

RAC Foundation response to the National Infrastructure Commissions' call for evidence on improving connectivity between northern cities

1. About the RAC Foundation

The RAC Foundation is an independent transport policy and research organisation which explores the economic, mobility, safety and environmental issues relating to roads and their users. The Foundation carries out independent and authoritative research with which it promotes informed debate and advocates policy in the interests of responsible road users.

2. Introduction

In this submission the RAC Foundation answers the following five questions set out by the National Infrastructure Commission with regard to improving connectivity between cities in the north of England.

1. To what extent are weaknesses in transport connectivity holding back northern city regions (specifically in terms of jobs, enterprise creation and growth, and housing)?
2. What cost-effective infrastructure investments in city-to-city connectivity could address these weaknesses? We are interested in all modes of transport.
3. Which city-to-city corridor(s) should be the priority for early phases of investment?
4. What are the key international connectivity needs likely to be in the next 20-30 years in the north of England (with a focus on ports and airports)? What is the most effective way to meet these needs, and what constraints on delivery are anticipated?
5. What form of governance would most effectively deliver transformative infrastructure in the north, how should this be funded and by whom, including appropriate local contributions?

The responses to these questions, provided in the following section, supported by a detailed analysis from section 4 onwards.

3. Summary of RAC Foundation response

For the purposes of this response the RAC Foundation takes the area to be considered as that described in the government's March 2015 report *The Northern Powerhouse: One Agenda, One Economy, One North*¹ comprising the North West, the North East and the Yorkshire and Humberside regions.

Q1. To what extent are weaknesses in transport connectivity holding back northern city regions (specifically in terms of jobs, enterprise creation and growth, and housing)?

Connectivity and mobility in the North is heavily dependent on roads and road transport. Of motorised travel 90% goes by road and of this 94% is by private transport. Road freight transport is also more important in the North than the South generating 22% more road goods transport per head than the national average and over twice as much as in the South. Almost 95% of business journeys go by road and improving the road (both local and strategic) network is a high priority for business.

Substantial sections of the Strategic Road Network (SRN) are congested today and this is forecast to get substantially worse with expected traffic growth. By 2040 it is expected that there will be about 600kms of regularly and severely congested trunk roads in the North amounting to 30% of the network. This increased congestion will lead to substantial costs for businesses and households. It will also present particular problems for road transport around

¹ HMG 2015a

the Greater Manchester and West Yorkshire Conurbations - which make up over a third of the North's GVA. Whilst Tyneside is less important in economic terms, increased road congestion will restrict accessibility within the conurbation and to the south where good connections are so important to its economy. The increased congestion on the SRN will cost around £1/2bn a year by 2040 and there will be significant increases in congestion on local roads especially in and around the larger urban centres.

Whilst connectivity can be categorised in a variety of ways in this response we use four types of connectivity as the main indicators. These are:-

- connectivity between the main urban areas in the region;
- connectivity between the main centres and their hinterlands;
- connectivity between the North and the rest of the country – especially London and the South East and
- connectivity with the rest of Europe and beyond.

Connectivity should reflect the proximity, directness and quality/capacity of service available. The main urban areas in the north are clustered in the Merseyside/Greater Manchester conurbations, West Yorkshire/South Yorkshire conurbations, Humberside, Teesside and Tyne and Wear. The Merseyside, Greater Manchester and West Yorkshire and South Yorkshire conurbations form a zone of 50kms by 130kms which contains over half of the region's population. In addition to these primary centres there are several secondary centres including Preston, York and the Fylde Coast. Within the major conurbations road links are generally direct but are not always of an adequate quality/capacity.

It is difficult to quantify the extent to which weakness in transport connectivity are holding back northern city regions, but the scale of existing road and rail congestion in the Northern regions provides important information about the current and likely future difficulties that will be experienced. It is also telling to look at current commuting patterns, which suggest a significant degree of 'containment' within established city-regions. This is a significant issue for the Northern Powerhouse concept because unless the northern cities move away from these existing patterns of 'containment' the concept of far wider areas – or the North as a whole - acting economically as a single employment-conurbation will not be achieved. A key task for Transport for the North will be to develop a better understanding of the extent to which the 'containment' currently seen is a product of limited travel options, or of other lifestyle choices.

Q2. What cost-effective infrastructure investments in city-to-city connectivity could address these weaknesses? We are interested in all modes of transport.

There are direct (albeit often congested) connections between the major conurbations with two exceptions - between Tyneside and South Lancashire and across the Pennines between Greater Manchester and West/South Yorkshire. The moderate traffic volumes and difficult terrain are such that a new link between Tyneside and South Lancashire does not appear justified, but there is a strong case for a new link between Manchester and Sheffield for which proposals are already under development.

There is also a case for improving the A65/A660 between the M6 and West Yorkshire which is no longer a trunk roads and is, an often poorly aligned, single carriageway for most of its length. It provides a direct route between West Yorkshire and the M6 and the Lake District and Cumbria which attracts over 40 million tourist visits a year worth almost £2/2bn to the

local economy². By reducing the present travel time between the M6 and Leeds from 2 hours to under 1½ hours³ considerable time savings would be made by the traffic on that route as well as significantly reducing pressure on the M62 to the South.

Congestion on local main roads is also a problem – particularly in Greater Manchester and West/South Yorkshire where, in a number of instances it impairs regional and wider connectivity as well as acting as a drain on the local economy. To support increased connectivity priority should be given to reducing congestion on these local road links.

There are a number of ‘peripheral’ towns in the North which have suffered from the demise of traditional industries yet have difficulty linking into the newer service economies focussed on the larger cities. Improving road access to these would help improve labour supply to the main regional centres and provide a more equitable distribution of the benefits of regional development. Usually this will require improvements to existing routes but there will remain some towns (e.g. Whitehaven) which will remain poorly linked to the rest of the region.

Ultimately it is important to start from the current situation, which is very high levels of road traffic. Car access is clearly important. Whilst The Northern Powerhouse strategy from March 2015⁴ recognises the importance of using transport to aid change in future patterns of land use and economic growth, it is less focused on ensuring that current infrastructure is performing at its very best, in that it is well-maintained and takes advantage of modern technology both in design and traffic management terms. Effective management of Highways England’s resurfacing programme is an important part of this. Travel planning, San Fransisco type parking controls as well as park and ride may offer some opportunity for improving city-to-city connectivity, although expanding and better connecting road and rail corridors in the first instance will be necessary.

Q3. Which city-to-city corridor(s) should be the priority for early phases of investment?

The first priority should be to ensure that the road network in general and the Strategic Road Network in particular is well maintained, properly managed - and resilient to severe weather episodes. Taking into account expected levels of congestion, the need for more direct connections between parts of the region and the need for increasing network resilience, table 4.6 in the detailed analysis sets out the core routes where improvements would bring substantial advantages. It has not been possible for us to quantify the potential benefits as this needs developed proposals and more detailed work than has been possible. However the routes listed in the detailed analysis deserve careful consideration for improvement.

The benefits of any improvements to connectivity between settlements will be reduced if congestion within them worsens. Each of the two main road arteries to the south (the M1 and the M6) are expected to be regularly congested in 2040 and conditions on the M6 south of Manchester are currently poor for substantial period in the week with, on average only 72% of journeys being ‘on time’. Table 4.2 also provides further details of the main sections of congested trunk roads in the North, which would benefit from early intervention.

Q4. What are the key international connectivity needs likely to be in the next 20-30 years in the north of England (with a focus on ports and airports)? What is the most effective way to meet these needs, and what constraints on delivery are anticipated?

² Cumbria Tourism 2015a.

³ Effectively increasing the average speed from 35mph to 45mph.

⁴ HMG 2015a

The M1 and M6 are also of importance as transit routes between Scotland and the Midlands and the South. These roads to the south provide access to the Channel ports and the Channel Tunnel and congestion on these puts the North at a disadvantage with the rest of the country for access to and from central and southern Europe.

The region contains three of the UK's busiest freight ports (Grimsby and Immingham, Tees & Hartlepool and Liverpool) and these carry 26% of all UK port tonnage. Grimsby and Immingham is especially important for the import of bulk goods and together with Liverpool these ship 40% of the UK's vehicle exports/imports⁵.

Over half the country's passenger traffic with the Netherlands passes through Hull and Newcastle and almost all traffic with Belgium through Hull; and Liverpool is an important portal for traffic to and from Ireland⁶. All sea traffic to and from the Isle of Man goes through Liverpool and Heysham⁷.

Good quality access to the North's major shipping ports is therefore clearly important to industry (e.g. automobile manufacturing) and commerce in the region as well as the national economy as a whole. In the west this means that it is particularly important that the road standards should be suitable for heavy traffic on the A580 and the A5808 and, along with the M62, capacity should be sufficient to limit traffic congestion to an occasional rather than a regular event. For further analysis on wider connectivity issues for the North please see section 4.10.

Q5. What form of governance would most effectively deliver transformative infrastructure in the north, how should this be funded and by whom, including appropriate local contributions?

We welcome the creation of Transport for the North (TfN) as a body that can focus its attention on connectivity and transformative change. To a considerable extent the consultation questions posed by the NIC are ones which TfN might, in due course, be expected to answer.

The RAC Foundation can foresee that TfN could operate in a similar way to Transport for London (TfL). This type of governance framework would provide TfN with more authority and direct management of road developments and strategic road maintenance within its jurisdiction. It will be important to have local, trans-regional, buy-in for solutions as a regional-national partnership will be necessary to secure funding and political commitment.

To be tenable, and ensure that all connections between centres are covered, the remit of any newly developed Governance structure should be expansive enough to incorporate a broad and relevant geographic spread.

It is unlikely that all of the potential transformative investments will be affordable at once. TfN will need to wrestle with the issue of prioritisation, cross modally and in time. Whilst centralising the investment budget would be an option – across sums currently held by Highways England, Network Rail, individual authorities and Central Government – this is likely to be very difficult to manage. That said, TfN would benefit from clarity over the scale of the investment envelope that will be available over, say, a 5-10 year horizon, and to have

⁵ DfT 2015h.

⁶ DfT 2015g, table SPAS0108.

⁷ DfT 2015g, table SPAS0201

as clear as possible mechanisms for influencing scheme design and prioritisation across national and local road and rail infrastructure.

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4. RAC Foundation analysis on Northern transport issues

4.1. Some Dimensions of the North/South Divide

Whilst transport connectivity is an important factor in the economic performance of the northern cities it is difficult to quantify the extent to which its shortcomings are impairing this - in what is a relatively well developed region. The North is however clearly underperforming when compared to the South and England as a whole; as illustrated in table 4.1.

Table 4.1: Some indicators of regional variations

PARAMETER	NORTH	L&SE	England
Average earnings ⁸	£389	£565	£428
GVA/capita ⁹	£19,181	£32,891	£24,091
Unemployment rate ¹⁰	6.4%	5.3%	5.5%
Unqualified adults ¹¹	12.1%	8.6%	12.0%
House prices ¹²	£181k	£441k	£278k
Number of LA's in top 20 deprived neighbourhoods ¹³	14	0	6 ¹⁴

Sources: ONS 2013a, 2014a, 2015a, 2015c, 2015d & 2015e.

People living in the North earn 9% less than the national average and are 30% less well off than those in the South. This disparity is even greater for economic output with Northerners being 40% less productive than Southerners and 20% less productive on average than England as a whole. The incidence of unemployment is higher in the North, as is the percentage of unskilled adults. Perhaps more striking is the variation in house prices with houses in the South being substantially costlier than the national average and almost 2½ times those in the South. There is however a strong 'London' effect on house prices in the South. In

⁸ ONS 2015a, table 25.1a.

⁹ ONS 2014a, table 1.1.

¹⁰ ONS 2015c.

¹¹ ONS 2013a.

¹² ONS 2015d.

¹³ ONS 2015e

¹⁴ Outside the North

London there are increasingly low levels of affordable housing, for sale or rent, which is starting to be recognised as a significant risk to London's continuing prosperity.

Despite the higher wages in the South, houses are twice as affordable in the North. Most striking of all is the extent of deprivation in the North with 14 of the top 20 local authorities with the most deprived neighbourhoods – and none in the South. This was not always the case as in 2010 there were 4 London Boroughs in the bottom 20; all of which have since climbed out.

4.2. The Importance of Road Transport in the North

Connectivity and mobility in the North is heavily dependent on roads and road transport. Figure 4.1 shows the use of different forms of transport in the North, South and England as whole in 2014. Of motorised travel 90% goes by road and of this 94% is by private transport. Personal travel is different from the South in two respects. Firstly travel rates are slightly higher in the North – because of the significantly lower trip rates in London offset partly by higher trip rates in the South East and secondly the use of rail is little more than half of that in the South – again because of the extensive use of commuter rail and the Underground in London and the South East. In 2013/14 there were 203m rail journeys in the North compared with 1,124m in the South¹⁵ where there were also 1.3bn Underground journeys¹⁶, 60% of all English light rail journeys¹⁷ and 59% of all local bus journeys in England.

Road freight transport is also much more important in the North than the South. In 2014 there were 2,666 ton-kilometres/head of freight in the North compared with 1,101 in the South and 2,178 in England as a whole¹⁸

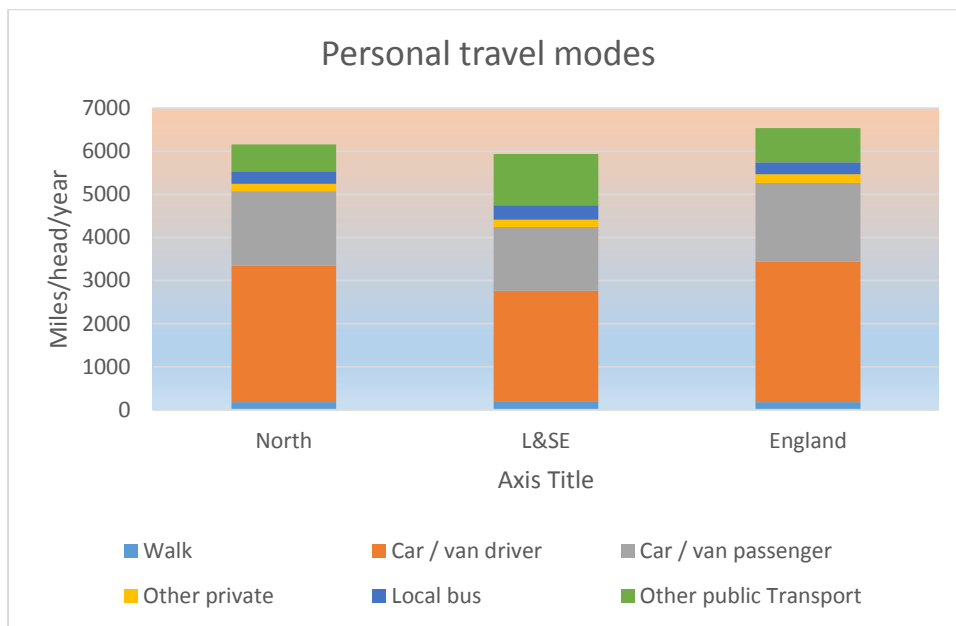
¹⁵ DfT 2015j

¹⁶ DfT 2015k

¹⁷ DfT 2015l

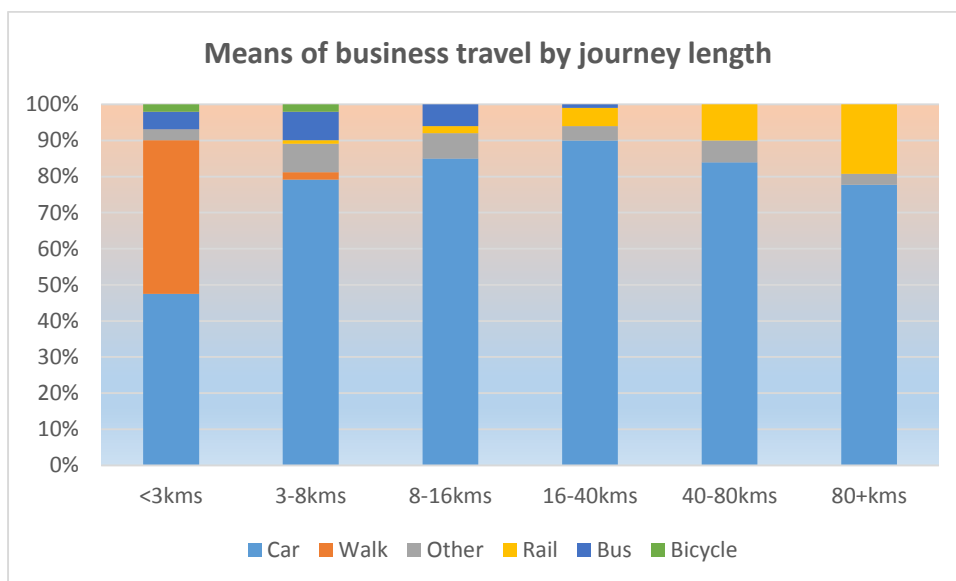
¹⁸ DfT 2015b

Figure 4.1: Personal Travel by Area 2013/14



Source: DfT 2015a, table NTS9904.

Figure 4.2: Percentage of business trips by main mode and trip length: Great Britain, 2009



Source: DfT 2011a, table 7.

Good roads are seen as especially important by business. In its 2015 Infrastructure Survey¹⁹ the CBI found - 'The importance of the Strategic Road Network (SRN) to business cannot be underplayed. With 89% of businesses seeing investment in the UK's motorway network as either crucial or beneficial to their business prospects, the justification for the £15bn Road Investment Strategy created in the last parliament is clear. Yet the results of this survey indicate that local roads are also crucial or important, with 89% of UK businesses using them to meet their needs, and 42% recognising them as crucial to their operations.'

¹⁹ CBI 2015a.

Whilst the importance of roads to the movement of goods is the most important their use for personal business travel is also significant. Figure 4.2 shows how important cars are to the 56 billion kilometres of business travel made each year in England²⁰ dominating all journey length ranges except the shortest where walking comes a close second.

Overall, compared with ‘free flow’ speeds delays to traffic on roads in the North amounted to of the order of £4½bn in 2010 and these could rise to £8½bn by 2040²¹.

4.3 Dimensions of Connectivity

Whilst connectivity can be categorised in a variety of ways in this response we use four types of connectivity as the main indicators. These are:-

- connectivity between the main urban areas in the region;
- connectivity between the main centres and their hinterlands;
- connectivity between the North and the rest of the country – especially London and the South East and
- connectivity with the rest of Europe and beyond.

Connectivity should reflect the proximity, directness and quality/capacity of service available. The main urban areas in the north are clustered in the Merseyside/Greater Manchester conurbations, West Yorkshire/South Yorkshire conurbations, Humberside, Teesside and Tyne and Wear. The Merseyside, Greater Manchester and West Yorkshire and South Yorkshire conurbations form a zone of 50kms by 130kms which contains over half of the region’s population. In addition to these primary centres there are several secondary centres including Preston, York and the Fylde Coast. Within the major conurbations road links are generally direct but are not always of an adequate quality/capacity.

4.4. Present & Prospective Traffic Conditions on the Northern Strategic Road Network

Figure 4.3 shows the makeup of the Strategic Road Network (SRN) in the North. This makes clear the relative richness of the motorway network in the North West and its sparsity in the North East, although this is compensated for to some extent by the higher provision of dual carriageway all-purpose trunk roads. The SRN is almost entirely outside the main urban areas and in the North has been reduced in length by over a third since 2002²² - about twice as much as in Britain as a whole²³.

The National Policy Statement for National Networks²⁴ shows the sections of the SRN in the North listed in table 4.2 to have been either regularly or severely congested in 2010.

²⁰ DfT 2015p & ONS 2015b.

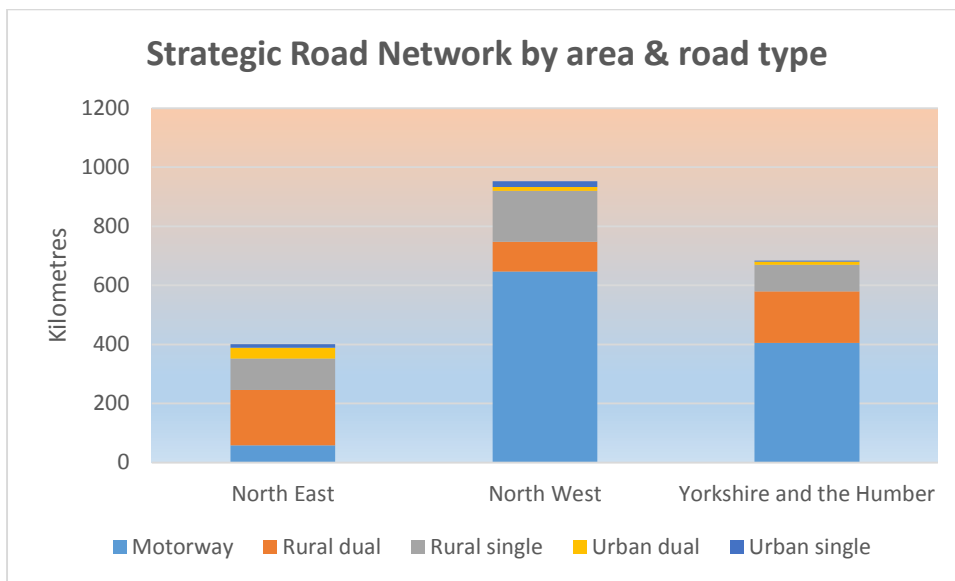
²¹ DfT 2015c, scenario 2 and DfT 2014b, table A1.3.5 and DfT 2015d, table TRA0104.

²² DfT 2013a.

²³ DfT 2015e, table RDL0103.

²⁴ DfT 2014a.

Figure 4.3: Northern Strategic Road Network length by road type and area 2014



Source: DfT 2015n.

Table 4.2: Main sections of congested trunk roads in the North 2010

ROAD	FROM	TO	LEVEL	IMPACT
A595	A5086	4kms to the north	Regular	Limits accessibility of coastal town of Whitehaven.
A590	A595	A5902	Mainly regular	Limits E↔W accessibility across southern Cumbria.
A1	A1(M)	B1318	Mainly severe	Impairs N↔S accessibility around Newcastle and orbital movement in Tyne & Wear.
A1(M)	A688	A690	Regular	Impairs accessibility between Tyne & Wear and the rest of the Region and the rest of the country.
A19	A194	A66	Severe to moderate	Impairs accessibility between Tyne & Wear and the rest of the Region and to the south.
A58/A61 A63/A64/ M1/M621/	A58	M1	Mainly regular	Impairs both orbital and radial accessibility in Leeds and between Leeds & Manchester/Sheffield/Rotherham and to the south.
M1	A6102	A42	Mainly regular	Impairs movements along the main artery between both West and South Yorkshire and to the south.
A585	M55	B5412	Regular	Restricts access between the north Fylde and the rest of the region and increases pressure on Blackpool's internal roads.

M62/602	A557	A6053	Regular	Impairs accessibility between Liverpool and Manchester and from Liverpool to the south.
M61/M62	M66	A627(M)	Regular/ severe	Restricts access between Manchester and Leeds & the north/east and increases pressure on Manchester's internal road network.
M66/A56	M60	M65	Mainly regular	Impairs accessibility between the Ribble valley and Manchester.
M56	M53	M60	Mainly regular	Reduces accessibility between the Wirral/Liverpool and Manchester, between both conurbations and via the M6 to the south; and between the region and Wales.
M60	M56	M66	Regular/ severe	Reduces accessibility between south Lancashire the Peak District and South Yorkshire and increases pressure on Manchester's internal road network.

Source: DfT 2014a, p93.

The most recent national road traffic forecasts²⁵ provide a range of five forecasts for five yearly intervals up 'till 2040 based on a range of assumptions about such factors as population, income, fuel prices, fuel efficiency, road congestion, modal choice and changes in travel habits. For the purposes of the following assessment a central scenario has been taken of a 34% growth between 2010 and 2040 with a range of 17% to 55%. This increase in traffic would lead to a more than doubling of congestion on the Strategic Road Network by 2040²⁶.

If the central national traffic forecasts materialise by 2040 the extent of regular and severe congestion will extend, intensify and cover:

- 110kms²⁷ of the M62/M60/M621 between the A5300 and the M1/A1;
- 100kms of the M6 between the southern edge of the region and the north of Preston;
- 55kms of the A1/A1(M) between the A19 and the A689;
- 30kms of the A1/A1(M) between the M62 and the M18;
- 45kms of the M56 between the M53 and the M60;
- 40kms of the M1 between the A53 and the M18;
- 30kms of the M69 between the M56 and the M62;
- 25kms of the A660/A6120 around the north of Leeds;
- 25kms of the A1(M) between the M62 and the M18;
- 20kms of the A19 between the A184 and the B1285;
- 15kms of the A585 north of the M55;
- 15kms of the A63 to the east of the Humber Bridge;

²⁵ DfT 2015c

²⁶ DfT 2014a, annex A.

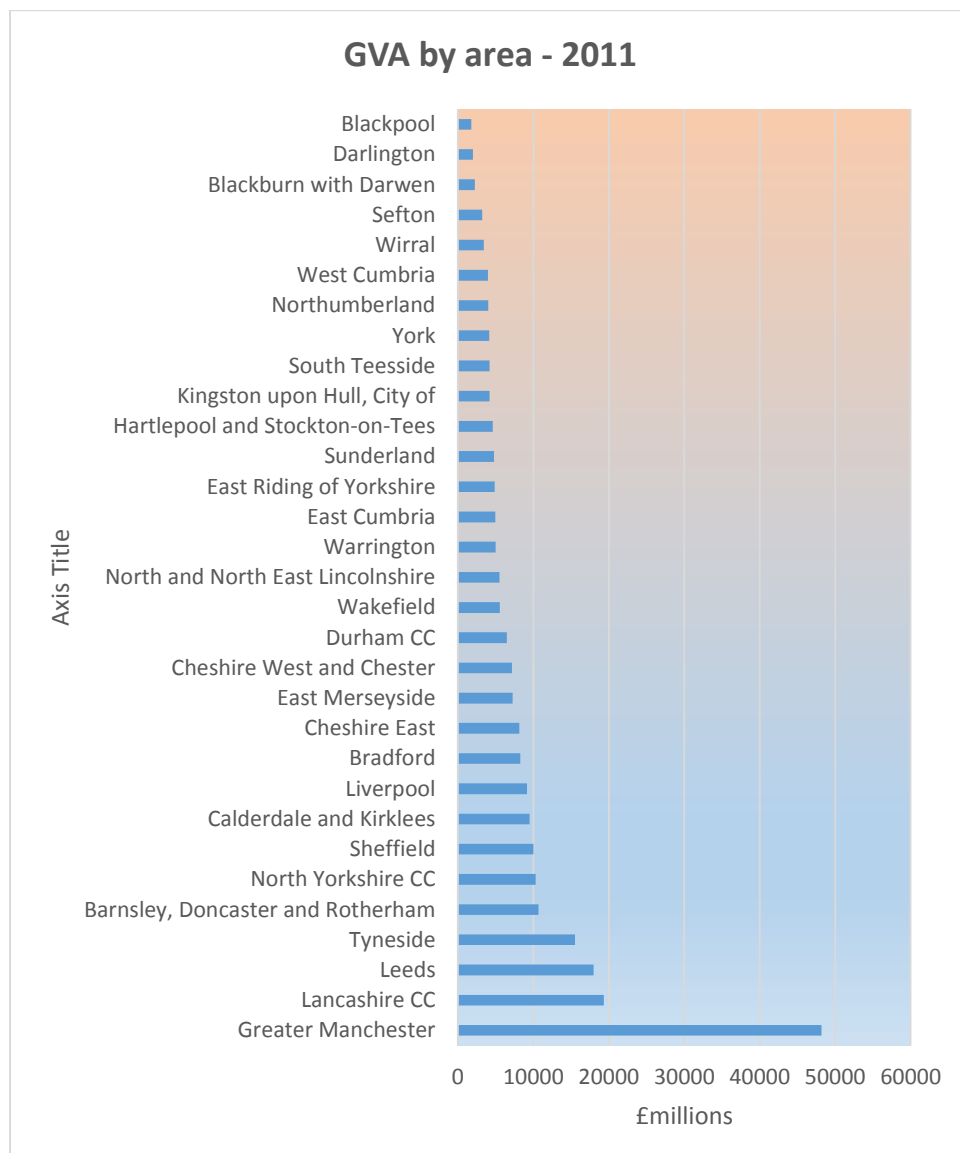
²⁷ Distances are approximate.

- 15kms of the A19/A66 between the A689 and the A714;
- 10kms of the A590 between the A595 and the A5902and
- 10kms of the A1(M) between the A59 and the A659:

Along with several shorter sections around the region.

The patterns of congestion reflected in the preceding list will result in particular problems for road transport around the Greater Manchester and West Yorkshire Conurbations which as figure 4.4 shows are very important and make up over a third of the North's GVA. Whilst Tyneside is less important in economic terms (6% of GVA) road congestion restricts accessibility within the conurbation and to the south where good connections are so important to its economy.

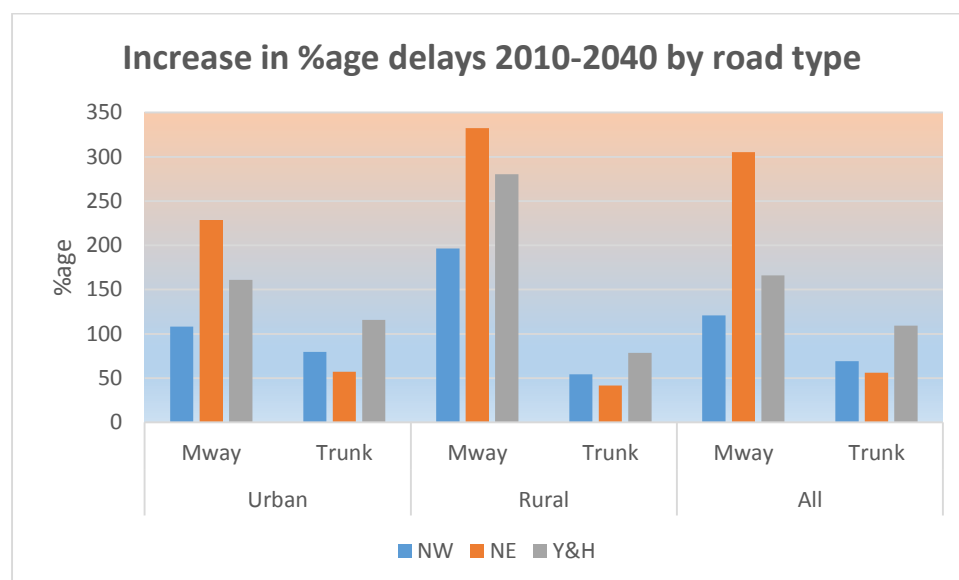
Figure 4.4: GVA by area - 2011



Source: ONS 2014a

This circa 550kms of regularly and severely congested roads in 2040 amounts to 27% of the 2,037kms²⁸ of trunk roads in the North. This increased congestion will lead to substantial costs to businesses and households. Figure 4.5 gives an indication of the spread of the increased congestion by road type and types of areas. The greatest percentage increases will be on Motorways.

Figure 4.5: Percentage increase in trunk traffic delays in the North 2010 - 2040



Source: DfT 2015c, English Regional plus Welsh Traffic, Emission and Speed Forecasts

4.5 Costs of Congestion and Accidents on the North's Strategic Road Network

The changes illustrated in figure 4.5 will mean delays on the strategic road network in the North increasing from 36m vehicle hours in 2010 to 72m in 2040²⁹ with the sharpest percentage increase on the North East motorways but the largest overall increase in the North West (47% of the total). Using an average time saving of £14/hour³⁰ this means time cost alone of trunk road congestion in the North would increase by roundly £500m/year by 2040 and, with vehicle operating costs also increasing in stop start motoring, the total would be even greater. Accident costs are also higher on poor standard roads and of the 5 authorities with the highest economic losses from serious road crashes two are in the North. For the period 2011-2013 in Lancashire and North Yorkshire these were estimated to amount to roundly £1bn with a fifth of this on the trunk roads network³¹.

There will also be considerable congestion on non-trunk roads in the region which is not specifically identified in the national traffic forecasts. Roundly two thirds of road traffic moves on non-trunk roads and delays on these in and around urban areas are much higher than on trunk roads. Consequently the increase in delays on these roads is forecast to increase by 275m vehicle hours/year between 2010 and 2040.

4.6 Core connectivity within the North

Road connectivity between the major conurbations is generally quite good (subject to reasonable levels of service) with two exceptions. The first is between Tyneside and South

²⁸ DfT 2015e, table RDL0101

²⁹ DfT 2015c, scenario 2, which is a central forecast in the range.

³⁰ Based on DfT 2014b, table A1.3.5 and DfT 2015d, table TRA0104.

³¹ European Road Assessment Programme 2015a, tables 3 & 4.

Lancashire and the second across the Pennines between Greater Manchester and West and South Yorkshire. The crow fly distance between Ashton in Makerfield (between Liverpool and Manchester) and Newcastle on Tyne is 185kms yet the actual route length is 260kms - a 40% excess compared with a 15% excess between Liverpool and Manchester. However a more direct road would almost certainly require traversing a considerable distance through hilly terrain and intrude into the Yorkshire Dales National Park and the Forest of Bowland AONB. As such, and in the light of probably relatively light traffic, a direct route could not be justified and improved connectivity will have to be via a less direct route through West Yorkshire.

There are only two trunk routes between south Lancashire and West/South Yorkshire the M62 between north Manchester and Leeds and the A628 to Barnsley north of Sheffield. The M62 is moderately congested today – and forecast to increase to regularly congested by 2040 in the National Policy Statement for National Networks. Moreover the absence of any reasonable alternative means that any incidents on this route can have substantial impacts on access between these two key areas.

The A628, although connected into Manchester by the M27, is a single carriageway road with at grade junctions. Its safety ranking is ‘medium’ for much of its length compared with a ‘low’ ranking for the M62. This is a deterioration from 2011 when the A628 was ranked as ‘low’ risk for all of its length. The relatively poor layout means that the average speed between the centre of Manchester and the centre of Sheffield is 42kph compared with 68kph between Manchester and Leeds. This weakness has already been recognised by the government and a new link between Manchester and Sheffield, involving extensive tunnelling, is being investigated³² and its preliminary findings include:

- there is a clear strategic case for the scheme:
- as well as direct user benefits the scheme could provide greater resilience, higher productivity, strengthened labour markets and attract investment:
- the construction would be challenging but technically feasible and the new link could be operated satisfactorily:
- the road link might be combined with a new rail link but
- the scheme would be very costly.

The costs may be reduced by shortening the tunnelled length but this is an issue for the route planning. The scheme has the potential to:

- reduce journey times between Manchester and Sheffield by up to half an hour;
- significantly reduce road accidents in the corridor;
- increase the resilience of cross-Pennine road travel;
- reduce congestion on the M62;
- improve connectivity between south Lancashire and the east of the country and
- provide alternative to the M6 for journeys between east Lancashire and the south.

The A65/A660 between the M6 and West Yorkshire is no longer a trunk road and is, an often poorly aligned, single carriageway for most of its length. It provides a direct route between West Yorkshire and the M6 and the Lake District. Its enhancement would provide a more direct route between West Yorkshire and the important tourist area of Cumbria and the Lake

³² GOV.UK, (2015c)

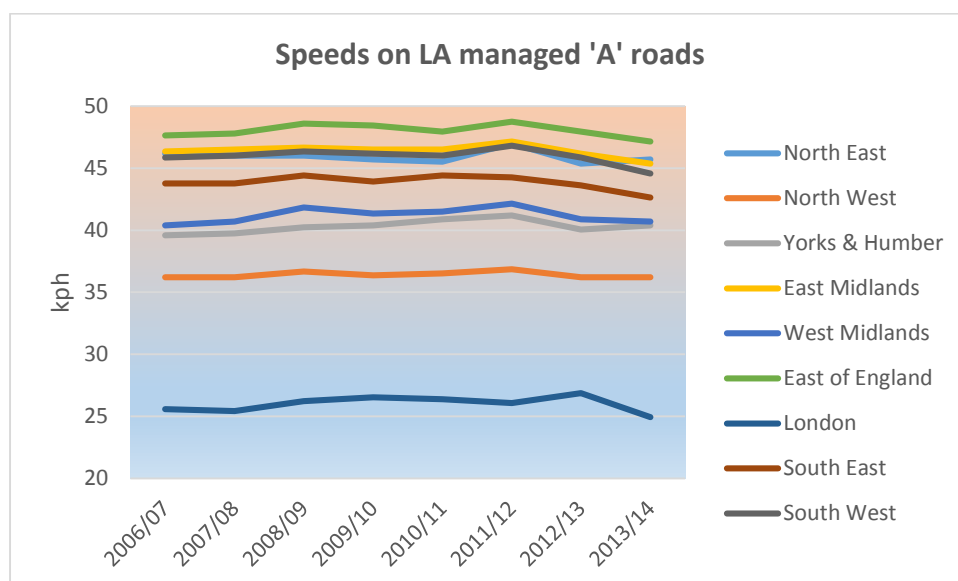
District which attracts over 40 million tourist visits a year worth almost £2½bn to the local economy³³.

By reducing the present travel time between the M6 and Leeds from 2 hours to under 1½ hours³⁴ considerable time savings would be made by the traffic on that route as well as significantly reducing pressure on the M62 to the South.

4.7 Local Connectivity

The benefits of any improvements to connectivity between settlements will be reduced if congestion within them worsens. Data on local road congestion which is consistent between local areas is limited and the most appropriate indicator is speeds on local authority managed A roads. Figure 4.6 shows the trend for these by region since 2006/07.

Figure 4.6: Trends in morning peak speeds on Local Authority managed 'A' roads



Source: DfT 2015s

London has the slowest traffic on its LA 'A' roads by a significant margin, but the North West and Yorkshire and Humberside are second and third slowest. The North East, with higher proportion of rural 'A' roads fares rather better but, as figure 3.3 shows, is poorly provided with motorways. Whilst overall delays on Principal roads is expected to increase in all regions of England the relatively poor position of the North is forecast to remain - as shown in figure 3.7 which shows delays on urban principal roads by region (except London). Conditions on these in the North is worse than average with the three component regions in the top four (excluding London). It is in the urban areas that most congestion occurs in the North with 94% of the 150 million vehicle hours lost on LA 'A' roads in 2010 (substantially more than on the SRN) being in urban areas. This is forecast to rise to almost 300 million in 2040 of with again about 94% being on urban roads³⁵.

The annex contains a list of indicators of traffic congestion by rough location. This is based on the DfT traffic survey data of morning peak speeds on Local Authority managed 'A' roads. This shows areas with five or more sections of roads with average speeds of under

³³ Cumbria Tourism 2015a.

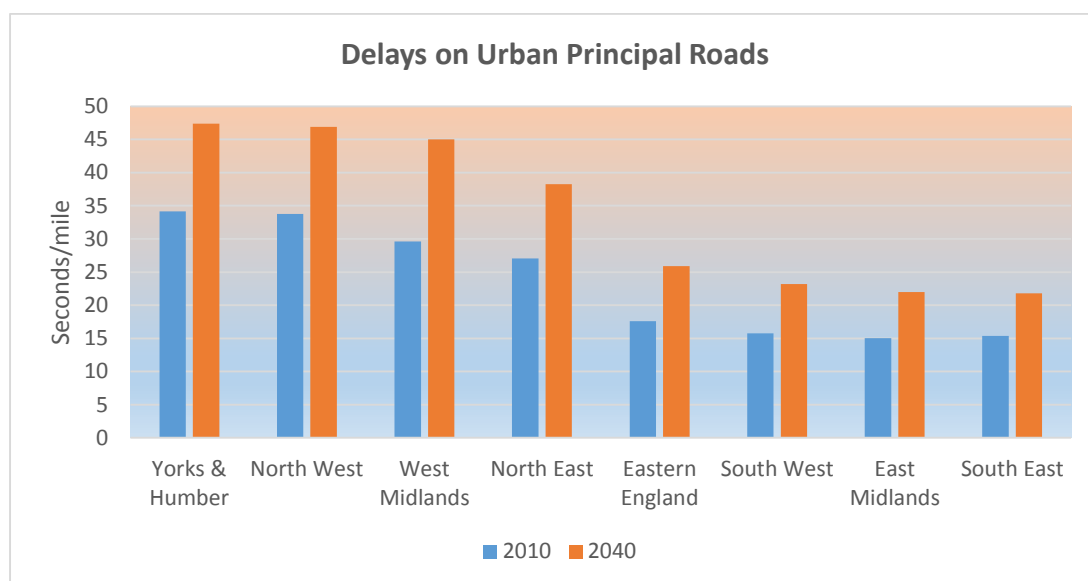
³⁴ Effectively increasing the average speed from 35mph to 45mph.

³⁵ DfT 2015c.

30kph. It should not be used as a guide to specific congestion locations but rather as an indicator of the broad pattern of congestion on these roads.

The greatest concentration of congestion on these roads is in the Greater Manchester area followed by West/South Yorkshire. The Liverpool and Newcastle areas also experience significant congestion but this is not as widespread as in the two main conurbations. Congestion on these routes affects roads serving both local functions such as commuting into the main centres but also, in a number of instances impairs longer distance movements to and from the core road network. In these instances consideration of what to do about these congested links should take account of their wider role in regional connectivity as well as dealing with local problems.

Figure 4.7: Estimated delays on Urban Principal Roads by English Region (excluding London), 2010 and 2040.



Source: DfT 2015c

4.8 Problems of Peripherality within the Region

Within wider regions connectivity between the main centres and satellite towns can be important. This is particularly important on the North as with the demise of shipbuilding, mining, milling and coastal tourism many non-metropolitan settlements have seen their primary economic base shrink or disappear. In the large cities proximity to a thriving centre has enabled many decayed inner city areas to regenerate such as with Salford Quays and the Albert Dock area of Liverpool. In more distal towns this effect has not existed and their economies have tended to lag behind the main centres – sometimes very badly. The construction of HS2 is likely to further exacerbate the differences between the northern ‘Poles’ and other more remote parts of the region.

In its recent report on the performance of English Towns³⁶ Demos showed that there are substantial differences between the performance of satellite towns and their regional centres. In some areas these towns outperformed their regional centres but in other they lagged behind. Of the seven English regions (excluding London) there were three where the satellite

³⁶ Cadywould C. & Paget A. 2015a.

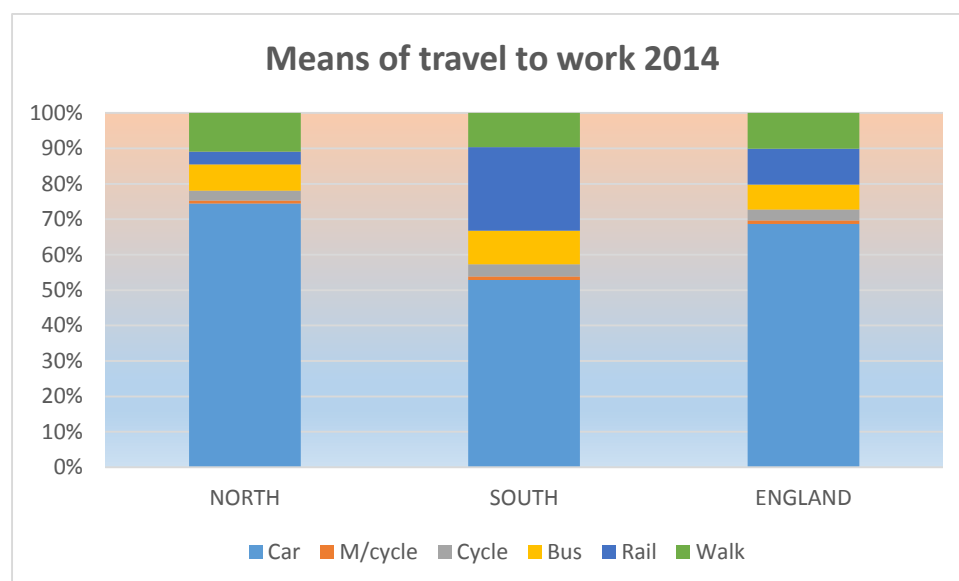
towns' performances were both relatively and absolutely weak – the North West, North East and Yorkshire and Humberside.

The Demos study did not examine connectivity in any depth, the only transport variables used being proportions of road and rail land area and commuting times, but ease of access to the larger and higher quality labour markets and business opportunities in the regional centres must assist job opportunities and commerce in satellite towns. The relative economic strength of the different authority areas in the North is illustrated in figure 5 with the more peripheral areas of Blackpool, Wirral, Darlington and West Cumbria towards the bottom of the league and the metropolitan areas such as Manchester, Leeds and Tyneside towards the top.

4.9 Accessibility of Jobs and Workers

Ease of access between jobs and workers expands both the labour market for employers and job opportunities for people in - and seeking - work. Again as figure 4.8 shows car travel dominates travel to and from work in the North. However rail is important in commuting into the main centres of Leeds, Manchester and a few other large urban centres and plans are already underway to improve key rail services in the North. With a population of 15 million³⁷ and over 7½ million jobs³⁸ the economy of the North has the potential of some medium sized European countries. Figure 4.9 shows how many jobs workers can reach in centres of more than five thousand jobs with a half hour commute in each English region.

Figure 4.8: Usual method of travel to work by areas of residence: England, autumn 2014



Source DfT 2015i, table TSGB0108.

This shows the North West to have relatively good employment accessibility – albeit not as good as London and the South East. However Yorkshire and Humberside is below average and the North East comes bottom of this league. This underlines the need to improve transport access to employment centres in the North East and Yorkshire and Humberside and to strengthen interconnectivity in the Liverpool ↔ Hull corridor. A significant question to ask

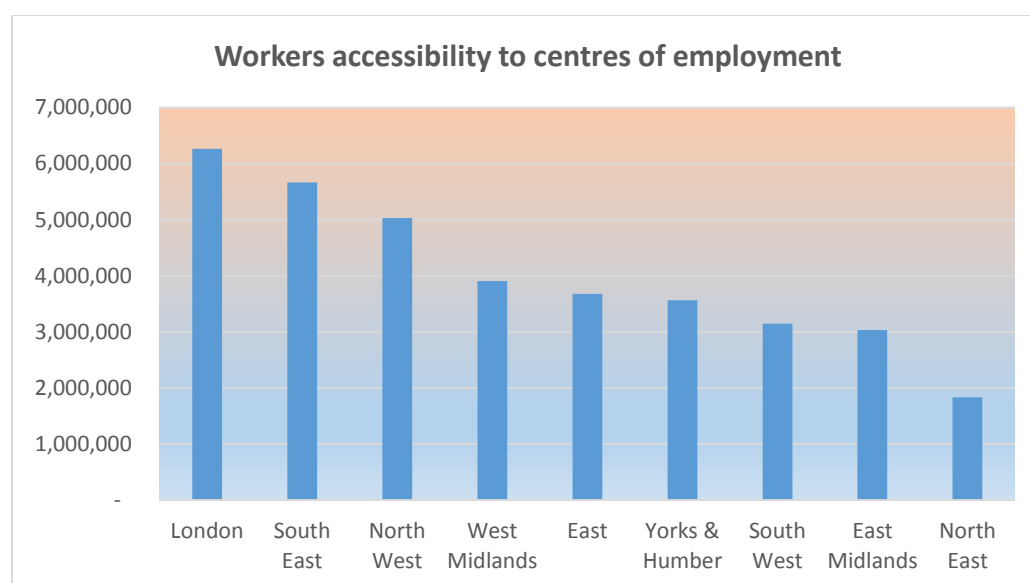
³⁷ ONS 2015b

³⁸ ONS 2015c

is what is the right, achievable balance between mass transport and personal transport? Where will the new jobs be and what does this mean for 2014 as they currently exist.

Within the regions there are significant variations in the extent to which workers travel to jobs outside their areas. It is to be expected that in areas with large numbers of jobs that the majority of workers in the area will work locally, but that in areas with fewer jobs workers are more likely to travel outside their area to work. In Manchester 88.2% of its 1.24 million workers have jobs in the area whilst in Blackpool with only 123 thousand workers the figure is only slightly less at 87.7% and Hull with a fifth of Manchester's workers has an even higher level of self-containment at 92.0%. Northern settlements with high ratios of self-containment in relation to their size are shown in table 4.3.

Figure 4.9: Number of jobs available to workers within a 30 minute commute 2014³⁹



Source: DfT 2015r

For the full potential of the North to be realised, and for the region's wealth to be more equitably distributed, these $\frac{2}{3}$ million workers need to be better integrated into the regional economy. This is a significant issue for the Northern Powerhouse concept because unless the northern cities move away from existing patterns of 'containment' the concept of Liverpool-Manchester-Leeds-Sheffield acting economically as a single conurbation will not be achieved. It would be interesting to understand to what extent the 'containment' currently seen is a product of limited travel options, or of other lifestyle choices.

Table 4.3: Northern towns with high degrees of self-containment (2014)

LOCATION	WORKERS thousands	WORKING LOCALLY %
Birkenhead	119	85.9
Blackpool	123	87.7
Bridlington	16	79.5
Grimsby	87	87.1
Hull	231	92.0
Kendal	42	80.0
Whitby	10	84.5

³⁹ This is a somewhat artificial measure as it includes a substantial degree of double counting but should be a useful indicator of relative accessibility.

Whitehaven	35	77.1
Workington	34	81.4

Source: ONS 2015f.

Whilst looking towards improving connectivity of the road network, sight should not be lost of the need for good quality management and maintenance of both trunk and local roads. These often do not cost a great deal and can be implemented more quickly than major infrastructure improvement/additions. In a recent survey by Transport Focus⁴⁰ improving the quality of road surfaces came out as the top priority for HGV drivers echoing widespread concerns by a wide range of other types of road users⁴¹. The way road use is paid for can have a material impact on the need for additional road capacity⁴² and the Commission might usefully consider the extent to which a payment regime more closely related to usage and congestion would affect the case for additional road space.

4.10 Wider Connectivity

Each of the two main road arteries to the south (the M1 and the M6) are expected to be regularly congested in 2040 and conditions on the M6 south of Manchester are currently poor for substantial period in the week with, on average only 72% of journeys being ‘on time’ (which is not a particularly demanding indicator of reliability/congestion⁴³). On the parallel section of the M1 80% of journeys were ‘on time’ between January and March 2015. The M1 and M6 are also of importance as transit routes between Scotland and the Midlands and the South.

These roads to the south provide access to the Channel ports and the Channel Tunnel and congestion on these puts the North at a disadvantage with the rest of the country for access to and from central and southern Europe.

The region contains three of the UK’s busiest freight ports (Grimsby and Immingham, Tees & Hartlepool and Liverpool) and these carry 26% of all UK port tonnage. Grimsby and Immingham is especially important for the import of bulk goods and together with Liverpool these ship 40% of the UK’s vehicle exports/imports⁴⁴.

Table 4.4: Traffic through the coastal ports in the North - 2014

PORT	Total (000 tonnes)	Lorries (000s)	Trailers (000s)	Cars (000s)	Vehicle import/ exports (000s)	Rail Wagons Etc. (000s)	Containers (000s)
Heysham	4,472	32	238	72	15	0	0
Grimsby & Immingham	59,370	80	529	1	990	146	123
Hull	10,925	56	70	176	2	65	123
Liverpool	30,996	146	344	144	86	13	393
Tees & Hartlepool	39,573	3	27	0	0	90	164
Tyne	6,701	19	7	72	657	0	26

Source: DfT 2015h

⁴⁰ Transport Focus 2015a.

⁴¹ See Bayliss 2015a, section 3.

⁴² DfT 2004a.

⁴³ DfT 2015f, table CGN0106.

⁴⁴ DfT 2015h.

Over half the country's passenger traffic with the Netherlands passes through Hull and Newcastle and almost all traffic with Belgium through Hull; and Liverpool is an important portal for traffic to and from Ireland⁴⁵. All sea traffic to and from the Isle of Man goes through Liverpool and Heysham⁴⁶.

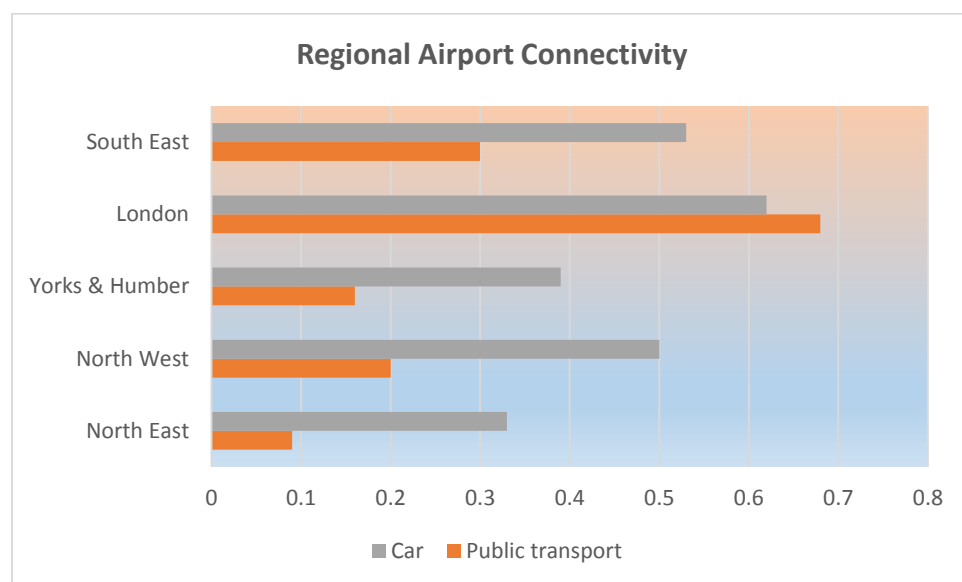
Good quality access to the North's major shipping ports is therefore clearly important to industry (e.g. automobile manufacturing) and commerce in the region as well as the national economy as a whole. In the west this means that it is particularly important that the road standards should be suitable for heavy traffic on the A580 and the A5808 and, along with the M62, capacity should be sufficient to limit traffic congestion to an occasional rather than a regular event.

In the Tyneside area congestion on the A19, A1 and A1(M) impacts on access to the Port and, although they are generally of a good standard, key sections are regularly and severely congested today; and this is forecast to get substantially worse unless capacity enhancements are undertaken. Around Teesport the A19 is forecast to become severely congested and unless some relief is provided this will inhibit road traffic movements into and out of the port.

In the Hull/Grimsby/Immingham area the A1033/A63 and A180 are vital to road movements in and out of the docks and forecast to be subject to localised but severe congestion. Relief for this is needed and, because of Immingham's position as the country's busiest port, wider ranging congestion relief is needed on the M1 to the south.

For some types of business and international tourism air transport is increasingly important and the region has a number of busy airports⁴⁷. The 34.4 million overseas visitors who came to the UK in 2014 spent a record £21.8 billion and International tourism is forecast to be worth £257bn by 2025⁴⁸.

Figure 4.10: Regional Airport Connectivity, 2011 (morning peak)



Source: DfT 2015o

⁴⁵ DfT 2015g, table SPAS0108.

⁴⁶ DfT 2015g, table SPAS0201

⁴⁷ i.e. more than one million passengers/year and/or one thousand freight flights and/or one thousand business flights.

⁴⁸ Deloitte/Oxford Economics 2013a.

Figure 4.10 illustrates airport connectivity by selected regions. This indicator is constructed using travel times to airports, weighted by size (measured by number of destinations served weekly). Clearly airport connectivity in the North is inferior to that in the South; especially when it comes to using public transport for landside access— again underlining to North’s greater dependence on road and private transport. In the North the North East stands out as being poorly served and unusually reliant on cars for access.

Manchester airport (Ringway) stands out as the region’s most important and is of national significance. 83% of passengers access the airport by car and a further 2% by bus or coach⁴⁹. Virtually all freight will be carried by road, so good road access is crucially important to its future development. Ringway, like Heathrow has two full runways - one more than Gatwick and with throughput at only 35% of Heathrow’s and 64% of Gatwick’s clearly has substantial room for growth⁵⁰. In the absence of additional runway capacity in the South East for the foreseeable future, Manchester airport offers an opportunity, subject to its increased accessibility, of being the main opportunity for increasing the UK’s global connectivity as it already serves more destinations than either Heathrow or Gatwick. However the M6, M56 and M60 are the main motorway connections and these are all forecast to be subject to regular/severe congestion by 2040.

Table 4.5: Traffic through the North’s principal airports - 2014

AIRPORT	Passengers 000s	Freight tonnes	Business flights numbers	Destinations numbers	Rankings
Manchester	21,950	93,466	4,008	225	3/4/5/1
Newcastle	4,513	4,450	66	74	10/14/34/12
Liverpool	3,984	236	1,422	60	13/26/15/14
Leeds/Bradford	3,263	68	56	75	16/33/35/11

Source: CAA 2015a, tables 01, 13 1 and 02 4 7 Statista 2015a.

As well as being the international portal to Greater Manchester, the Lake District and Peak District are important tourist destinations easily reached from Ringway. With far fewer international connections at Liverpool John Lennon and Leeds/Bradford large areas east of the Pennines also rely heavily on Ringway for international connectivity.

4.11 Priorities for improving road connectivity

The first priority should be to ensure that the road network in general and the Strategic Road Network in particular is well maintained, properly managed - and resilient severe weather episodes. Taking into account expected levels of congestion, the need for more direct connections between parts of the region and the need for increasing network resilience table 4.6 sets out the core routes where improvements would bring substantial advantages. It has not been possible to quantify the potential benefits as this needs developed proposals and more detailed analysis than has been possible. However the routes listed below deserve careful consideration for improvement.

Table 4.6: Core routes needing to improve road connectivity in the North

ROAD	FROM	TO	FORECAST CONGESTION	IMPACTS
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⁴⁹ DfT 2015i, table AVI0107

⁵⁰ Air Traffic Movements - CAA 2015a table 02 2.

M6	North of Preston	Newcastle under Lyme	Mainly regular with some severe	Improves accessibility to/from the Midlands and the South. Improves N/S access in Lancashire/Cheshire and strengthen Ringway's national role. New additional route should be considered south on Manchester.
M1	Junction with A1(M)	Junction with the A57	Mainly regular	Improve accessibility to/from the Midlands and the South. Improve N/S access in West Yorkshire and strengthen Grimsby/Immingham's role as the UK's busiest freight seaport.
M61/M62	M60	A1(M)	Regular	Improves access in the North's most important economic corridor between South Lancs and West/South Yorks.
M56	Junction with M53	M60	Regular/severe	Improve the linkage of the Wirral Peninsula into the South Lancashire economy and strengthen access between North Wales and the North of England.
M60	Entire length		Regular/severe	Facilitate linkage between the Manchester core and the South Lancashire main road network. Ease pressure on Manchester's internal road network and expedite movements along the Liverpool-West Yorkshire corridor.
A1/A1(M)	A19	A689	Moderate to severe	Improves Tyneside's connectivity with West/South Yorkshire and beyond
A1/A1(M)	M62	M18	Severe	Free up a major N/S artery on the east of the Pennines benefitting both Tyneside and West/South Yorkshire. Ease pressure on the M1.
A19	A66	A1	Moderate to severe	Improves the main route through south Tyneside/north Teeside and eases pressure on the A1(M)
Trans Pennine Route	Manchester	Sheffield	N.A.	Substantial reduction in journey times between south Lancashire and south

				Yorkshire. Reduce congestion on the M62 and increase the resilience of E↔W road transport in a key corridor.
A65/A660 (re-trunk)	M6	A64(M)	Variable ⁵¹	Improved connectivity between Cumbria/Lake District and West/South Yorkshire. Safety benefits and increased resilience for cross Pennine travel.

As well as these core schemes there are a number of other peripheral roads where improvements would help integrate remoter towns into regional economy. These are the A66 (Workington and Whitehaven), the A585 the Fylde peninsula and the A63 (Hull).

4.12 Conclusions

The North's economy is performing less well than the rest of England and the South in particular and whilst improving connectivity will not guarantee its economic success its full potential will require better connectivity within the region, between the North and the rest of the country as well as with the rest of Europe and beyond.

The North is heavily dependent on road transport with 90% motorised personal travel going by road of which 94% is by private transport. Road freight transport is also more important in the North than the South generating 22% more road goods transport per head than the national average and over twice as much as in the South. Almost 95% of business journeys go by road and improving the road (both local and strategic) network is a high priority for business.

Connectivity needs to be considered in the context of:

- connectivity between the main urban areas in the region;
- connectivity between the main centres and their hinterlands;
- connectivity between the North and the rest of the country – especially London and the South East;
- connectivity with the rest of Europe and beyond and

should address questions of proximity, directness and quality/capacity of service available.

Substantial sections of the Strategic Road Network (SRN) are congested today and this is forecast to get substantially worse with expected traffic growth. By 2040 it is expected that there will be about 600kms of regularly and severely congested trunk roads in the North amounting to 30% of the network. This increased congestion will lead to substantial costs to businesses and households and presenting particular problems for road transport around the Greater Manchester and West Yorkshire Conurbations - which make up over a third of the North's GVA. Whilst Tyneside is less important in economic terms, increased road congestion will restricts accessibility within the conurbation and to the south where good connections are so important to its economy. The increased congestion on the SRN will cost around £1.2bn a year by 2040 and there will be significant increases in congestion on local roads especially in and around the larger urban centres (more needed on this).

⁵¹ Morning peak speeds range between 15mph (Leeds) and 45mph (Lancashire)

There are direct (albeit often congested) connections between the major conurbations with two exceptions - between Tyneside and South Lancashire and across the Pennines between Greater Manchester and West/South Yorkshire. The moderate traffic volumes and difficult terrain are such that a new link between Tyneside and South Lancashire is not justified but there is a strong case for new link between Manchester and Sheffield for which proposals are already under development.

There is also a case for improving the A65/A660 between the M6 and West Yorkshire which is no longer a trunk road and is an often poorly-aligned single carriageway for most of its length. It provides a direct route between West Yorkshire and the M6 and the Lake District and Cumbria which attracts over 40 million tourist visits a year worth almost £2½bn to the local economy⁵². By reducing the present travel time between the M6 and Leeds from 2 hours to under 1½ hours⁵³ considerable time savings would be made by the traffic on that route as well as significantly reducing pressure on the M62 to the South.

Congestion on local main roads is also a problem – particularly in Greater Manchester and West/South Yorkshire where, in a number of instances it impairs regional and wider connectivity as well as acting as a drain on the local economy. To support increased connectivity priority should be given to reducing congestion on these local road links.

There are a number of ‘peripheral’ towns in the North which have suffered from the demise of traditional industries yet have difficulty linking into the newer service economies focussed on the larger cities. Improving transport access to these would help improve labour supply to the main regional centres and provide a more equitable distribution of the benefits of regional development. Usually this will require improvements to existing routes but there will remain some towns (e.g. Whitehaven) which will remain poorly linked to the rest of the region.

International connections are mainly through the North’s six major ports and four major airports. In the west this means that, for sea ports, A580 and the A5808 and along with the M62 capacity should be improved to limit traffic congestion and in the east on the A19, A1 A1(M), A1033/A63, A180 and M1 in the vicinity of Tyneside, Teesside and Grimsby/Immingham.

Manchester stands out as the North’s premier airport exceeding, by any measure, the output of the other three major airports combined. As such it is the major international passenger portal for the North and a top ranking air portal nationally. 85% of passengers and virtually all freight access Manchester airport (Ringway) by road. It is well connected to the M6, M56 and M60 but significant lengths of these currently suffer from congestion and forecast to be subject to regular/severe congestion by 2040. Ringway, unlike Heathrow and Gatwick has significant spare runway capacity and if it is to serve a greater national role then additional road (and rail) capacity will be needed to connect within the North and to the South via the M6.

Taking into account expected levels of congestion, the need for more direct connections between parts of the region and the need for increasing network resilience a set of core routes (see table 3.6) has been identified where improvements would substantially strengthen internal and external connectivity. There is a case for more limited improvement to three peripheral routes to assist the integration of a number of coastal communities into the regional economy. As well as these longer distance route improvements there is a need to deal with local congestion which imposes large costs on the North’s economy and in devising

⁵² Cumbria Tourism 2015a.

⁵³ Effectively increasing the average speed from 35mph to 45mph.

measures to do this full weight should be given to improving those congested links that impair accessibility to and from the SRN.

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Annex: Indicators of congestion on Local Authority managed 'A' roads in the North: 2014/15

AREA	ENTRIES	ROADS	FUNCTIONS
Blackburn & Darwen	9	A6078 A679	Approach to the town centre from the east and part of inner ring road.
Blackpool	8	A5073 A5099 A583 A587	Links to the M55 main access motorway from the east and main inland N/S route.
Bolton	15	A5082 A575 A6099 A579 A676	Mainly radial single carriageway roads to the north and south of Bolton.
Bradford	15	A657 A6181 A6035 A6177 A647	E/W route through Bradford and western ring road and central Keighley link.
Cheshire East	5	A5078	N/S section of Crewe inner distributor
Cheshire West and Chester	8	A5268 A5115	E/W by pass to Chester city centre
Kingston upon Hull	7	A1079 A1165	Route linking Beverly and York; and approach to Hull Docks
Kirklees	7	A638 A652	E/W route through Dewsbury and N/S route south from Doncaster.
Lancashire	12	A5072 A5071 A6063 A5085	Links between Primary routes to the west and north of Preston centre on routes between Preston and the Fylde.
Leeds	12	A6029 A643 A62 A657	Radial routes into Leeds from the SW and NW and link road across the M62.
Liverpool	29	A5048 A5039 A5038 A5053 A5047 A566 A562 A5058 A57	Radials into Liverpool from the S, SW and W; Liverpool ring road and city centre link road
Manchester	29	A56 A6 A5067	Radials into Manchester from the W, SW, SE, NE; Manchester inner ring; E/W link

		A665 A5145 A6010 A664 A62 A34 A635	road on southern edge of inner Manchester.
Middlesbrough	6		
Newcastle upon Tyne	12	A186 A189 A187 A188 A191	Easterly N/S route from Newcastle to the north and E/W routes between Newcastle and Whitley bay/Tyneside.
Oldham	10	A6104 A671 A6048	Link road across north Manchester; link road between Oldham and Rochdale
Rochdale	7		
Salford	27	A5186 A6042 A6041 A572 A575 A5066 A5185 A56 A576	Radial routes to/from the N, W & NW; N/S link roads to the west of Salford; part of Manchester inner ring road; N/S route between Salford and Manchester linking four Primary routes.
Sefton	11	A5057 A567 A5038 A5090	N/S route parallel to Liverpool docks;
Sheffield	13	A6109 A61 A6178 A6135	N/S route through centre of Sheffield and city centre by – pass; secondary N/S route north of Sheffield and principal route between Sheffield and Rotherham;
Stockport	14	A6017 A6 A560 A5145 A627	Main route from SW through Stockport into Manchester; SW/NE route to Hyde and the M62; link road between Stockport & Stretford and N/S route to Oldham and the M62.
Tameside	13	A6140 A57 A662 A627 A6017	Main route from SW through Stockport into Manchester; main link from Manchester to the M57; E/W radial between Manchester and Ashton u Lyne and link road between Stockport & Stretford and N/S route to Oldham and the M62.
Trafford	13	A5145 A5014 A5181 A5067	Main and parallel route between Manchester and the M56 & M6 to the south; link road between Stockport & Stretford; link road between Trafford park

		A56	and M60 and SW/NE radial into Manchester via University campus.
Warrington	11	A5060 A5061 A49 A50	Main links to the surrounding motorway network – particularly to the S & E.
Wigan	7	A578 A574	Route between Leigh & Wigan.
Wirral	6	A5029 A5088 A552	Link between M63, Birkenhead and the Mersey tunnel; feeder from Birkenhead/Wallasey into the A59/M63.

Source: DfT 2015s.