Whole Industry Strategic Plan

Call for Evidence Response Form

09/12/2021

Responding to this Call for Evidence

This call for evidence launches on 9 December 2021 and will be open for eight weeks until 4 February 2022.

You may respond as an individual or on behalf of an organisation or organisations (please let us know all the organisations you are responding on behalf of) and can submit a response in the following ways:

- Online via the call for evidence webpage.
- Via email to cfe@gbrtt.co.uk using this response template.

We recommend you read the call for evidence launch document in full before submitting your response.

Please send the completed response form, along with any supporting information or attachments, to cfe@gbrtt.co.uk.

In the email subject please include your name and/or organisation and 'WISP call for evidence submission'.

I am responding on behalf of: *

One or multiple organisations

If you are responding as an individual, please move to Section 2. If you are responding on behalf of an organisation, please fill in Section 1 and Section 2.

Section 1 – Organisation Details

Organisation name(s)*

Transport for Greater Manchester and the Greater Manchester Combined Authority

Please identify the category, or categories that best describes your organisation(s)*

If multiple categories apply, please list within the "other" field below.

Regional, Local or Combined Authority

If other, please state

Please provide a brief description of the organisation(s) you are responding on behalf of.
This may include information about who the organisation represents, the size of its membership and how the views of members were obtained.

The Greater Manchester Combined Authority (GMCA) is made up of the ten Greater Manchester councils and Mayor, who work with other local services, businesses, communities and other partners to improve the city-region. Our vision is to make Greater Manchester one of the best places in the world to grow up, get on and grow old. We're getting there through a combination of economic growth, and the reform of public services.

Transport for Greater Manchester (TfGM) is the local government body responsible for delivering Greater Manchester's transport strategy and commitments.

Section 2 – Your details

Name

Eamonn Boylan

Email address

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Please choose the region you or your organisation(s) are based within*

If multiple regions apply, please list within the "other" field below.

England - North West

If other, please state

Please provide information about the reason for your interest in the Whole Industry Strategic Plan

Rail plays a key role in supporting Greater Manchester's strategic transport objectives and ensuring that the WISP is fit for purpose is a key enabler to achieving our aspirations.

Strategic Objectives for the Whole Rail Industry

The UK Government has developed five strategic objectives for the Strategic Plan over the next 30 years: **meeting customers' needs, delivering financial sustainability, contributing to long-term economic growth, levelling up & connectivity, and delivering environmental sustainability.** We intend to put these objectives at the heart of the Strategic Plan, and we are using them to guide all of the questions in this call for evidence.

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We recognise that many of you are working to similar long-term objectives. We are very interested in how you define and quantify your objectives, and how they match or differ from our own. When considering your response to question 1, please use your experiences to inform your answers and share any examples, taking into account that in all future scenarios we expect affordability to be a significant constraint.

Question 1

a) How would you apply these objectives to rail in your region or to your area of expertise within the transport sector? Do you have evidence you can share with us of how you have applied similar objectives in relation to rail, and do you consider the objectives to have missed any key areas?

b) How is it possible to make progress against a number of the objectives simultaneously? Do any of the objectives have larger barriers associated with them than others, or do any objectives pose possible barriers to others? Where would you make the trade-offs?

c) What long-term trends in wider society, the economy, and the environment will affect these five objectives over the next 5, 10, and 30 years? Please give evidence to support your response.

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d) What are the key uncertainties you consider that the Strategic Plan must be resilient to in order to be effective over the next 5, 10 and 30 years?

e) Over the next 5, 10 and 30 years, which steps should the sector take to improve integration of rail with the wider transport system (including walking and cycling) in pursuit of these objectives?

a) How would you apply these objectives to rail in your region or to your area of expertise within the transport sector? Do you have evidence you can share with us of how you have applied similar objectives in relation to rail, and do you consider the objectives to have missed any key areas?

The objectives defined are complementary and aligned to key objectives in Transport for Greater Manchester's (TfGM) 2040 Strategy and the GM Prospectus for Rail. Greater Manchester's Right Mix vision, which aims to see at least 50% of all journeys in Greater Manchester to be made by non-car modes by 2040, and zero net growth in car traffic between 2017 and 2040, is well aligned with the goal of environmental sustainability. The 'levelling up and connectivity' and 'contributing to long-term economic growth' objectives are both aligned with GM's goal of sustainable economic growth. Greater Manchester's goal of improving quality of life for GM residents shares a number of common features with meeting customers' needs. And value for money is an integral part of all aspects of our transport strategy.

Greater Manchester also regards creating better urban places as an important driver of economic growth. Rail – by contributing to the Right Mix vision – can support that by providing an attractive alternative to car travel. That particular aspect of contributing to economic growth appears to be missing from the objectives, unless it is covered by the reference to the "place-making agenda".

These objectives seem potentially suitable and appropriate for the long-term strategy for the railway although they are too general to be a useful guide to policy without providing further detail – e.g. it is unclear whether "reducing costs to government" refers to reducing costs from the presently high financial support required during the pandemic, or to reducing costs from the much lower financial support that applied pre-Covid. If it means the latter, then that would be worrying, and not appropriate; rail must be geared towards growth to support the delivery of these objectives and that requires appropriate funding.

To achieve Greater Manchester's Right Mix vision, we are targeting an increase in mode share of rail trips (across light rail and heavy rail) from 3% of total trips (including walk-trips) in 2017 to 6.5% of trips in 2040. The percentage of trip-km for rail implied by that target will of course be much higher than that (interim-year mode share targets for rail are 3.6% in 2025 and 4.0% in 2030). The growth of Greater Manchester's Regional Centre (Manchester City Centre plus surrounding densely developed areas such as Salford Quays and Media City UK) will be an important driver of the targeted growth in rail travel.

b) How is it possible to make progress against a number of the objectives simultaneously? Do any of the objectives have larger barriers associated with them than others, or do any objectives pose possible barriers to others? Where would you make the trade-offs?

In many instances, the defined objectives are complementary to one another. For example: meeting customers' needs should lead to increased patronage which should in turn deliver against the objectives of financial and environmental

sustainability through farebox revenues and modal shift. In some ways, this can also apply in reverse; railways – like other modes of public transport – can suffer from vicious circles which see them enter into 'managed decline'.

There are also clear examples of where the objectives set in this consultation may be in conflict. For example, the introduction of the Virgin High Frequency timetable in 2008 where a 20 min frequency train service to London led to the breaking of long-standing local rail links in South Manchester. This kind of trade-off represents an explicit if unstated trading of financial stability against local levelling up and connectivity. The resolution of such conflicts is only possible when clear valuations are attached to all aspects of the objectives so that the true net cost of any service change is able to be viewed in the round.

While it would be ideal that all objectives are considered equally, it is clear that over the long-term, there will be shifting priorities that the industry will have to respond to. Although priorities might fluctuate in different economic, political and societal circumstances, it is important that a balanced approach is maintained throughout. These objectives should serve as a set of principles to guide the industry through such fluctuations – they should set the industry up with a consistent approach to problems in anticipation of emerging issues. This should enable the industry to follow through on plans so as to not waste money or fall short of fully realising the benefits of projects such as new fleets or infrastructure interventions.

Ultimately, to ensure that the objectives are met simultaneously it is important that there is a clear focus on a growth-oriented railway. The railway is a high fixed cost and low marginal cost system whereby it makes sense to fully utilise its assets. The growth seen pre-pandemic, while welcome, clearly tested the railway to its limit as the industry was not in a position to build for the future. Where it is not possible to meet all objectives simultaneously, there should be ability for industry to prioritise across objectives and make decisions transparently without delay.

Finally, the objectives as they stand do not place enough emphasis on encouraging mode shift by increasing the attractiveness of rail. At present, this looks particularly challenging, in view of government policy of increasing rail fares above inflation while holding vehicle excise duty constant in nominal terms, and reductions to the marginal cost of car travel expected from the growth of electric cars. The decline of commuting – for which rail is particularly strong – is also likely to adversely affect rail mode share, especially if reduced commuting is offset by more travel for other purposes, for which other modes presently enjoy a higher mode share than for commuting. Without this emphasis, customer affecting trade-offs are likely to be necessary with the objective of reducing costs to government. It should be noted that pre-COVID UK financial support for rail was low compared with other developed countries.

c) What long-term trends in wider society, the economy, and the environment will affect these five objectives over the next 5, 10, and 30 years? Please give evidence to support your response.

There are a number of significant trends that will impact these objectives, although as the pandemic has shown, behaviours can change rapidly in response to events. Nonetheless, our 2040 Transport Strategy anticipates a number of long-term trends that will have transformative effects on transport.

Climate change will be a defining feature over all timescales and it will force the railway to be much more resilient to extreme weather events. Unless counteracted through engineering interventions, we expect there to be a growing disruption to the railway attributable to extreme weather events. This is an issue that the industry is well aware of, as Network Rail's recent Third Adaption Report demonstrates, however it must be sufficiently resourced. Climate change will also give rise to rising climate consciousness and a transition to low-carbon modes, as we are already seeing across the wider transport sector.

The UK's response to climate change in **the transition to net zero** is just as significant for rail. The railway is a very efficient mode in terms of carbon emissions, particularly relative to its competition over medium and long distances and reducing the UK's transport carbon emissions relies on rail taking an increased modal share of all trips – this is indeed part of GM's Right Mix vision. The wider transition of all modes is both an opportunity and a threat to the railway, as the railway can either seize and enhance on its place as the leading provider of environmentally friendly mechanised transport, or it could lose standing to the electric vehicle if it fails to act quickly on traction decarbonisation.

An ageing population, with increasing accessibility needs will also be a key trend over all timescales. Rectifying accessibility issues at GM railway stations is already a key priority and the need to open up the railway to all ages and accessibility requirements will only intensify as time goes on. We may also see an increased focus on the health agenda, with growing appetite for active travel modes and a need for rail to achieve better modal integration. The growing importance of simple and efficient station access and interchange will require the industry to work alongside local transport authorities to ensure rail is well integrated as part the whole journey.

Digitalisation has long been a key trend in all aspects of the economy, which has been accelerated since the COVID-19 pandemic. Driven by customer convenience (particularly among younger cohorts) and value for money, this is expected to continue with the roll out of contactless ticketing and further development of digital information accessible through phones and other devices. Increasing digitalisation of the customer proposition for rail opens up the opportunity for much better modal integration and enhanced attractiveness. If rail does not keep pace with digitalisation and emerging Mobility as a Service offerings, it risks being seen anachronistic and unattractive.

Increasing urbanisation has been a transformational feature in GM for over twenty years and despite the pandemic having caused weakened urban centres in the short term, the long-term economic effects of agglomeration are expected to continue and will need to continue if Greater Manchester is to achieve its pathway to the 2040 Right Mix vision. Greater Manchester's Places for Everyone forecasts continued population growth of 190,000 by 2037, from today's 2.8 million people.[1] Public transport is a vital part of meeting the increased travel demand this will generate and we should expect to see an increased reliance on public transport (including rail) in line with decreased dependency on the car, particularly among younger cohorts.

[1] Places for Everyone, GMCA (2021) https://www.greatermanchester-ca.gov.uk/media/4838/places-for-everyone.pdf

However, this is a trend that is in flux and difficult to predict with confidence over a 10-30 year timescale.

Increasing homeworking and a more flexible approach to commuting has been the hallmark of changing rail usage since the pandemic, however, the underlying trends for this were already being seen pre-COVID. For this reason, we expect this to be a key trend in the future, especially for higher paying 'white collar' jobs. This is not necessarily a wholly negative trend, for example, it could give rise to commuting over longer distances at lower frequencies, which could increase rail's attractiveness versus the car. While the recovery of regular Monday-Friday commuting needs to be carefully monitored, there may be an opportunity to revisit how the railway provides its services, for example, by reorienting resources away from the cost-intensive morning peak periods to take advantage of fast recovering weekend leisure markets.

A decline in business travel is a further by-product of the rapid shift to homeworking. The growth of video-conferencing during the pandemic is expected to have long-lasting adverse effects on the business travel market given its benefits in cost, convenience and carbon emissions. That particularly affects the financial sustainability objective, especially for inter-urban rail services on which business travellers typically pay premium fares.

Increasing leisure role for rail, which COVID has simply accelerated as commuting started to change over the last 10 years due to technology. This means rail needs to reassess when the peak and profile of demand exists, with better service provision in the evenings into regional centres and a much-enhanced Sunday offering. Rail will also need to make its offer more responsive and dynamic as the market changes, and with more seasonal variations, in order to meet the financial sustainability, economic growth and environmental objectives. In turn this will challenge the concept of peak period fares pricing with much better research needed into how different rail markets respond to pricing in a post COVID world.

Rail's competitiveness with other modes is also crucial: rail's fortunes are bound by how it responds to emerging trends in other modes. Unless policy responds to the circumstances, the transition to electric cars will make the marginal cost of car travel considerably cheaper relative to rail. This could directly affect the financial sustainability of the railway and the achievement of the other proposed objectives for the rail industry. Possible technological developments such as autonomous vehicles and low-carbon flying could also threaten aspects of rail's unique customer proposition. Rail needs to be at the heart of an intelligent, integrated transport offer in concert with these other modes to ensure its relevance in the long term.

d) What are the key uncertainties you consider that the Strategic Plan must be resilient to in order to be effective over the next 5, 10 and 30 years?

Over the next five years, it is clear that a key uncertainty will continue to be the pandemic and to what extent (and to the shape in which) the railway recovers its previous levels of patronage. At this stage, the pandemic seems to have accelerated a number of underlying trends that were already in motion prior to the outbreak of COVID-19. This includes increased remote working, commuting from greater distances and the railway increasingly serving a discretionary leisure market.

However, the extent to which these trends continue remains to be seen and the industry must be responsive and agile in the face of a volatile market.

Naturally, other key uncertainties include climate change, which will be a major and increasing concern over a five, ten and thirty-year timeframe. More frequent extreme weather conditions present fundamental risks to the railway in terms of performance and safety, and all operational, engineering and construction activities need to take this into account.

Considering the longer term, TfGM has created four evidence-based travel scenarios for Greater Manchester with horizon-years of 2025 and 2040. Rail-relevant uncertain variables in the Greater Manchester Travel Scenarios include:

- The extent of urbanisation and/or population dispersion
- The extent of home-working and potential displacement of time previously spent commuting towards leisure-related travel
- The extent to which business travel is replaced by digital communication
- Government policy, which includes: the level of subsidy to rail; policy on the pricing of car travel and the allocation of road space; the extent of devolution of power to local transport authorities; the extent to which transport capex is focused on road-building or public transport.

The four scenarios - which include both National Rail and Metrolink light rail services - lead to highly divergent outcomes for rail-based person-km in Greater Manchester in 2040, ranging from a doubling of person-km compared with pre-Covid to a reduction in person-km to 40% of the pre-Covid level. This suggests that it is no exaggeration to say that rail is now at a 'hinge moment'.

e) Over the next 5, 10 and 30 years, which steps should the sector take to improve integration of rail with the wider transport system (including walking and cycling) in pursuit of these objectives? How to do these things simultaneously? What are the conflicts?

The WISP should ensure that rail is at the heart of the wider transport system as a low-carbon, mass transit system with complementary and easy links to other low carbon modes of transport. In the context of a city-region like Greater Manchester, this means seamless transition between cycle hire, Metrolink and bus, and developing the role of stations as open, accessible multi-modal transport hubs. Research carried out by TfGM in 2021[2] has shown that frequent users of rail are more likely to make multi-modal journeys than users of any other mode – this highlights rail's central role and the potential of a truly integrated system.

Part of these ambitions is TfGM's objective to introduce tram-train/metro services on the GM public transport network, as set out in the 5-Year Transport Delivery Plan 2021-26. These vehicles will have the capability to operate on both the heavy rail and Metrolink networks in the region. This represents another opportunity for integration both from an infrastructure/vehicle perspective but also in terms of shared procedures and operations.

[2] 2040 Network Principles 2021 results

In the next five years, the sector should immediately take steps to improve the integration of rail fares and ticketing in cities outside of London, which has had an integrated ticketing system for nearly two decades. This is a key commitment in the Williams-Shapps plan which must be delivered on. As part of the Bee Network vision, Greater Manchester aims to have rail incorporated into an integrated transport system by 2030, which includes a goal of a zonal fares system for rail, like Metrolink. If done right, we expect this to help drive revenue as the customer proposition would become simpler and more attractive.

Over a 10-year period, the sector should take steps to develop stations and other key accessible railway assets into mobility hubs. This should entail the provision of additional cycle storage, easily walkable and inviting surroundings, and convenient links to bus, cycle hire schemes, other electromobility and light rail. Where possible, stations should rooted in local communities and not be designed to be ‘car first’, although there should be a focus on introducing EV charging at all station car parks.

Over a 30-year period, there will be unpredictable changes in the transport environment. However, taking into account the delivery of major projects such as HS2 and NPR, we should ensure that new infrastructure is set up to deliver on integrated transport, including Metrolink. These projects should also be delivered to ensure full network integration between HS2 and NPR and the classic rail network, rather than two (or three) separate systems.

Meeting customers' needs

Rail industry customers broadly fall into two types: passengers and freight. The rail network provides important benefits to the customers who rely on it. The Plan for Rail says that passengers must receive high-quality, consistent services day in, day out. This means accessible, reliable journeys that are well connected with other transport services and include new customer offers at stations and on trains.

Since the COVID-19 pandemic began, the rail freight industry has shown its resilience and agility, working to transport food and medical supplies around the country. This example, and others given in the Plan for Rail, highlight how important rail freight is to our economy now and in the future, and how we will develop growth targets for freight that will be included in the Strategic Plan. The Plan for Rail says of freight: 'national co-ordination, greater opportunities for growth and strong safeguards will put rail freight on the front foot.'

When considering your responses, please take account of the likelihood of changes in levels or patterns of passenger and freight demand over the next 5, 10 and 30 years, what that would mean for the rail system, and what will the interventions be over that period that will provide the maximum value for money.

Question 2

a) Passenger: how will rail passenger expectations, including accessibility requirements, evolve over the coming 5, 10 and 30 years, what will be the driving causes of these changing expectations, and how can they be most effectively met by the rail sector?

b) Passenger: in your experience, how can we most effectively monitor and assess customer satisfaction? What is a stretching yet realistic ambition for this objective and what measures can we most effectively use to consider success over the coming 5, 10 and 30 years? What evidence can you share to support your view?

c) Freight: what evidence can you provide regarding the advantage(s) of transporting goods by rail and what evidence can you share for how that could develop in the next 5, 10 and 30 years? What do you consider to be the most effective role for rail freight in the existing supply chains served and those that it doesn't? How could this change over that period? In answering, please explain and take account of likely developments in technology and in the wider economy.

d) What is a stretching yet realistic ambition for this objective and what measures can we most effectively use to consider success over the coming 5, 10 and 30 years? What are the interventions over that period which will be the maximum value for money, and what evidence can you share to support your claim?

a) Passenger: how will rail passenger expectations, including accessibility requirements, evolve over the coming 5, 10 and 30 years, what will be the driving causes of these changing expectations, and how can they be most effectively met by the rail sector?

Over the next five years, we expect to see a market which continues to adapt and recover following the effects of the COVID-19 pandemic. As Manchester's new timetable is implemented with lower capacity than has been previously promised, we can expect to see the same capacity constraints being reached over the next five years, despite the pandemic having significantly reduced passenger numbers. Indeed, TfGM customer insight[3] has suggested that the majority expect to make the same number of journeys by train after all COVID-19 restrictions are lifted, albeit with a reduction in trips by those who are working and a shift to towards leisure. This means that the industry cannot settle into a holding pattern of reduced services and that there must be continuous efforts to remove bottlenecks in key strategic corridors, such as central Manchester.

In the short term, the passenger will be looking towards a much more dynamic and flexible service offer, with services running at times which have traditionally been reserved for network maintenance. Pressure for later weekday evening services into regional centres, and stronger weekend travel has already been occurring pre COVID and will only be reinforced by the changes brought on by the pandemic. Rail needs to relook at the markets that it best meets and reconfigure its offer to focus on its strengths.

Interventions in the rail sector require significant planning and long lead times, and a growth-oriented railway should ensure it is consistently on the front foot and anticipating the need for increased capacity. Unfortunately experience in Greater Manchester has shown that waiting until there is a critical need to intervene can cause irreparable damage to the mode. This was particularly evident at local stations on the TransPennine route between Stalybridge and Huddersfield where first the introduction of the 5th path each hour in May 2014 and the increased unreliability of the local services reversed demand growth at Mossley and Greenfield in Greater Manchester, and then an even worse impact was seen from the May 2018 timetable, losing up to 7 years' worth of demand growth as seen in 2018/19 ORR footfall figures.

Other trends, such as increasing awareness of carbon footprints and the proliferation of other zero-carbon modes of transport will increase expectation on the railway to be fully decarbonised. Over the next ten years, there is a significant risk that the railway becomes a laggard in terms of environmental performance, despite the railway's overall relatively strong position for decarbonisation. The railway can meet these expectations through a rolling programme of electrification, accompanied by the introduction of new technology such as battery and hydrogen-powered fleets where appropriate.

The need for full accessibility will only increase when taking into account an ageing population and ever-increasing social expectation of a fully accessible rail network.

[3] TfGM Sales Funnel 2021

TfGM customer surveying from 2021 showed that disabled respondents were less satisfied than respondents without a disability at several points of the journey, including access to the station, personal security, access to trains, and elements of onward connections.[4] With existing Metrolink trams and tram stops accessible for wheelchairs and mobility scooters, there is already little excuse for the poor accessibility provided at a number of GM National Rail stations and this would be especially true over the 30-year time horizon. The tram-train has a level 1 requirement to create the same level of accessibility at heavy rail stations that is currently provided at all Metrolink stops. This will be a challenge for both the station infrastructure and the new vehicles, but one which should be achieved to meet passenger expectations for today and the long term.

b) Passenger: in your experience, how can we most effectively monitor and assess customer satisfaction? What is a stretching yet realistic ambition for this objective and what measures can we most effectively use to consider success over the coming 5, 10 and 30 years? What evidence can you share to support your view?

TfGM leads a programme of strategic research with representative samples of GM residents and within the 2040 Transport Strategy we have an established plan to measure success according to satisfaction with the seven 2040 Network Principles (Figure 1). This enables us to monitor each mode's relative performance in all metrics, which can be segmented among user groups and other characteristics to give us a picture of where modes are performing well and poorly. This enables us to target particularly underperforming segments for improvement with targeted policy interventions.

Over the long-term, the industry should adopt a similar inclusive representative sample data to get the perspectives of a range of customers and prospective customers (not just current users) as a means of tracking rail customer satisfaction. Importantly, this would benchmark rail against other modes and understanding rail's customer satisfaction against the car, plane or bus is essential to achieving modal shift.

Figure 1: GM 2040 Strategy – Network Principles

[4] Network Principles 2021

With regard to the wider industry, we have welcomed improved passenger satisfaction metrics with the introduction of Wavelength, which gives a much more granular picture of customer satisfaction than the NRPS. However, the industry should build on this and continuously improve, as well as opening up data to as many stakeholders as possible. Quality of service and passenger satisfaction should be front and centre of new passenger service contracts to be let in the new structure for the railway.

More fundamentally, the timetable is the railway's core product and the industry should have a consistent focus on its delivery. Over the long term, this should mean using technology to enable the development of more detailed performance analysis so we have a better understanding of key issues and how to rectify them.

A new source of data to be considered for use would be social media "conversations". TOCs already use such sources to help them identify delays on the network. Harvesting of such data sources with suitable data scaling measures applied could provide a strong immediate source of passenger satisfaction measure "in the moment". However, it is worth caveating the volatility and representativeness of social media reactions.

As post-COVID trends indicate, if we are to expect an increasingly discretionary railway market, it is also important that the railway is at the forefront of passenger experience. In many respects there has not been massive progress in the last 25 years (and in some cases – seat comfort – a deterioration). During the same period, competing modes have noticeably improved their products. Given the importance of rail's need to increase its modal share, it is essential that rail passenger experience is benchmarked against the best in class across all modes of transport.

c) Freight: what evidence can you provide regarding the advantage(s) of transporting goods by rail and what evidence can you share for how that could

develop in the next 5, 10 and 30 years? What do you consider to be the most effective role for rail freight in the existing supply chains served and those that it doesn't? How could this change over that period? In answering, please explain and take account of likely developments in technology and in the wider economy.

The advantages of transporting freight by rail are well-documented: a single freight train can remove up to 76 HGVs from the road and this brings significant benefits in terms of carbon emissions reduction and decongestion. Rail freight is estimated to generate £2.45bn in economic benefits to the UK annually and typically serves specific markets that rely on consistent and predictable flows of heavy, bulky goods. Much of this market is already captured, and rail freight has most room for growth in terms of intermodal container traffic.

As there is currently no viable non-carbon emitting alternative to the diesel HGV for long-range journeys by road, it is likely rail that will need to provide a substantial proportion of longer-distance trunk haulage within GB if net zero ambitions are to be met.. The challenge over the next five years is ensuring that rail freight captures a larger share of the intermodal market and opens up new markets through empowering rail freight to play a larger role in moving goods in a much more flexible way, like HGVs are able to do. This obviously means challenges for strategic capacity on a rail network that is already very busy.

In Manchester specifically, constraints on the rail network such as a lack of capacity on the Castlefield Corridor and a lack of gauge clearance on trans-Pennine routes, pose significant barriers to intermodal freight growth from ports on the east coast of England. Significant attention needs to be paid to these issues to enable rail freight to fulfil its potential and reduce carbon emissions.

Research carried out by Jacobs and MDS Transmodal on behalf of TfGM provided freight demand forecasts by 2043 based on three distinct scenarios: Network Rail forecasts, Commercially Driven Growth (NR forecasts overlaid with FOC commercial aspirations) and Policy Driven Growth (a theoretical scenario based on ambitious policy interventions) as shown in Table A below.

Table A

Link			Average Daily Trains (sum of both directions)				
	2019	Scenario 1: Total 2043	% change in Scenario 1	Scenario 2: Total 2043	% change in Scenario 2	Scenario 3: Total 2043	% change in Scenario 3
Castlefield Corridor	23	47	104%	65	182%	65	182%
Crewe-Piccadilly via Styal	17	18	6%	18	6%	18	6%
Stockport-Heaton Norris Jn	20	42	110%	42	110%	42	110%
New Mills South Jn-Stockport	10	7	-30%	7	-30%	7	-30%
New Mills Central-Hyde	6	8	33%	8	33%	8	33%
Heaton Norris Jn-Denton	16	17	6%	17	6%	17	6%
Mid-Cheshire Line	17	15	-12%	15	-12%	83	388%
Guide Bridge-Ashburys	6	8	33%	26	333%	26	333%
Rochdale-Miles Platting Jn	11	10	-9%	10	-9%	42	281%
Miles Platting Jn-Victoria	13	20	54%	24	84%	24	84%
Ashton-Miles Platting	11	15	36%	19	73%	19	73%
Diggle-Stalybridge	5	11	120%	33	560%	33	560%
Earlestown-Ordsall Lane Jn	8	15	88%	21	162%	89	1012%
Victoria-Bolton	5	9	80%	9	80%	9	80%
WCML Warrington-Winwick	39	107	174%	107	174%	175	349%

It found that under all scenarios, there is a need for enhanced freight capacity on nearly all freight corridors through Greater Manchester. This is especially true for the Policy Driven Growth scenario, where government prioritises net zero targets through battery-electric HGVs and an increased dependence on rail freight. Industry endorsed forecasts indicate that demand for retail, intermodal and construction will be especially strong over this timeframe.

In the long term, there is an important role for local authorities to play in facilitating freight growth through the identification of new land opportunities and consistent application of planning policy guidelines in support of the development of additional rail freight terminals where they are needed.

d) What is a stretching yet realistic ambition for this objective and what measures can we most effectively use to consider success over the coming 5, 10 and 30 years? What are the interventions over that period which will be the maximum value for money, and what evidence can you share to support your claim?

The introduction of a rail freight growth target is welcome and should be stretching. To be effective, the target should consider rail freight taking a growing proportion of overall freight traffic in Britain, rather than an absolute figure which could be easily offset by rising HGV/OGV volumes. Long-term objectives for the freight sector also need to take account of the commercial environment in which freight operators compete – this means operators being empowered to respond to emerging markets

such as express parcel services. Key to all of this is providing the infrastructure that is able to accommodate the freight growth required to meet net zero ambitions. In a GM context, this means developing the infrastructure to provide the capability to meet both growing passenger and freight demand and developing proposed rail links to Port Salford, as well as exploring further developments in the North West such as Parkside. Multi-modality, and integration with other modes of transport, is also key, as we can see similar reductions in carbon through other modes such as inland waterways.

Delivering financial sustainability

Rail is both a public service, supported by the taxpayer, and a business, run by private operators, with paying passenger and freight customers. The railways have received unprecedented levels of public support throughout the pandemic, protecting the essential services that people, including commuting key workers, rely on. As the recovery and rail reform gains pace, as with all areas of public expenditure, there is an onus on the rail sector to ensure value for money for users and taxpayers in how funds are used, and it must harness the incentives of the private sector to deliver the service in the most cost-effective way.

The railway, accordingly, must seek to deliver infrastructure and services more efficiently, in order to maximise beneficial outcomes while balancing costs against revenue and taxpayer funding. This is more than just a short-term issue: we are clear that reducing the cost of the railway, increasing efficiency including through innovating with private partners, and achieving a better deal for users and taxpayers is a critical priority over the next 30 years.

When considering your answer to the question below, please consider how we can support greater efficiency (such as joined up operations), innovation, alternative sources of funding and/or cost base reduction. Similarly, what steps you would propose to improve the efficiency and reduce the cost of infrastructure projects, operation and maintenance, and what evidence you have to support your response.

Question 3

Where are the most significant opportunities and barriers to delivering financial sustainability in the rail sector over 5, 10, and 30 years and how do we achieve/overcome them? How can we most effectively monitor and assess this? What is a stretching yet realistic ambition for this objective and what measures can we most effectively use to consider success over the coming 5, 10 and 30 years? What are the interventions over that period which will be the maximum value for money?

Where are the most significant opportunities and barriers to delivering financial sustainability in the rail sector over 5, 10, and 30 years and how do we achieve/overcome them? How can we most effectively monitor and assess this? What is a stretching yet realistic ambition for this objective and what measures can we most effectively use to consider success over the coming 5, 10 and 30 years? What are the interventions over that period which will be the maximum value for money?

In the short term, it has been the sharp loss of farebox revenue that has significantly affected the financial sustainability in the rail sector and the focus over the next five years must be in recovering this through increased patronage. While the railway has previously grown through financial crises, the pandemic is an altogether different challenge which has provoked a transformation in travel patterns. However, early evidence has shown a strong leisure market recovery; the railway should be adaptable to seize on any opportunity for recovery of patronage and fare box revenue. The railway should be growth-oriented to provide for increased capacity when supply is no longer able to meet demand; and the risk of the railway settling for a low growth, low capacity and minimal cost alternative must be avoided.

Part of meeting this challenge should be a wholesale re-evaluation of the railway's fares and ticketing system. As noted in the Williams-Shapps plan, today's confusing and complex fares offers detract from the railway's customer proposition – there are a number of complexities such as TOC-only fares, split-ticketing and the erratic provision of certain fares products that should be ironed out. We should be seeking to build on previous limited industry trials of single-leg pricing to rationalise important intercity markets.

Given the change in the rail market due to COVID it is critical that research is undertaken to understand the price sensitivities of the commuting, business and leisure markets. Even before COVID DfT's own research was showing changes in pricing sensitivity by ticket type (DfT Fares Study, 2019) and this is likely to have changed further since then. Much better understanding of the price elasticity would allow for a more targeted pricing level to maximise revenues to achieve longer term financial sustainability. In particular the rationale for peak/anytime period pricing needs to be considered for a post COVID demand profile.

Over the next 10 years, ensuring that the interventions necessary for increased capacity are delivered at value is crucial. The railway has long suffered from high costs relative to European peers and other modes, and there must be a concerted industry effort to drive down the costs of infrastructure delivery. This should mean less 'gold plating', more even and regular industry spending on projects such as electrification and more competitive procurement processes. The sector should also be open and innovative towards alternative funding sources, such as through private investment partners and through schemes such as land value uplift.

With regard to delivery of operations and infrastructure, there is also the need to reduce and stabilise costs borne by the railway, including raw materials for construction and energy. High costs in this area make it much more difficult to achieve environmental outcomes and can end up causing compromise solutions. Potential solutions could include more infrastructure financing made available by the government and a cross-government focus on improved energy security and price stability.

Over a thirty-year timeframe, there is a clear opportunity as society becomes more digitalised to move towards much more automation and streamlining of customer interfaces and operational practices. Changes such as these often have a dual benefit of being more cost-effective and more convenient for the customer, for example, with the mass roll out of contactless ticketing; there is both a much simpler customer proposition but it also enables staff to play a much more customer-facing role.

Contributing to long-term economic growth

Rail helps to boost productivity and growth through improved connectivity and job creation, enables supply chains, delivers goods to businesses and consumers and directly employs over 240,000 people (source: the rail sector in numbers). Among other factors, such as population growth, long term economic growth is influenced by emerging technology, and innovative, more effective ways of thinking and doing things. Over the next 30 years, wider economic, social, environmental and technological trends will change the role rail plays in our economy. It will be for the whole sector to demonstrate that it cannot only continue to deliver wide economic benefits in the face of a changed economy but that it can find new ways to catalyse growth and prosperity.

When considering your answer to the questions below, please share examples of any relevant local, regional and national growth and productivity, and examples of innovations and technology from the UK and abroad, research into trends that may influence rail's contribution to economic growth, and/or new ways of thinking that should be used in or for the rail sector over the coming 5, 10 and 30 years.

Question 4

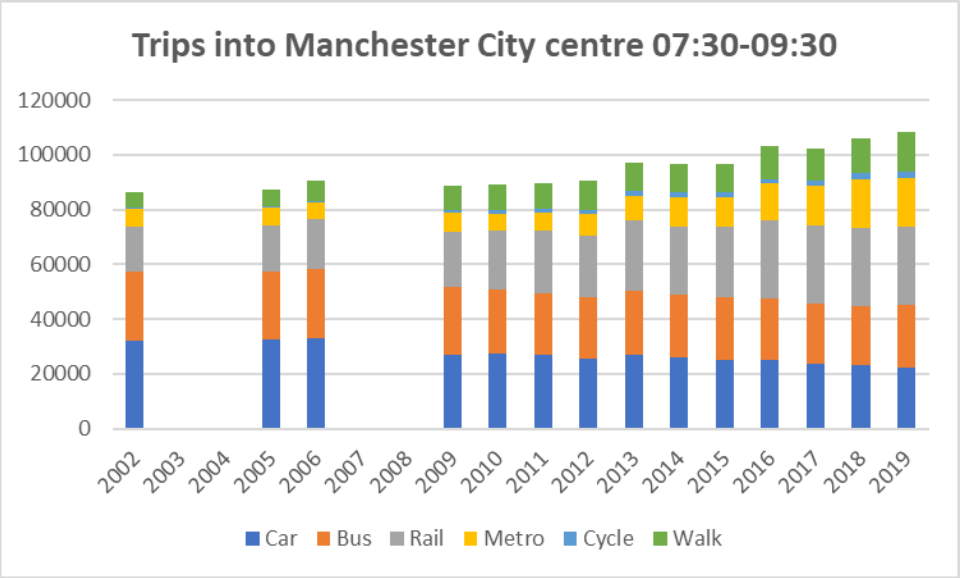
a) As Britain recovers from the effects of the COVID-19 pandemic, what evidence do you have for how rail can contribute to wider economic growth over the next 5, 10, and 30 years? What is a stretching yet realistic ambition for this objective and what measures can we most effectively use to consider success over the coming 5, 10 and 30 years? What type of interventions over that period will provide maximum value for money from rail's economic contribution, and what evidence can you share to support your views?

b) In the context of enabling development and regeneration opportunities both in the immediate vicinity of stations and within the surrounding area, how can rail best facilitate improvements to places and local growth, through improved connectivity and unlocking commercial activity, housing, and employment over the next 5, 10 and 30 years?

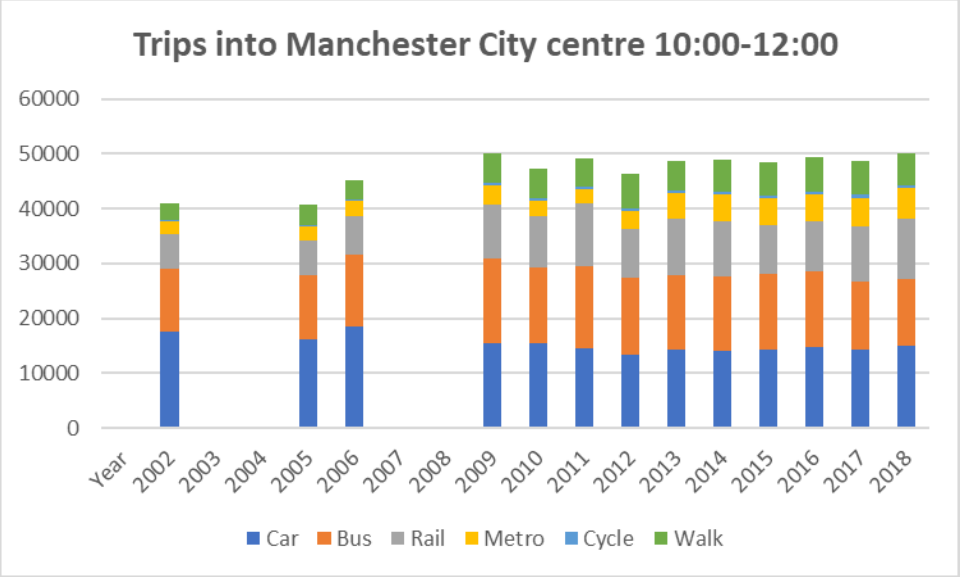
c) What innovative and modernising ideas do you have which would benefit the railway while supporting the strategic objectives? Please give evidence and make reference to how they would maintain or enhance the railway's safety record.

a) As Britain recovers from the effects of the COVID-19 pandemic, what evidence do you have for how rail can contribute to wider economic growth over the next 5, 10, and 30 years? What is a stretching yet realistic ambition for this objective and what measures can we most effectively use to consider success over the coming 5, 10 and 30 years? What type of interventions over that period will provide maximum value for money from rail's economic contribution, and what evidence can you share to support your views?

Prior to the pandemic rail had become an increasingly important mode of travel into Manchester city centre for both peak and off-peak periods, mirroring the growth of rail seen over this period into many regional cities in the UK.



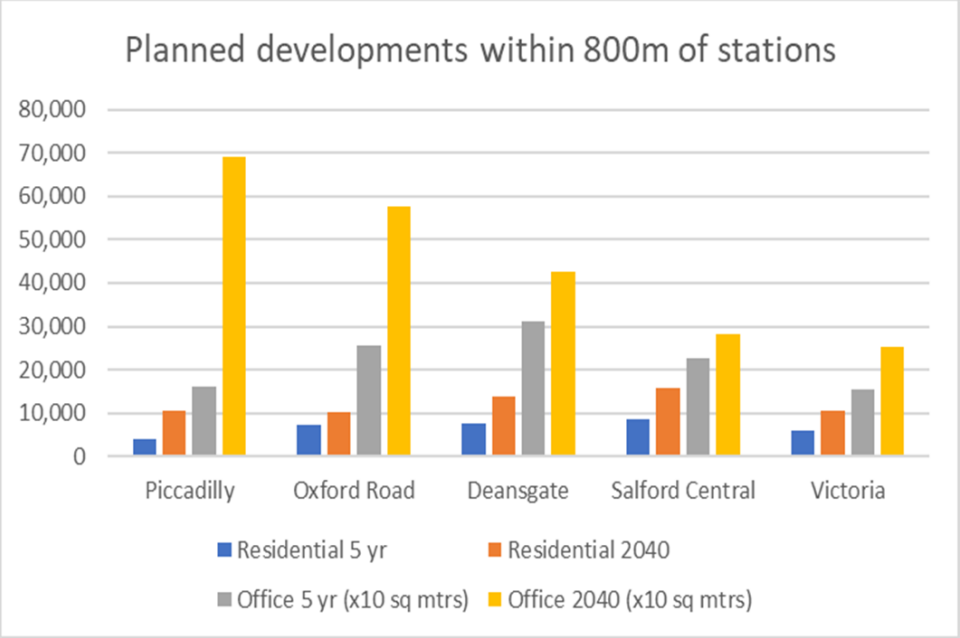
Source: TfGM HFAS Transport Statistics



Source: TfGM HFAS Transport Statistics

This step change in rail demand, particularly for the commuting market, was driven by such external influences as car costs, road congestion and the structural change in the employment market. The ease of access to the city centre also drove growth in off-peak leisure orientated demand.

The pandemic has clearly had a major impact upon rail commuting, but prior to the Omicron wave the recovery in rail demand was being driven by commuting for education and leisure, and we see this continuing. The commuting market is likely to take longer to recover, but employment growth in Manchester is still forecast to be substantial with major developments focussed around the 5 key city centre stations.



Source: TfGM Greater Manchester Spatial Framework analysis

Therefore, with continued constraints on highway access to the city centre, we see an upward trajectory of rail demand into the regional centre of Manchester. Indeed, the Greater Manchester 2040 Strategy includes a Right Mix target which requires a doubling of rail demand into the city centre.

The vitality of the city centre of Manchester is key to the wider economics of the city region. Manchester's employment catchment prior to COVID stretched to as far north as the Lake District, to Huddersfield, Leeds and Sheffield in the east, south towards Birmingham and west to Liverpool, Chester and North Wales. In the London catchment, COVID has led to an increasing tendency for workers to look for residences further out with fewer but longer distance commuting trips likely to be a future pattern. A similar behaviour might well be expected for Manchester, further extending its economic impact.

b) In the context of enabling development and regeneration opportunities both in the immediate vicinity of stations and within the surrounding area, how can rail best facilitate improvements to places and local growth, through improved connectivity and unlocking commercial activity, housing, and employment over the next 5, 10 and 30 years?

The recent major expansion and redevelopment at Stratford in East London, and the similar ongoing developments at Old Oak Common to the west of the city serve as two key examples of where rail has played a key role in enabling development and regeneration, with the rail investments "pump priming" the locations. Indeed, 2019/20 footfall figures recorded Stratford station as the second busiest station nationally (just below Birmingham New Street) beyond the major London termini.[5] The joint public/developer funded new rail link to Barking Riverside is seen as critical to this new housing development on a major regeneration site, and again this shows the critical pump priming role that rail can provide.

Beyond London, the Borders Rail reopening in Scotland has helped to reverse fortunes of the area with strong evidence of increased inbound tourism and increased residential population choosing to live in the area due to the enhanced transport links (Transport Scotland Borders Railway Evaluation, 2017).

More locally, the Manchester Metrolink Phase 3 extensions to South Manchester, Ashton, Rochdale and the Oldham loop have given rise to enhancements in the catchment areas. Analysis[6] has shown there has been a significant improvement in public transport access to employment, further education and healthcare, an improvement that is particularly noticeable for the more deprived communities of Greater Manchester:

- 18.2% for employment (30.5% of the 10% most deprived communities)
- 18.8% for further education (27.7%)
- 19.8% for healthcare (29.5%)

The major redevelopment of the Salford Quays area in Manchester provides an interesting example of where the provision of a rail-based transport mode was not placed front and centre as plans were being laid, with a suboptimal routing of the Metrolink route resulting. This has led to car-based development, which has only recently started moving towards Metrolink due to growing highway congestion.

The above example shows that for rail to play a full role in development and regeneration opportunities it needs to be provided at the start if not before the development begins, with associated funding, and given the climate emergency needs to be seen as an integral part of the solution.

[5] ORR Station Usage Figures, 2019-20
https://dataportal.orr.gov.uk/media/1906/station-usage-2019-20-statistical-release.pdf
[6] Metrolink Phase 3 – Monitoring and Evaluation Second Report:
https://assets.ctfassets.net/nv7y93idf4jq/6Tk9r9ATVS8zTQfyi4vFD2/f67f3087b19d46fb8d4f2c290ec2fef0/Metrolink_Phase_3_evaluation_second_report.pdf

New stations need to be plumbed into such developments with service provision planned at an early stage and built into timetables to be ready for opening. An example of where such progressive thinking has not been applied is Salford Central station in central Manchester, which is located adjacent to the commercial heart of the city, an area known as Spinningfields. TfGM origin-destination surveys with rail passengers in 2017 showed this area to be the top destination of employment trips, and to this end TfGM has been developing over time the expansion of the station with additional platforms, a great example of rail assisting with regeneration of the area. However, the rail industry has been only at best weakly supportive of the plans viewing them as an operational inconvenience, rather than an opportunity to tap into a strong rail-based employment location. Such a limited view of new opportunities for rail needs to be changed, with new and improved access points to the network seen as a solution to the transport challenges that we now face.

Funding is critical for rail to play a key part in future developments and regeneration opportunities, and for this we should look to examples of land value capture and developer funding as used for the Crossrail project in London. Providing an ongoing revenue stream against which money may be borrowed to fund the early provision of rail facilities is key, and as such agreement to extend such mechanisms beyond London to the major regional cities needs to be promoted to enable rail to play the required of it in the future.

c) What innovative and modernising ideas do you have which would benefit the railway while supporting the strategic objectives? Please give evidence and make reference to how they would maintain or enhance the railway's safety record.

A key requirement for rail to meet the objective of economic growth is to provide access and services to the population when and where they want them. This means addressing long entrenched views about levels of service provided on weekday evenings and weekends, and much greater flexibility of timetables by seasonality of demand. If, as seem to be case, rail demand recovers post COVID as an even more leisure-led railway then rail services will need to meet the needs of such passengers much better.

Later weekend evening services from regional and entertainment centres, along with close to weekday levels of service on Sundays need to be the target for rail. This will mean a reappraisal; of engineering access for Network Rail, with route blockades in periods of lower demand providing for a more efficient usage of manpower and plant. Allied to this, restructuring of rail traincrew terms and conditions to move away from such archaic practices as "rest day working" needs to be addressed head on and quickly if rail is not to miss the leisure market opportunities in the short term.

In terms of innovation, the introduction of tram-train services on heavy rail and Metrolink lines across the region has the potential to open up new journey options both orbitally and radially or increase frequency on existing routes. With the vehicles ability to operate on heavy and light rail infrastructure this could reduce the need for

passengers to interchange, therefore relieving pressure at key nodes across the network. If tram-train services ‘left’ the heavy rail network at the regional centre to connect in to the Metrolink network, this could also release vital capacity on the heavy rail network on track and at stations.

Levelling up and connectivity

The Secretary of State for Levelling Up has outlined four key outcomes on which the government will focus:

- Empowering local leaders and communities;
- Boosting living standards by growing the private sector and improving productivity and connectivity;
- Spreading opportunity and improving public services; and
- Restoring local pride.

Rail has an important part to play in working toward these outcomes, and particularly so in connecting the nations, regions and communities of the UK. Improved rail links can connect people to jobs, education and skills, high-quality housing, social opportunities, services, and green spaces, as well as encouraging the growth of businesses, and attracting leisure visitors into an area. Improving stations and surrounding areas can also act as a catalyst for regeneration and development and a cause for local pride.

At present, usage of rail differs widely across the UK; before the pandemic, almost two thirds of all rail journeys made were in London and the south east (Rail Sector in Numbers report from 2019).

When answering your questions, consider the ways in which rail can be used to improve connectivity and local economic growth over the next 5, 10, and 30 years.

Question 5

a) What evidence can you provide for how the rail sector contributes to the four levelling up outcomes and to improving connectivity across Great Britain, including through cross-border services? How does this change depending on the type of place where the sector operates (including in cities, towns and rural areas), and what are the most cost-effective ways at the sector's disposal to improve that further during the next 5, 10, and 30 years?

b) How could the rail industry, over the next 5, 10, and 30 years, become more responsive to, and more accountable to, local communities and passengers? Please give evidence and examples in your response.

c) What is a stretching yet realistic ambition for this objective and what measures can we most effectively use to consider success over the coming 5, 10 and 30 years? What are the interventions over that period which will be the maximum value for money, and what evidence can you share to support your views?

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Empowering local leaders and communities

As highlighted in our response to question 1b below, rail has a key role to play in empowering local leaders and communities through devolving more responsibility to the places where rail services matter most – this is no exception for Greater Manchester.

Boosting living standards by growing the private sector and improving productivity and connectivity;

Good quality transport (including rail) provides the ability for people to remain in their home communities whilst accessing good quality jobs, education and other opportunities. As highlighted in the previous section, the experience from the Metrolink Phase 3 expansion clearly demonstrates the enhanced connectivity provided by improved transport links which ultimately improves opportunity, jobs, and prosperity.

Regarding Union connectivity, rail is a vital mode for connecting cities and regions across the country and acts as a crucial gateway into Manchester. Manchester is well-positioned at the heart of the country with direct connections to the three capital cities in Great Britain. Strong leisure and business markets to cross-border destinations serve to highlight the strong position of rail in connecting the Union, and this should be further strengthened given the environmental benefits of rail travel.

Spreading opportunity and improving public services

A successful railway acts as an important distributor of wealth from core areas with agglomeration benefits to home communities beyond city centres. Through acting as the primary provider of public transport over medium-long distances, rail plays a key role in generating demand for improved public services in the form of other public transport and creating islands of low carbon transport with low car ownership. This also has implicit health benefits through increased rates of walking and cycling, which reduces strain on the National Health Service in the aggregate.

Restoring local pride

In a local context, communities take pride in the railway, and local railway stations can often act as hubs of community activity. TfGM has played an active role in fostering these community partnerships which bring together civic society to open up and improve the railway for all. This is evidenced through a thriving network of community

rail partnerships in GM in particular. Particularly for smaller stations, this kind of community engagement is a real asset to increase the attractiveness of stations and ultimately makes the railway a more attractive customer proposition in a way which also provides value for money.

b) How could the rail industry, over the next 5, 10, and 30 years, become more responsive to, and more accountable to, local communities and passengers? Please give evidence and examples in your response.

Across Greater Manchester we have an ever-growing role working with and influencing decision making across the rail industry, building on our current heavy involvement in the specification and management of rail contracts, station management, project development and delivery, fares and ticketing, and future strategic planning. For us to actively continue to influence and achieve our vision of making Greater Manchester the best place to grow up and grow old in, it is vital that local transport authorities are given greater accountability and decision-making powers across these interfaces. This will allow us to fully utilise our expertise and act as the overall coordinating authority for transport across GM, and provide a truly integrated modern day transport network fit for any modern region.

GM's existing experience of managing GM bus station operations; ownership, infrastructure asset management and management of the contract for the Metrolink network; delegated responsibilities for the key route network; substantial delivery experience for physical infrastructure projects; and now the ownership, operations and management of rail station assets such as Horwich Parkway, is a testament to our capabilities and shows that we have the core future rail competencies, to undertake further accountability, and deliver sustained customer improvements across the GM network.

Our expertise and understanding of the local Fares and Ticketing system across GM and the wider pan-northern region for rail, and our ability to set the fares standard and service provision for bus and Metrolink operations across GM, presents clear opportunities to link the railway with both franchised bus and Metrolink, and the wider Bee Network. We therefore strongly believe that we are well positioned to be able to influence the new rail fares and ticketing structure, including rail service operations, to allow passengers and our local communities, and businesses, to reap the benefits of a fully integrated, and seamless multi-modal transport system.

However, we fully appreciate the complexities of the rail industry, and that TfGM is not the sole actor across many of these interfaces, although we strongly believe that TfGM can play a vital role in embedding local-regional accountability across our partners within GM and the wider North, and set the tone for a positive realigned relationship across local leaders in the rail industry and local government, to ensure the industry is being held to account and that we are able to deliver a collective vision that aligns with local–city regions and the national strategy.

To do this, we see that there is a real opportunity for devolved transport authorities to build upon the good work that has previously been done and seize on the opportunity to set out a clear vision and structure for decision making within rail across Greater

Manchester, hence we are working up plans with our local-regional partners, the DfT and GBR transition team to establish the *Greater Manchester Rail Partnership (GMRP)* which intends to bring together key industry partners across the Greater Manchester region and travel-to-work boundary, streamline existing governance, and empower decision makers at the local / regional level, whilst allowing us as an industry to act as one voice in the interests of Greater Manchester's residents, communities and business.

c) What is a stretching yet realistic ambition for this objective and what measures can we most effectively use to consider success over the coming 5, 10 and 30 years? What are the interventions over that period which will be the maximum value for money, and what evidence can you share to support your views?

Success needs to be measured through delivery. In GM, we should have a level of performance and service that is at the very least commensurate with the UK's largest regional economy outside of London. This means matching London's level of integrated fares and ticketing system, and providing a reliable service level that enables GM residents to switch from the car to the train (and other public transport).

As noted in the preface to this question, rail modal share is also much lower in the North than London and the South East, and addressing this imbalance through passenger growth must be a key objective.

Delivering environmental sustainability

The Plan for Rail commits to the creation of a comprehensive environment plan that will establish rail as the backbone of a cleaner future transport system, one that aims to protect and enhance biodiversity and the natural environment. That plan, the Sustainable Rail Strategy (SRS), will be one of the inputs to the Strategic Plan, and will build on and develop a strategy for achieving the policy commitments set out in both the UK's Transport Decarbonisation Plan and the Rail Environment Policy Statement that were published in July 2021, as well as the Net Zero Strategy from October 2021.

In addition to tackling the causes of climate change, the rail network must also be able to adapt to the changes already being seen. This means preparing for the impact of extreme weather events and increasing the resilience of the rail network to the impacts of these events – for example, flooding.

When answering your questions, consider the ways in which rail and the rail estate can contribute to wider national and regional environmental policy agendas, support decarbonisation, conserve and enhance biodiversity, improve air quality and increase renewable power generation.

Question 6

a) What is a stretching yet realistic ambition for this objective and what measures can we most effectively use to consider success over the coming 5, 10 and 30 years? What are the interventions over that period which will be the maximum value for money, and what evidence can you share to support your views?

b) What use can the rail sector make of emerging or existing technologies to reduce its impact on the environment and enhance biodiversity over the next 5, 10, and 30 years, and, in a proportionate and cost-effective way, help national and regional authorities to meet their environmental objectives?

c) How can rail best invest in climate resilience, supported by smarter forecasting, planning and technology, over the next 5, 10, and 30 years and what evidence do you have to support your view?

a) What is a stretching yet realistic ambition for this objective and what measures can we most effectively use to consider success over the coming 5, 10 and 30 years? What are the interventions over that period which will be the maximum value for money, and what evidence can you share to support your views?

Decarbonisation of the railways is a key priority for GM and we have a target to be carbon neutral by 2038. Key to this is not only reducing the railway's own carbon emissions, but also that the railway (as a low carbon mode) takes on an increased modal share of transport to reduce the emissions that would be emitted by other modes. Transport emissions in the UK have remained relatively static over the last decade and have represented the largest emitting sector since 2016. BEIS figures show that this largely attributable to stubbornly high overall automobile emissions, and whilst it is important that rail reduces its own carbon footprint, there are much more meaningful reductions in carbon emissions achievable by increasing rail's modal share for freight and passenger traffic. For this reason, when considering transport emissions holistically it is essential that rail has strong growth-oriented modal shift targets for both passenger and freight.

These modal shift targets should be supported by policy which encourages consumers to respond rationally in favour of public transport. This means revisiting the current settlement whereby car operating costs are disproportionately low compared to other modes (exacerbated by the long-term freeze in fuel duty), whereas rail fares in Britain have been progressively increased above RPI. As the market for EVs continues to grow and fuel duty revenues decline, there is a burgeoning need for policy to better recoup the external costs of car travel and rebalance funding towards rail, public transport and active travel – this is especially true for city-regions such as GM.

Furthermore, the need to improve air quality, particularly in urban centres, means that it will be increasingly unacceptable for diesel trains to be running through core cities. Diesel engine rolling stock contributes to the air quality burden in the city region and as emissions from other modes are reduced, rail risks being behind the curve on decarbonisation.

TfGM is currently in the process of developing a strategy for decarbonising its passenger rolling stock and meeting UK government objectives of removing diesel-only trains from the network by 2040. This also applies to the planned tram-train scheme: the requirement for the new tram-train vehicles is that they will be zero emission vehicles through using existing OLE on the Metrolink network and an On-Board Energy Storage Solution when on heavy rail (e.g. battery or hydrogen). Meeting this challenge will require a significant amount of coordinated industry planning in terms of infrastructure development, intelligent and cost-effective cascading and refurbishment where appropriate, and investment in new rolling stock and technology. Building in resilience and flexibility is also vital to ensure that rail has the capability to deal with the future challenges of decarbonisation, whether it may be flat batteries or downed OLE infrastructure.

Ultimately, a successful and environmentally friendly railway should be taking on an increased proportion of mode share away from competing less sustainable modes such as aviation and the private car. It should also facilitate low-carbon lifestyles where there is much reduced need for the private car and entire journeys are made on carbon-free modes. Targets should be set to reflect these ambitions and should include a progressive

increase in rail modal share, a much more ambitious programme of rolling electrification and an increased proportion in those who are able to live car-free. This is a significant undertaking that should be coordinated at a cross-departmental government level, rather than simply being left to the industry and the Department for Transport to achieve on its own.

b) What use can the rail sector make of emerging or existing technologies to reduce its impact on the environment and enhance biodiversity over the next 5, 10, and 30 years, and, in a proportionate and cost-effective way, help national and regional authorities to meet their environmental objectives?

In terms of reducing rail's own emissions, the industry is well aware of the challenges of decarbonisation as recent publications including Network Rail's Traction Decarbonisation Network Strategy and the government's wider Transport Decarbonisation Plan show. However, there is a greater urgency required to decarbonise the network to meet our carbon neutral target in 2038 and there should be a greater emphasis on delivering an electrification programme that is based on current, known, proven technology. While there are benefits for investigating alternative modes of traction on lesser used lines where it would be disproportionately costly to electrify them, the industry should not lose time in waiting for improved battery and hydrogen technology where there are clear solutions based on railway electrification. The industry also needs to consider the whole-lifecycle carbon emissions of battery replacement and hydrogen production which may not be favourable over the long term.

However, the cost and complexity of delivering even in straightforward schemes needs driving down significantly, this needs to prioritised under any network wide "guiding mind". Experience from Scotland's rolling programme of electrification, where much better value has been achieved than elsewhere, shows there are benefits from learning and experience being passed from one project to the next.[7]

c) How can rail best invest in climate resilience, supported by smarter forecasting, planning and technology, over the next 5, 10, and 30 years and what evidence do you have to support your view?

As mentioned previously, with the effects of climate change we can expect to see an increasing incidence of extreme weather events over the next thirty years and likely beyond. Higher temperatures, increased flood risk, stronger winds and heavier rainfall will all have infrastructural and operational impacts on rail services. Network Rail's four pillars of resilience (Figure 2) have been prepared to anticipate these kinds of weather events.

Figure 2: Network Rail's four pillars of resilience

[7] RIA Electrification Cost Challenge https://www.nsar.co.uk/wp-content/uploads/2019/03/RIAECC.pdf

Through use of intelligent technology which can anticipate where infrastructure is most at risk, and proactive investment, we can seek to prevent or minimise the most damaging effects of climate change. Furthermore, we can seek to build resilience by having a much more integrated approach to providing alternative modes when rail is disrupted.