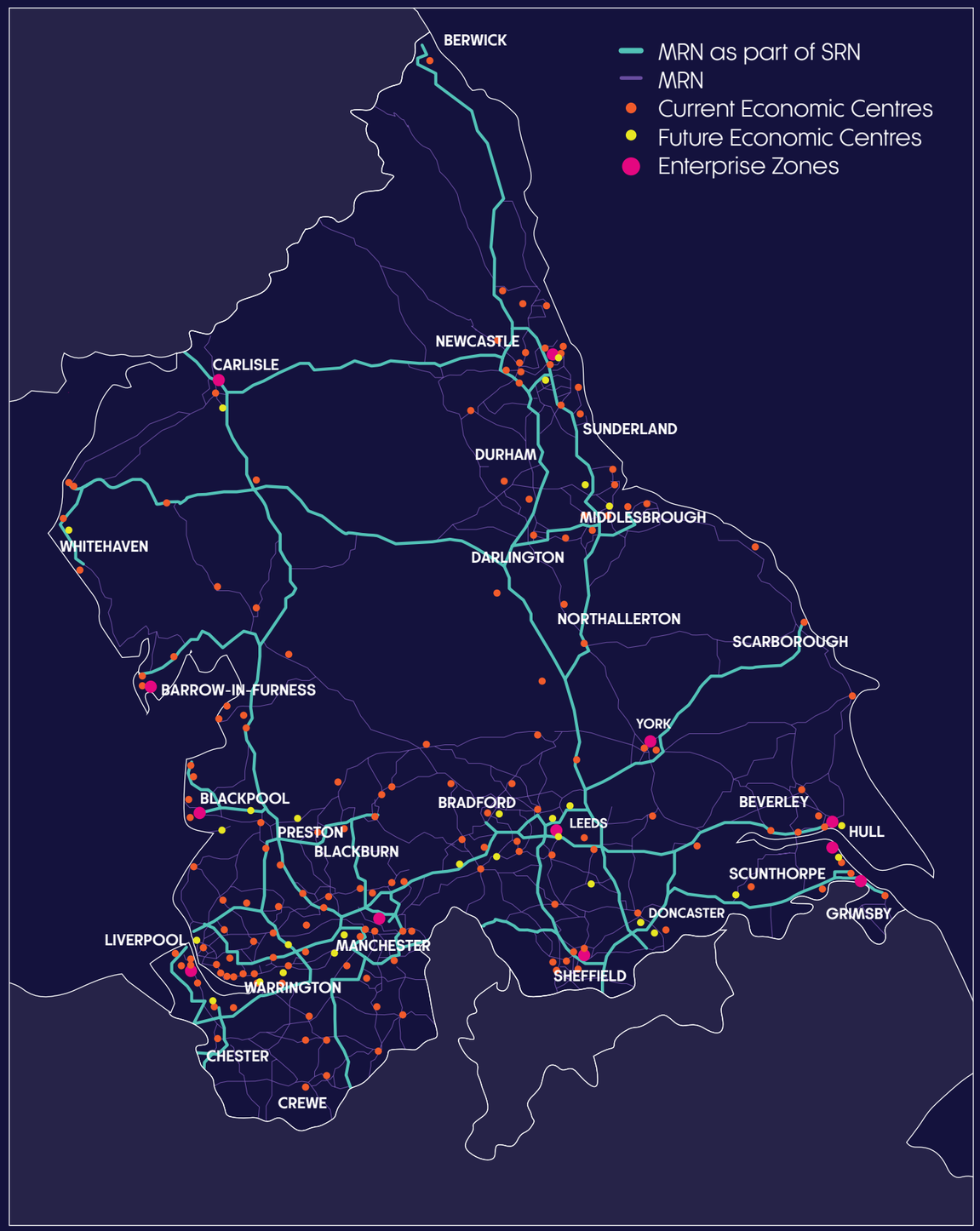
While total traffic volumes are greatest on roads operated and managed by National Highways, known as the Strategic Road Network (SRN), this only accounts for 2% of the road network in the North. Almost all road journeys start and finish on local roads, including those first and last miles of a journey that can make all the difference as to whether goods or people make it in time and as efficiently as possible.

In response to this issue, TfN and our Members have identified and mapped a Major Road Network (MRN) for the North - a network consisting of the North's economically important roads. This network, which includes both the SRN and important local roads, represents about 7% (by distance) of the roads in the North, and links the North's important centres of economic activity, including the first and last miles to and from the SRN.

The North's important centres of economic activity include:

- Ports and airports, supporting imports, exportsand the visitor economy.
- Clusters of the prime and enabling capabilities as defined in the Northern Powerhouse Independent Economic Review.
- Major population centres, which are generally over 50,000 residents.
- Enterprise zones, universities and other key employment sites.
- Major centres of tourism.

Figure 2: Major Road Network in the North



There is a direct link between better connectivity to these assets and enabling the North's economy to realise its potential.

The MRN[10] has a critical role in connecting people, businesses and communities, and, put simply, major roads are indispensable to supporting economic activity, access to services, and our overall quality of life.

Roads are used by pedestrians, cyclists, horse-riders, motorcyclists, drivers of cars and vans, and passengers in cars, buses and coaches. In total, 97% of all personal journeys are made by these modes, amounting to 88% of distance travelled.

% of trips in the North

Using roads in the North

- **59%** by car
- **26%** by foot
- **9%** by bus
- **2%** by bicycle
- **2%** by taxi

Other

- **2%** by rail/ metro
- **<1%** by other

Good transport connectivity is central to people's lives; to opening up opportunities to access jobs, education, health, and leisure facilities; to supporting new housing; and allowing goods to be delivered and businesses to grow. Roads are flexible in that they can be adapted to support different transport needs and users, for example providing more space for cyclists and pedestrians during the Covid-19 pandemic.

Although the majority of all trips are by road, integration of our major roads with other transport networks is vital in achieving a more sustainable transport system. This includes providing good access from the MRN to public transport hubs (such as park and ride, tram and rail stations) and multimodal options for freight movements, supporting the transfer of goods from road to rail and enabling cleaner and more efficient last mile delivery.

At present, 87% of freight movements are on our roads. Our goal is to move more freight by rail, and, where appropriate, inland waterway. But even in the most ambitious scenarios road freight will continue to be by far the dominant mode, with continued growth of freight on light goods vehicles likely to remain a significant trend.

148 million tonne/kilometres of freight is moved by road in the North

Ambition for the Major Road Network

Major roads are part of the 'life blood' of our economy with more than 90% of the distance travelled in the North by road, and 75% of commuters travelling to work by car.

TfN's ambition is for the North's Major Road Network to support fast action towards achieving net zero for transport, while maintaining a vital role in enabling safe, reliable and resilient multimodal journeys.

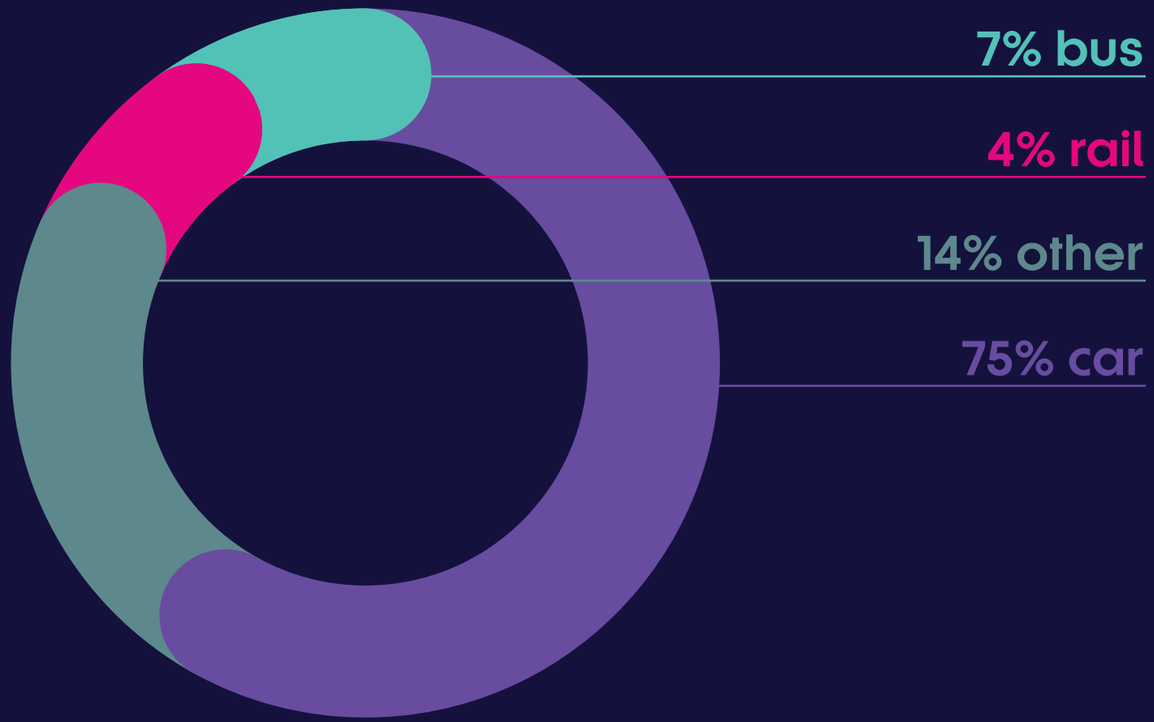
For the North's major roads to fulfil this role they must, in combination:

- Enable the most efficient journeys across multiple transport modes.
- Contribute to improving access to opportunities for all citizens of the North.
- Rapidly deliver new technologies to drive forward the adoption of low and zero emission vehicles.
- Support agglomeration economies by providing better connectivity and more reliable journeys to bring businesses closer together.
- Enable growth in key employment and housing sites.
- Increase the resilience of the economy to outside opportunities and threats.
- Enable international connectivity by improving access to airports, ports and associated economic clusters, where an appropriate rail connection or other more sustainable access is not possible.

There is an opportunity for TfN to play a critical role in working with our local partners, Government, the other Sub-national Transport Bodies and national delivery partners (National Highways and Network Rail) in coordinating the development of an evidence base and delivery programme for transport, including a coordinated approach to investment in the Major Road Network.

TfN's Northern Transport Charter advocates the case for devolution of further powers and responsibilities from central Government.

Figure 3: Snapshot of travel in the North (2018 data).



13km
Average commute

26 minutes
Average travel time to work

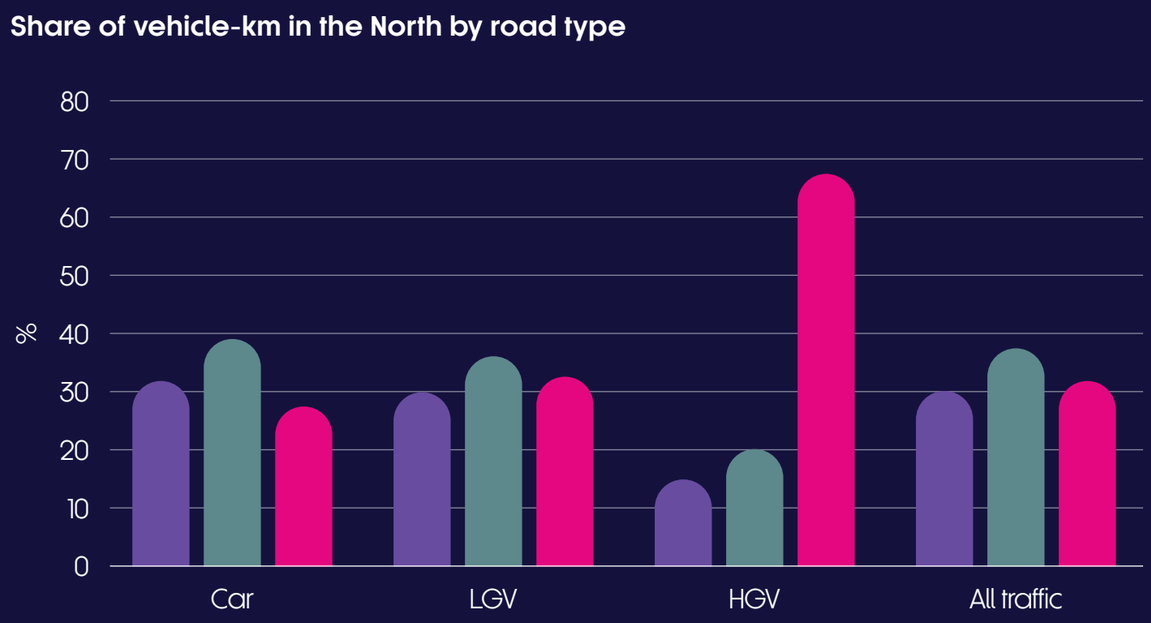
126 billion
Vehicle KM's on our roads

1.54
Vehicle occupancy

+8%
increase in road trips between 2012-2016

222.9 million
Passenger rail journeys

Figure 4: Vehicle kilometres in the North. 11



% of v-km	Car	LGV	HGV	Total
Local Roads	32%	31%	13%	31%
MRN (ex. SRN)	39%	36%	20%	37%
SRN only	28%	33%	67%	32%

Major Road Network - Conditional outputs

TfN and our partners have agreed a set of pan-Northern conditional outputs against which we aim to monitor the MRN, and will use these to identify issues and develop proposed actions to improve performance.

- **Journey reliability:** Where drivers on 90% of the MRN should experience an average peak hour delay of no more than 25% in relation to the 'free-flow' travel time. This equates to a delay of 15 minutes or less on a 60-minute journey.
- **Network efficiency:** Aiming to ensure that the MRN contributes to a sustainable and inclusive transport system. This includes reducing carbon emissions through optimising the efficient flow of people and goods on the MRN; encouraging travel behaviour change; and supporting new technologies to reduce emissions of pollutants and greenhouse gases.
- **Network resilience:** Aiming to reduce the number of MRN route closures leading to severe journey delay. This will require a focus on infrastructure maintenance, renewals, and adaptation to mitigate for impacts of climate change.
- **Journey quality:** Improving the experience of using the MRN, including the quality and availability of travel information
- **Carbon emissions:** Reduction in carbon emissions from road transport in the North in line with TfN's trajectory for achieving near-zero net carbon emissions from surface transport by 2045.

In addition to the pan-Northern conditional outputs above, improving safety and air quality are fundamental objectives for TfN Members and partners in managing their road networks. These elements are reported by National Highways and local Highway Authorities and are captured as part of TfN's Monitoring and Evaluation Framework. The Monitoring and Evaluation Framework also includes measures of:

- **Air pollution:** The proportion of the population exposed to high levels of PM2.5 and NOX12 emissions, to which vehicles are a significant contributor.
- **Noise pollution:** The proportion of the population exposed to high levels of day and night-time noise pollution from vehicles.
- **Road incidents:** The number of road incidents resulting in fatalities or serious injuries.
- **Physical inactivity:** The proportion of adults walking or cycling for travel at least three days per week.

Future Travel Scenarios and what they could mean for the MRN

Even before the Covid-19 pandemic during 2020/21, the effects of the digital age colliding and merging with the motor age over the last two decades were becoming apparent in our daily lives. Long-run trends of relevance to travel and transport have been changing (in the UK and other countries). Technology-based innovations are a source of ongoing potential disruption and change. Now underscored by Covid-19 and its effects, there is deep uncertainty regarding what the future has in store.

Recognising the need to ensure that our policymaking and statutory advice should account for a sophisticated range of future uncertainties, in 2020 TfN completed work on updating and identifying four plausible Future Travel Scenarios looking ahead to 2050. Our scenarios take a whole system view to capture social, spatial, economic, technology

The four scenarios are:

1. In a **Just About Managing** scenario we see a gradual shift in lifestyles and travel – we do not alter our behaviours or give up certain 'luxuries', leaving major developments and change to be shaped by market forces.

2. In a **Digitally Distributed** world we fully embrace technological change, work remotely, and use an accessible service-based transport system with connected and autonomous shared mobility options.

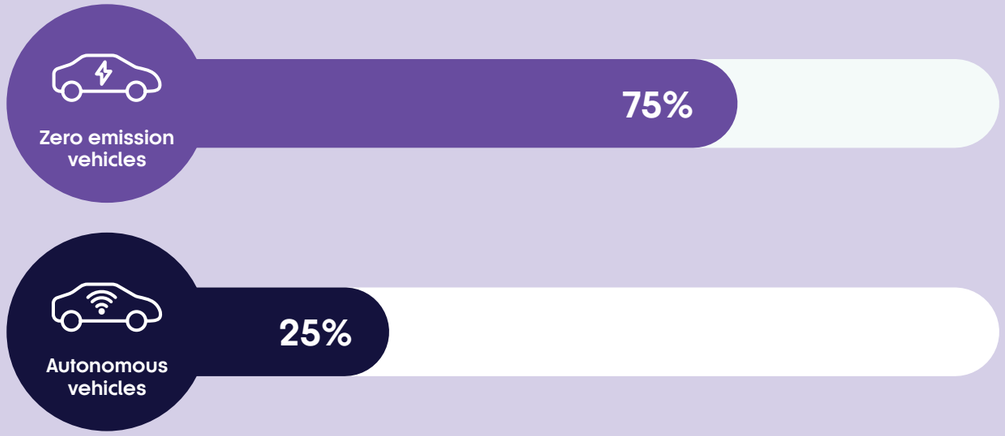
3. In an **Urban Zero Carbon** future there is a fundamental refocus by both the public and Government towards action on climate change, resulting in fast action on zero-emission transport systems and places, with integrated planning across energy, spatial and other sectors.

4. A **Prioritised Places** scenario would see a focus on people and place, with strategies and investments in local assets, specialisms and economic and social infrastructure. This scenario also sees a change in priorities, a focus on work-life balance and community.

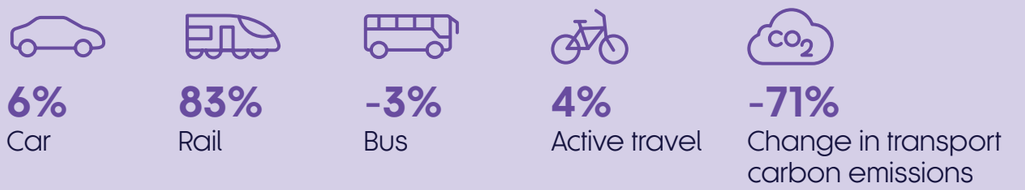
Figure 5: Summary of the four Future Travel Scenarios.

Just About Managing

if society continues to develop in lin with existing trends

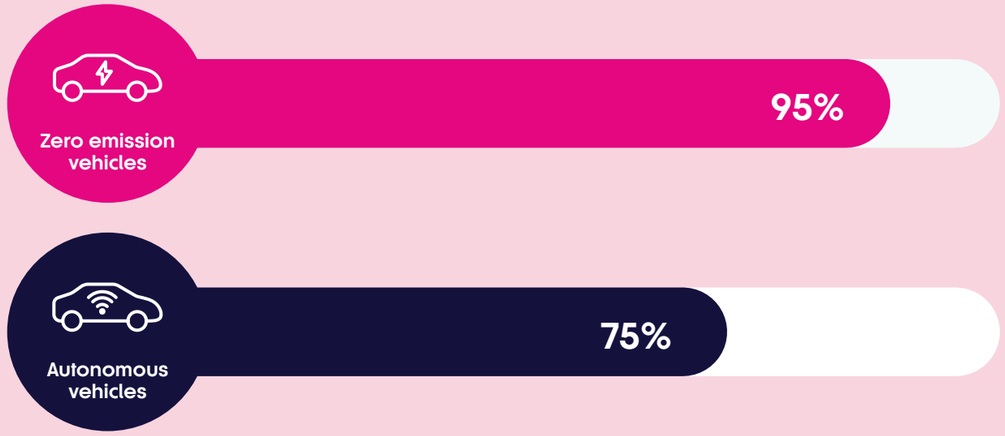


Transport demand growth - Number of trips made (2015 - 2050):



Digitially Distributed

If society achieves NPIER outcomes by using technological solutions to create connection and agglomeration across towns and cities



Transport demand growth - Number of trips made (2015 - 2050):

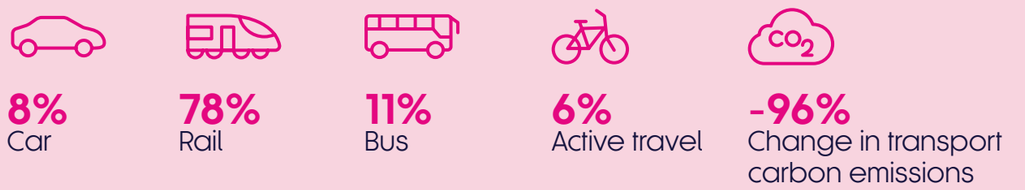
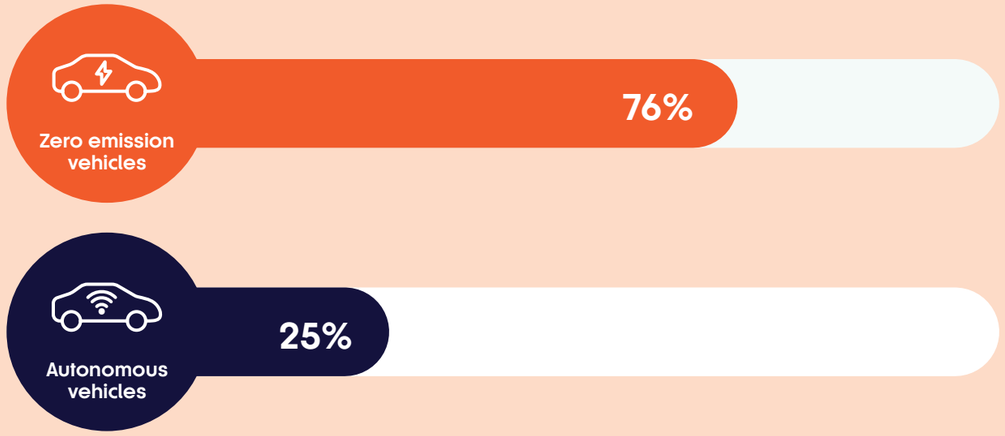


Figure 5: Summary of the four Future Travel Scenarios. (continued)

Prioritised Places

If society becomes more focused on place, place-making and community than growth or connectivity

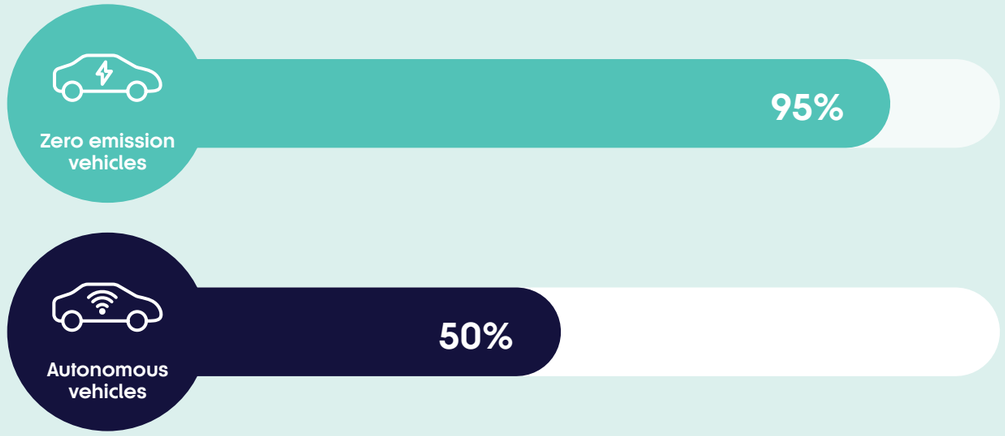


Transport demand growth - Number of trips made (2015 - 2050):

1%	122%	19%	13%	-73%
Car	Rail	Bus	Active travel	Change in transport carbon emissions

Urban Zero Carbon

If society achieves NPIER outcomes by using policy intervention to maximise energy-efficient city growth



Transport demand growth - Number of trips made (2015 - 2050):

-6%	193%	21%	30%	-96%
Car	Rail	Bus	Active travel	Change in transport carbon emissions

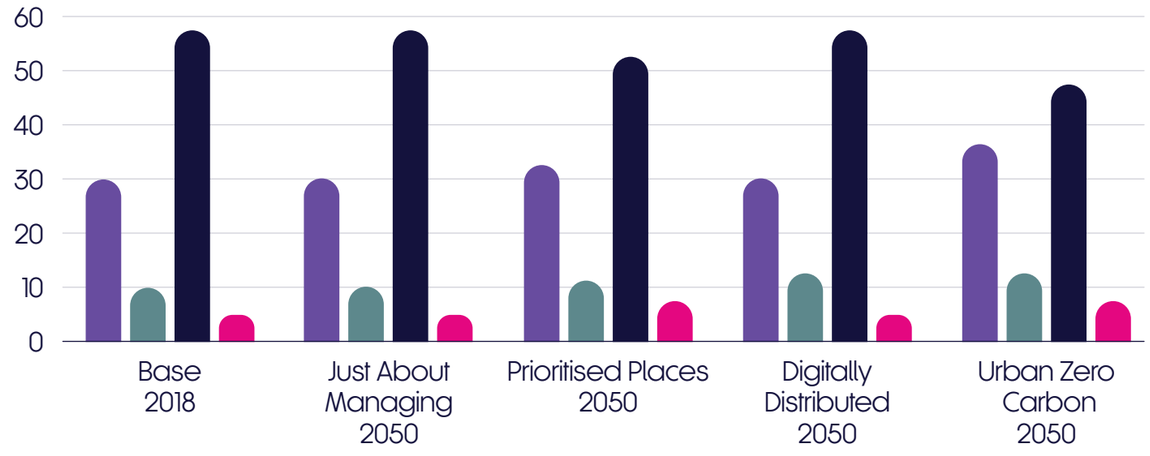
Using the scenarios

Our Future Travel Scenarios are being used to estimate future travel demand and the potential performance and impact of transport plans within each of the four broad potential futures. We are applying these within our Analytical Framework[13] tools to evidence and inform policy recommendations and future transport investment priorities in the North. The scenarios are built for the long term, with pathways out to 2050, however we have adapted these to reflect change and uncertainty resulting from the Covid-19 pandemic.

The recent changes we have all experienced may continue to evolve in different and unknown ways, affecting the way we travel and creating ongoing uncertainty. We might see continued high levels of home working for those who can; a rapid return of passengers on public transport; or ongoing reluctance to use shared mobility. Critically, the rate of economic recovery and introduction of new measures to boost the economy, for example flexible season tickets, will impact on levels and types of travel demand. This makes it even more important to build tools that facilitate an assessment of how changing trends may affect transport networks in the North.

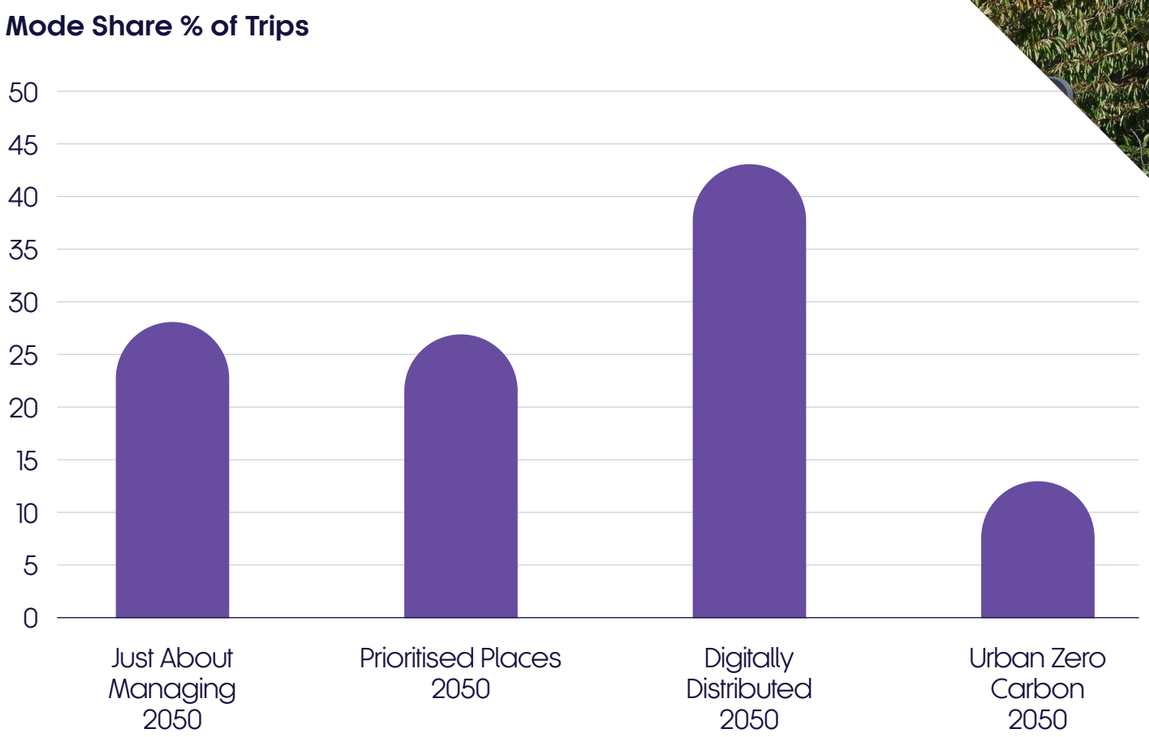
Our scenario analysis tool provides the basis for further interrogation of evolving and new trends, based on evidence as it develops. The Future Travel Scenarios Framework can be regularly reviewed and adjusted with the aim of learning more about future change trends and supporting an ambition of 'building back better'.

Figure 6: Summary of forecast estimates for changes in mode share for the four scenarios.



In all four scenarios the % share of rail shows the highest growth, however total vehicle kilometres in 2050, including car, van and HGV, are higher than for the 2018 baseline, and car remains the dominant mode across all scenarios. Vehicle kilometre increase is lowest in Urban Zero Carbon as this scenario requires the most policy activity to drive such a change (seeing less than the 15% road demand growth advised by the Climate Change Committee's 6th Carbon Budget). Digitally Distributed sees a slower shift towards sustainable policy and modal shift, and an increased access to road travel through uptake of advanced technology solutions. Just About Managing sees a continued trend of road reliance due to longer journeys which are not feasible via other modes as it stands. Prioritised Places is driven by population and trip growth in rural and sub-urban areas, increasing shorter journeys made by active travel and by bus.

Figure 7: Forecast changes in vehicle kilometres.



Next steps

Roads were first developed in the Iron Age and have had an important role in moving people and goods for millennia. In the last hundred years the internal combustion engine has provided the automotive power to transform our society, opening up opportunities for longer distance travel to access jobs, a wide range of services, and leisure activities, and enabling the movement of vast quantities of freight. Motorised transport has delivered many benefits, but also brought with it some significant social problems, particularly air and noise pollution, severance, and social exclusion for those without access to a car.

As we move into the second quarter of the century, road transport will continue to have a vital role in underpinning economic activity, social interaction, and movement of goods.

To be fit for the future, how we manage, operate and invest in our transport networks, including the 85,000km of roads in the North (7,899km of MRN) should reflect the needs and priorities of our communities in the 21st century.
This means a focus on improving air quality, reducing exposure to high levels of traffic noise, and the rapid decarbonisation of our transport system. Measures to achieve this include encouraging higher use of public transport, shared mobility and active travel so that where practicable these modes replace car trips. Similarly, where viable, movement of freight by rail can take pressure off our roads. Alongside changes in the movement of people and freight we need to see the swift adoption of zero emission vehicles, with electric and hydrogen power seen as the leading options.

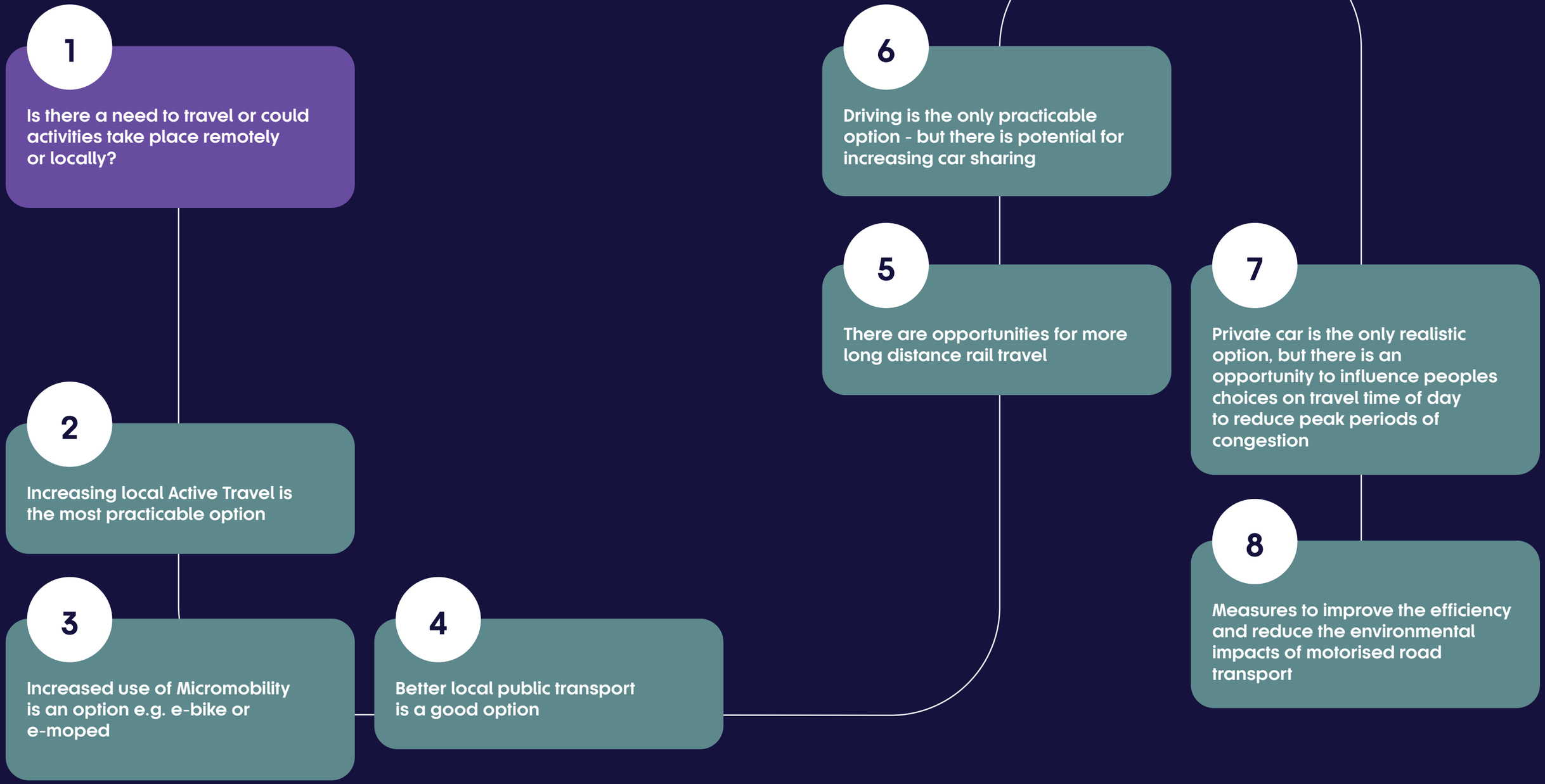
Figure 8 outlines the recommended process for considering an initial transport options appraisal, starting with a question on whether there is a need to facilitate more travel, followed by consideration of options before making a decision on whether there is a requirement for new road capacity.

Achieving the required scale of change will need an emphasis on improved active travel and local public transport infrastructure (particularly in urban areas), faster and more reliable rail services, policies and actions to encourage behaviour change, and targeted investment in improving the efficiency of our road networks including in electric and hydrogen refuelling infrastructure.

Policy measures beyond TfN's direct area of influence are represented in the Future Travel Scenarios we are using to appraise and evidence our recommended transport investment programme, including investment in our roads.

Through application of our Analytical Framework, we are assessing the transport benefits and wider social, economic and environmental outcomes of our proposed programmes of transport investment. The Investment Programme Benefits Analysis work will provide a strong evidence base, supporting recommendations for future policy decisions and transport investment, including where the evidence supports it, investment in improving our Major Roads.

Figure 8: Initial appraisal of transport options.



Action Plan - Major Roads

Major roads are part of the 'life blood' of our economy with more than 90% of the distance travelled in the North by road, and 75% of commuters travelling to work by car.

- → **Transforming economic performance**
- → **Increasing efficiency, reliability, integration, and resilience in the transport system**
- → **Improving inclusivity, health, and access to opportunities for all**
- → **Promoting and enhancing the built, historic, and natural environment**

TfN action	Description	Timing
Investment Programme Benefits Analysis (IPBA)	This will provide a quantified understanding of the Investment Programme benefits and support TfN Board in recommending policy and investment priorities for the North's transport networks (including the MRN), as statutory advice to the Secretary of State for Transport.	Spring 2021 – Summer 2022
TfN input to SRN Route Strategies	With our comprehensive evidence base we will input to influencing the National Highways-led SRN Route Strategies.	Autumn 2020 – Summer 2023
TfN inputs to Road Investment Strategy pipeline (RIS3)	Using evidence from our Strategic Development Corridor studies, the IPBA and our wider portfolio of research, TfN will represent the North's position with regard to the development of the National Highways RIS3 pipeline.	Autumn 2020 – Summer 2023
Major Road Network Performance Monitoring Evidence Base	Utilising data from tracking mobile phones we will provide TfN partners with access to MRN data reporting on journey times, journey time reliability, origin and destination of motorised trips using the MRN. This will support TfN and our partners in identifying issues on the MRN, in appraising options, developing business cases and in evaluating the impact of policies and of investment.	Annual reporting 2019-2022
Electric Vehicle Charging Strategy	Using TfN's suite of analytical tools to underpin work on assessing the future trajectory and geographical location of EV demand, combined with input from our partners and Distribution Network Operators, we will develop an EV charging infrastructure evidence base for the North.	Summer 2021 – Summer 2022

Action Plan – Major Roads

TfN action	Description	Timing
Zero Emissions Vehicle charging & re-fuelling Strategy	Working with partners across the North with regards to hydrogen fuelling, we will combine work on identifying requirements for hydrogen re-fuelling with the Electric Vehicle Strategy to formulate a ZEV Infrastructure Strategy and support Local Authority partner delivery of charging and re-fuelling solutions.	Summer 2021 – Spring 2023
Multimodal hubs policy position and evidence base	We will develop a TfN policy position and evidence base on the provision of multimodal transport hubs in the North.	Spring 2022
TfN research into Transport-Related Social Exclusion	This project will provide new data tools and primary empirical evidence on the link between transport and social exclusion. This includes accessibility analysis, socioeconomic analysis, and demographic analysis. Evidence from this work will support transport related investment and policy decisions, including on the role of the MRN in supporting an inclusive and sustainable North.	Winter 2020 – Summer 2021
TfN research into health and wellbeing	This project will expand evidence on the link between transport, health, and wellbeing in the North – focusing on severance, physical inactivity, poor user experience, and access to health services. It will provide new data tools and indicators to measure these relationships. Evidence from this work will support decisions on the role of the MRN in supporting an inclusive and sustainable North.	Autumn 2021 – Spring 2022
TfN Clean Mobility Visions project	This project will develop a set of strong and attractive mobility visions based on practicable evidenced based policy options for reducing private car usage, applicable to specific place and population contexts in the North. It will consider the decarbonisation, health, inclusion, and accessibility-related impacts of these policies.	Summer 2021 – Spring 2023
Impact of Future Mobility on the MRN	Building on the Future Travel Scenarios, this workstream will support TfN and partners in planning for the impact of new and emerging technologies, for example connected autonomous vehicles, freight platooning and data platforms supporting greater use of shared mobility solutions.	2023/2024
Future MRN investment	Building on the outputs of the IPBA, EV Strategy and performance monitoring, we will set out the priorities for MRN investment 2035-2030.	2022/2023

Footnotes

[1] TfN Major Roads Report – XXXXX 2021

[2] Business Population Estimates 2020, October 2020, BEIS [Accessible here]

[3] Labour Force Survey (Jan-Mar 2020), May 2021, ONS [Accessible here]. The most recent data (Jan-Mar 2021) indicate that employment across the North is around 7.2 million.

[4] Estimates of the population for the UK, England and Wales, Scotland and Northern Ireland (Mid-2019), June 2020, ONS [Accessible here]

[5] The Northern Powerhouse Independent Economic Review: Final Executive Summary Report, June 2016, Cambridge Econometrics and SQW [Accessible here]

[6] Regional gross value added (balanced) per head and income components, December 2019, ONS [Accessible here]

[7] Northern Highway Assignment Model (NoHAM) 2018

[8] Data from the National Travel Survey (NTS, 2019)

[9] TfN User Insight Phase 3 Business Survey 2021

[10] Note that the MRN defined by TfN and our partners differs from the Department for Transport's definition of the MRN, which is defined as being separate to the Strategic Road Network (SRN) and encompasses around 2% of roads in the North.

[11] TfN Northern Highway Assignment Model (NoHAM) 2018 baseline data

[12] Particulates under 2.5 Microns in diameter and Nitrous Oxide air pollution, both harmful to humans

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