HIGHWAYS AGENCY

Safe roads, reliable journeys, informed travellers

South Pennines Route Strategy Evidence Report

April 2014

An executive agency of the Department for Transport

Document History

South Pennines route-based strategy evidence report

Highways Agency

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Table of Contents

Tables

Figures

1 Introduction

1.1 Background

1.1.1 The Highways Agency is responsible for planning the long term future and development of the strategic road network.

1.1.2 Route-based strategies (RBS) represent a fresh approach to identifying investment needs on the strategic road network. Through adopting the RBS approach, we aim to identify network needs relating to operations, maintenance and where appropriate, improvements to proactively facilitate economic growth.

1.1.3 The development of RBS is based on one of the recommendations included in Alan Cook's report *A Fresh Start for the Strategic Road Network*, published in November 2011. He recommended that the Highways Agency, working with local authorities (LA) and local enterprise partnerships (LEPs), should initiate and develop route-based strategies for the strategic road network.

1.1.4 The then Secretary of State's accepted the recommendation in the Government's response (May 2012), stating that it would enable a smarter approach to investment planning and support greater participation in planning for the strategic road network from local and regional stakeholders.

1.1.5 The Highways Agency completed the following three pilot strategies which have been published on the Agency website:

- A1 West of Newcastle
- A12 from the M25 to Harwich (including the A120 to Harwich)
- M62 between Leeds and Manchester.

1.1.6 Building on the learning from those pilot strategies, we have divided the strategic road network into 18 routes. A map illustrating the routes is provided in Appendix A. The South Pennines route is one of that number.

1.1.7 RBS are being delivered in two stages. Stage 1 establishes the necessary evidence base to help identify performance issues on routes and anticipated future challenges, takes account of asset condition and operational requirements, whilst gaining a better understanding of the local growth priorities.

1.1.8 In the second stage we will use the evidence to take forward a programme of work to identify possible solutions for a prioritised set of challenges and opportunities. It is only then that potential interventions are likely to come forward, covering operation, maintenance and if appropriate, road improvement schemes.

1.1.9 The RBS process will be used to bring together national and local priorities to inform what is needed for a route, while delivering the outcomes in the performance specification.

1.1.10 Using the evidence base and solutions identification studies, we will establish outline operational and investment priorities for all routes in the strategic road network for the period April 2015 – March 2021. This will in turn feed into the Roads Investment Strategy, announced by the Department for Transport in Action for Roads.

1.2 The scope of the stage 1 RBS evidence report

1.2.1 During the first stage of RBS, information from both within the Agency and from our partners and stakeholders outside the Agency has been collected to gain an understanding of the key operational, maintenance and capacity challenges for the route. These challenges take account of the possible changes that likely local growth aspirations, or wider transport network alterations will have on the routes.

1.2.2 The evidence reports:

- Describe the capability, condition and constraints along the route
- Identify local growth aspirations
- Identify planned network improvements and operational changes
- Describe the key challenges and opportunities facing the route over the five year period
- Give a forward view to challenges and opportunities that might arise beyond the five year period.

1.2.3 The 18 evidence reports across the strategic road network will be used to:

- Inform the selection of priority challenges and opportunities for further investigation during stage 2 of route-based strategies
- Inform the development of future performance specifications for the Highways Agency.

1.2.4 A selection of the issues and opportunities identified across the route are contained within this report, with a more comprehensive list provided within the technical annex. This is for presentational reasons and is not intended to suggest a weighting or view on the priority of the issues that have been highlighted.

1.2.5 The evidence reports do not suggest or promote solutions, or guarantee further investigation or future investment for the issues identified.

1.3 Route description

1.3.1 The South Pennines route includes all west to east sections of the strategic road network from the welsh border near Chester, Liverpool and the Fylde Coast through to Hull, Immingham and Scarborough. The route comprises of a mixture of Motorways and A Roads throughout its length as shown in Figure 1. The Motorway sections are predominantly 3 and 4 lane, with some sections of the M60 being 4 lanes with supplemental 2 lane collector distributor roads running parallel. There are also a number of locations where the route is made up of dual 2

lane carriageway and single carriageway including the M65, A663, A5036, M602, A628, A63 and the A180.

1.3.2 The route serves the Liverpool, Bootle, Birkenhead and Humber Ports as well as Leeds and Greater Manchester, which are two of the largest urban areas in England, each city at the heart of their City Regions. The conurbations of West Yorkshire and Greater Manchester are some of the most densely populated areas in the country, outside of London. The route also provides strategic access to North Wales and subsequently the port of Holyhead.

1.3.3 The M62 forms a large part of the South Pennines route and connects the cities of Hull, Leeds, Manchester and Liverpool. These distinct inter-urban sections generate short commuting trips between key locations, such as within the conurbation of West Yorkshire, but also serve long distance traffic. In addition, the M60 orbital ring road and arterial links include long distance east – west traffic from the M62 as well as short journey commuting trips from the 22 local authority areas in Greater Manchester, Cheshire, Merseyside and beyond to North Wales and Lancashire.

1.3.4 On an average day the number of vehicle miles travelled on the South Pennines route is over 29 million, with the proportion of freight on the route varying from 17% to 51%. There are a number of freight generators along the South Pennines route including the ports and large logistics and warehousing developments. Indeed, the M62 and part of the M60 are designated as part of the Trans European Transport Network (TEN-T), connecting Ireland with Northern Europe.

1.3.5 As well as the inter-urban sections there are large rural areas. Some of these, such as the A628 and A64, have villages and hamlets alongside. The rural parts of the route across the Pennines can have issues with disruption during severe weather. The M62 (east of junction 22) is the highest point on the English motorway network; however, it is rarely fully closed due to severe weather.

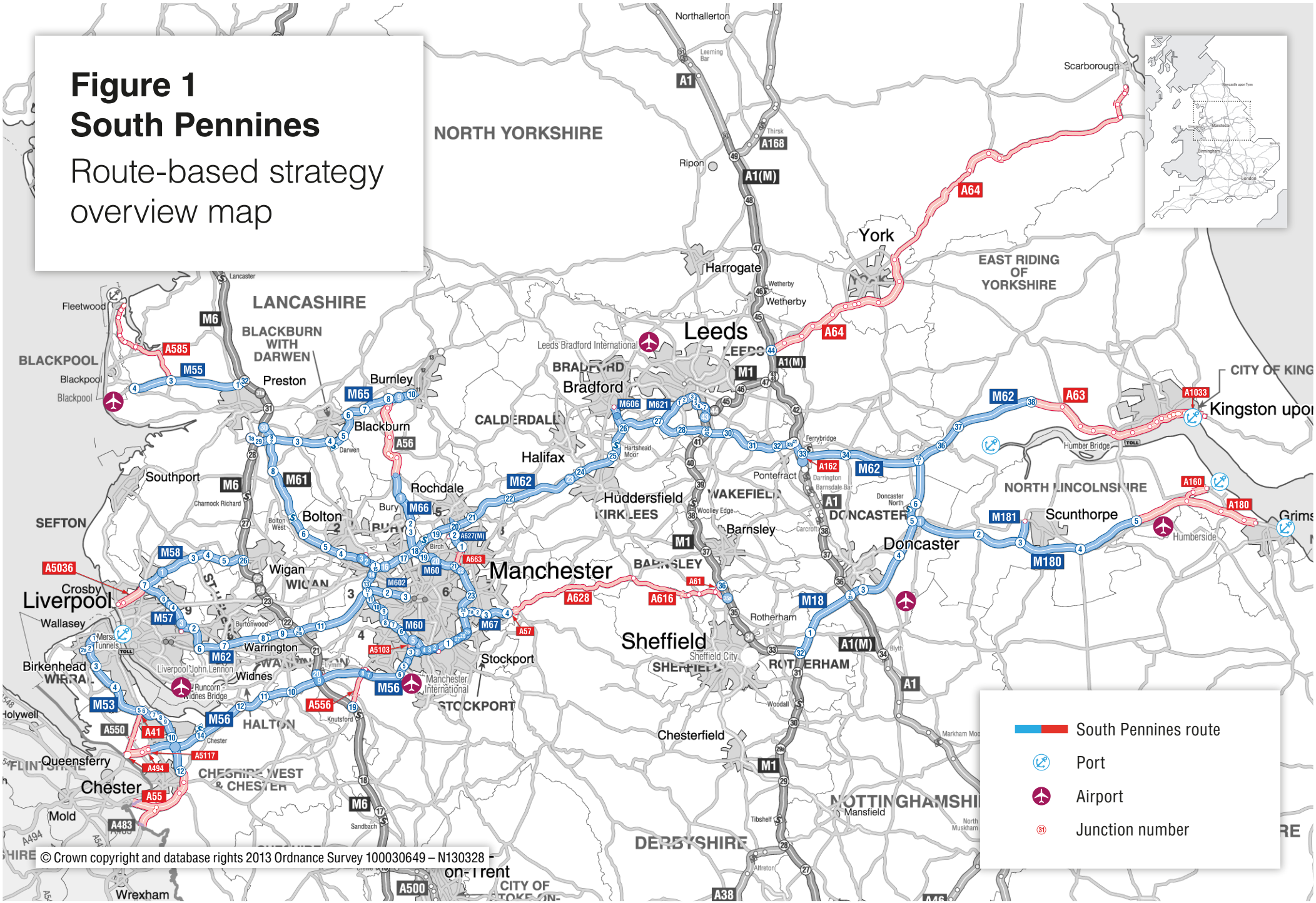
1.3.6 At either end of the route are the A64 and the M55 – the roads lead to the east and west coasts respectively. The influence of tourism causes large seasonal variations on these sections of the route. Events such as Blackpool Illuminations also provide unusual traffic patterns outside normal holiday periods. There are also key visitor attractions along the route, including the Trafford Centre and the M62 J32 retail and leisure development which can also cause congestion outside of normal peak periods.

1.3.7 This route connects with a number of other routes for which RBS are also being developed. These are:

- London to Scotland West
- London to Scotland East
- London to Leeds (East).

Figure 1
South Pennines

Route-based strategy overview map



2 Route capability, condition and constraints

2.1 Route performance

2.1.1 Nationally, the strategic road network comprises only 3% of England's road network, but carries one-third of all traffic. Around 80% of all goods travel by road, with two-thirds of large goods vehicle traffic transported on our network.

2.1.2 The ten most trafficked sections of the South Pennines route are presented in Table 2.1. This is for the reporting period 1st April 2012 to 31st March 2013.

Table 2.1 Ten busiest sections on the route (1 April 2012 to 31 March 2013)

Rank	strategic road network section	Annual Average Daily Flow (AADF)	National Rank
1	M60 between M60 J12 and M60 J13 (clockwise)	93,556	9
2	M60 between M60 J13 and M60 J12 (anticlockwise)	89,456	12
3	M60 between M60 J16 and M60 J17 (clockwise)	82,581	16
4	M60 between M60 J17 and M60 J16 (anticlockwise)	80,760	18
5	M60 between M60 J17 and M60 J18 (clockwise)	79,494	23
6	M60 between M60 J13 and M60 J14 (clockwise)	78,845	27
7	M60 between M60 J18 and M60 J17 (anticlockwise)	78,574	28
8	M60 between M60 J15 and M60 J16 (clockwise)	75,617	38
9	M60 between M60 J14 and M60 J13 (anticlockwise)	74,335	42
10	M56 between M56 J3 and M56 J4 (Southbound)	73,126	49

2.1.3 Table 2.1 shows that the majority of the ten busiest sections in the South Pennines route are located on the M60 between junctions 13 and 18. This section combines main east – west traffic from the M62 with orbital traffic from the M60. It also includes traffic heading into and out of Manchester from the north (via the M61 and M66) as well as local commuting trips.

2.1.4 All of the sections between junctions 13 and 18 are ranked within the top fifty busiest route sections nationally, with M60 junction 12 to 13 ranked among the ten busiest nationally with an AADF of 93,556. Of the flows on the M60, between 13% and 18% is freight. The M56 section identified has a freight proportion of 21%.

2.1.5 In addition to the sections listed in Table 2.1, a further 16 sections have flows in excess of 60,000 vehicles. These are included in the Technical Annex and are at the following locations:

- M60 from junctions 1 to 4 (Travis Brow to A34) and from junctions 10 to 12 (Davyhulme to Eccles Interchange)
- M56 from junctions 5 to 3 (Manchester Airport to Cheadle)

- M62 from junctions 18 to 19 (Simister to Heywood)
- M62 from junctions 26 to 30 (Chain Bar to Rothwell).

2.1.6 On the South Pennines route, the level of freight traffic is greatest on the M56 between junctions 6 and 5, with 51% of all traffic being classified as freight. This is the 5th highest proportion of freight traffic on any section nationally. In addition, the M56 from junctions 7 to 6 and junctions 2 to 1 has 47% and 46% (respectively) of all traffic being classified as freight. These are the 10th and 13th highest nationally. The M56 freight traffic is likely to be a combination of traffic heading for Manchester Airport, the M6, Cheshire or Wales. The Technical Annex includes a summary table listing the sections that have over 30% of the flow as freight.

2.1.7 However, busy roads in themselves don't necessarily represent the only issue we are interested in – our customers' experience of driving on the network is also important to us. The *Strategic road network performance specification 2013-15*, sets us high level performance outcomes and outputs under the banner of an efficiently and effectively operated strategic road network. We currently measure how reliable the network is based on whether the 'journey' time taken to travel between adjacent junctions is within a set reference time for that period, that is, 'on time'.

Table 2.2 Ten least reliable journey time locations on the route (1 April 2012 to 31 March 2013)

Rank	Location	On-time reliability measure	National Rank
1	A63 between A1165 (Great Union St) and A1079 (Ferensway)	48.6%	8
2	A5036 between A5207 and A59 (Netherton, North of Liverpool)	49.5%	10
3	M60 between M60 J4 and M60 J3	53.4%	18
4	M606 between A6177 and M606 J2	55.8%	34
5	A663 between A627(M) and A669 (Oldham)	56.6%	37
6	M606 between M606 J2 and A6177	58.0%	47
7	M58 between M58 J5 and M58 J6	58.0%	48
8	A61 between A616 and M1 J36	58.1%	49
9	A663 between A669 and A627(M) (Oldham)	58.1%	50
10	A63 between A1166 (Brighton St) and A1079 (Ferensway)	58.2%	51

2.1.8 Table 2.2 shows that the majority of the top ten least reliable journey time locations occur on the trunk road sections of the route. Each of the sections identified in table 2.2 are within or on the approach to an urban area.

2.1.9 Nine of the ten locations shown in table 2.2 are ranked within the fifty least reliable journey time locations nationally. The A63 (between the A1165 and the A1079), as well as the A5036 (between the A5207 and

the A59) are within the ten least reliable journey time locations nationally, with values below 50%.

2.1.10 The Technical Annex includes a summary table of a further 15 sections, which are in the top 100 nationally for least reliable journey time.

2.1.11 Figure 2.1 illustrates the average speeds during weekday peak periods between 1st April 2012 and 31st March 2013. The peak periods are generally the busiest periods on the network and help us to understand the impact of the worst congestion on customers' journey times. Figure 2.1 also shows any known performance or capacity issues where the local road network interfaces with the route.

2.1.12 Figure 2.1 is based on average speed across two peak periods so where there is a heavy 'tidal' nature to the flow on a particular section this may be under-represented. The speeds shown should also be read in the context of the speed limits in force on particular sections. At-grade signal controlled junctions, where normal delays can be expected, should also be taken into account.

2.1.13 As stated above, the South Pennines route contains large sections which are located within or in close proximity to urban areas. This means that the network is often used for large numbers of commuter trips during the peak periods. These journeys tend to be relatively short and make use of the convenient choice the route offers in negotiating within and around the major conurbations it serves.

2.1.14 The significant volume of traffic, combined with short junction spacing, tends to lead to low peak hour speeds on much of the route. This is particularly evident on the M60 (around Manchester) and on the M62 from junctions 26 to 29 (where the route provides a link into Leeds). A Smart Motorways scheme was under construction on the M62 between junctions 25 and 30 during the period to which figure 2.1 relates.

2.1.15 In addition to the locations identified in table 2.1 there are tidal congestion issues on the M602 into and out of central Manchester and Salford and on the M621 into and out of Leeds. Indeed, the M602 and M621 are key arterial routes into and out of regional centres.

2.1.16 There are many further areas of the route affected by low peak hour speeds. These include, but are not limited to:

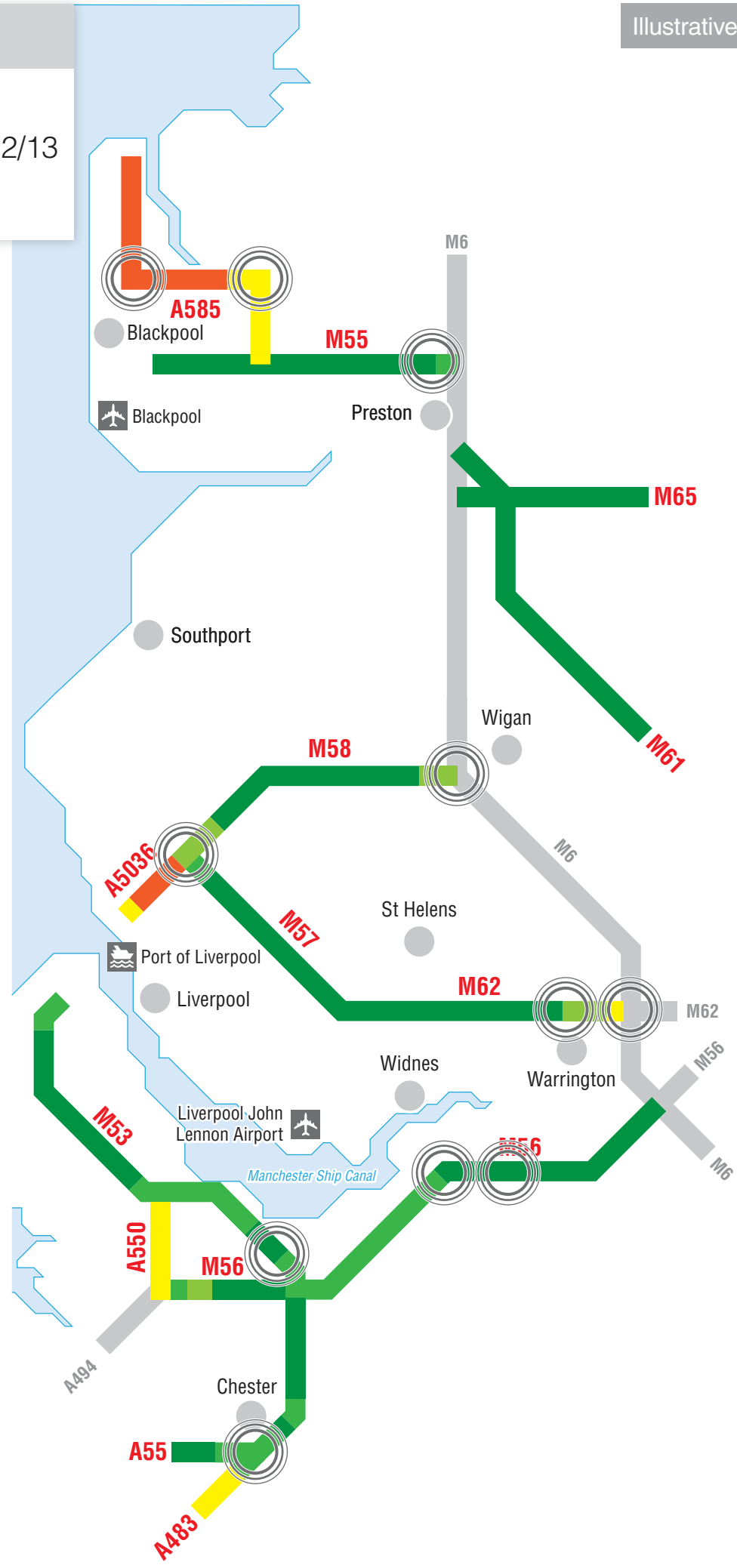
- The M56 between junction 6 and the M60 (including the A5103)
- The M61 approaching the M60
- The M66 approaching the M60
- The A5036 between the M57/M58 and Bootle Docks
- The M62 between junctions 9 and 12 (Warrington – Eccles)
- The M55 between junction 1 and the M6 at Preston
- The A63 into Hull
- The A160 into Immingham
- The A64 around and to the east of York.

South Pennines –
Route-based strategy – Map 1 of 4

Illustrative

Figure 2.1

Network performance 2012/13
Peak period speeds



Average speed at peak times (mph)
(April 2012 – March 2013)

Peak times are Monday to Friday 7–10am and 4 –7pm

- Less than 20mph
- 21 – 30mph
- 31 – 40mph
- 41 – 50mph
- 51 – 60mph
- 61 – 70mph
- No data available
- Key junction capacity issue

Illustrative

Figure 2.1
Network performance 2012/13
Peak period speeds

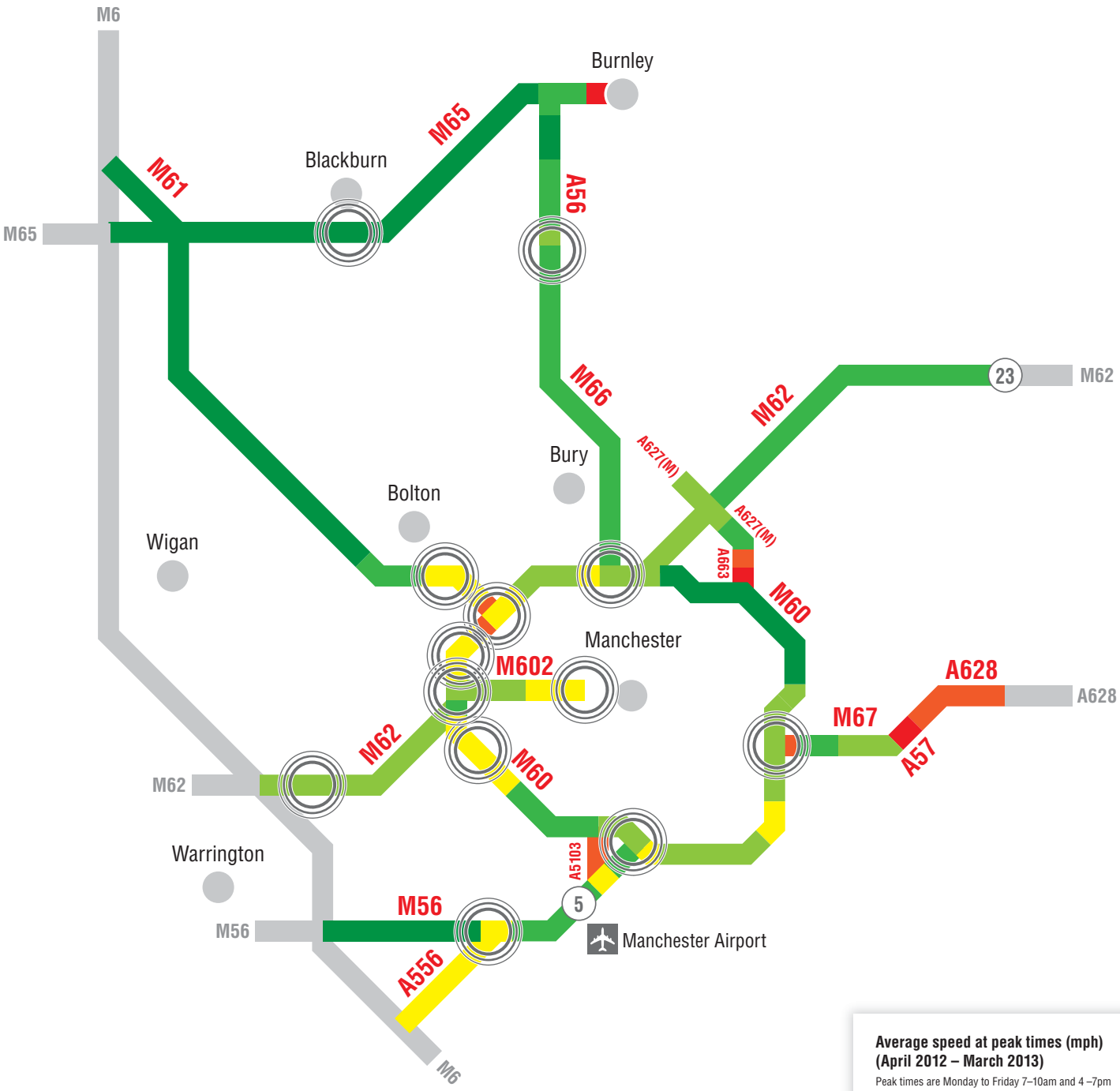


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Figure 2.1
Network performance 2012/13
Peak period speeds

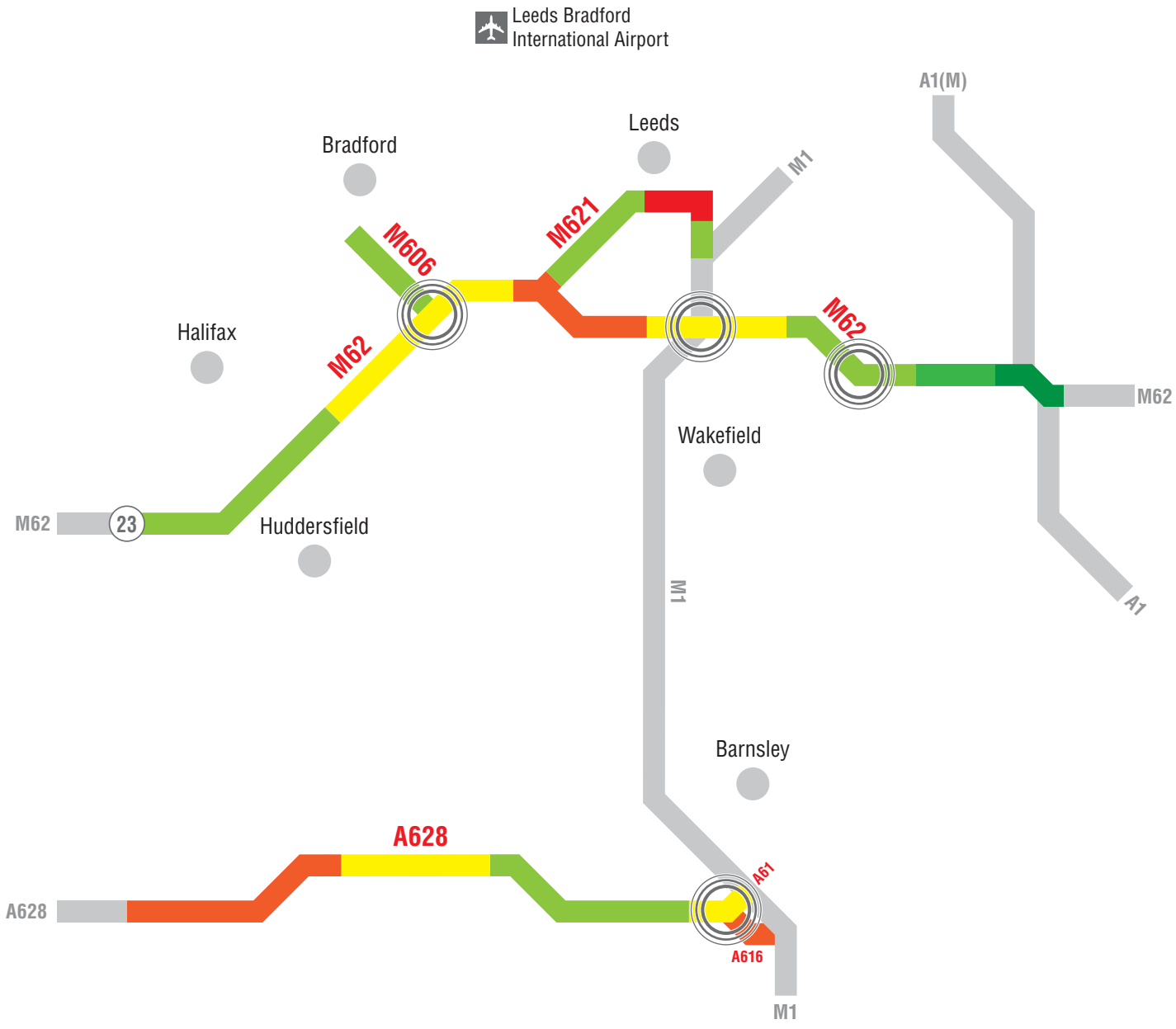

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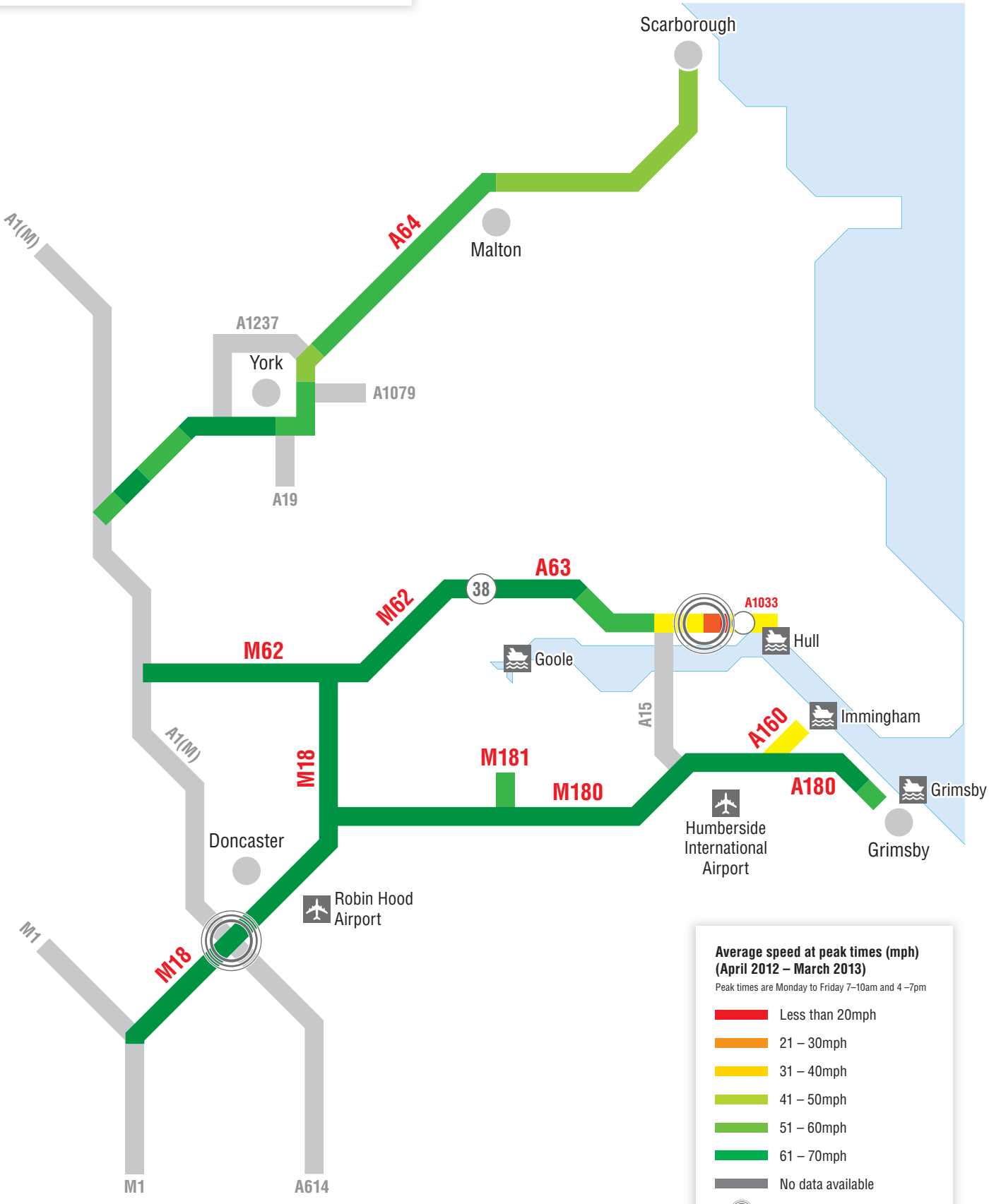
Figure 2.1

Network performance 2012/13

Peak period speeds



2.1.17 The strategic road network is key in promoting growth of the UK economy, and alleviating congestion can realise economic benefits.Figure 2.2 shows the delay on our network compared with a theoretical free-flowing network.

2.1.18 The South Pennines route has a number of key locations which suffer from high levels of congestion and delay.

2.1.19 The urban sections of the M62 and the M60 have significant delay and congestion around key interchanges. Figure 2.2 shows that delay is experienced in both directions on the M62 through much of Merseyside, Greater Manchester and West Yorkshire. Junctions of the M60 also suffer from significant delay, particularly on the western side of the M60 Orbital.

2.1.20 Smart Motorways have either recently been installed or are planned to be installed on sections of the M62 and M60 which is expected to help alleviate congestion on these sections. It should also be noted that during the period that the data was collected for Figure 2.2, construction works for Smart Motorway was underway on the M62 between junctions 25 and 30 which is likely to affect information presented.

2.1.21 In addition to the sections highlighted Figure 2.2 it is also important to recognise that a number of junctions on the South Pennines route suffer from congestion and delay. This affects both access to and from the strategic road network and also local road movements across junctions. The M62 junctions 10 (Croft) and 29 (Lofthouse) are key strategic locations at which this route interfaces respectively with the the London to West Scotland RBS (M6) and London to Scotland East (M1) RBS. At peak times these locations suffer significant congestion and delay.

2.1.22 The M602 is a main link into Salford, Trafford Park and the A57(M) Mancunian Way around Manchester City Centre. This section of the route normally suffers from tidal congestion at peak times especially if there are evening events in the City Centre , for example at Sport City, Christmas markets or concerts at Manchester Arena. Congestion can form both inbound and outbound in the evening peak period.

2.1.23 Similarly the M621 provides a key route into Leeds City Centre and also experiences congestion during the peak periods. However, this is primarily a tidal peak period issue and as such is not adequately represented on Figure 2.2.

2.1.24 The parts of the route where delay and congestion is experienced is not limited to the motorway sections. Trunk road sections of the route which experience delay include the A585, A5036 to Bootle Docks, the A628 and A57 through Mottram, Hollingworth and Tintwistle and the A63 into Hull. The parts of the route providing links into busy urban areas are particularly affected and these include the A663 Broadway around Rochdale and Oldham, the A556 to the south of Manchester and the A64 where it meets the York Outer Ring Road.

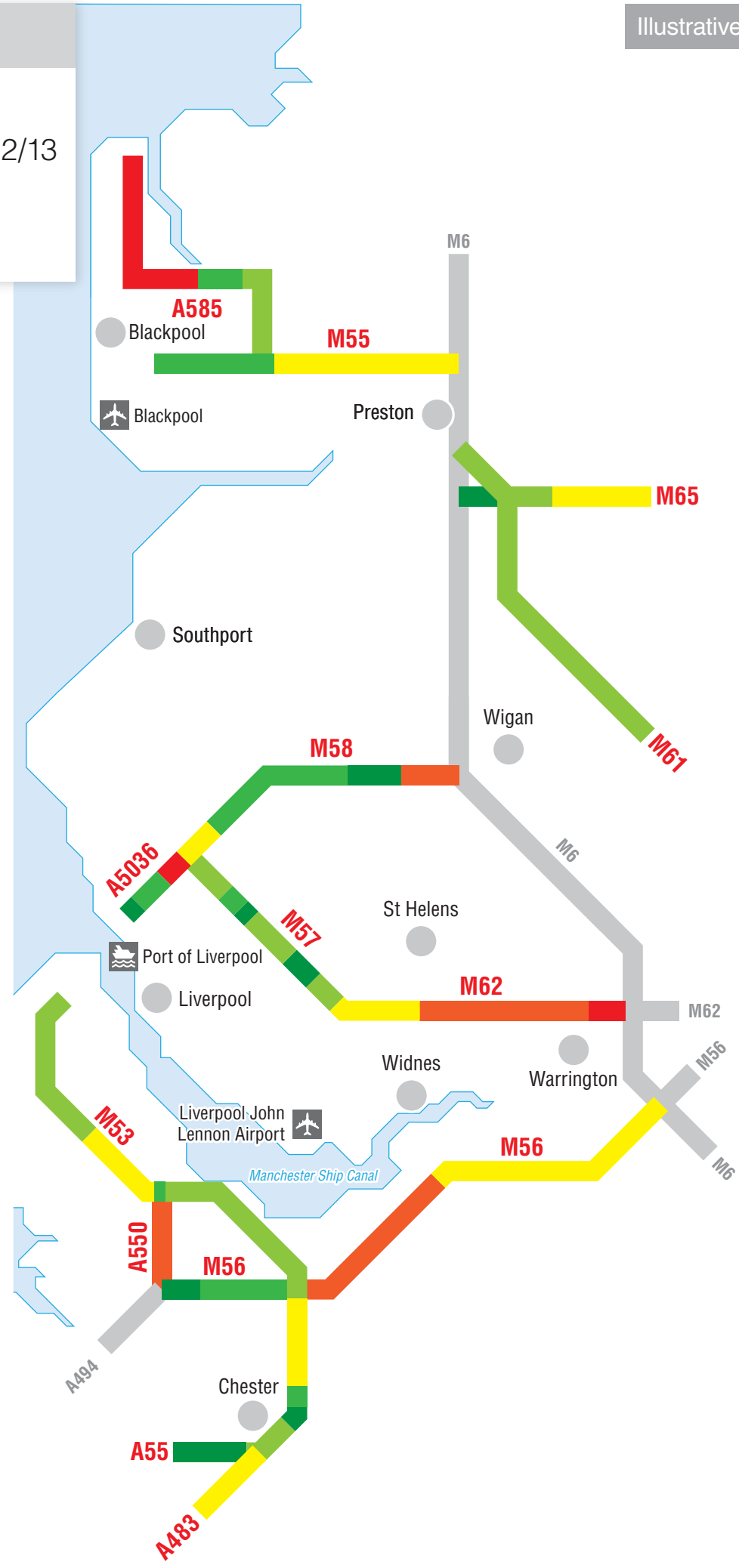
South Pennines –
Route-based strategy – Map 1 of 4

Illustrative

Figure 2.2

Network performance 2012/13

Delay



Vehicle Hours Delay
(April 2012 – March 2013)

Vehicle Hours Delay is an estimate of the total travel time experienced by all road users over and above the expected theoretical free-flow travel time.

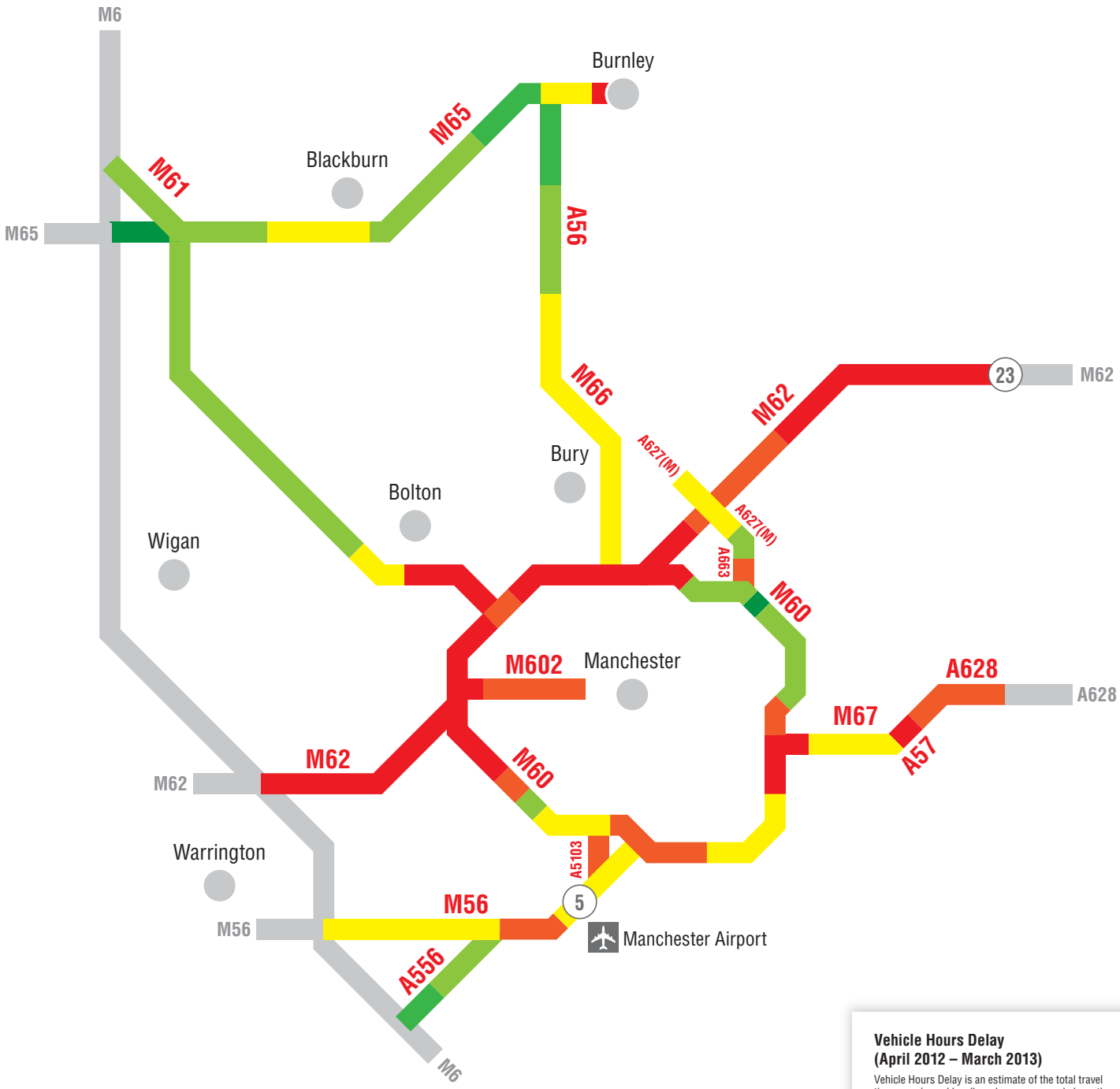
- Top 10%
- Next 10%
- Next 20%
- Next 20%
- Next 20%
- Bottom 20%
- No data available

Illustrative

Figure 2.2

Network performance 2012/13

Delay



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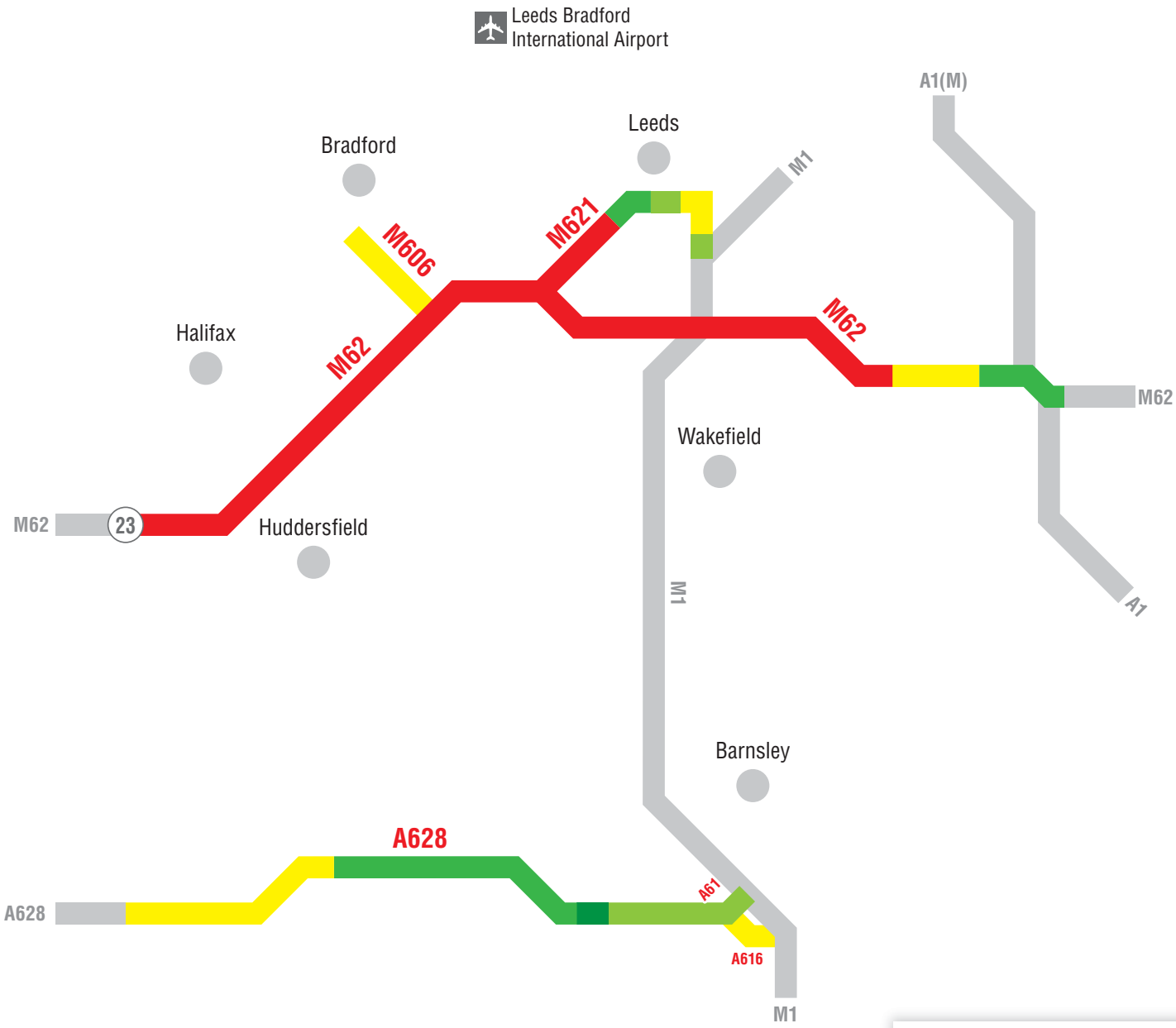
Illustrative

Figure 2.2

Network performance 2012/13

Delay



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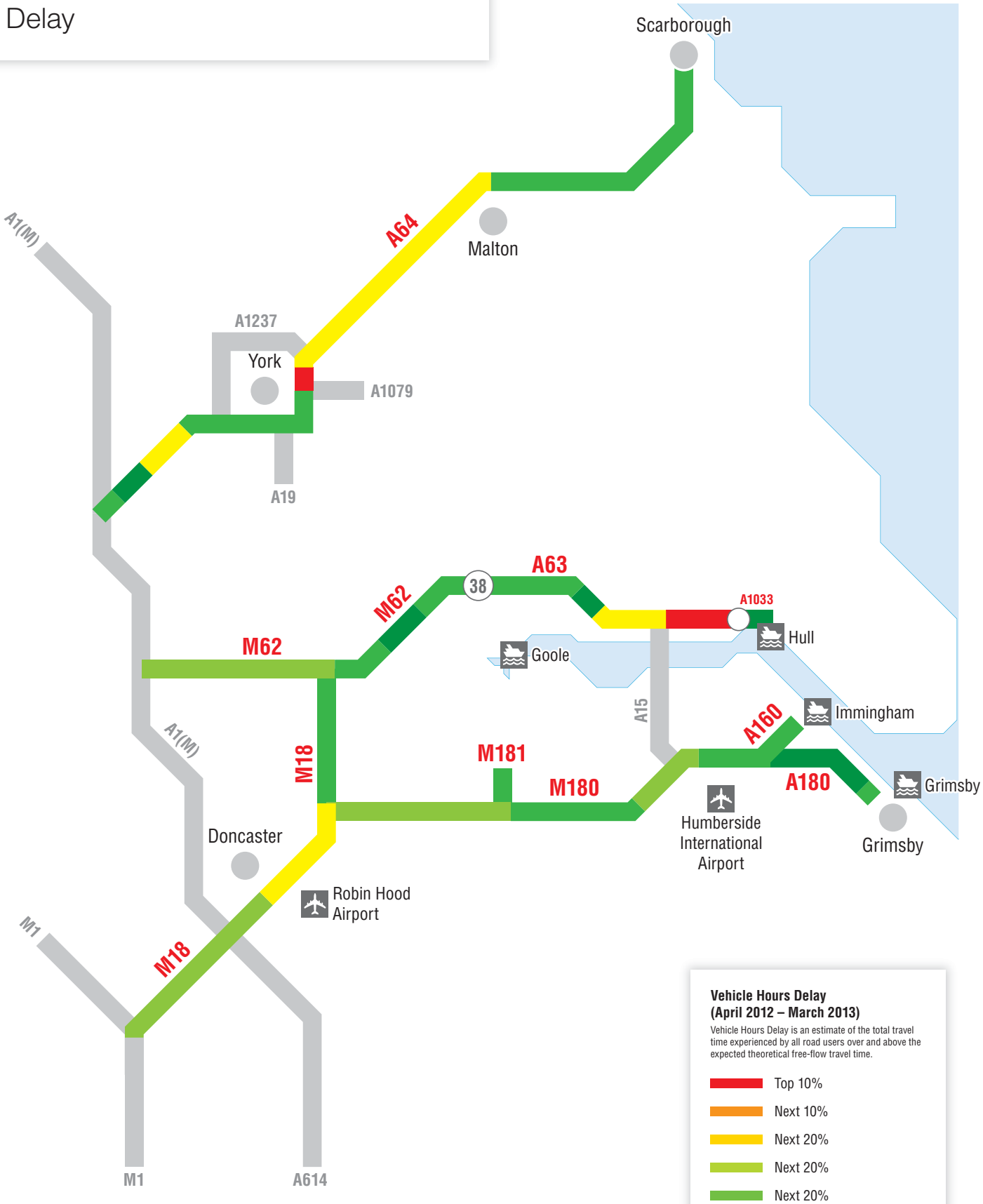
Illustrative

Figure 2.2

Network performance 2012/13

Delay



2.2 Road safety

2.2.1 As a responsible network operator and through the *Strategic road network performance specification 2013-15* the Highways Agency works to ensure the safe operation of the network.

2.2.2 By 2020, *The strategic framework for road safety 2011* forecasts the potential for a 40% reduction of the numbers killed or seriously injured on the roads compared with 2005-2009. We are working toward this goal.

2.2.3 Figure 2.3 illustrates the rates of injury accidents and the top 250 casualty locations on the strategic road network between 2009 and 2011. Injury accidents are collisions where people were injured and their injuries were slight, serious or fatal. Damage only incidents have not been included. The top 250 casualty locations have been calculated nationally, and are based on the number of casualties which occurred within a distance of 100m of the Strategic Road Network. Locations with the same number of casualties have been given a “joint” ranking and therefore there may be some locations with the same rank number.

2.2.4 In the period from 2010 to the end of 2012 there were just under 4,000 recorded incidents on the South Pennines route resulting in nearly 7,000 casualties. Of these casualties, just fewer than 600 were killed or seriously injured.

2.2.5 In terms of vehicles/road users involved in the collisions:

- 2.2% of vehicles involved were HGV’s
- 1.7% involved pedestrians or cyclists
- Where the age of drivers was known 7.1% were young drivers (aged 16-19)
- 9.5% were older drivers (aged 60 or over).

2.2.6 Figure 2.3 shows that, in general, the risk of a collision occurring is higher on the trunk road sections of the route than the motorway sections. This is to be expected given the higher levels of conflict experienced on a trunk road compared with a motorway. It also reflects the national picture where our motorways are considered to be the safest sections of the entire highway network in terms of collision risk (by vehicle kilometre).

2.2.7 However, of the motorway links, the northwest quadrant of the M60, the M602, the M65 (between junctions 6 and 7), the M621 and the M606 stand out as having a high risk of collision.

2.2.8 Figure 2.3 shows a number of sections on the South Pennines route where the collision risk is particularly high. These include:

- The A585, from the M55 to Fleetwood. This is a single carriageway trunk road over much of its length and has a number of junctions and side road connections to it. Pinch Point schemes at Windy Harbour and Borne Way should help reduce the number of

incidents on this road; however, further work is still likely to be required.

- The A56, running through Haslingden. This section of the A56 includes the only at-grade roundabout, at Rising Bridge, on what is otherwise a high standard dual carriageway with grade separated junctions. The part of the A56 showing the highest collision risk includes the section of the route with a particularly curved alignment and includes a section where all vehicles wishing to continue onto the M65 from the south must leave the main carriageway.
- The A5036, which connects the Port of Liverpool to the motorway network. It is a dual carriageway with a number of signalised junctions and uncontrolled connections. There are a lot of HGV movements along this route and many turning movements.
- The A550, from the A494 to the A41/M53. This section of the A550 is a narrow single carriageway road and provides the most convenient access from North Wales to the Liverpool City Region.
- The A556, from the M6 to the M56. This section is predominantly a 4 lane single carriageway road, becoming a dual carriageway as it approaches junction 7 of the M56. There are many private accesses to this route and a number of poorly aligned junctions. Given that the A556 is the main access to the Manchester City Region from the south, it suffers from regular periods of congestion. All these factors affect the collision risk. A major scheme has been proposed to bypass the existing A556; however, this currently is still awaiting formal approval.
- The northwest quadrant of the M60 and the M602. This is generally due to congestion and, in particular, merging traffic and resultant queuing.
- The M65 between junctions 6 and 7. Here the M65 drops from 3 lanes to 2 in a westerly direction. In addition, the volume of traffic using this section of the M65, particularly in peak times, can lead to congestion occurring.
- Links on approaches to key interchanges. These are again generally related to congestion and include:
    - The M61 (approaching the M60 at Worsley)
    - The M67 (approaching the M60 at junction 24, Denton)
    - Where the M62 meets the M6 (at junction 10, Croft)
    - The M62 (approaching junction 27, Gildersome)
    - The M62 (around junction 32a, Holmfield Interchange)
    - The M606 (approaching junction 1, Staygate).

  The M62 Smart Motorways (junctions 25 to 30) improvements should help reduce the frequency of these collisions. Several Local Network Management Schemes (LNMS) are being developed for

these sections, with the intention of delivery during the RBS period. Proposed schemes include capacity enhancements to M62 junction 27 and improvements to the signing and lining on the approach to M62 junction 32a.

- The M621, which is a congested route serving Leeds city centre. Closely spaced junctions result in significant amount of weaving traffic resulting in collisions.
- Trans-Pennine trunk roads, including sections of the A628, A61 and A616. Collisions involving overtaking are evident on the rural single carriageway section of the A628. Adverse weather conditions also play a role in increasing the likelihood of an collision on the exposed sections.
- The A63 through Hull. This is a busy section through an urban area. Major improvements are planned for the A63 Castle Street in central Hull.
- Links to the eastern ports. As well as on the A63, there is a high frequency of collisions, particularly involving HGVs, on the A1033, M62, M180, A180 and A160 which provide access to the ports of Hull, Immingham and Grimsby. A number of LNMS are currently under development for these sections of the route, with the intention of delivering them during the RBS period. These include capacity enhancements to the A63 Garrison Road roundabout and safety improvements to the M180 at junctions 2, 4 and 5. A recently completed Pinch Point scheme which signalises and widens the A1033 Northern Gateway roundabout will also improve capacity and access to the port. Major improvements to dual the A160 are also planned. The scheme will improve access to the Port of Immingham by dualling the full length of the A160 and making associated junction improvements along the route.
- The A64 between York and Scarborough. The nature of the A64 northeast of York, including long stretches of single carriageway road and a number of at grade side road junctions, contributes to the collision risk. Collisions involving overtaking are also more likely to occur on the rural single carriageway sections of this length of the A64. The Agency is developing a number of LNMS for the A64 which seek to address safety and severance issues, with the intention of delivering them during the RBS period. These include schemes to provide pedestrian refuges on the A64 in Ganton, East Heslerton and West Heslerton.

2.2.9 In addition to the sections with high collision risk, a number of locations on the South Pennines route are included in the national top 250 ranked sites for casualty rates. The following list details the sites shown in figure 2.3 and any proposed improvements, such as LNMS, that may help address safety problems:

- A585 (rank 81 and 202). The majority of incidents were shunt type collisions or collisions involving vehicles turning across the path of another. Pinch Point schemes to improve the operation of this road

at Windy Harbour and West Drive are currently programmed. Furthermore, a new development at Norcross should reduce the problems at Norcross roundabout and Anchorsholme Lane.

- M65 junction 2 and junction 8 (rank 123 and 60 respectively). These junctions are two of the major interchanges on the M65. Junction 2 is a motorway to motorway roundabout and junction 8 connects the M65 with the A56 (heading towards Manchester). The collisions at these junctions include shunts, lane change/side swipe incidents and failures to give way.
- A5036 (rank 81, 158 and 202). Incidents on this section of the route can adversely affect access to the Port of Liverpool. The incidents tend to occur at the junctions and include failure to stop at signals, turning across oncoming vehicles, side swipes/lane change incidents and rear end shunts. The junctions involved include Netherton Way and Hawthorne Road.
- A56, at the junction with the A680 (rank 52). Many of the collisions at this location tend to be rear end shunts, with the majority of those occurring on the A56 approaches to the roundabout. Over half of the recorded collisions occurred in wet weather.
- A663 at the junction with Foxdenton Lane and the junction with Middleton Road (rank 123 and 158). The collisions at both these sites are typical of junction related collisions. It is also notable that many of the collisions occurred during wet weather, however only a small number involved vehicles actually skidding.
- M62 at the junction with the M606, junction 26 Chainbar (rank 41). Congestion related shunt and lane change collisions. The Agency has a planned improvement scheme for the junction which will widen the southern part of the circulatory carriageway and alter lane designations. This scheme is expected to increase capacity and improve safety.
- Junction 30 of the M62 (rank 123=). Collisions at this location include shunt accidents on the exit-slip approaches to the roundabout. However, the ranking of this site is due more to the very low exit-slip flows rather than a particularly high number of collisions. A safety improvement scheme was completed for the westbound exit-slip as part of the Smart Motorways project.
- A63 Mytongate junction, Hull (rank 41). This location suffers from congestion related shunt and lane change collisions. A major improvement is planned for the A63 Castle Street – to be implemented post-2015.
- A63 Garrison Road roundabout, Hull (rank 123=). This location suffers from congestion related shunt and lane change collisions. An improvement scheme is proposed for this junction. The scheme will fully signalise the junction and provide extra capacity through widening and provision of a ‘hamburger’ style arrangement.

- A63 Daltry Street interchange, Hull (rank 158). This location suffers from congestion related shunt and lane change collisions and loss of control accidents through the ‘S’ bend flyover. There is a study in progress to identify potential safety improvements.
- A180 Pyewipe roundabout, Grimsby (rank 158). This location suffers from congestion related shunt and lane change collisions. There is also an issue with loss of control accidents at the eastbound roundabout entry.
- M18 at the junction with the A1(M), junction 2 Wadworth (rank 12, 18 and 98). These locations suffer from congestion related shunt and lane change collisions. Recent major improvements were implemented and included signalisation and slip-road widening. There is a further potential improvement scheme proposed at the junction which will increase capacity by signalising the northbound approach and widening to three lanes.

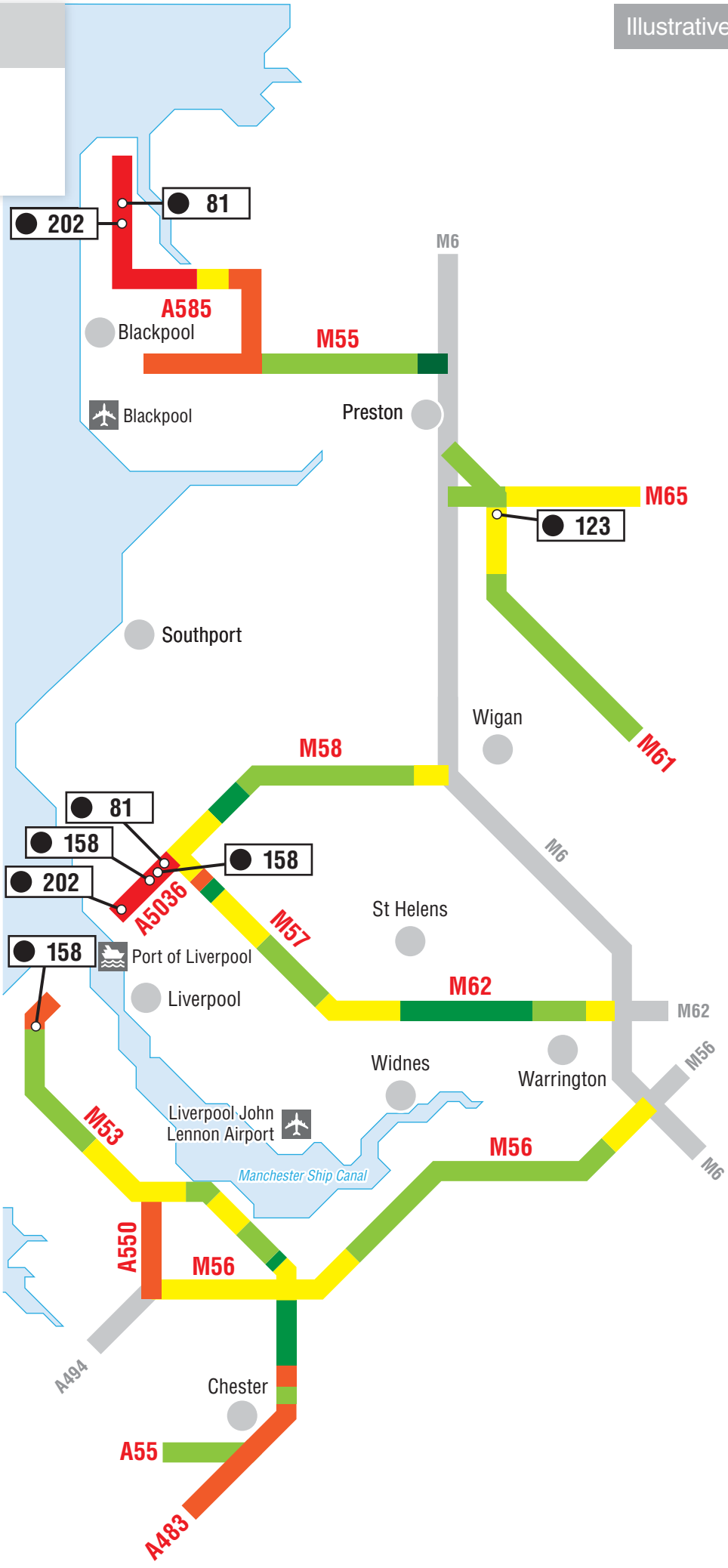
2.2.10 While we aim to reduce the numbers killed or seriously injured using and working on the strategic road network, we will always identify more safety interventions than our budget allows us to implement. We use a prioritisation process to help us and we review this regularly to ensure we are targeting the locations with the greatest opportunity to save lives and reduce the severity of injury.

South Pennines –
Route-based strategy – Map 1 of 4

Illustrative

Figure 2.3

Safety on the network



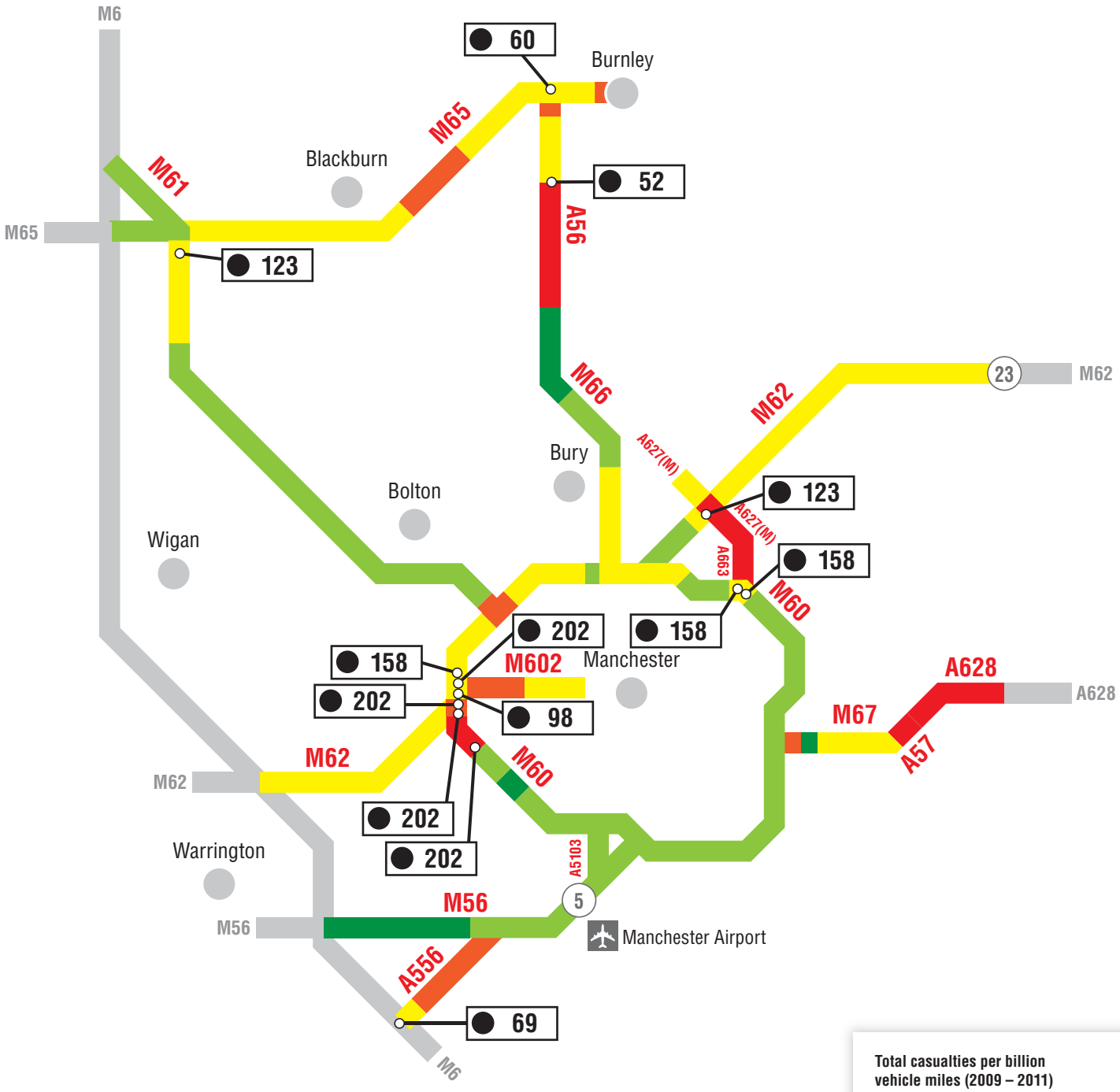
Total casualties per billion vehicle miles (2009 – 2011)

- Top 10%
- Next 15%
- Next 20%
- Next 25%
- Bottom 30%
- No data available
- 186 Top 250 collision location (with national ranking)

Note: Collisions shown include all fatal, serious and slight injuries.

Illustrative

Figure 2.3
Safety on the network



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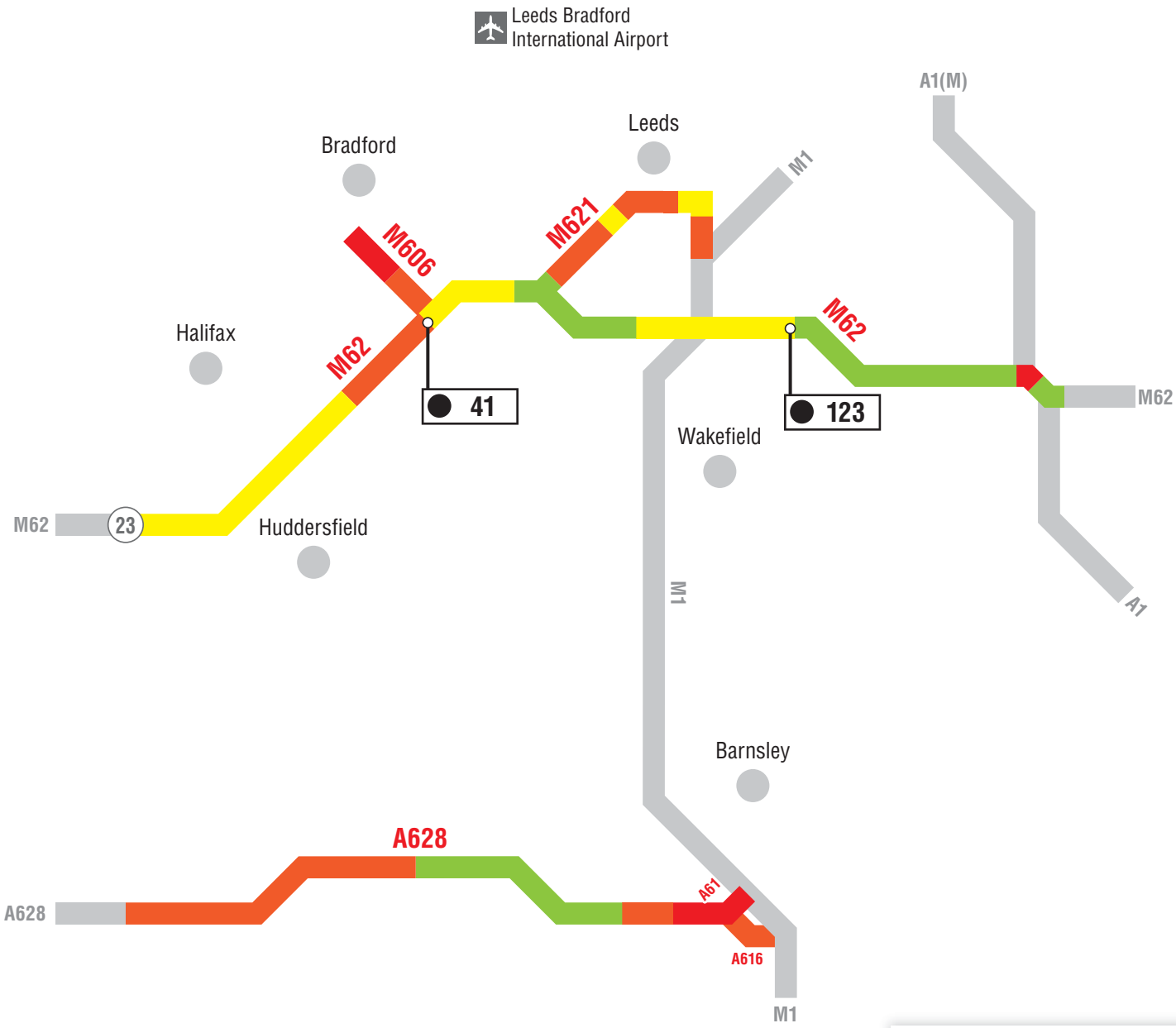
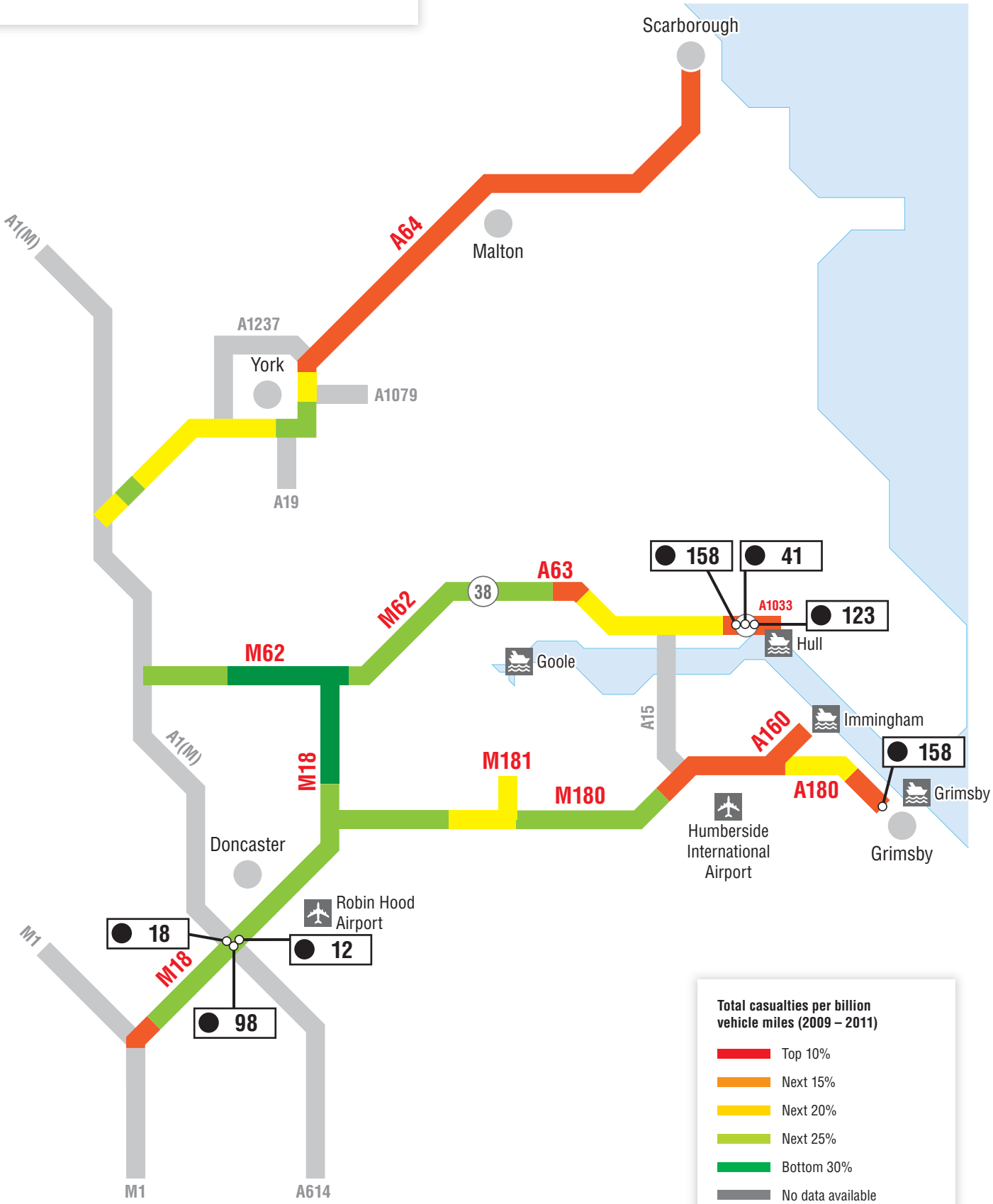


Illustrative

Figure 2.3
Safety on the network



2.3 Asset condition

2.3.1 We carry out routine maintenance and renewal of roads, structures and technology to keep the network safe, serviceable and reliable. We also ensure that our contractors deliver a high level of service on the strategic road network to support operational performance and the long-term integrity of the asset.

2.3.2 From new, assets have an operational 'life' within which, under normal conditions and maintenance, the risk of failure is expected to be low. Beyond this period, the risk of asset failure is expected to increase, although for many types of asset the risk of failure remains low and we do not routinely replace assets solely on the basis that they are older than their expected operational life. We use a combination of more regular maintenance and inspection along with a risk-based approach to ensure that assets remain safe while achieving value for money from our maintenance and renewal activities.

2.3.3 We maintain a National Asset Management Plan as an annual summary of the Agency's network asset inventory and condition. It is aimed at ensuring there is sight of future issues affecting the asset and enabling strategic decision making.

Carriageway Surface

2.3.4 The road surface on the strategic road network is primarily surfaced with two types of flexible bituminous materials, namely Hot Rolled Asphalt (HRA) which has an approximate design life of 25 years and Thin Surface Course System (TSCS) with a lower construction cost and shorter design life of 10-15 years. Large tranches of HRA were laid in the 1990s and TSCS tranches laid in the 2000s resulting in a significant proportion of the network reaching the end of its design life by 2020.

2.3.5 It should be noted that, although carriageway surfacing may be identified as reaching or exceeding its design life, the surfacing will not necessarily require treatment at this point. Carriageway surfacing that is beyond its design life is at a higher risk of failure, with such risk increasing the longer that the surfacing exceeds its design life. The increasing age of the surfacing could manifest in an increased frequency of maintenance interventions which, if a renewals scheme is not funded, may result in a higher cost both financially and in terms of disruption to road users to maintain the asset in a safe and serviceable condition.

2.3.6 The majority of the South Pennines route is surfaced with either HRA or TSCS although some concrete surfacing does exist (see section 2.3.13 below.). It comprises 54% HRA, 44% TSCS and 2% concrete surfacing. Across the route there are significant lengths where the pavement is expected to reach the end of its design life during the RBS period and is therefore likely to require resurfacing. There are also locations where TSCS is failing earlier than expected with evidence of failure after between 5-8 years. The technical annex provides a description of pavement condition on each section of the route.

2.3.7 The route includes sections which have recently been upgraded to Smart Motorways. In some cases, resurfacing was implemented as part of the upgrade, for example on the M62 in West Yorkshire. Where this is the case, significant maintenance interventions are not expected to be required during the period up to 2021.

2.3.8 Some parts of the route are operated and maintained by a Design Build Finance Operate (DBFO) company. Where this is the case, the carriageway will be maintained (and subsequently returned to the Agency at the end of the contract) to the standards set out in that particular contract.

2.3.9 There are also some single carriageway sections of the route such as the A585, A550, A64, A628, A57, A616 and A61 which were not originally constructed to Agency standards but now form part of the trunk road network. The pavements on these sections are prone to requiring deep structural repairs, which can be complicated by constraints on maintenance activities.

2.3.10 A further issue in relation to the pavement surface is the need to renew road markings, including reflective studs. All road markings and studs on the network are expected to require renewal at least once before 2021, with the most heavily trafficked sections expected to require renewal twice.

2.3.11 As highlighted above, we also have concrete road surface material but this is only a very small proportion when compared to the length of flexible road surfaces. The amount of concrete road surface is also reducing. As it reaches the end of its serviceable life, it is being replaced by flexible material.

2.3.12 Sections of the route which have a concrete surface include:

- Junctions 15 to 16 of the M56
- Junctions 11 to 12 of the M53
- A483 Pulford to Wales border
- The M62 near junction 38
- The A180 westbound, between Brocklesby and Barnetby.

2.3.13 All the above locations have a history of large scale concrete repair interventions.

2.3.14 Resurfacing work is planned so as to minimise any disruption to the network, however there are locations particularly at key junctions and interchanges such as M62 junction 18 (Simister) and M62 junction 29 (Lofthouse) where major resurfacing schemes and improvements are likely to cause some disruption.

Structures

2.3.15 The structures on this route vary from masonry retaining walls built in the 1800s to modern pre-stressed concrete structures. Key issues affecting the route are:

- Concrete repairs – the age of the structures on the route means that the ongoing deterioration of the structural concrete is at a point, in some cases, where further deterioration will be structurally significant. Alkali Silica Reaction is a further issue with structural concrete that leads to an expansion of the material. This produces stresses within the concrete that can affect structural capacity. Failure to carry out repairs within the period to 2021 may require load management measures to be put in place such as lane closures to protect structurally weak elements.
- Half joints – a large number of structures have half joints, a structural detail allowing for continuity of a superstructure. Half joints have inherent durability and maintenance issues and significant defects with this detail can lead to the need for a complete renewal of a structure.
- Bearings – the bearings on a number of structures have reached or are about to reach the end of their serviceable life. Life expired bearings can create structural capacity issues as structures are no longer free to move as designed, leading to stress redistribution and potentially cracking. This could require load management measures to be put in place such as lane closures to protect structurally weak elements.
- Waterproofing – a number of the bridge deck waterproofing systems will be life expired by 2021 and replacement will require complex traffic management. There are also ongoing issues with a particular waterproofing system that, when failure occurs, rapidly spreads across the bridge deck leading to high incidence of potholes and maintenance interventions.
- Expansion joints – bridge joints will continue to deteriorate, many rapidly with little warning. Some types of joint are very difficult to manage in a safe way as the joint construction does not lend itself to temporary repairs which fail almost immediately. Many joints on the route are expected to have exceeded their life expectancy within the RBS period.
- Parapets – there is an ageing parapet stock with a large number nearing a condition whereby they will be classed as substandard and in need of replacement. There are also locations particularly on non-motorway trunk roads such as the A628 where the vertical and horizontal alignment has lead to numerous parapet strikes, requiring temporary concrete barrier installation and repair works. A large proportion of the retaining walls on the A628 have current or repaired sections of impact damage. This is an ongoing issue with impacts occurring on a regular basis
- Abnormal loading - there are a number of locations where strengthening of structures is required to allow the passage of abnormal loads.
- Smart Motorways – a number of sections will be operational on the route by 2021. This will affect access to the structures for

maintenance and is likely to require more complex traffic management arrangements for renewal schemes. We aim to undertake only essential maintenance to structures on Smart Motorways sections during the early years of their operation and therefore a backlog of maintenance may accumulate on these sections, potentially requiring significant spend towards the end of the RBS period.

2.3.16 As a result of the above issues many of the structures on the South Pennines route will require intervention during the RBS period these include some significant locations such as M62 Lofthouse Interchange and M62 Ouse Bridge. Monitoring of Barton High Level Bridge, between junctions 10 and 11 of the M60 will also need to take place during the RBS period. Significant works near to the bridge will be ongoing during this time and monitoring to safeguard the bridge will be essential. The technical annex includes details of the locations which will require major interventions along with a description of the problem.

Other key asset issues for routes

Geotechnical

2.3.17 We monitor our earthwork asset by identifying where any risks to the network exist. There are some locations along the South Pennines route where there is a risk to the earthwork asset. Amongst these, locations of particular interest from a geotechnical perspective are the A56, the M62 and the A628.

2.3.18 On the A56 at Woodcliffe, the cutting slope for the road has slipped and is currently considered a critical risk given the potential impact of failure of the slope. Monitoring is ongoing and movement in the slope has been confirmed. Contingency plans are in place should the slope fail or if further, more significant, movement occurs.

2.3.19 On the M62 between junctions 11 and 12, there are a number of significant defects. Most significant of these affect the ride quality of the pavement and increase the risk of loss of control type collisions. The pavement issues are likely to be related to the slag used to construct the motorway. However there are also possible issues relating to the underlying peat as severe fissuring occurs on the earthworks slopes and adjacent third party land. In some locations the fissuring is severe enough to require fencing to prevent access for highway workers and members of the public (seeking safety following a vehicle breakdown).

2.3.20 Over time we have made undertaken a number of investigations to investigate and remedy the defects on the M62 between junctions 11 and 12. Signs warning of uneven road surface have been in place since before 1989 and re-profiling of sections has been undertaken on an annual basis since and will continue to be required.

2.3.21 On the M62 near junction 22 runs over high moorland and is locally underlain by peat. This, combined with high annual rainfall, can present geotechnical challenges such as washouts and bursts. These can be exacerbated by high groundwater flows during periods of high rainfall

and snow melts. Further east, the hilly topography has required the construction of many high embankments and deep cuttings.

2.3.22 Between M62 junction 24 and junction 32a the route is directly underlain by the Pennine Upper Coal Measures. Earthworks and structures are therefore at risk from the influence of shallow mine workings and mine shafts, many of which are not recorded. At some locations the road alignment crosses areas of backfilled open pits. Records can indicate where shafts are located, but details of how shafts have been capped or sealed are not always available. The earthworks are often constructed from locally sourced fill, which in this region is generally mine waste. The chemical nature of this material can have adverse effects on buried concrete. To the east of junction 32a the coal measures are at a much greater depth, as they are overlain by other, non-coal bearing, younger rock formations. The risks presented by shallow mining are therefore not present. The risk from coal mining to the east of junction 32a is limited to subsidence caused by the collapse of deep longwall workings and there should be very few, if any, uncharted shafts.

2.3.23 The A628 is predominantly single carriageway with limited or no verges. Defects occurring close to the carriageway on this route have significantly more potential to create network disruption than those on the areas' motorways. Maintenance and repair of defects is also more difficult, as it requires restricting traffic to a single lane under traffic management. Large sections of the Woodhead Pass section are constructed on sidelong ground, with the land either side of the kerblines being outside our ownership and, additionally, subject to the planning restrictions imposed by the National Parks Authority.

2.3.24 High rainfall in the area is channelled beneath the road in substandard culverts. Surface water runoff is thought to be the cause of many of the earthwork defects recorded. Following several landslip incidents along the A628 in recent years, a geotechnical study is currently underway, covering a 20km stretch of the A628 between Tintwistle and Chapel Brow. The objective of this study is to determine the works required in order to prevent further landslip activity which would adversely affect the A628 running lanes. This report is due to be completed by Spring 2014.

Drainage

2.3.25 The topography along the route results predominantly in two types of drainage asset. To the east of the M1, the drainage system is predominantly soakaway, whereas to the west of the M1 it is a more traditional gully and pipe system. Key issues affecting the route are:

- Changing weather patterns are likely to have a significant effect on precipitation levels, putting the drainage systems under more pressure.
- The trunk road sections of the route have no hard shoulder, which makes maintenance or investigative work on drainage assets resource intensive and disruptive to traffic.

- There are extensive ditch networks in the flatter eastern side of the route, namely along parts of the M62, M18, M180, M181. These provide habitats for water vole populations. The ditches connect with drainage systems of neighbouring Internal Drainage Boards and play an important role in water level management of the surrounding areas.
- The A64 and A628 drainage assets are ageing.

Lighting

2.3.26 The South Pennines route has a number of locations where lighting is reaching the end of its design life. Asset failures on this route are predominantly age related and this results in an ongoing programme of minor interventions. There are a number of significant locations where the asset is life expired:

- The M602, M67, A627M – life expired assets have been identified and, due to the low number of incidents during the hours of darkness, lighting can no longer be justified. Following the guidance, as per IAN 167, it is due for removal by March 2014.
- M621 highmasts – some of the masts are ten years over their design life and amongst the oldest in the UK.
- The M621 (from junction 27 of the M62 to junction 1).
- The A57.
- The A63.
- The M62, junctions 26, 27 and 28.

2.4 Route operation

Incident Management

2.4.1 We work hard to deliver a reliable service to customers and to reduce the number and impacts of incidents on road users.

2.4.2 Across the whole network, the Highways Agency Traffic Officer Service responds to around 20,000 incidents each month. We measure how effective we are at managing incidents by looking at the time incidents affect the availability of running lanes.

2.4.3 Large sections of the South Pennines route are covered by the Traffic Officer Service which operates from two regional control centres and six outstations located across the route. The majority of the motorway sections benefit from the highest level of Traffic Officer Service, which includes a dedicated on-road response service. This effectively means the routes are patrolled.

2.4.4 The following routes are exceptions to this level of coverage, where there is a lower level of provision and Traffic Officer vehicles do not routinely patrol:

- M53

- M57
- M58
- M602
- M65
- M606
- M621
- M181 east of junction 3
- M62 between junctions 37 to 38.

In these locations to the Traffic Officer Service is able to provide a response service if required.

2.4.5 The non-motorway trunk road sections of the route are not routinely patrolled and an on-road response will only be provided in exceptional circumstances on these sections. However, our service providers operate a response service which includes the provision of temporary traffic management and incident clear up.

2.4.6 We have a good understanding of the types of incidents which are quick to clear up and those which take longer. In general, incidents which impact running lanes are rare and are mostly caused by breakdowns, debris in the road and damage-only collisions. The longest duration incidents are mostly caused by infrastructure issues, such as road surface repairs, bridge strikes, barrier collisions and spillages, or by collisions involving serious or fatal injuries which require police investigation. We continue to work with our partners in the emergency services to reduce the impacts on our network from serious collisions and long-duration incidents.

2.4.7 There are a small number of locations across the South Pennines route where incident duration has an average lane impact duration of over 60 minutes. These are on sections of the A180, the A56, the M58 and the M53, all of which operate a reduced level of Traffic Officer Service.

2.4.8 In addition to where the level of Traffic Officer Service is reduced, lengthier incident durations tend to be at the extremities of our network, for example, at the eastern end of the M62 and M180, where the average lane impact duration of incidents is between 30 and 60 minutes. Incidents at the eastern end of the route frequently involve of freight traffic, which often a results in a longer recovery period. Such incidents can be particularly disruptive on trunk road sections of the network where there is no hard shoulder, such as the A63.

2.4.9 Another factor in incident duration is the level of congestion. Parts of the M60 and M62 are some of the busiest sections of the South Pennines route. Significant sections of both the M60 and M62 have an average incident duration of between 30 and 60 minutes and this can cause severe disruption.

Flooding

2.4.10 We have a responsibility to reduce flooding. Flooding of the HA network impacts upon network performance and the safety of road users. Flooding off the network has an impact on third parties living adjacent to the network.

2.4.11 Based on recorded flooding incidents, we have identified those parts of the network that are at high risk of repeated flooding.

2.4.12 The South Pennines route is intersected by a number of rivers which have a flooding plain indicated on the Environment Agency flood risk maps. The route is generally elevated in these areas and therefore sits above the risk of flooding.

2.4.13 The key risk for the South Pennines route is highway surface water runoff, while some trunk road locations are also at risk due to runoff from third party land. Key at risk locations include:

- Sections of the M57, particularly near Knowsley and Switch Island
- The M53 near Ellesmere Port
- The M56, particularly on the sections north of Chester and south of Manchester
- The northern section of the M61
- The M66 over its full length
- Numerous locations on the M60, particularly on its southern sections near Stockport
- The M62 between junction 22 - 26,
- The M62 near Knottingley
- The M18 / M62 interchange
- The eastern end of the M62, where it becomes the A63
- Sections of the A616, A628 and A57
- The M180 near Scunthorpe
- The M18 from the junction with the M1 to junction 3
- The A63 in Hull
- The M621 near Leeds
- The M606 towards Staygate
- The A64 beyond Malton.

Severe Weather

2.4.14 The HA aims to minimise where possible the impacts of severe weather, such as strong winds and snow, on network performance and the safety of road users.

2.4.15 There are a number of sections on the South Pennines route which are susceptible to severe weather – the A628, the M62 (between junctions 18 and 25), the A56 (between the M66 and the M65), the M65 and the M67 are all particularly susceptible to snow.

2.4.16 The sections of the route that are exposed to high winds include:

- M60 between junctions 10 and 11 (Barton Bridge) and junctions 16 and 17 (Irwell Valley)
- M61 junctions 4 and 5 (Hill Top)
- The M61/M65 intersection
- M62 between junctions 21 and 22 (Rakewood Viaduct) and at junction 22 (Rockingstones)
- M65 Stanworth Viaduct and Underpass
- M53 between junctions 1 and 2 (Bidston Moss)
- M56 at junction 12 (Weaver Viaduct) and between junctions 12 and 14
- M58 at junction 1 (Maghull)
- A56 Accrington Easterly Bypass, particularly between Huncoat and Haslingden
- The M62 between junctions 21 and 25, at junction 29 (Lofthouse interchange), and between junctions 34 and 35 (over Ouse Bridge)
- The A628.

2.4.17 Sections of the route that are susceptible to fog include:

- The M60 between junctions 23 and 25
- The M61 between junctions 6 and 9
- The M65 between junctions 2 and 10
- The M62 between junctions 11 and 12, at junction 20, between junctions 22 and 25, at junction 30 and between junctions 34 and 35
- The A628 and the A616
- The A63 in Hull, the A1033, the M18, the M180, the M181, the A180 and the A160

2.5 Technology

2.5.1 The Highways Agency works hard to deliver a reliable service to customers through effective traffic management and the provision of accurate and timely information. We provide information to our customers before and during their journeys.

2.5.2 We monitor key parts of our network using CCTV and use sensors in the road to monitor traffic conditions. These are used by our National Traffic Operations Centre and seven Regional Control Centres to provide information to customers before their journeys, for example on

the Traffic England website or through the hands-free traffic app for smartphones. Whilst on the network, we also inform our customers using variable message signs (VMS).

2.5.3 Technologies such as overhead gantries, lane specific signals and driver information signs are among the tools we use to operate our network efficiently. In some locations we have controlled motorways, which is where we can use variable mandatory speed limits to help keep traffic moving. Smart Motorways use both variable mandatory speed limits and the hard shoulder as an additional live traffic lane during periods of congestion. Ramp metering manages traffic accessing the network via slip roads during busy periods to help avoid merging and mainline traffic from bunching together and disrupting mainline traffic flow.

2.5.4 The South Pennines route benefits from much of the technology provision as described above. This includes sections which have recently been converted to Smart Motorways, such as junctions 25 to 30 of the M62.

2.5.5 The central section of the route (incorporating the M60, the M62 and the M18) is well covered by technology and includes CCTV, VMS, MIDAS and some ramp metering. However, technology coverage beyond these areas, such as to the west of the M6, north of the M60/M62 and to the east of the A1 is more limited.

2.5.6 Significant sections of the route have almost no technology provision at all. These include the M53, the M56 (west of the M6), the 'Liverpool box' of M62/M57/M58 motorways (all west of the M6) and the M65 motorway. Many of these sections such as the 'Liverpool Box' have existing performance issues such as low peak hour speeds and delay.

2.5.7 To the east of the A1, many of the trunk roads, including the A64, the A63, the A1033, the A180 and A160 have no technology provision. The A628 and A616 Trans-Pennine route between Sheffield and Manchester also lacks technology provision. Many of these sections such as the A64 around York and the A63 through Hull are busy locations with significant performance issues including low peak hours speeds and delay.

2.5.8 Key locations around significant sites are also inadequately covered. These include the area around Stanlow in Cheshire, access to the Port of Liverpool (via the A5036) and access to the Port of Hull (via the A63). Although the M621 benefits from some technology provision including CCTV there is a significant gap in VMS on the busy part of the route serving the city centre.

2.5.9 The lack of technology on these sections of the route hinders incident management and creates additional work for the Traffic Officer Service. The lack of CCTV is particularly pertinent in this respect, especially as the trunk roads within the route have the highest collision risk.

2.5.10 There is an opportunity to extend technology provision on the route, both to cover existing gaps and to enhance provision to support future planned growth.

2.6 Vulnerable road users

2.6.1 For the purpose of this section, vulnerable road users refers to pedestrians, cyclists and equestrians. This section highlights a number of locations on the South Pennines route where there are interactions between the strategic road network and vulnerable users. The stakeholder engagement carried out (as described in section 4 below) highlighted a number of concerns about severance and vulnerable user safety, particularly in relation to pedestrians, cyclists, equestrians and motorcyclists. The repair and maintenance of footways and cycleways was also raised as a concern.

2.6.2 A significant number of issues have been highlighted along the A585 for cyclists and vulnerable road users. These include difficulties at junctions, difficulties crossing and navigating the road safely and the general poor maintenance of facilities for cyclists and vulnerable road users along this section of the route. Indeed, it was considered that the A585 was not attractive to cyclists or other vulnerable road users and actually posed a significant deterrent to those modes of use.

2.6.3 Another particular issue was raised by stakeholders concerning the A56 (located to the north of Manchester) and the severance caused when the Haslingden Bypass was constructed. The concern related to the safe use and crossing of the bypass by equestrians – although it was considered that similar problems would also be experienced by pedestrians and cyclists.

2.6.4 The A628 through Hollingworth and Tintwistle villages (to the east of Manchester) has a high proportion of collisions involving pedestrians. Throughout these villages, the A628 is bordered by residential properties with many boundaries in close proximity to the carriageway edge. The footways are also very narrow in places. However, there are numerous desire lines for vulnerable user movements across the A628 including the Pennine Way National Trail and parts of the national cycle network such as the Longdendale Trail. These lead to potential conflicts with vehicles, particularly when traffic volumes are high during peak travel periods. Where the Pennine Way interacts with the A628 the footways are narrow and there is no tactile paving or dropped curb provision.

2.6.5 The A63 and the A1033 in Hull is a section of the route that has both a high volume of vehicular traffic and vulnerable road users, particularly cyclists. The provision for cyclists is varied. On the A63 (through the city centre) provision for cyclists is on-road; however a shared pedestrian/cycleway is provided along the northern side of the A1033. Outside Hull, the Wolds Way National Trail crosses the A63 at Melton Interchange. A puffin crossing is provided on the free-flow westbound off-slip with dropped curbs and tactile paving at the other points where the trail crosses the off-slips. There are some specific locations where a high number of collisions involving cyclists have occurred, including the A63 Mytongate, Garrison Road and Brighton Street and the A1033 Marfleet. These are all busy roundabouts providing access into the

urban areas of Hull. A LNMS safety scheme is being progressed which seeks to improve vulnerable user safety along the A63 and the A1033.

2.6.6 A further issue in Hull, which was raised by stakeholders, is severance between the city centre and the port and marina. However, the A63 Castle Street improvement will provide pedestrian and cycle access between the city centre and marina through the provision of an overbridge.

2.6.7 The A64, to the east of Malton, is single carriageway and rural in nature with villages and small hamlets along its length. Stakeholders raised concerns of severance and safety for pedestrians needing to cross. There are controlled crossings incorporated into signalised junctions in the larger villages of Rillington, Sherburn and Staxton, and some of the smaller hamlets have pedestrian crossing refuges. LNMS severance schemes are currently under development to provide additional pedestrian crossing refuges in Ganton, West Heslerton and East Heslerton to help ease community severance.

2.6.8 The A64 has a varied level of cycleway provision. A shared pedestrian and cycle route is provided from Tadcaster to the A1036 Askham Bar interchange southwest of York and part of this forms a national cycle network route. However, there are no further off-carriageway facilities around the York by-pass. Between York and Malton, there are shared routes running along both verges of the dual carriageway section between Barton and Welburn. Between Malton and Scarborough the route becomes single carriageway, and there are a number of isolated shared routes provided within and between adjacent villages. There are, however, no off-road facilities between Staxton and Scarborough on the north-eastern most section of the route. Gaps in cycling provision and the suitability of cycling schemes to meet user needs have also been identified by stakeholders.

2.6.9 The issues for vulnerable users are not limited to the trunk road. Stakeholders in Greater Manchester highlighted that the M60 causes significant severance issues, especially for vulnerable road users including pedestrians and cyclists. The desirability of some underpasses and footbridges was also questioned and was a particular issue raised within the Stockport area. However, it is likely to be a more widespread an issue throughout the conurbation as well as other built up areas along the route.

2.6.10 On motorways particular problems for vulnerable users tend to occur at the end of slip roads. This affects many of the motorway junctions along the route in both urban built up areas and rural locations.

2.6.11 The M621 junctions 6 and 7 eastbound exit slip crossings were identified as locations where there are a particularly high number of pedestrian and cyclist collisions. These are urban motorway junctions adjacent to developed areas with a high number of collisions where cyclists cross ends of slip roads.

2.6.12 Although the Agency does pursue schemes to improve facilities for vulnerable users through its LNMS programme, the stakeholder

evidence would suggest that these are not always adequately addressing users needs.

2.6.13 The Agency has been working with Sustrans, to identify a prioritised list of one-hundred locations which have the potential to most improve the connectivity, accessibility and safety of cyclists on the strategic road network. At a number of these locations improvement schemes have been identified and are being progressed for construction in 2014. On the South Pennines route these locations include:

- The M62 at Milnrow
- The M62 at junction 19 Middleton
- The M60 junction 1-27 Stockport
- The M57/A506 Kirby
- The A63 between Clive Sullivan Way and Marfleet.

2.6.14 In addition to the above locations we are also progressing cycle feasibility studies at a number of other locations across the route including:

- The A5036 in Merseyside
- The M60 junction 22 at Hollinwood
- The M57 junction 2/A58 Prescott
- The A556 between the M6 and the M56
- The M621 in Leeds
- The A64 through York and North Yorkshire
- Further improvements to the A63 and A1033 through Hull.

2.7 Environment

2.7.1 As a responsible network operator and through the *Strategic road network performance specification 2013-15*, the Highways Agency works to enhance the road user experience whilst minimising the impacts of the strategic road network on local communities and both the natural and built environment.

Air quality

2.7.2 We recognise that vehicles using our road network are a source of air pollution which can have an effect on human health and the environment. We also appreciate that construction activities on our road network can lead to short-term air quality effects which we also need to manage.

2.7.3 The Highways Agency is committed to delivering the most effective solutions to minimise the air quality impacts resulting from traffic using our network. We will operate and develop our network in a way that

works toward compliance with statutory air quality limits as part of our broader Environmental Strategy.

2.7.4 Along the South Pennines route, local authorities have designated the following Air Quality Management Areas (AQMAs):

- M62 between junctions 8 and 12 and junctions 18 and 22
- M60 along its full length
- M66 along its full length
- M61 from the M60 and Chorley CC border (between junction 6 and 8)
- M56 east of junction 11 to 9 and junction 6 to the M60
- M602 along its full length
- A627(M) along its full length
- M67 along its full length
- A5036 from Crosby Road South and Ewart Road Flyalong
- A663 along its full length
- A5103 along its full length
- A556 along its full length
- A56 along its full length
- A57 and A628 through Mottram in Longdendale and Hollingworth
- M62 from Lofthouse and Knottingley;
- A616 around Sandcksbridge and Langsett;
- M621 adjacent and A653 Dewsbury Road overbridge at junction 4
- M18 between A638 Bawtry Road and Warning Tongue Lane, Bessacarr
- A63 Hessle Road and Castle Street (east and River Hull).

2.7.5 The locations on this route where Defra (the Department for Environment, Food and Rural Affairs) has identified exceedences of European air quality limits for annual average levels of nitrogen dioxide include all of those areas above plus the addition of:

- A63 over a length of 0.3km at Hessle, to the east of Priory Way
- A63 over a length of 3.6km covering Brighton Street to Daltry Street
- A63 over a length of 0.8km between the River Hull and Garrison roundabout
- A63 over a length of 2.2km covering Garrison roundabout to Mount Pleasant
- A1033 over a length of 1.6km centred on Marfleet in east Hull

- A1033 over a length of 0.6km between Marfleet and Southcoates roundabout
- A1033 over a length of 0.6km between Somerden roundabout and Salt End roundabout

Cultural heritage

2.7.6 The Highways Agency is committed to respecting the environment across all its activities and to minimising the impact of the trunk road on both the natural and built environment. Wherever possible, balanced against other factors, Agency schemes are designed to avoid impacts on cultural heritage assets.

2.7.7 Along the South Pennines route there are a significant number of Scheduled Ancient Monuments, Registered Parks and Gardens and other sites of cultural heritage value. The majority of these sites do not lie within the boundaries of the network. However, we do recognise that the network can impact on sites that are close by. We also recognise that cultural heritage assets, and visitors to them, make a significant contribution to local and regional economies.

2.7.8 Tatton Park, located just off the A556 in Cheshire, is one of the UK's most complete historic estates. A considerable number of events take place each year that attract a high number of visitors. For all events at the park, special traffic management arrangements have to be introduced to ensure visitors can access the park safely and without needing to turn right from the trunk road.

2.7.9 The A63 in Hull runs through the Old Town Conservation Area and has a number of listed buildings and buildings of historic value adjacent to the strategic road network.

2.7.10 Along the South Pennines route there however some locations where important cultural heritage assets are within the Agency's estate.

2.7.11 The A628, which links Manchester with South Yorkshire via the Pennines, is an historic link across the moors which appears to have changed little since early OS mapping. It has a number designated assets, including:

- The curtilage wall of a listed valve station
- The boundary walls and railings of Bleak House
- Salter's Brook Bridge – a non-listed historic structure
- The western portal of the Woodhead Tunnel.

2.7.12 The A64, from the A1(M) to Scarborough is over 80km in length. It was originally a Roman road. However, the present carriageway does not exactly follow the original line of the Roman road for the majority of its length. For example, the original route passed through the centre of Tadcaster and York, whereas these have now been bypassed. North of Tadcaster, the present carriageway meanders across the course of the older road intermittently. This section of the A64 contains 30 designated

assets (listed buildings and structures). These include the following Grade II listings:

- Scampston Bridge, which dates to around 1775
- The gates, gate piers, railings and flanking walls of the gate lodge to Scampston Hall
- Scampston Park registered park and garden, which extends across Highways Agency land
- Crambeck Bridge, a Grade II listed sandstone structure, which dates to 1785
- Crambeck scheduled monument, which covers an area of buried archaeology alongside and within Highways Agency land. The designation covers Roman pottery kilns and associated features.

Ecology

2.7.13 The Agency's activities, including road construction projects and maintenance schemes, have the potential to impact on protected sites, habitats and species. We aim to minimise the impact of our activities on the surrounding ecology and wherever possible contribute to the creation of coherent and resilient ecological networks by maximising opportunities for protecting, promoting, conserving and enhancing our diverse natural environment.

2.7.14 The key designated nature conservation sites associated with the South Pennines route are as follows:

- The A585 runs close to the southern end of Morecambe Bay Estuary where the River Wyre enters the estuary and provides important habitat for breeding and wintering birds. Morecambe Bay Estuary is a Special Area of Conservation (SAC), wetland of international importance (Ramsar site) and Special Protection Area (SPA). It is also the subject of a Nature Improvement Area project.
- The M53 and M56 motorways also run close to the Mersey Estuary. The Mersey Estuary is designated as a Ramsar site and SPA.
- There are several significant Special Areas of Conservation (SAC) along the western side of the route. The M62 between junctions 11 and 12 passes through the Manchester Moss SAC, the M60 at junction 20 and M62 between junctions 19 and 20 pass through the Rochdale Canal SAC and the A55 and A483 pass through the River Dee and Bala Lake SAC.
- The South Pennine Moors SAC and Site of Special Scientific Interest (SSSI) and the South Pennine Moors Phase 2 SPA straddle the far western section of the M62 between Booth Wood reservoir and junction 22.
- The M62 Ouse Bridge near Howden spans the River Ouse, which marks the western extent of the Humber Estuary Ramsar site, SPA, SSSI and SAC.

- The A628 passes through the Dark Peak SSSI, South Pennine Moors SAC and Peak District Moors (South Pennine Moors Phase 1) SPA between Woodhead Reservoir and just to the west of the interchange with A616 at Flouch roundabout. The A628 also abuts the Dark Peak Nature Improvement Area.
- Hatfield Chase Ditches SSSI crosses the M180 at two locations - between junctions 1 and 2, near Sandtoft (culverted beneath the carriageway).
- Parts of the M62, M18 and M180 run through the Humberhead Levels Nature Improvement Area
- The A63 runs largely parallel to the north of the Humber Estuary Ramsar site, SPA, SSSI and SAC (which covers the breadth of the estuary) from Welton to its completion at Garrison Road in Hull. This designation continues to the south of the A1033 from Garrison Road to Salt End roundabout. To the south of the Humber Bank the A160 also runs close to these designations.
- Melton Bottom Chalk Pit SSSI lies immediately north of the A63 between Welton and Melton.
- The River Derwent has SAC status and passes beneath the A64, between the A169 and B1248, at the eastern end of Malton Bypass.
- Mount Pleasant Quarry SSSI abuts the carriageway to the south of the A64 at the Welburn and Castle Howard exit.

Landscape

2.7.15 Roads and other transport routes have been an integral part of the English landscape for centuries. However, due to large increases in traffic, combined with modern highway requirements, they can be in conflict with their surroundings. We are committed, wherever possible, to minimise the effect of our road network on the landscape.

2.7.16 The key areas of landscape sensitivity along the South Pennines route are as follows:

- The M62 runs through the open moorland of the Pennines between junctions 22 and 23.
- The Peak District National Park to the east of Manchester is situated within the corridor in which the route passes. This national park was the first of 15 national parks to be designated for its spectacular landscapes, cultural heritage and wildlife. The M62 passes very close to the northern edge of the park whilst the A628 passes directly through it from Hollingworth to the A616 Flouch roundabout. The government circular *English National Parks and the Broads: UK government Circular and Vision*, sets out the policy guidance relating to national parks including the approach to major development and road improvements.
- The A64 bisects the Howardian Hills Area of Outstanding Natural Beauty (AONB) between Barton Hill and Malton.

Noise

2.7.17 Traffic noise arising from the Highways Agency's network has been recognised as a major source of noise pollution.

2.7.18 We take practical steps to minimise noise and disturbance arising from the road network. This includes providing appropriate highway designs and making more use of noise reducing technologies.

2.7.19 In 2012, Defra completed the first round of noise mapping and action planning which identified the top one per cent of noisiest locations adjacent to major roads. These were based on the conditions in 2006. The locations in this top one per cent are known as Important Areas.

2.7.20 Almost 300 Important Areas have been identified by Defra along the South Pennines route. Of these, 175 have been considered First Priority Locations.

2.7.21 These locations tend to be concentrated in urban areas, particularly where there are large numbers of houses located close to the network, and along sections of network with HRA surfacing. The primary measure proposed by the Defra action planning to remedy problems of noise is the replacement of the existing HRA surface with low noise TSCS when it requires renewal.

2.7.22 Details of the Defra designated locations on the route and our proposals to address them are available on request.

Water pollution risk

2.7.23 We have a duty not to pollute water courses and ground water. We have identified those highway discharge locations across our network where there is an existing potential water pollution risk.

2.7.24 There are some key water pollution risks along the South Pennines route, most of these are on the M62 - within the Pennines, around Dewsbury, around Normanton, near the M18 interchange and near the A63 interchange.

2.7.25 Other areas of risk include:

- On the southern section of the A585
- M61 between junctions 3 and 8
- A56 near Haslingden
- M53 between junctions 4 and 7
- M56 between junctions 4 and 9
- A55 south of Chester
- M62 between junctions 9 and 11
- M602 near Salford
- A627(M) near Rochdale
- M60 at junctions 8, 14, 26 and 27

- A628 near Langsett.
- A616 between Langsett and Midhopestones and near Finkle Street.
- M18 around the interchange with the M1, near Thurcroft, near Hellaby and at the interchange with the M62.
- M180 around junction 1, near Thorne and near Sandtoft.
- A180 near Healing.
- A63 near Welton and at the far end, near Hedon.
- A64 near York, and a number of sites between Cranbeck and Sherburn.

3 Future considerations

3.1 Overview

3.1.1 There is already a lot known about the planned changes to and around the route. Local authorities and the development community are already pushing forward the delivery of their housing and economic growth aspirations, as set out in their local plans. The Highways Agency has a large programme of schemes it has to deliver, plus an even larger programme of pipeline measures that could come forward after the general election. Local authorities, together with port and airport operators, are progressing measures to improve the operation and performance of their transport networks and facilities.

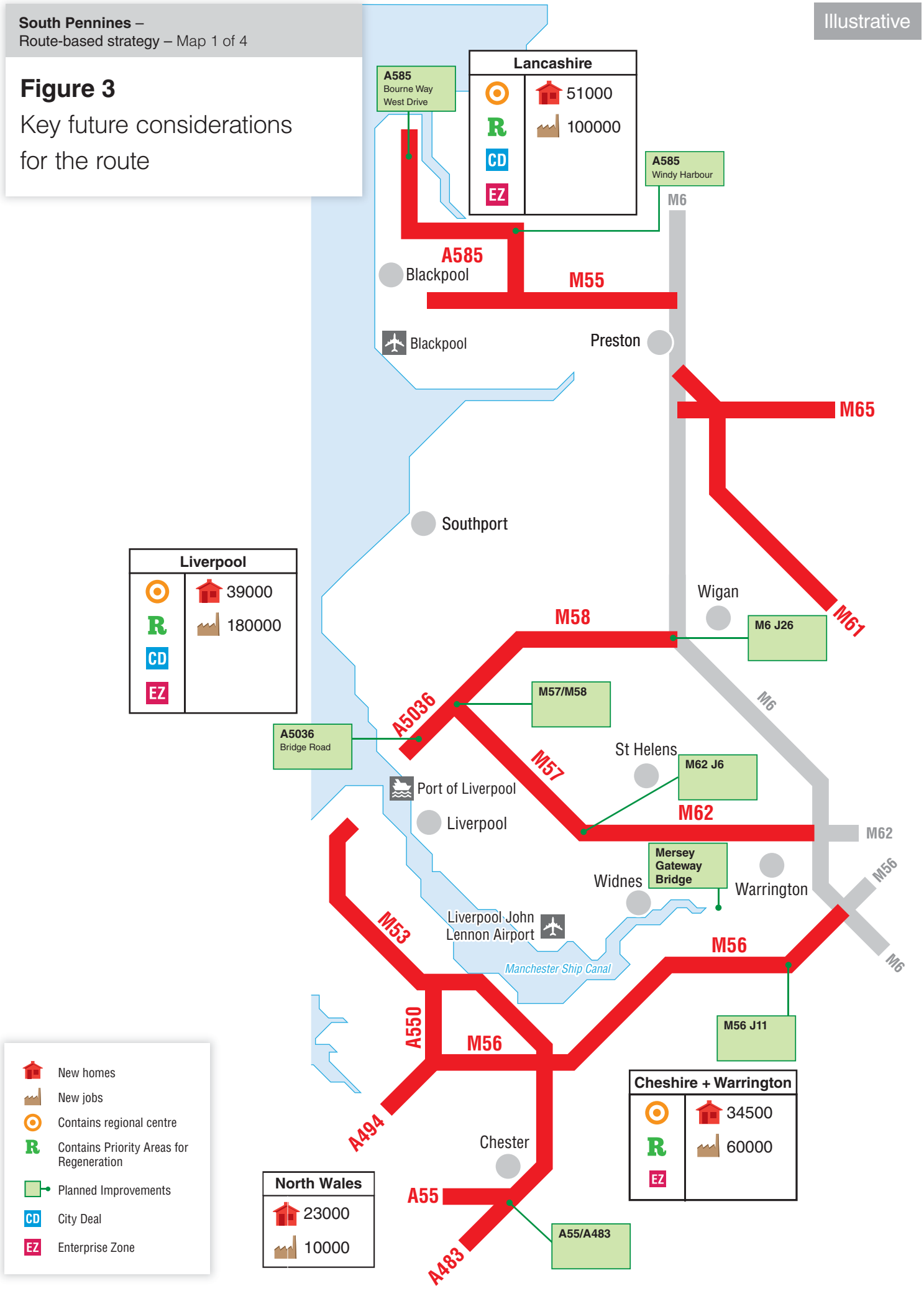
3.1.2 All of these issues have the potential to directly influence the ongoing performance and operation of the route. Figure 3 summarises the anticipated key future issues in the period up to 2021 and the following sections summarise those issues in more detail.

South Pennines –
Route-based strategy – Map 1 of 4

Illustrative

Figure 3

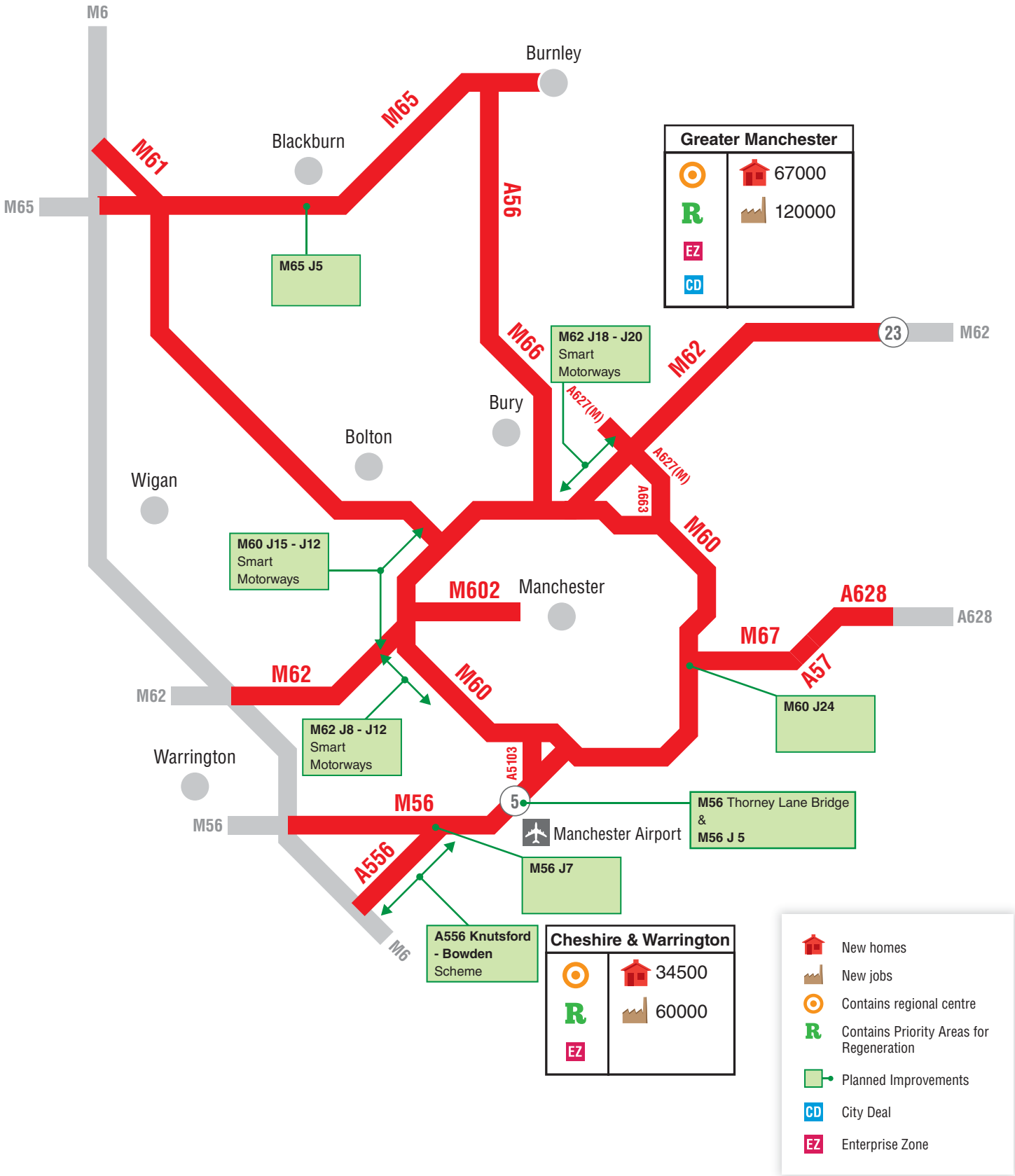
Key future considerations for the route



Illustrative

Figure 3

Key future considerations for the route



Illustrative

Figure 3

Key future considerations for the route

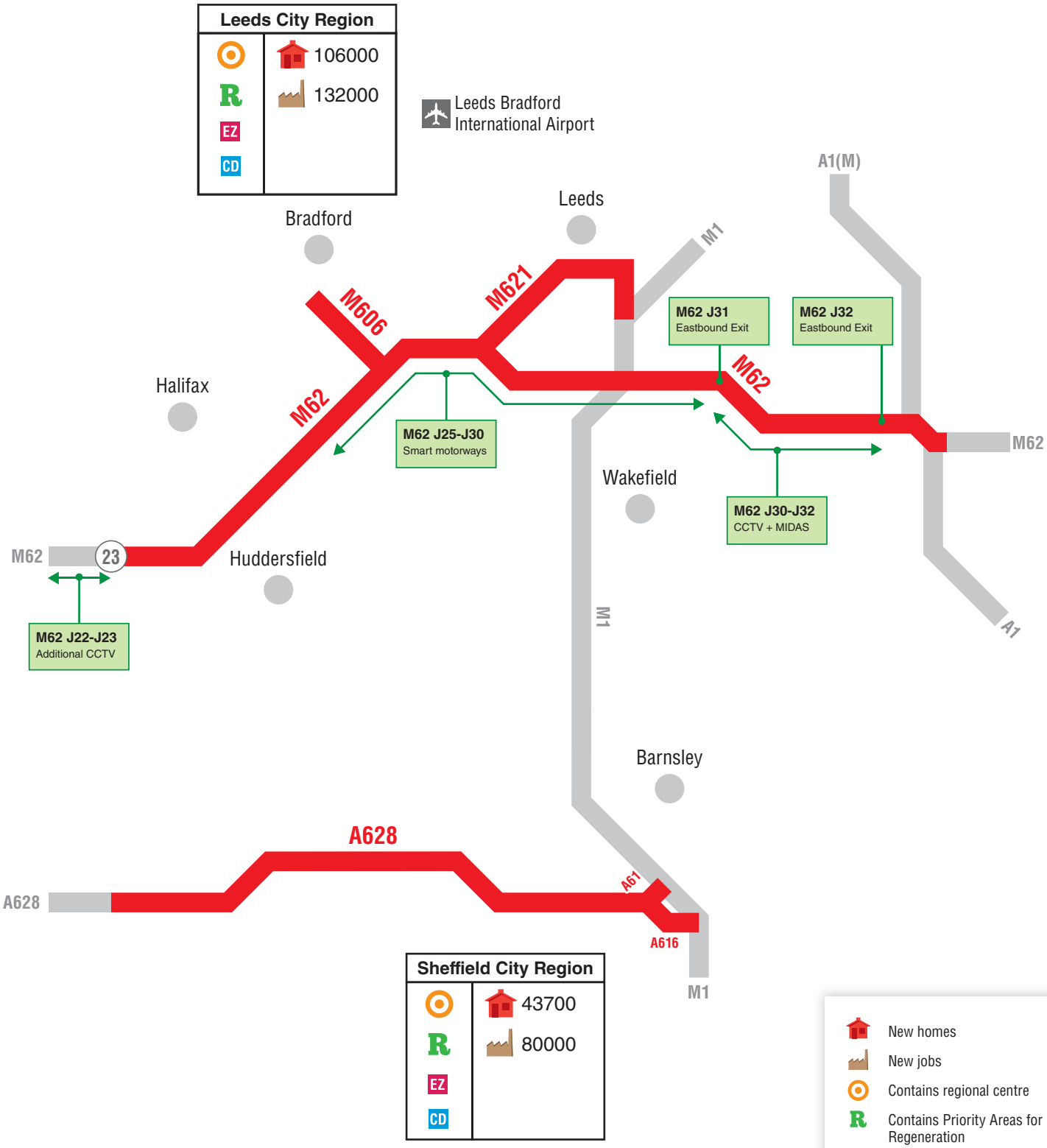


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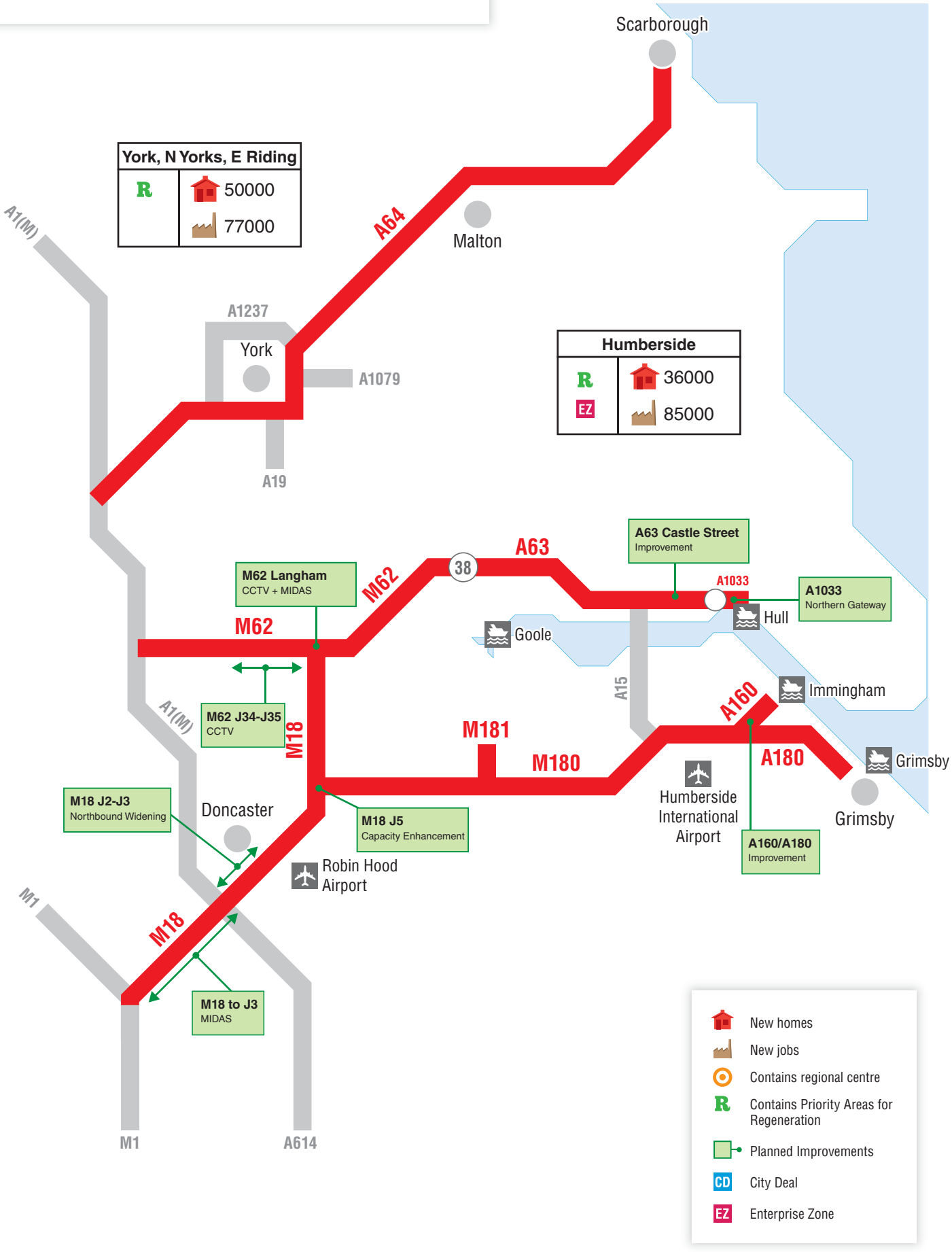
Figure 3

Key future considerations for the route



3.2 Economic development and surrounding environment

3.2.1 A key aspect of managing the route effectively will be ensuring that it is capable of supporting future local housing and economic growth aspirations. This will involve preparing the route through effective management and public investment to be in the best possible position to cater for the planned demands placed upon it, whilst ensuring that the developments themselves effectively mitigate their local impacts.

3.2.2 Figure 3 summarises the known key housing and economic growth aspirations that would impact on the route, with Table 3.1 below providing more context about some of those key developments the nature, scale and timing of the proposals.

3.2.3 There are significant numbers of development proposals along the route that are likely to impact upon it. These cannot all be shown here, but Table 3.1 below and Figure 3 give an indication of the approximate scale and type of development along the route, along with the location of likely impacts.

Table 3.1 Key housing and economic growth proposals

Location of Development	Development Type	Anticipated growth			Anticipated Location of Impact on Route
		2011-2015	To 2021	To 2031	
Deeside Enterprise Zone	Commercial Residential	300 homes 2,500 jobs	500 homes 4,500 Jobs	500 homes	A494, A550, M53, M56
Chester City Growth	Commercial Residential		6,000 jobs 5,200 homes	5,200 homes	A55, M56, A550, A494, M53
Ellesmere Port Employment Zone	Commercial		3000 jobs		M53
Daresbury Sci/Tech Enterprise Zone	Commercial		10,000 jobs		M56 J11
Mersey Waters Enterprise Zone	Residential Commercial		10,000 homes 20,000 jobs	22,000 homes 35,000 jobs	M53
Port of Liverpool Expansion (including Port Centric Developments)	Commercial	700 jobs	5,000 jobs		A5036, M57, M58
Warrington Development Sites, including Omega & Parkside	Residential Commercial	1,100 homes	4,000 homes 16,500 jobs	5,000 homes 21,000 jobs	M62 J8 – J11.
Manchester Airport & Airport City Enterprise Zone	Commercial		7,000 jobs	11,500 jobs	M56 J5 & J6

Location of Development	Development Type	Anticipated growth			Anticipated Location of Impact on Route
		2011-2015	To 2021	To 2031	
Manchester Regional Centre	Commercial Residential	11,000 homes	15,000 jobs 29,500 homes	50,000 jobs 55,000 homes	M60, M602, M62, A663, M56
Port Salford	Commercial		3,800 jobs		M60 J10, M60 J11, M62 J12, M60 J9-13
Salford Quays (including Media City)	Commercial		7,000 jobs	15,500 jobs	M602, M60 J10 - 12, M62
Heywood Distribution Park Special Planning Zone, Rochdale	Commercial Residential		3,000 jobs 400 homes		M62 J19
Burnley Pendle Growth Corridor	Commercial		5,000 jobs		
Cuerden Strategic Employment Site	Commercial		2,000 jobs		M65 J0
Preston City Centre	Commercial		6,000 jobs	8,000 jobs	M65 J0, J1 & J2, M61 J9 & J10, M55 J1
Lancashire Enterprise Zone (Warton & Samlesbury)	Commercial Residential		6,000 jobs 1150 Homes		Warton – M55 J1 & J3 (New J2 proposed which will serve this area), Samlesbury – M65
North Preston Area housing	Residential		4,000 homes	6,000 homes	M55 J1 (New junction 2 proposed which will serve this area)
Whyndyke Farm	Residential		1,000 homes	1,500 homes	M55 J4
SE Bradford inc. Holmewood	Residential	900 homes	2,700 homes	5,800 homes	M606
Chidswell, Kirklees	Commercial Residential		4,500 jobs 180 homes	12,300 jobs 500 homes	M62 J28
Cooper Bridge, Kirklees	Commercial		4,500 jobs	14,500 jobs	M62 J25
Leeds City Centre	Residential B1	1,100 homes 6,100 jobs	4,400 homes 24,500 jobs	10,200 homes 57,500 jobs	M621
Castleford Riverside & Prince of Wales	Residential B1b/c B2 B8	410 homes	3,500 homes 3,500 jobs 400 jobs 200 jobs	3,900 homes 7,000 jobs 900 jobs 500 jobs	M62 J32
Knottingley	B8	500 jobs	2,500 jobs	5,500 jobs	M62 J33

Location of Development	Development Type	Anticipated growth			Anticipated Location of Impact on Route
		2011-2015	To 2021	To 2031	
Rossington Inland Port	B8		1700 jobs	2660 jobs	M18 J3
Robin Hood Airport	Commercial	7,400 jobs	8,500 jobs	10,200 jobs	M18 J3
Europarc, NE Lincs	Commercial	600 jobs	1,700 jobs	3,500 jobs	A180
Lincolnshire Lakes	Residential Mainly B1		3,000 homes 12,300 jobs	6,000 homes 25,000 jobs	M181
South Humber Bank	B1, B2, B8	2,500 jobs	16,000 jobs	48,000 jobs	A160/A180/M180
North Killingholme Airfield	Mainly B8	600 jobs	2,500 jobs	7,000 jobs	A160/A180/M180
Sandtoft Business Park	Mainly B8	300 jobs	1000 jobs	4000 jobs	M180
Malton town	Residential Commercial	100 homes	600 homes	1,500 homes 10,500 jobs	A64
Scarborough Business Park	Commercial	2,500 jobs	9,800 jobs	19,500 jobs	A64
Monks Cross North	Residential B1	 400 jobs	500 homes 3,500 jobs	1,500 homes 8,800 jobs	A64
Whinthorpe, York	Residential		1,900 homes	5,600 homes	A64
Humber EZ and Hedon Haven including Green Port, Paull & BAE Brough	Employment	1100 jobs	4000 jobs	8,600 jobs	A1033/A63
Humber Bridgehead	B1	400 jobs	1,700 jobs	3,558 jobs	A63
Melton	B2/B8	500 jobs	2,000 jobs	4,500 jobs	A63
Capitol Park, Goole	B2/B8	700 jobs	1,700 jobs	4,300 jobs	M62 J36

3.2.4 In addition to the key housing and employment sites presented in the above table, the technical annex provides the development aspirations of each local authority. The cumulative impact of their aspirations is expected to have a significant effect on an already congested network, especially around the urban areas of Liverpool, Greater Manchester, West Yorkshire, York, Doncaster, Hull and the links to the ports.

3.2.5 There are six areas along the route with approval for City Deals:

- Liverpool City Region
- Greater Manchester
- Leeds City Region
- Sheffield City Region

- Preston & Lancashire
- Hull and Humber.

3.2.6 There are a number of Enterprise Zones that are relevant to the South Pennines route:

- Lancashire (Warton & Samlesbury) (M55 & M65)
- Mersey Waters (M53/A5036)
- Daresbury Sci/Tech (M56)
- Manchester Airport City (M56)
- The Humber (A63, A1033 and A160).

3.2.7 The route also serves a number of ports and airports. The plans for growth of these facilities are set out in section 3.4.

3.3 Network improvements and operational changes

3.3.1 The Agency is already delivering a large capital programme of enhancement schemes nationally. This includes Major Schemes greater than £10m in value, plus smaller enhancement schemes including the current Pinch Point Programme.

3.3.2 Table 3.2 below summarises the current committed enhancement schemes proposed along the route, which have also been represented on Figure 3.

Table 3.2 Committed strategic road network enhancement schemes

Location	Scheme Type	Completion Year	Anticipated Benefits
A556 Knutsford to Bowdon	Major Scheme (committed subject to Development Consent Order Approval)	2017	Improved journey time reliability, accident reduction and improved connectivity for the Greater Manchester City Region to the midlands and south of England.
M60 J8-12	Smart Motorways	2017	Congestion reduction and improved journey time reliability to support growth along the route and throughout the north of England.
M60 J15-12	Controlled motorways	2017	Congestion reduction and improved journey time reliability to support growth along the route and throughout the north of England.
M62 J18-20	Smart Motorways	2017	Congestion reduction and improved journey time reliability to support growth along the route and throughout the north of England.
M62 J25-30	Smart Motorways	2013	Congestion reduction and improved journey time reliability to support growth along the route and throughout the north of England.

Location	Scheme Type	Completion Year	Anticipated Benefits
A160/A180 Immingham	Major Scheme	2016/17	Improved access to the Port of Immingham and the surrounding area.
M60 J24 Denton	Pinch Point Scheme	2015	Congestion reduction and improved journey time reliability to support growth in south and east of the Greater Manchester conurbation.
A5036 / Bridge Road, Sefton	Pinch Point Scheme	2015	Congestion reduction and improved journey time reliability on this important access route to the Port of Liverpool.
A55 / A483 Chester	Pinch Point Scheme	2015	Congestion reduction and improved journey time reliability around this key node to support growth in Cheshire and North Wales and improve environmental impacts locally.
A585 Windy Harbour	Pinch Point Scheme	2015	Congestion reduction and improved journey time reliability on this important access route to the major growth areas on the Fylde Peninsula.
M6 J32 & M55 J1	Pinch Point Scheme	2015	Capacity improvement scheme to relieve congestion on the M6 and M55 motorway and support the strategic development of the North Preston area, including the Enterprise Zone at Wharton.
M56 J11	Pinch Point Scheme	2015	Capacity improvement scheme to improve access to the major development area at Daresbury.
M56 J7	Pinch Point Scheme	2015	Eastbound merge enhancements to reduce congestion and improve journey time reliability to support growth in the Greater Manchester City Region.
M6 J26	Pinch Point Scheme	2015	Congestion reduction and improved journey time reliability on this important access route to the M6 from the Port of Liverpool, supporting growth throughout north west England and development aspirations in West Lancashire.
M56 Thorley Lane Bridge	Pinch Point Scheme	2015	Bridge replacement scheme to ensure continued and better access to Manchester Airport and the Manchester Airport Enterprise Zone. Provision for Metrolink also included to further support growth at the airport and in the surrounding area.
M65 J5	Pinch Point Scheme	2015	Congestion reduction scheme to improve access and support growth in Blackburn and the East Lancashire area.
A585 Bourne Way to West Drive	Pinch Point Scheme	2015	Congestion reduction and improved journey time reliability on this important access route to the major growth areas on the Fylde Peninsula.

Location	Scheme Type	Completion Year	Anticipated Benefits
M62 J19 Roundabout & Slip Road Improvements	Pinch Point Scheme	TBC	Improvements to the roundabout at M62 J19 and its connecting slip roads to provide better access to Heywood Distribution Park and reduce congestion and improve journey time reliability on the M62 and M66 as a result.
M55 J2	Pinch Point Scheme	TBC	New junction to provide better access to Lancashire Enterprise Zone at Warton and improve access to the Preston area. In doing so, providing a reduction in congestion on the M55 and M6 motorways and improving journey time reliability.
A1033	Pinch Point Scheme	2013	Capacity and safety enhancements.
M18 J2-3	Pinch Point Scheme	2015	Capacity enhancements and improved access to FARRRS and Robin Hood Airport.
M62 J32	Pinch Point Scheme	2014	Capacity and safety enhancements.
M62 J31	Pinch Point Scheme	2014	Capacity and safety enhancements.
M18 J5	Pinch Point Scheme	2015	Capacity and safety enhancements.
M57/M58 **M62 J6** **A55/A483** **M53/M56** **M56 J11** **M56 J5** **M18 J0-3** **M62 J30-32** **M62 Langham** **M62 J34-35** **M62 J22-23**	Technology Improvements. Pinch Point Schemes.	2015	The schemes include a variety of technology improvements including provision of CCTV, variable message signs and installation of detection equipment. These schemes will help with the reliability of the network.

3.3.3 In addition to the programme of improvement schemes above, there are also plans to de-trunk part of the M181 from a point north of B1450 to it's current terminal with A18. The proposal involves the provision of a new terminal junction at the point where the de-trunking will start, with the section between here and the M180 likely to be reclassified as all purpose trunk road. The de-trunking will support the proposals for the development of approximately 6,000 houses and 70 ha of employment land at Lincolnshire Lakes near Scunthorpe. Plans for the de-trunking will be submitted to the Secretary of State for Transport in Spring 2014.

3.3.4 The 2013 Spending Review and subsequent report from HM Treasury Investing in Britain's Future referenced a series of potential new pipeline schemes for the strategic road network. Table 3.3 below provides a

summary of the pipeline improvement schemes that would impact this route, subject to value for money and deliverability.

3.3.5 *Investing in Britain's Future* set out how more than £2 billion per year of funding from across transport, skills and housing budgets will be included in a Single Local Growth Fund to support investment in economic priorities and stimulate growth, with funding allocated to LEPs. In addition, the government is bringing together European Union Structural and Investment funds for 2014 to 2020, with money allocated to LEPs across England. LEPs will be able to use these funds to promote schemes on or affecting the strategic road network where it addresses their strategic priorities.

Table 3.3 Declared pipeline schemes

Location	Scheme Description
M60 J24-27 & J1-4	Smart Motorways
M62 J10-12	Smart Motorways
M56 J6-8	Smart Motorways
A63 Castle Street	Castle Street is the section of the A63 in the centre of Hull, adjacent to the port. The scheme would improve access to the port, relieve congestion and improve links to developments.

3.3.6 *Investing in Britain's Future* also promoted undertaking a number of feasibility studies that the government will undertake to inform potential future investment in highway improvements. The Trans-Pennine route which forms part of the South Pennines RBS has been identified as a feasibility study location.

3.3.7 This location has notorious and long-standing issues and does not need to await conclusion of these evidence reports. The feasibility study will in effect expedite elements of the stage 2 phase of the RBS through the early investigation of specific interventions on these sections of the route. At stage 2, any results available from the feasibility study work will be considered in the context of the emerging strategy recommendations for the entire route, including maintenance, operations and any other enhancements deemed needed along the route, together with the timing of those needs.

3.4 Wider transport networks

3.4.1 *Investing in Britain's Future* also listed the local transport schemes either completed, under construction or due to start before May 2015. Table 3.4 below lists the schemes from that report that will influence the ongoing operation of this route, plus any other funded local network commitments that will be delivered before 2021.

Table 3.4 Committed local transport network enhancement schemes

Project	Scheme Type	Completion Year	Anticipated Impacts on the Route
Rochdale Interchange	Public Transport	2014	Limited direct impact. The interchange will replace the poor quality bus station.
Daresbury Enterprise Zone / East Runcorn Access Improvements	Road - Local Pinch Point Scheme	2014	Limited direct impact. Impact will mainly come from the growth at the enterprise zone as opposed to these schemes.
Cutacre Logistics Site Access Improvements, Bolton	Road - Local Pinch Point Scheme	2014	Improvements should help mitigate some of the transport impacts associated with the Cutacre development at M61 J4.
A5758 Broom's Cross Road, Sefton (Thornton – Switch Island link)	Road	2015	Improvements should provide some relief to the A5036/A5207 Copy Lane junction. The scheme also impacts on The M57/M58 terminal roundabout at Switch Island.
A5300/A562 Improvements, Knowsley	Road - Local Pinch Point Scheme	2015	No direct impact. However, may lead to an increase in arrival rate of vehicles at M62 J6.
A57 Hyde Road Widening, Manchester	Road - Local Pinch Point Scheme	2015	Reducing the queue on this section of the local road network should help egress for Manchester bound traffic from M60 J24 roundabout.
A6077 Haslingden Growth Corridor	Road - Local Pinch Point Scheme	2014	Will improve exit on to the local road network from M65 J5 and, as such, will reduce congestion at and approaching that junction.
A6 – Manchester Airport Relief Road	Road	2017/18	Limited direct impact, although may lead to an increase in traffic using M56 J5.
Broughton Bypass, Preston	Road	2017	Likely to improve operation of M55 J1.
Preston City Deal Transport Improvements – includes new J2 onto M55 and a new distributor road to the west of Preston	Road/Public Transport	2019-2021	Likely to have a positive impact on M55 at J1 and on the approaches to the M55 from the M6.
Central Lancashire Highways & Transport Masterplan	Road/Public Transport	2021	Likely to have positive impact on M6, M65, M55
Fylde Coast Highways & Transport Masterplan	Road/Public Transport		Likely to have positive impact on M55
A57 – Western Gateway Infrastructure Schemes, Salford/Trafford	Road	2014 - 2021	Developer promoted improvement schemes around Port Salford and Trafford Quays. Likely to positively impact on M60 J10 and 11.
Mersey Gateway Bridge (PFI)	Road	2016/17	Will relieve the congested and ageing Silver Jubilee Bridge at Halton and will provide an additional crossing of the River Mersey and Manchester Ship Canal. In doing so it should offer some relief to both the M6 and M53 but may adversely impact on the M56 at J12 and on the links between J11-12 and J12-14.

Project	Scheme Type	Completion Year	Anticipated Impacts on the Route
Northern Hub Rail Improvements	Rail	2019	Limited direct impact although the increase in capacity on the rail network generated by this proposal should improve the attractiveness of rail use within the Greater Manchester conurbation. This, in turn, may contribute to a reduction in traffic growth over the RBS period.
Pennine Reach (Blackburn)	Public Transport	2016/17	Reduced congestion on the road network, reduced bus journey times and reliability, improved public transport provision to key strategic employment sites and regeneration of Pennine Lancashire's towns. Scheme may have slight benefits to the operation of M65.
Ainley Top signalisation	Road	2014	Will alleviate impacts of proposed development on M62 J24.
Access York Phase 1	Public Transport	2014/15	Unknown - discussions ongoing with local authority regarding increased park and ride availability and patronage.
Leeds Inner Ring Road maintenance	Road Maintenance	2014/15	Potential disruption during works. Limited direct impact following completion.
Leeds Station Southern Access	Public Transport	2014/15	Limited direct impact, although the improved access to the rail station may improve the attractiveness of rail use for developments in South Leeds.
A614 Airmyn Road roundabout scheme, near Goole	Road - Local Pinch Point Scheme	2015	Limited direct impact at M62 J36.
A19 corridor improvement	Road - Local Pinch Point Scheme	2015	Unknown - discussions ongoing with local authority regarding bus and pedestrian improvements.
Leeds rail growth and electrification of the trans Pennine rail connection	Public Transport	2015/16	Likely to have a positive impact on the M62 corridor. The increase in capacity and reduced journey times should improve the attractiveness of rail use between Leeds and Manchester.
Leeds New Generation Transport	Public Transport	2019/20	Unknown - discussions ongoing with local authority regarding the park ride site at Stourton.
Finningley & Rossington Regeneration Route Scheme	Road	2016	The FARRRS project will provide a new highway from the M18 at junction 3 to Robin Hood airport, with links into Rossington village and the Inland Port development

3.4.2 In addition to the committed schemes there are a number of local transport schemes, which do not currently have funding secured, but are a priority for delivery by the districts. Each scheme has been prioritised in the City Deal, with the initial package of schemes to be delivered from

2015 to 2020. The schemes that will have an impact on the South Pennines route include:

- M62 junction 19 – A new Link Road to Heywood Distribution Park and improvements to the motorway junction roundabout. This is Transport for Greater Manchester's highest priority road scheme. Whilst the new link road to the distribution park is still awaiting funding, funding has been approved for the works on the roundabout at junction 19 and the connecting motorway slip roads.
- M62 junction 24a – a new junction on the M62. The Agency is working with the city region to identify and understand the potential benefits of this scheme.
- A650 Tong Street – works on Tong Street, including a new link to Bowling Back Lane. It is anticipated that this will increase the capacity of the local road alternative to the M62.
- DN7 (Hatfield Link) – provision of a new 2km highway from M18 junction 5 to serve the DN7 major development at Hatfield.
- West Moor Link, Doncaster – the package of measures includes dualling of the A630 West Moor Link between M18 junction 4 and the A18 Thorne Road.
- Gateway to Sheffield City Region (formerly known as the Finningley and Rossington Regeneration Route Scheme or FARRRS) – multi-mode access to Robin Hood Airport comprising an additional 2km road link between the A638 and Robin Hood Airport and a new rail station.

3.4.3 The Mersey Gateway Bridge is a key new element of transport infrastructure that provides an additional crossing of the River Mersey and Manchester Ship Canal near Runcorn. This crossing, whilst promoted as a local scheme, provides an additional strategic crossing of these two waterways. In doing so, relief and additional resilience to the existing strategic crossing on the M6 at Thelwall is achieved. This new crossing also significantly enhances the economic vitality of the Cheshire, Merseyside and South Lancashire regions. It is though anticipated to have a significant impact on the M56 motorway, particularly around junction 12 and on the motorway links approaching that junction.

3.4.4 The ports and airports that the route serves also have plans for further growth. The plans for the ports are as follows:

- Liverpool City Region has developed a SuperPORT concept that focuses on creating a freight and logistic hub for the whole city region. This concept includes the expansion of the Port of Liverpool, including its new deep water container berth and associated facilities. In addition, the concept includes major development projects such as Wirral Waters, 3MG, Mersey Gateway, Knowsley Industrial Park and John Lennon Airport. The port itself currently handles some 33m tonnes of freight per year.

This project is likely to significantly increase that tonnage and will have a significant impact on the A5036, and its junction with the M57/M58 motorways at Switch Island, the M53, M56, M57 and M62.

- Port Salford, located just off the M60 at junction 11, is currently under development and already has planning consent. Significant infrastructure improvements are required to help bring this proposal to fruition, particularly as the surrounding area is likely to be subject to further development in the future.
- The Port of Fleetwood is located at the end of the A585. The port has recently lost its roll-on, roll-off ferry operations. However, proposals to continue the use of the port are being developed. These include installation, operation and maintenance activities for the large offshore wind and energy projects planned for the Irish Sea. A fishing fleet also still operates from Fleetwood.
- The Port of Grimsby and Immingham is the busiest port area in the country, handling over 60 million tonnes of freight per year. The South Humber Gateway refineries provide 27% of the UK's needs and there are significant plans for the South Humber Gateway including the Port. Able UK's Marine Energy Park has been granted a Development Consent Order and includes a 1.5 mile quay with improvements to the road and rail network, particularly for freight.
- Hull is the UK’s ninth-busiest busiest container ports handling 132,000 containers in 2012. It also has two P&O passenger terminals which provide daily services to Rotterdam and Zeebruggee. The port has significant plans for expansion, and Siemens has announced plans in March 2013 to invest £160m in wind turbine production at Alexandra Dock. The Humber Enterprise Zone also covers parts of the port and in total covers over 400ha of land for development.
- The Port of Goole is located on the River Ouse and handles around 2 million tonnes of freight per year. The port is located close to the expanding Capitol Park distribution centre.

3.4.5 The plans for the airports are as follows:

- Liverpool John Lennon Airport handles almost 4.5m passengers per year and is forecast to grow to 12.3m by 2030. Growth of this scale would be likely to impact on Junction 6 of the M62.
- Blackpool International Airport handles 235,000 passengers per year and is forecasting growth to 3.3m. This level of growth would be expected to impact on Junction 4 of the M55.
- Manchester Airport is located off junction 5 of the M56 and is the third busiest UK passenger airport after Heathrow and Gatwick. It handles almost 20 million passengers and almost 100,000 tonnes of freight per year. Further growth of the airport in terms of

passenger numbers and freight is expected throughout the life of this RBS and beyond.

- Leeds Bradford Airport handles almost 3 million passengers per year and is forecast to continue to grow to 8 million per year by 2030.
- Robin Hood Airport Doncaster Sheffield handles almost 700,000 passengers and is forecast to increase to nearly 7 million per year by 2030. The Finningley and Rossington Regeneration Route Scheme (FARRRS) will provide a new link between junction 3 of the M18 and the airport and will also open up significant development opportunities.
- Humberside Airport handles over 200,000 passengers per year. As with the other airports, Humberside has plans to grow passenger numbers to 3 million a year by 2020.

4 Key challenges and opportunities

4.1 Introduction

4.1.1 It is not possible to show all the challenges and opportunities identified in this evidence report. This chapter shows a selection based on those where our internal and external stakeholders viewed these as a priority and these are supported by evidence. A full list of all the identified challenges and opportunities are provided in the Technical Annex.

4.1.2 Figure 4 summarises some of the key issues and challenges that the route will experience during the period from 2015, with the following sections and Table 4.1 explaining these issues and challenges in more detail.

Timescales

4.1.3 To understand the timescales of when the key challenges identified become critical and when opportunities on the route could be realised, the following definitions have been made Table 4.1:

- **Short term:** current
- **Medium term:** before March 2021
- **Long term:** not before 2021

4.1.4 These timescale categories provide a guide for informing when a future intervention may be required to meet anticipated future operational performance needs, or when interventions may be needed to help facilitate local housing and economic growth aspirations.

4.1.5 Many of the issues and opportunities identified in table 4.1 are already critical and have been identified as existing problems both through our own evidence and by stakeholders. Other identified issues, especially those relating to growth, are dependent to some extent on the rate of development build out.

4.1.6 Interventions to address the issues identified will need time for feasibility assessment and design and therefore, even those issues identified as becoming critical after 2021, may need consideration during the RBS period

Stakeholder Priorities

4.1.7 Input from stakeholder and road user groups linked to the route has been used to inform the development of this evidence report. This included getting their views on what they deemed to be the priorities within their area and identifying their “top priorities” locally. This has been collated according to the route to which those views related.

4.1.8 Table 4.1 presents a summary of whether the challenges and opportunities identified were a priority for our stakeholders in their particular area. This exercise does not seek to prioritise the challenges

and opportunities along the length of the route by trying to compare one issue against another, but reports the feedback from local discussions.

4.1.9 This picture of stakeholder priorities is subjective and has been informed by discussions regarding the top priorities locally which took place at the stakeholder events, and in conversations with stakeholders who couldn't attend the events.

4.1.10 We recognise that the picture we build through this categorisation will be influenced by the representatives and organisations we have engaged with, and that consequently we may not have achieved a statistically balanced view and certain priorities may not have been identified as a "top priority". We will be conscious of the limitations of the reporting of stakeholder priorities as we move into the second stage of RBS.

4.1.11 Where stakeholders did not attend the workshop sessions, views were sought through a variety of other existing forums and meetings. Feedback from these stakeholders was therefore also incorporated into Table 4.1.

4.1.12 We noticed from the engagement process that stakeholders tended to focus on issues such as supporting growth, providing capacity and network operation. Other categories, such as asset condition, were generally not raised by stakeholders, possibly because the condition of our asset (and potential implications of this) is less well understood by stakeholders. As a result, the final prioritisation categories reflect a combination of stakeholder feeling and also our internal knowledge and priorities.

4.1.13 The following themes were identified as the most significant issues for stakeholders:

- Supporting economic growth on an already congested network
- Provision for vulnerable users
- The effect of incidents on both the strategic and local road networks.

4.1.14 The sections below summarise the key issues and opportunities raised through our evidence and the stakeholder engagement process.

4.2 Operational challenges and opportunities

4.2.1 As well as providing east to west connectivity, the South Pennines route passes through or close to a number of urban areas, and stakeholders considered there to be conflicts between the purposes of the route serving both long distance traffic and shorter commuter trips. The sections where this is particularly evident include the M60, the A663 Broadway, the M602, the M56 (from junction 6 to the M60), the M62 (between junctions 18 and 21 and 24 through to 32), the A64 (around York), the A63 (through Hull) and the A180 (on the approach to Grimsby).

4.2.2 There are a number of freight generators near the South Pennines route including ports, logistics and warehousing developments. These provide a number of opportunities for economic growth but are likely to present challenges, such as safety and congestion. The freight industry plays a significant part in the economic vitality of the regions through which the route passes and it is key that journey times are as reliable as possible.

4.2.3 The existence of slow moving agricultural vehicles on parts of the route was highlighted by stakeholders, with particular reference made to the A64. The A64 serves a number of rural communities and on occasions agricultural vehicles can cause slower journey times especially along the single carriageway sections.

4.2.4 The lack of suitable alternative links across the Pennines was highlighted by stakeholders as an operational issue. This issue is exacerbated by the high risks of disruption on the existing links during severe weather and as a result of the steep gradients. A feasibility study is underway the Trans-Pennine link between Manchester and Sheffield, which will consider potential improvement options.

4.2.5 When incidents do occur there are often delays on the strategic and local road network. Whilst the Traffic Officer Service can assist with incident management, not all of the route benefits from full coverage. This, combined with issues relating to emergency diversion routes, can extend the duration and impact of incidents. There is an opportunity for us to improve our response to these incidents.

4.2.6 Stakeholders supported this aim, commenting on the need for closer working between the local authorities and the Highways Agency. This relates to not only emergency incidents but also to routine traffic management, including planned works. This aim could be supported through improved technology provision – another opportunity raised by stakeholders. Key locations which could benefit from improved technology include west of the M6, to the north of the M62/M60, to the south of the M62 and to the east of the A1.

4.2.7 As highlighted above, there is an opportunity to better manage planned works. During the RBS period the South Pennines route will be subject to a number of improvement schemes which will inevitably lead to some disruption to normal operation. The duration and extent of these schemes and associated traffic management will need to be managed.

4.2.8 It should also be recognised that there are local authority controlled sections of motorways that connect directly on to the mainline motorways of this route. These include the M62 between junctions 1 and 6 and the M65 between junctions 10 and 14. Motorists do not usually differentiate between the two operators and therefore close working relationships and liaison is critical in these areas.

4.2.9 A final challenge not raised by stakeholders but which may affect the route is the introduction of Smart Motorways on some sections. This will affect not only how we respond to incidents but is also likely to change how we maintain the route.

4.3 Asset condition challenges and opportunities

4.3.1 Pavement condition is a key challenge for the route. Significant lengths of the network are likely to need resurfacing during the RBS period. This will have the added benefit of providing an opportunity to address some of the Defra Important Areas by providing low noise TSCS surfacing.

4.3.2 The condition of our pavement asset has not gone unnoticed by stakeholders. A number of concerns have been raised about the standard of maintenance on some sections of the route. The condition of footways, cycleways and the soft estate along the trunk road sections in particular, has also been raised as a pertinent issue.

4.3.3 We have identified the need to renew road markings, including reflective studs, across the route. This was raised by stakeholders at particular locations.

4.3.4 Some sections of the route have recently been improved to include concrete central safety barrier. There is an opportunity to extend the provision of concrete central safety barriers, which would help to improve network resilience by reducing the severity and impact of incidents.

4.3.5 The route has ageing structures with a number suffering from deterioration. These require concrete repairs, bearing replacement, waterproofing and, in the case of half joint failure, total structure replacement. This will present technical challenges, cost implications and potentially disruptive traffic management.

4.3.6 The stakeholder engagement made particular reference to the condition of the structures at M62 junction 29 Lofthouse Interchange, which is backed up by evidence held by the Agency. The condition of this asset is considered poor and the capacity of the interchange to cater for future traffic growth has also been identified as an issue. Lofthouse Interchange is a critical part of the strategic road network as the interchange between the M1 and M62 motorways.

4.3.7 Another feature of our structures is their ability to accommodate abnormal loads. A particular opportunity exists to strengthen a number of structures along the M62 to allow the passage of abnormal loads, thus avoiding the need for lengthy diversions.

4.3.8 Landslips are a localised but potentially very disruptive challenge for the route. The A56 at Woodcliffe and the A628 have both suffered from landslips, and continue to present an ongoing geotechnical risk. A further ongoing safety risk, caused by geotechnical issues and requiring annual intervention, is between junction 11 and 12 of the M62 where the uneven road surface increases the risk of loss of control type collisions.

4.3.9 Although not identified by stakeholders as a priority, intervention is likely to be needed to both the lighting and drainage assets along the route. These include renewal of lighting on busy sections of the route, such as the M621 and M62. Other parts of the route have been identified for possible lighting switch off, including the M67, the A627(M) and the M602. These are in addition to those areas where lighting has already been switched off. Interventions to the drainage systems on the A64 and the A628 are also likely to be required. It should be noted that the drainage asset along significant sections of the route is ageing.

4.4 Capacity challenges and opportunities

4.4.1 As highlighted above, the South Pennines route provides east to west connectivity but also passes through a number of urban areas. This leads to conflicts between long distance traffic and shorter commuter trips as well as capacity issues around the urban centres. Planned growth in these centres will place additional demands on the route and, as such, ensuring that the route can accommodate future economic development is a key priority for both the Agency and stakeholders.

4.4.2 Key locations include:

- The M53. Major growth aspirations at the north end of the M53. throughout Ellesmere Port and within Chester are anticipated to put significant stress on this section of the route.
- The M62 between junctions 8 and 11. This section of the M62 experiences significant congestion in the peak periods. This section of the route is also a key focus for new development.
- The M60. There is an existing capacity problem which will be exacerbated by proposed future growth around many of the junctions. Each junction serves a local commuting need into Manchester, as well as playing a part in the wider strategic network. This conflict causes congestion at each junction on the route. Although the Agency has small improvement schemes under development for some of these junctions, they are predominantly designed to address existing issues rather than cater for significant additional growth. Key junctions that suffer considerable stress include the M60/M62/M602 interchange at junction 12 (Eccles) and the M60/M66/M62 interchange at junction 18 (Simister).
- Smart Motorways on the M60. The impact of introducing Smart Motorways on the M60 was raised by stakeholders in terms of how it may change traffic flows, both at junctions and also further along

the route. The schemes improve flow on the mainline but do not address issues at any of the junctions.

- The western M60. Planned growth at the Trafford Centre, Port Salford, Worsley and Atlantic Gateway will place additional strain on this section of the route. Particular issues were highlighted by stakeholders at junctions 10, 11 & 12 and weaving issues between junctions 12 and 13.
- The M56. Between junction 7 and the M60 currently experiences significant congestion and growth at Manchester Airport, the proposed Enterprise Zone, the interface with the proposed SEMMMS/A6 MARR scheme and growth within the regional centre as a whole will all add significant further pressure on this section of the route. In addition, the proposed Mersey Gateway will affect junctions 11 and 12, and the potential for the development of a Junction 11a was raised as an opportunity by stakeholders.
- The A5036 and Switch Island junction. The need to maintain access to the Port of Liverpool, in light of development aspirations (post-2020) and particularly for HGVs is relevant at this location.
- The M65 in East Lancashire. Capacity is predicted to be exceeded on parts of this section of the route towards the end of this RBS period. Predicted growth in Blackburn and Central Lancashire is likely to add to the traffic on this part of the route, which in turn is likely to lead to an increase in congestion and delay.
- The A56/M66. Capacity issues were identified by stakeholders at Rising Bridge on the A56 and on the M66 approaches to the M60 (Simister Island, M60 junction 18). These issues and those on the M65 above are likely to have a significant impact on the economic viability and vitality of the east and central Lancashire areas. They also impact on the attractiveness of public transport alternatives that utilise this route.
- The A483 and A55 - cross-border links between England and Wales. There is a need to maintain the strategic nature of these links whilst accommodating the development aspirations in their vicinity.
- The A585 links and junctions. Existing capacity issues.
- The Trans-Pennine links (A57, A628, A61 and A616). There are existing capacity constraints, particularly through Mottram in Longendale, Hollingworth and Tintwistle. There is a committed LMNS scheme for A61/A616 Westwood roundabout due for construction in 2014/15 which will tackle the problems at the eastern extent of this section. A feasibility study has also been identified for the routes between Sheffield and Manchester to analyse option for the route, the capacity challenges for this route will be considered within this study.
- The M62 in West Yorkshire. There is an existing capacity problem which will be exacerbated by proposed future growth around many

of the junctions. Many of the junctions serve a local commuting need into the urban centres, as well as playing a part in the wider strategic network. This conflict causes congestion at junctions on the route. Although the Agency has small improvement schemes under development for some of these junctions, they are predominantly designed to address existing issues rather than cater for significant additional growth.

- The M62 Smart Motorways. The impact of introducing Smart Motorways on the M62 was raised by stakeholders in terms of how it may change traffic flows, both at junctions and also further along the route. The schemes improve flow on the mainline but do not address issues at any of the junctions.
- The M621. This provides a direct access into Leeds City Centre, which is the main trip attractor in the region and will continue to be as employment numbers grow. We have recently completed a study, which considers the current and future capacity of the M621, and are working with Leeds City Council to identify solutions on both the local and strategic road network that will facilitate future economic growth.
- The M18 between junctions 2 and 5. A significant amount of development is planned associated with the Gateway to the Sheffield City Region scheme, which also provides a new link from junction 3 of the M18 to Robin Hood Airport and Rossington Inland Port. This combined with growth at Hatfield near junction 5 is likely to increase congestion and delay. There are two committed Pinch Point schemes which seek to support Doncaster's growth proposals. These are northbound widening between junctions 2 and 3 and capacity enhancements at junction 5.
- The A160, M180 and A180. The planned growth of Immingham and Grimsby ports and the surrounding areas are likely to put pressure on these sections of the route. There is a committed major scheme planned for the A160 between the junctions with the A180 at Brocklesby Interchange and the Port of Immingham. Work on the project is expected to start in 2015 and should improve congestion as well as catering for predicted future traffic growth from planned developments on this section of the route.
- The A63, particularly through the urban area of Hull. Where the A63 meets local road junctions, for example Mytongate, the limited capacity causes queuing on both the local and strategic road networks. The A63 Castle Street project has been declared as a pipeline project and the intention is that it will be constructed during the RBS period. The Castle Street project is designed to alleviate congestion and improve safety. However, stakeholders commented on the need to consider the impact of this scheme on other parts of the A63 and we are addressing this in partnership with Hull City Council.

- The A64 around York. Between the two junctions of the York Outer Ring Road, the A64 will come under increased pressure as a result of proposed developments. This section is also affected by seasonal flows to the east coast.
- The A64 from the north east of Hopgrove to the east coast. York, along with Malton, Norton and Scarborough are key locations for development. Ryedale District Council also has plans to increase the number of jobs at the Food and Environment Research Agency site to the north of York, which will include the provision of a new at grade junction. In addition to the development aspirations, this section is also affected by seasonal flows to the east coast, creating delay outside of the traditional peak hours It was raised at the stakeholder engagement that the changes from dual to single lane carriageway are a particular challenge during busy summer periods, with queues often extending back through Hopgrove roundabout. The Local Enterprise Partnership (LEP) is pursuing a number of potential capacity and safety improvements, as identified in the A64 Corridor Connectivity Study.

4.4.3 In addition to the challenges outlined on the strategic road network, there are a number of junctions on the local road network which are constrained by their capacity. As well as their ability to effectively serve the local area, these junctions potentially have an impact on the operation of the strategic road network. There are quite a number of locations where this problem is experienced. However, some of the more significant examples include:

- The A6 north of Preston that affects M55 junction 1
- Junctions on the A6077 heading in to Blackburn from junction 5 of the M65
- The A5082/A6053 junction at Farnworth that can affect M61 at junction 3
- Junctions on the A57 Regent Road leading into Manchester from the end of the M602
- The B5214 leading from M60 J10
- The A57 from M60 J11
- The A5103 from M60 J5
- The Cooper Bridge junction in Kirklees that can affect the M62 J25
- Junctions in on the approach to Leeds city centre which can affect the M621
- Junctions on the Outer Ring Road of York which can affect the A64.

4.5 Safety challenges and opportunities

4.5.1 It is a key priority of the Highways Agency that the network is safe for all users. We carry out regular reviews and studies of the network to

identify any issues. Where feasible, schemes to address issues are then developed through our Local Network Management Scheme (LNMS) programme.

4.5.2 Section 2.2 sets out locations along the route which were ranked in the top 250 nationally for accidents, and the stretches of route with high levels of collision risk. The majority of locations where safety has been highlighted as a concern are on the trunk road sections although some busy motorway junctions have also been identified. The locations which were also raised by stakeholders include:

- The A56/M66 corridor. The issues raised here are likely to relate the at grade junction at Rising Bridge along with the busy approach to the M62 at Simister Island
- The A663 (Broadway). This is a busy trunk road section with frequent at grade junctions and side roads which is likely to increase the frequency of collisions.
- The M56 eastbound approaching junction 12. Congestion and queuing at this location are resulting in congestion related incidents and shunts.
- M62 – junction 10 (Croft). This is a complex interchange where the M62 meets the M6.
- M60 junctions 12 (Eccles) and 18 (Simister). These are both busy motorway to motorway interchanges with congestion related incidents.
- M62 junction 26. The size of the interchange and the number of weaving movements throughout this location was considered a potential cause of the collisions. Smart Motorways has recently been introduced on the mainline at this location and the impact of this will need to be monitored. In addition, we have a planned improvement scheme for the junction which, along with increasing capacity, seeks to improve safety.
- A63 through Hull. The collisions along this stretch of the route are often shunts as a result of congestion. The planned Castle Street improvement will fundamentally change how the A63 through Hull operates and, in particular, the Mytongate junction. In addition, we are also developing LNMS for the Garrison Road and Daltry Street junctions which seek to improve safety (not yet committed).
- The M180 and A180. Comments were made that the route has few features to ensure drivers are engaged with the task of driving. The route also provides access to the ports at Immingham and Grimsby, giving rise to high numbers of HGVs. Stakeholders considered that this combination increased the number of collisions and the potential for accidents on these roads. We have a planned major improvement to the A160, as well as a number of LNMS under development. The challenge of keeping drivers engaged with the task of driving is, however, unlikely to be entirely resolved by these schemes.

- The A64, A628, A61 and A616. The single carriageway nature of parts of these routes and frequency of at grade side road junctions are likely to increase collisions in these locations. We are developing a number of LNMS with the intention of improving safety. These schemes will, however, be localised improvements and may not fully address stakeholders' wider concerns.

4.5.3 In addition to the above locations, stakeholders raised particular concerns in relation to vulnerable user safety. These are discussed in section 4.6 below.

4.6 Social and environmental challenges and opportunities

4.6.1 In considering social and environmental factors, the biggest stakeholder concerns related to air quality, noise, flood risk and vulnerable users.

4.6.2 Our approach to air quality is driven by the EU directive on ambient air quality and cleaner air for Europe, which sets limit values for certain pollutants. The two most relevant to the strategic road network are particulates (PM10) and nitrogen dioxide (NO2). At present the route passes through a significant number of Air Quality Management Areas (AQMAs). Most of these have expected exceedences of NO2 levels and will continue to constrain improvement opportunities on the road network as schemes will need to demonstrate that air quality will not be worsened by the proposals.

4.6.3 Vehicular traffic using the strategic road network is a significant source of air pollution. This sets a big challenge for the Agency as our network is seldom the origin or destination of many journeys. Indeed, economic growth itself can lead to an increase in traffic volumes. So, supporting economic growth whilst bringing air quality along the route within European targets, will be a significant challenge during the RBS period. Air Quality impacts and associated issues are seen as a high priority amongst our stakeholders.

4.6.4 Noise pollution from the strategic road network is also a particular challenge. The number of First Priority Locations along the route highlights the scale of the issue. The main generator of noise on our network tends to come from the interaction of vehicle tyres with the road surface. Older carriageways surfaced with concrete or HRA tend to be nosier than the more modern TSCS that are now used. As a result, where the route is surfaced with HRA or concrete, noise is more of an issue for nearby residents. This is supported by the comments received from stakeholders.

4.6.5 The increase in surface renewal activity likely to occur during the period covered by this RBS provides an opportunity to start dealing with some of these noise issues. Resurfacing with thin, "low noise" surfacing, is a good way to start to reduce the noise impact of our network.

4.6.6 Flood risks on the route are largely due to highway surface runoff. Stakeholders expressed concerns about some of the flood risks we have already identified, including the M18 and A64.

4.6.7 In addition, issues faced by vulnerable users of the network were also highlighted by stakeholders. Issues relating to severance, safety in crossing the network and poor maintenance were the main factors. The strategic road network in the South Pennines corridor contains large sections that are within or on the approach to urban areas. In these locations, provision for cyclists and pedestrians is an important challenge.

4.6.8 Section 2 highlighted some key locations where there is frequent interaction between the strategic road network and cyclists, pedestrians and equestrians. These include the A5036, the A56, the A663, the A64, the A63 and the A628. Stakeholders also raised the lack of provision for vulnerable users along the A585, the A180 and the A160. However, almost anywhere there is a junction between the strategic road network and the local road network, particularly in the urban built up areas along the route, interaction with pedestrians and cyclists can be an issue.

4.6.9 There are a number of areas where the route comes into contact with ecologically sensitive locations and species. Although ecological interventions were not highlighted as a significant priority by stakeholders across the route, where appropriate we will continue to take action on the network to reduce road-related pollution and improve biodiversity.

4.6.10 The Peak District National Park was however identified by stakeholders as an important issue and also presents a significant challenge. The A628 passes through the National Park and this presents a significant environmental challenge in the context of conserving and enhancing the landscape.

Table 4.1 Schedule of challenges and opportunities

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
Network Operation	Across route especially on steep gradients	Risk of disruption due to severe weather. Resilience of the network.	Yes	✓			Yes	✓		
	Across route	High proportions of freight on the route	Yes	✓			Yes	✓		
	Across route	Opportunity to enhance existing technology provision	Yes		✓		Yes		✓	
	Across route but especially west of M6, north of M62/M60, south of M62 and east of A1	Gaps in technology provision	Yes	✓			Yes		✓	
	Many sections across the route	Conflicts between longer distance and short commuter trips. The route serves a variety of functions adding to delay, congestion and journey time reliability	Yes	✓			Yes		✓	
	Across route	The ability to manage incidents is impacted by the lack of Traffic Officer Service on some routes.	Yes	✓			Yes		✓	
Network Operation	Across route	In the event of an incident the lack of strategic alternatives has a detrimental effect on the local road network, causing delay and congestion	Yes	✓			Yes	✓		
	Across route	There is an opportunity for closer working with local authorities in relation to incident and congestion management.	Yes	✓			Yes			✓

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
Asset Condition	Across Route	Significant lengths of surfacing likely to reach end of design life.	Yes	✓			No			✓
	Across Route	Condition of road markings and studs is deteriorating.	Yes	✓			No		✓	
	Across route including M56 J15-16, M53 J11-12, A483 Pulford to Wales border, M62 near J38, M180 J2, M18 J2-3, A180 Brocklesby to Barnetby	Concrete surfacing defects.	Yes	✓			Yes			✓
	Across route	Ongoing significant interventions required to address structural defects	Yes	✓			No		✓	
	Across route	Poor maintenance of cycleways, footways and soft estate	Yes	✓			Yes		✓	
	M1/M62 Lofthouse Interchange	Key interchange requiring structural interventions and capacity enhancement	Yes	✓			Yes			✓
	M62	Structures are unsuitable to support abnormal loads.	Yes	✓			No	✓		
	A628, A56	Geotechnical issues, such as land slippage cause operational issues for the route.	Yes	✓			No		✓	
	M62 J11-12	Geotechnical defects causing ride issues.	Yes	✓			No		✓	
	M621, M62	Lighting asset reaching end of design life	Yes	✓			No	✓		
	M67, A627(M), M602	Investigate lighting switch off	Yes	✓			No	✓		
	Across route	Ageing drainage asset	Yes	✓			No		✓	

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
Capacity	M60	Existing limited capacity at Junctions including Lofthouse interchange. Will be exacerbated by planned future growth.	Yes	✓			Yes			✓
	M62 J24-J32		Yes	✓	✓	✓	Yes			✓
	M60 and M62	Impact of Smart Motorways on other parts of route and junctions	No	✓	✓		Yes		✓	
	M53	Existing congestion will be exacerbated by planned future growth	Yes		✓		Yes		✓	
	M62 J8-11	Existing congestion will be exacerbated by planned future growth	Yes	✓			Yes			✓
	M60 North & Western section (including Eccles and Simister Interchanges)	Existing congestion will be exacerbated by planned future growth	Yes	✓			Yes			✓
	M56 J7-M60	Existing congestion will be exacerbated by planned future growth	Yes	✓			Yes			✓
	A5036- Switch Island junction	Existing congestion will be exacerbated by planned future growth	Yes	✓			Yes			✓
	M65 East Lancs	Existing congestion will be exacerbated by planned future growth	Yes		✓		Yes			✓
	A56/M66	Existing congestion will be exacerbated by planned future growth	Yes		✓		Yes	✓		
	A483 and A55	Strategic nature of links needs to be maintained. Planned future growth may impact	Yes		✓		Yes			✓

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
Capacity	A585	Existing capacity problems	Yes	✓			Yes			✓
	M621	Existing congestion will be exacerbated by planned future growth	Yes	✓	✓	✓	Yes		✓	
	M18	Future growth of development land around Hatfield, the Inland Port and on the route of the Finingley and Rossington Regeneration Route will create additional pressure on the M18	Yes		✓	✓	Yes		✓	
	A57, A628. A61, A616	Congestion on the alternative trans Pennine routes to the M62. This is experienced mostly where the strategic road network interacts with the urban area.	Yes	✓	✓	✓	Yes			✓
	A63	Future growth will add to existing congestion issues. A particular issue where the strategic road network interacts with the local road network at junctions such as Mytongate	Yes	✓	✓	✓	Yes			✓
	A64 around York	Future growth will add to existing congestion issues at the junctions between the York Outer Ring Road.	Yes	✓	✓	✓	Yes		✓	
	A64 -north east of Hopgrove roundabout	To the north east of Hopgrove the existing single carriageway sections cause delay on the route especially during tourist peaks. Future growth of York, Malton and Scarborough will add to the problem	Yes	✓	✓	✓	Yes			✓
	A180, A160, M180, M181	Planned future growth including that of ports and airports will increase congestion and numbers of HGV's	Yes	✓	✓	✓	Yes			✓
	Various locations across route.	Limited capacity of local road junctions causing congestion on the strategic road network	Yes		✓	✓	No		✓	

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
Safety	A56/M66 Corridor	Safety Issue raised through our evidence and/or stakeholders	Yes	✓			Yes			✓
	A663 Broadway		Yes	✓			Yes		✓	
	M56 eastbound to J12		No	✓			Yes		✓	
	M62 J10 (Croft)		Yes	✓			No	✓		
	M60 J12 (Eccles and J18 (Simister)		Yes	✓			No		✓	
	M62 J26	Safety Issue raised through our evidence and/or stakeholders	Yes	✓			Yes			✓
	A63, Mytongate, Hull		Yes	✓			Yes			✓
	A180 Pyewipe Roundabout, Grimsby		Yes	✓			Yes			✓
	Urban sections of M62, M1, M606 and M621		Yes	✓			No			✓
	A61, A616, A628		Yes	✓			Yes			✓
	A63 through Hull		Yes	✓			Yes			✓
	A64		Yes	✓			Yes			✓
	M180, A180 and A160	The route has few features making it hard for drivers to stay on task. The route also has high numbers of HGVs and a high proportion of the collisions involve HGVs.	Yes	✓			Yes			✓

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
Social and environment	A180, M18, M62 J38	Concrete surface causes noise issues	Yes	✓			Yes		✓	
	Across Route	Defra Noise First Priority Locations identified. Opportunity to provide low noise surfacing.	Yes	✓			Yes		✓	
	Across Route	Air quality issues. AQMA's and locations where Defra have identified exceedences of European air quality limits	Yes	✓	✓	✓	Yes			✓
	M60, A56, A63, A64	Strategic road network causes severance	Yes	✓			Yes		✓	
	A64, A63, A628, A585, A180, A160	Stakeholder concerns about limited provision for vulnerable users.	Yes	✓			Yes		✓	
	Across route. A628 and Peak District National Park highlighted.	The environment is ecologically and visually sensitive	Yes	✓	✓	✓	Yes			✓
	Various across route.	Flooding risks identified	Yes	✓	✓	✓	Yes	✓		

4.7 Conclusion

4.7.1 The South Pennines route is a key focus for economic growth in the future, passing through the major conurbations of the Leeds city region and Greater Manchester. Both areas are the focus of economic growth in the regions and have aspirations that will see the number of new dwellings and jobs significantly increase. The evidence has shown that the route already suffers from congestion and delay on the sections serving these locations. The potential ability of the route to cope with planned growth is the headline message demonstrated by our evidence and that of stakeholders. Indeed, many of the areas highlighted as being of particular concern here have also been reflected as constraints to growth within the draft Strategic Economic Plans produced by Local Enterprise Partnerships.

4.7.2 The committed and pipeline schemes will go some way to addressing the challenges that may limit the delivery of economic growth in the short term. Locations such as the M60 in Greater Manchester and Castle Street in Hull will benefit from planned major schemes before the end of 2021. These will help facilitate some of the anticipated growth aspirations identified. However, given the significant plans for growth that will impact on the northwest quadrant of the M60 in particular, it is expected that further improvements will be required in that area.

4.7.3 There are also further locations where the challenges posed by future growth plans are yet to be addressed. These include sections of the M62 between junction 7 and 11 in Warrington, the M53 in Cheshire and Merseyside and the M65 in East Lancashire. Similar challenges also exist around the M18 in Doncaster, the M62 in Wakefield district, and the A64 around York.

4.7.4 Through the spatial planning process, we will continue to work with local authorities and other partners to develop solutions to support plans for growth. Although we have identified some initial solutions (for example through our infrastructure studies), the funding and delivery mechanisms for many schemes are uncertain.

4.7.5 Accommodating planned growth at airports and ports is a further issue identified through our evidence and through stakeholder engagement. Growth around Manchester Airport, the Port of Liverpool, Rossington Inland Port and Immingham were all raised as concerns by stakeholders. At some locations there are planned schemes which will support growth including M60 Smart Motorways, the A5036/Bridge Road Junction Improvement Scheme, Castle Street in Hull, M18 junction 2 to 3 widening near Doncaster and the A160 upgrade in Immingham. However, it is once again likely that further improvements will be required at some locations to help fully realise and deal with the growth aspirations at the ports along the route, particularly at the Port of Liverpool.

4.7.6 The ability of junctions on the route to cope with traffic is also a key issue to come out of our evidence and engagement. Although Smart Motorways will improve capacity on the mainline, the schemes will not

enhance junctions. Many junctions within the extents of the M62 Smart Motorways in West Yorkshire are already under considerable pressure and require intervention to address the existing issues and support planned growth. The key locations for intervention are the M62 junction 26 Chain Bar, which provides access to the M606 to and from Bradford, and M62 junction 29 Lofthouse, which is the interchange between the M62 and M1. In addition the M62 Smart Motorways scheme is limited to the section between M62 junctions 25 and 30 whereas there is significant planned growth at either extent, in Huddersfield in the West and around Castleford and Normanton in the East.

4.7.7 Likewise the planned M60 Smart Motorways will help improve mainline capacity but will not tackle existing congestion at junctions. Planned future growth will only exacerbate these issues. Key locations for intervention on the M60 include junctions 12, 15 and 18. Similarly, junctions 7, 9, 10 and 11 on the M62, and junctions 7, 11 and 12 on the M56 all currently experienced significant peak hour queuing that can extend back to the mainline motorway. It is also recognised that growth around junction 8 of the M62 and the impacts of the Second Mersey Crossing (Mersey Gateway) on junction 12 of the M56 and junction 7 of the M62 will also add significant additional pressure to the network. Junction 10 of the M60 experiences significant queuing as a result of vehicles accessing the Trafford Centre area. We are working with the developer concerned to try and help bring about a long term solution to the problems experienced in that area and help facilitate further planned growth.

4.7.8 There are other locations where although planned growth is less significant, both our own evidence and stakeholder comments demonstrate existing performance issues. The most significant of these locations are the A628 and A57, which act as an alternative Trans-Pennine route to the M62, the A585, which links the Fylde Peninsula and Fleetwood to the motorway network and the A64 to the north east of York, which experiences significant seasonal variations in flow.

4.7.9 There are some sections of the route which would be better equipped to deal with growth as they tend to suffer less from delay and congestion issues. These locations tend to be away from existing urban areas and include sections such as the M62 between junctions 21 and 23, the M62 to the east of junction 32a, the M18 to the north of Doncaster and the M180 in North Lincolnshire. The M55, the M57, M58 and the eastern side of the M60 also suffer much less from delay and congestion than other sections of the route. However, getting to these areas could place additional pressure on sections of both this and other routes which have already been highlighted as problematic.

4.7.10 There are a number of locations along the route which were ranked in the top 250 nationally for accidents or identified as having a high collision risk. The locations tend to be at busy or complex junctions or on trunk road sections of the route. Significant growth is also planned around many of the identified locations. Safety issues were raised less frequently by stakeholders than issues such as capacity and supporting growth, however operating a safe network remains a key concern for us.

4.7.11 Provision for and safety of vulnerable road users was also a high priority for some stakeholders. These priorities are consistent with the locations where we have identified frequent interactions between the strategic road network and vulnerable users and include the A5036, A56, A663, A628, A63 and A64. A lack of adequate provision for vulnerable users has been identified in the evidence presented in section 2.6. Stakeholders also expressed concerns about the quality of provision for pedestrians and cyclists along these parts of the route.

4.7.12 We are operating an ageing asset along the South Pennines route. Significant resurfacing will be required along with interventions to structures, lighting and drainage systems. The introduction of Smart Motorways along some sections of the route also presents its own challenges for inspection and maintenance of the asset. Furthermore, the interaction of any maintenance work with committed or pipeline schemes will also need to be considered, along with restrictions on working times imposed along various sections of the route.

4.7.13 During the RBS period we will need to continue to manage a number of ongoing risks in relation to the asset, including landslip risks on the A56 and A628 and geotechnical issues on the M62 between junctions 11 and 12. A number of significant structures will also require intervention during the period including M62 junction 29 Lofthouse Interchange which suffers from capacity issues, and the M60 Barton High Level Bridge which carries a very busy section of the M60 over the Manchester Ship Canal.

4.7.14 From an environmental perspective the biggest challenges across the route are air quality and noise. Stakeholders also raised these as issues. A number of AQMAs exist along the route which, have potential to conflict with areas of planned growth. A high number of noise First Priority Locations also exist, however there is an opportunity to improve some of these locations when carriageway renewal takes place. The Peak District National Park and relationship with the A628 is a further challenge identified through our own evidence but also one considered a high priority by stakeholders.

4.7.15 Operationally, the Traffic Officer Service appears to have a positive impact on incident duration and the opportunity to extend the service wider across the route could reduce incident duration and impacts. Stakeholder engagement has also shown that stakeholders would welcome closer working with partners to better manage the impact of incidents and planned works.

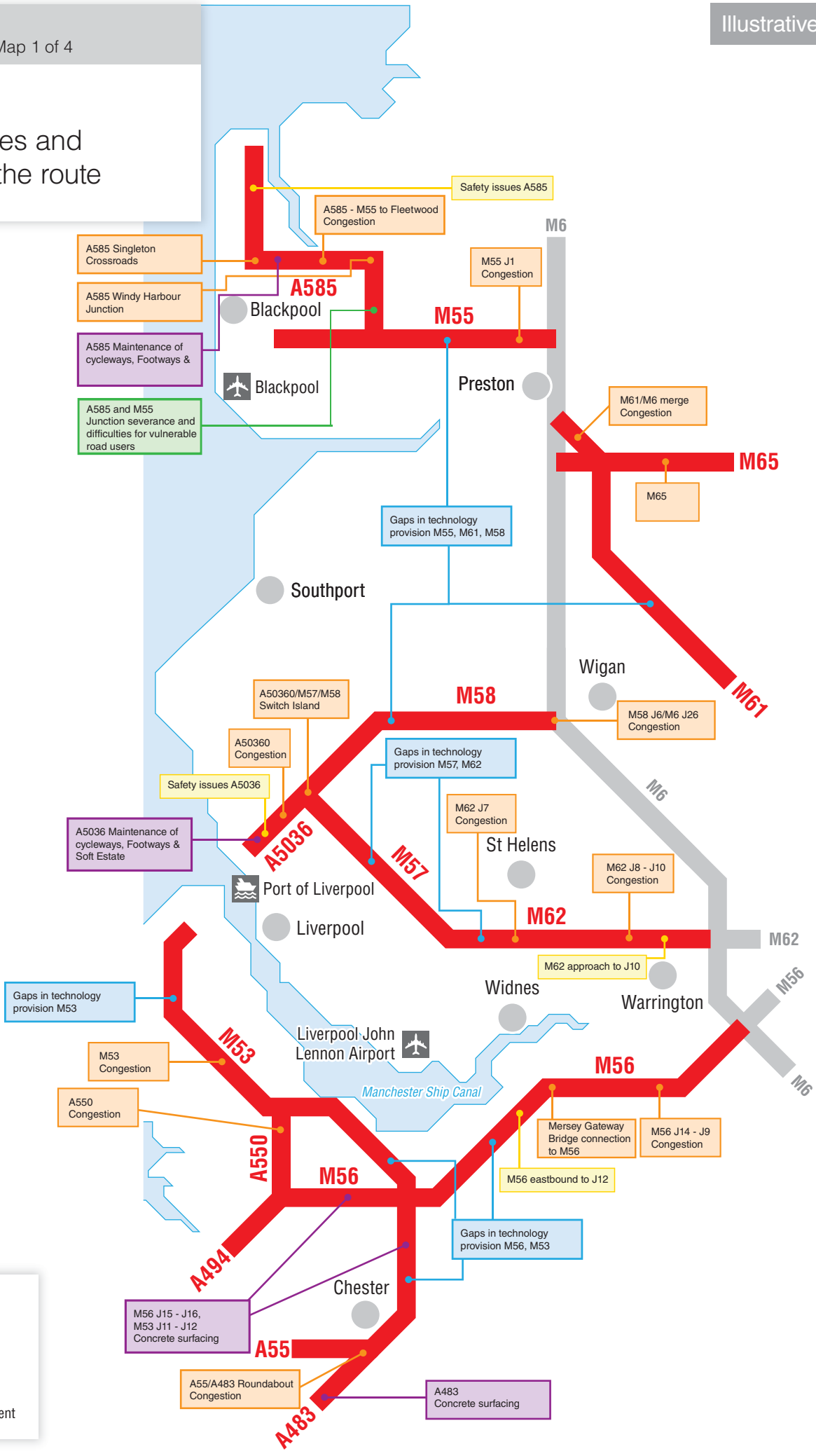
4.7.16 Although parts of the network benefit from technology provision, significant gaps have also been identified, particularly to the west of the M6, the north of the M60/M62 and to the east of the A1. Many gaps coincide with already busy locations or locations where the impact of incidents can be particularly problematic such as the ‘Liverpool Box’ and the A63 in Hull. There is an opportunity to improve the operation of the route by enhancing technology provision.

South Pennines –
Route-based strategy – Map 1 of 4

Illustrative

Figure 4

Key opportunities and challenges for the route



Illustrative

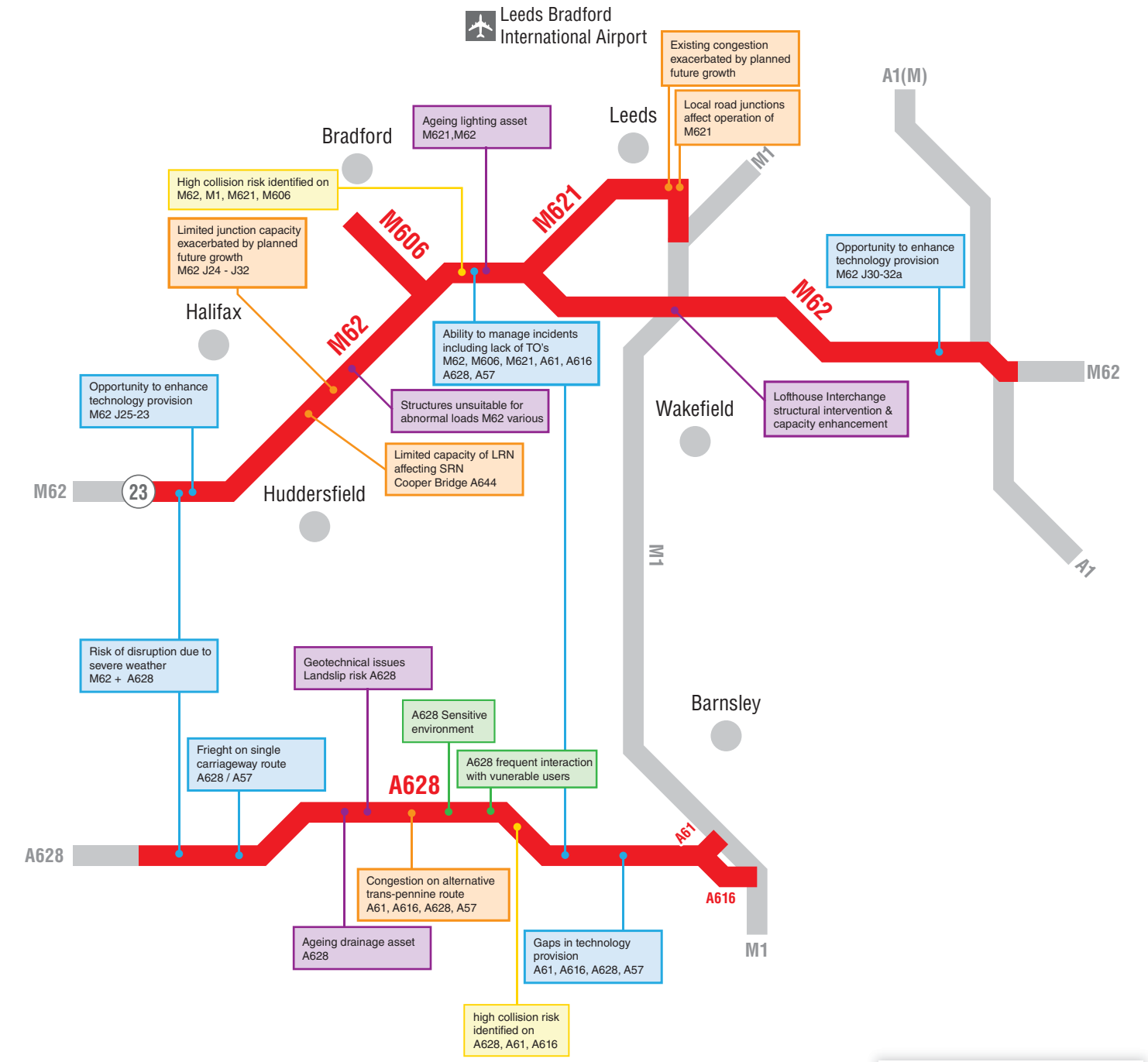
Figure 4

Key opportunities and challenges for the route

Illustrative

Figure 4

Key opportunities and challenges for the route



Illustrative

Figure 4

Key opportunities and challenges for the route

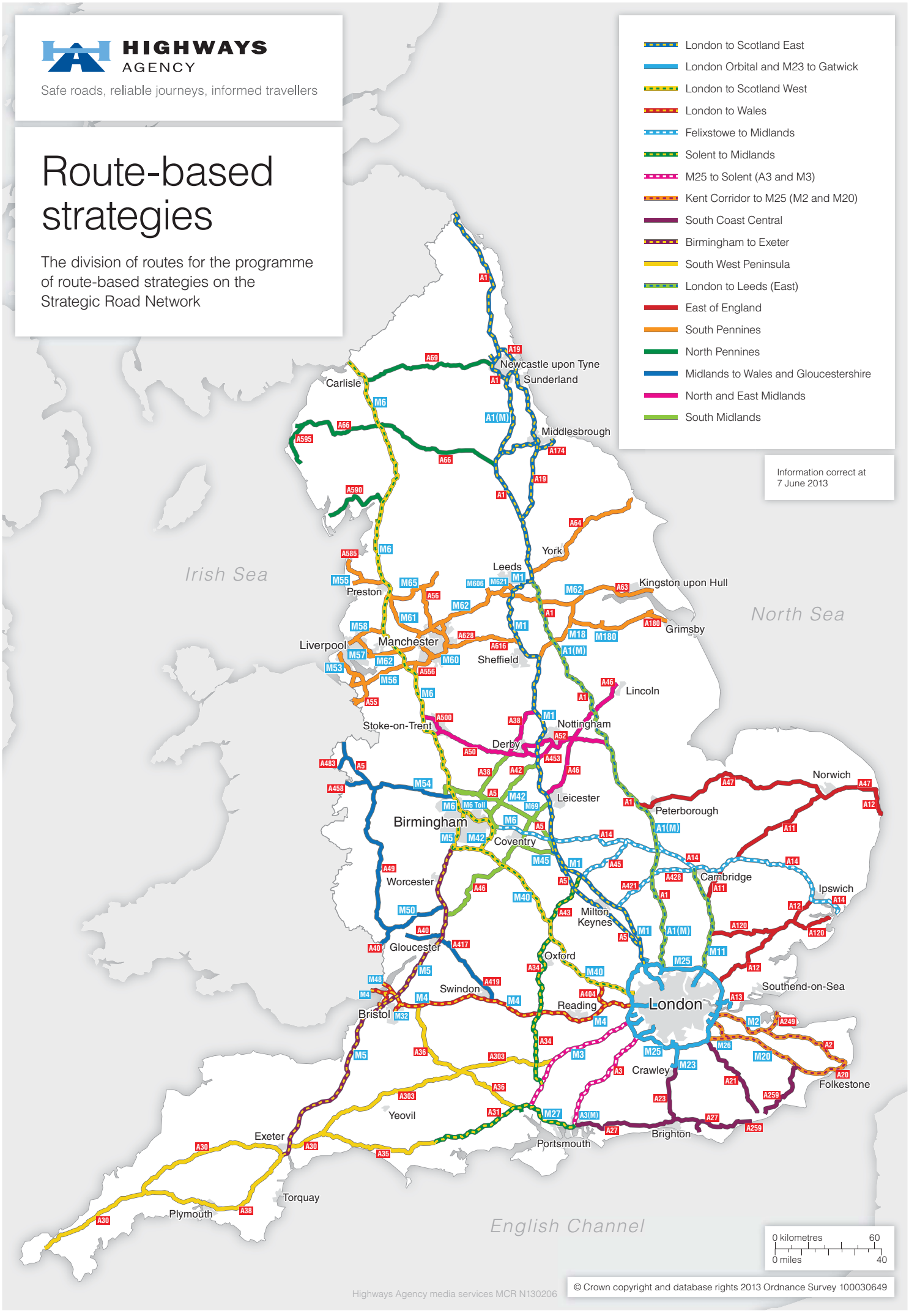
Appendix A Route map

HIGHWAYS AGENCY

Safe roads, reliable journeys, informed travellers

Route-based strategies

The division of routes for the programme of route-based strategies on the Strategic Road Network



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Appendix B Glossary

Abbreviation	Description
AADF	Annual Average Daily Flow – for the purpose of this report data is directional.
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
CCTV	Closed Circuit Television
DBFO	Design, build, finance and operate. This refers to roads which were constructed under the private finance initiative.
Defra	Department for the Environment, Food and Rural Affairs
DfT	Department for Transport
FPL	Important Area with First Priority Location. Area identified as an Important Area by Defra which additionally experiences noise of 76dB or higher.
HRA	Hot-rolled asphalt. This refers to road surfaces constructed of a bitumen-based asphalt with stone chips rolled into it.
IA	Important Area. Area identified by Defra as being among the 1% of residential sites most affected by noise.
LA	Local Authority
LEP	Local Enterprise Partnership
LNMS	Local Network Management Schemes
MIDAS	Motorway Incident Detection and Automatic Signalling
Ramsar	Protected wetland sites of international importance, designated under the Ramsar convention,
RBS	Route-based strategy
SAC	Special Area of Conservation. Protected habitat site.
SEP	Strategic Economic Plan. Published by Local Enterprise Partnerships setting out the economic priorities.
SPA	Special Protection Area. Areas of land, water or sea which have been identified as being of international importance for the breeding, feeding, wintering or the migration of rare and vulnerable species of birds
SRN	Strategic Road Network
SSSI	Site of Special Scientific Interest. Environmental designation.
TEN-T	Trans European Transport Networks

Abbreviation	Description
TSCS	Thin surface course system. This refers to surface course materials that are laid at a thickness less than 50mm and which provide a high performance, rut resistant, low noise and skid resistant layer that supports the high volume of traffic found on the strategic road network.
VMS	Variable message signs. Signs on which the message can be changed electronically, either as a light matrix or using rotating planks to switch between one or more defined messages.

Appendix C Stakeholder involvement

In addition to the people listed in the table below, all MPs representing constituencies on the route were informed about stakeholder events and invited to contribute evidence.

Organisation	Contact Name	Provided Input
ABP	Arran Marshall	Yes
Andrew Bingham MP	Jamie Douglas	Yes
Aone+	Paul Fisher	Yes
Arups	Adam Parbutt	Yes
Bassetlaw District Council	Joelle Davies	Yes
Blackburn Council	Mike Cliffe	Yes
Blackpool Council	Jeremy Walker	Yes
Bradford Council	Joe Grint	Yes
Bradford Council and Safer Roads Partnership	Simon D'Vali	Yes
Brereton Parish Council	Jane Deans	Yes
British Cycling	Martin Key	Yes
British Horse Society	Caroline Bradley	Yes
British Land	Miles Price	Yes
British Motorcycle Federation	Brian Burke	Yes
Burnley Council	Sarah Taylor	Yes
Bury MBC	Ian Lord	Yes
Business for Innovation and Skills	Martin Wood	Yes
Calderdale Council	Peter Stubbs	Yes
Calderdale Council	Tim Lawrence	Yes
Castle Howard	Neil Swain	Yes
Cheshire East Council	Andrew Ross	Yes
Cheshire West and Chester Council	Kevin Carrol	Yes
Cheshire West and Chester Council	Richard Flood	Yes
Chorley Council	Gary Hall	Yes
City of York Council	Ian Stokes	Yes
Connect	Mark Mageean	Yes
Connect	David Tate	Yes
Counter Context	Thomas McHugh	Yes
CPRE	Anne Robinson	Yes

Organisation	Contact Name	Provided Input
CPRE North Yorkshire	John Gill	Yes
Cumbria County Council	Andrew Moss	Yes
Cycle Sheffield	Mick Nott	Yes
Cycling Touring Club	Terry Ratcliffe	Yes
DfT	Margaret Jackson	Yes
DfT	Richard Perry	Yes
DNCC	Chris Hobson	Yes
DRAX	Mark Gibbens	Yes
DTA	Tom Mais	Yes
East Riding	James Durham	Yes
Environment Agency	Jo Bradley	Yes
Farmers Union	James Copeland	Yes
Freight Transport Association	Malcolm Bingham	Yes
Friends of the Earth	Anthony Rae	Yes
Friends of the Peak District/Campaign for National Parks	Anne Robinson	Yes
Fylde Council	Mark Sims	Yes
Greenhalgh with Thistleton Parish Council	Ken Dodsworth	Yes
Halton Council	Ian Draycott	Yes
Halton Council	Mick Noone	Yes
Halton Council	Stephen Rimmer	Yes
High Legh Parish Council	Richard Wright	Yes
Hull and Humber Chamber of Commerce, Industry and Shipping	Dave Hooper	Yes
Hull City Council	Mike Ibbotson	Yes
Hull City Council	Graham Hall	Yes
Hull City Council	Paul Robinson	Yes
Hull Civic Society	John Netherwood	Yes
Humber Bridge Board	John Webb	Yes
Humberside Police	Richard Sampson	No
Hyndburn BC	Simon Prideaux	Yes
Investment NW Wales	David Peel	Yes
Investment NW Wales	Peris Jones	Yes
Kirklees Council	Tim Lawrence	Yes

Organisation	Contact Name	Provided Input
Kirklees Council	Kathryn Broadbent	Yes
Knowsley Council	Sean Traynor	Yes
Lancashire County Council	Dave Colbert	Yes
Lancashire County Council	Gary Makin	Yes
Lancashire County Council	Martin Porter	Yes
Lancashire County Council	Simon Emery	Yes
Lancashire Police	Ross Wills	Yes
Leeds City Council	Phil Mitchell	Yes
Leeds City Council	Dave Cherry	Yes
Leeds City Council	Tim Harvey	Yes
Leeds University Institute for Transport Studies	Dr Ronghui Liu	Yes
Leeds, York & N York's Chamber of Commerce	Ian Williams	Yes
Liverpool City Region LEP	Claire Delahunty	Yes
Manchester Airport	Jon Bottomley	Yes
Manchester City Council	Richard Elliott	Yes
Meadowhall	Dawn Osborne	Yes
Mere Parish Council	Ian Hodgson	Yes
Mid Yorkshire Chamber of Commerce	David Horseman	Yes
Mid Yorkshire Chamber of Commerce	Steven Leigh	Yes
Morgan Sindall plc	Gary Crisp	Yes
North East Lincolnshire Council	Angi Blake	Yes
North East Lincolnshire Council	Mark Scarr	Yes
North Lincs Council	Jodie Booth	Yes
North Lincs Council	Iain Cunningham	Yes
North Wales Trunk Road Agency	Dave Evans	Yes
North West Transport Activists Round Table (NWTAR) + CPRE	Lillian Burns	Yes
North West Transport Activists Round Table	Adrian Dunning	Yes
North Yorkshire County Council	Andrew Bainbridge	Yes
North Yorkshire Police	Steve Burrell	No
Oldham Council	David Dairymple	Yes
Oldham Council	Joanne Betts	Yes
Peak District National Park Authority	Tim Nicholson	Yes
Peel Holdings	Peter Nears	Yes

Organisation	Contact Name	Provided Input
Peel Ports	Warren Marshall	Yes
Pendle Council	Neil Watson	Yes
R3 Products	Gary Shepherd	Yes
RMS	Alistair Snart	Yes
Rochdale Council	Lisa Houghton	Yes
Rossendale Council	Adrian Smith	Yes
Rotherham	Ian Ashmore	Yes
Ryedale District Council	Howard Wallis	Yes
Ryedale District Council	David Wheelwright	Yes
Scarborough District Council	David Hand	Yes
Sefton Council	Stephen Birch	Yes
Selby District Council	Diane Wilson	Yes
Sheffield City Region LEP	Martin McKervey	Yes
South Yorkshire Fire & Rescue	D Galloway	No
South Yorkshire Fire & Rescue	J Torn	No
South Yorkshire Fire & Rescue	K Watts	No
South Yorkshire Police	Anthony Ashton	No
South Yorkshire Safer Roads Partnership	Ken Wheat	Yes
Stagecoach	Chris Icely	Yes
Stockport	Sue Stevenson	Yes
Sustrans	Gordon McArthur	Yes
Sustrans	Mike Babbitt	Yes
SYPTE	Dave Allatt	Yes
SYPTE	Neal Byers	Yes
Tameside MBC	Nigel Gilmore	Yes
Tata Steel	Mick Morris	Yes
TfGM	David Bland	Yes
TfGM	Moira Percy	Yes
Thornton Action Group	Phillip Jenkins	Yes
Trafford Centre	Andrew Douglas	Yes
Trafford Council	Dominic Smith	Yes
Wakefield Council	Paul Stevenson	Yes
Warrington Borough Council	Stephen Hunter	Yes
West Yorkshire Police	Mark Mitchell	No

Organisation	Contact Name	Provided Input
Wigan	Dave Round	Yes
Wirral Council	Julie Barnes	Yes
WYPTE	Jeff English	Yes
WYPTE	Michael Long	Yes
Wyre BC	David Thow	Yes
Yorkcourt Properties	Colin Mackie	Yes
Yorkshire Dales NPA	Peter Stockton	Yes

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