HIGHWAYS AGENCY

Safe roads, reliable journeys, informed travellers

North and East Midlands Route Strategy Evidence Report

April 2014

An executive agency of the Department for Transport

Document History

North and East Midlands route-based strategy evidence report

Highways Agency

This document has been issued and amended as follows:

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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 (SRN).

1.1.2 Route-based strategies (RBS) represent a fresh approach to identifying investment needs on the SRN. 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 (LAs) and local enterprise partnerships (LEPs), should initiate and develop route-based strategies for the SRN.

1.1.4 The then Secretary of State 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 SRN from local and regional stakeholders.

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

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

1.1.6 Building on the learning from those pilot strategies, we have divided the SRN into 18 routes. A map illustrating the routes is provided in Appendix A. The North and East Midlands 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 SRN 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 Highways Agency and from our partners and stakeholders outside the Highways 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; and
- 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 SRN will be used to:

- Inform the selection of priority challenges and opportunities for further investigation during stage 2 of route-based strategies; and
- 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.

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

1.3 Route description

1.3.1 The North and East Midlands route crosses the north Midlands between Stoke-on-Trent in the west and Lincoln in the east and totals over 360 carriageway miles (i.e. both directions). The route links the main arterial north-south routes; the M6, M1 and A1. Between the M6 and the M1 the route comprises the A50, A500, A6, A5111, A52 and the length of A38 to the M1. East of the M1 the route includes the A52 through Nottingham, the A453 south west of Nottingham and the A46 through

Newark between Leicester and Lincoln. A map of the route is shown in Figure 1.

1.3.2 The route links the major cities of Stoke-on-Trent, Derby, Nottingham, Leicester and Lincoln and directly serves the international airport for the East Midlands and the Donington Park Racing Circuit, both located near Castle Donington.

1.3.3 On average, the route services over 6 million vehicle miles per day. There is a high proportion of locally based short trips between the major towns and cities, particularly on the sections around Stoke-on-Trent and between Derby and Nottingham, and more strategic and commercial traffic between the major arterial routes of the M6, M1 and A1.

1.3.4 The route between Stoke-on-Trent and Derby is predominantly dual carriageway all purpose trunk road. The route from Nottingham (A52) to the A46 is a mixture of single and dual carriageway and the route between Leicester and Lincoln is mostly dual carriageway with sections of wide single carriageway around Newark-on-Trent and standard single carriageway around parts of Lincoln.

1.3.5 One key section of the route is maintained and operated on behalf of the Highways Agency as part of the private finance initiative under the terms of a Design, Build, Finance and Operate (DBFO) contract. This is the A50 Stoke to Derby link managed by Connect A50 Limited.

1.3.6 The strategic and local road network around Donington Park Racing Circuit is affected by annual events such as the Download Festival, Moto GP and similar events.

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 (connects with the route at Stoke-on-Trent at the M6 junctions 15 and 16);
- South Midlands (connects with the route at Derby where the A38 meets the A50);
- London to Scotland East (connects with the route at M1 junction 28, near Derby, Nottingham and Leicester); and
- London to Leeds (East) (connects where the A52 meets the A1 and crosses the A1 at Newark).

Figure 1
North and East Midlands

Route-based strategy overview map

2 Route capability, condition and constraints

2.1 Route performance

2.1.1 The SRN comprises only three per cent of England's road network, but it carries one-third of all traffic. Around 80 per cent of all goods travel by road, with two-thirds of large goods vehicle traffic transported on our network.

2.1.2 Compared with the national average the North and East Midlands route has relatively low traffic flows, due in part to the route consisting entirely of trunk roads rather than motorways. The busiest sections are to the west of the route around Stoke-on-Trent.

2.1.3 The proportion of freight traffic is reasonably low compared to the rest of the SRN, reflecting the high proportion of locally based trips around the major towns and cities. The link with highest proportion of freight traffic is the A50 between A511 and A516 (near Hilton in Derbyshire), which is 26% with 19% heavy good vehicles (HGVs). This link is ranked 265 nationally out of 1,977 links across the SRN.

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

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

Rank	SRN section	Annual Average Daily Traffic (AADT)	National Rank (out of 2497 links)
1	A500 between A527 and A53	40,870	578
2	A50 between A50 and A5035	40,744	583
3	A50 between A5035 and A50	40,430	594
4	A500 between A52 and A50	39,203	620
5	A500 between A53 and A527	38,593	633
6	A52 between A6005 and A453	37,412	668
7	A50 between A500 and A50	37,027	677
8	A500 between A53 and A5006	36,958	681
9	A500 between A5006 and A53	36,835	682
10	A50 between A50 and A500	35,950	713

2.1.5 However, busy roads in themselves don't necessarily represent an issue – our customers' experience of driving on the network is 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 SRN. 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, i.e. 'on time'.

2.1.6 The ten least reliable journey-time locations of this route are presented in Table 2.2. This is for the reporting period 1 April 2012 to 31 March 2013.

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	A52 between A6464 and A6514	43.5%	4
2	A52 between A6514 and A6464	48.7%	9
3	A46 between A1133 and A1	52.1%	17
4	A38 between A6 and A61	53.9%	20
5	A52 between A6007 and A6464	55.3%	26
6	A500 between A34 and M6 J16	55.6%	31
7	A500 between A527 and A34	56.7%	38
8	A500 between A34 and A527	57.1%	41
9	A46 between A617 and A1	59.1%	58
10	A52 between A6464 and A6007	59.4%	65

2.1.7 In Nottingham the A52 in both directions between the Priory (A6464) and Queens Medical Centre (QMC) (A6200/A6514) roundabouts are in the top ten worst performing routes nationally for journey-time reliability, as well as in this route.

2.1.8 The A52 is normally a busy section with greater flows recently as a result of traffic being displaced from surrounding routes, all which are subject to substantial road works. For example, improvements for Nottingham Express Transit (NET) phase 2, on the Nottingham Ring Road, and the widening scheme on the A453 between M1 junction 24 and the A52 at Clifton which have all contributed to poor journey-time reliability on the A52.

2.1.9 The A46 between the A1133 (Winthorpe) and the A1 (Newlink) junctions, north east of Newark-on-Trent, is very heavily trafficked as it is the major intersection between the A1, A17 and A46. Subsequently, journey-time reliability along this route is poor and is ranked 17 nationally.

2.1.10 In Derbyshire, the A38 between the A6 (Allestree) and the A61 (Little Eaton) roundabouts, is the fourth most unreliable section of the route, with regular traffic queues and speeds of 20mph. Little Eaton currently has part time signals in operation during the morning and evening peaks. There is a current scheme underway at this section designed to improve traffic flow.

2.1.11 The A52 between the Bramcote (A6007) and Priory roundabouts is known to suffer from congestion. However a scheme has recently been

completed here that included full signalisation of Priory and QMC roundabouts and will improve journey-time reliability.

2.1.12 In Staffordshire, the A500 through the Potteries passes through predominately urban areas. Traffic flows are high on this section and with the close proximity of junctions there is a negative effect on journey-time reliability.

2.1.13 The A50/A500 around Stoke-on-Trent is heavily featured in Table 2.1, but isn't in the top five in Table 2.2. This is primarily due to the higher than usual traffic flows on the A52 because of roadworks around Nottingham, causing an issue with unreliability. Once these works are completed, the A50/A500 around Stoke-on-Trent is likely to appear higher in the least reliable journey locations on the route.

2.1.14 The A46 between the A617 (known locally as Cattlemarket roundabout) and the A1 (Newlink) junctions is a heavily congested single carriageway with a level crossing on the B6326 that influences a poor journey-time reliability.

2.1.15 The A52 and A453 from M1 into Nottingham both suffer congestion at peak times. A major scheme to widen the A453 is currently under construction.

2.1.16 East Midlands Airport is reliant on the reliable operation of the A50, A52 and A453 for passenger and freight accessibility. There are in the region of 500 HGV movements to and from the airport on a typical week day. The vast majority of these trips take place late at night (normally after 9pm) and early in the morning (between 2am and 5am). With shift patterns for most of the employees on this site, there is no "normal" peak.

2.1.17 There is morning peak queuing on the A52 westbound from Derby, Pride Park and Pentagon Island along the A52 as far back as Borrowash. This is not shown in the above table as there are currently no data collection points along this route.

2.1.18 Figure 2.1 illustrates the average speeds during weekday peak periods between 1 April 2012 and 31 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.

Figure 2.1

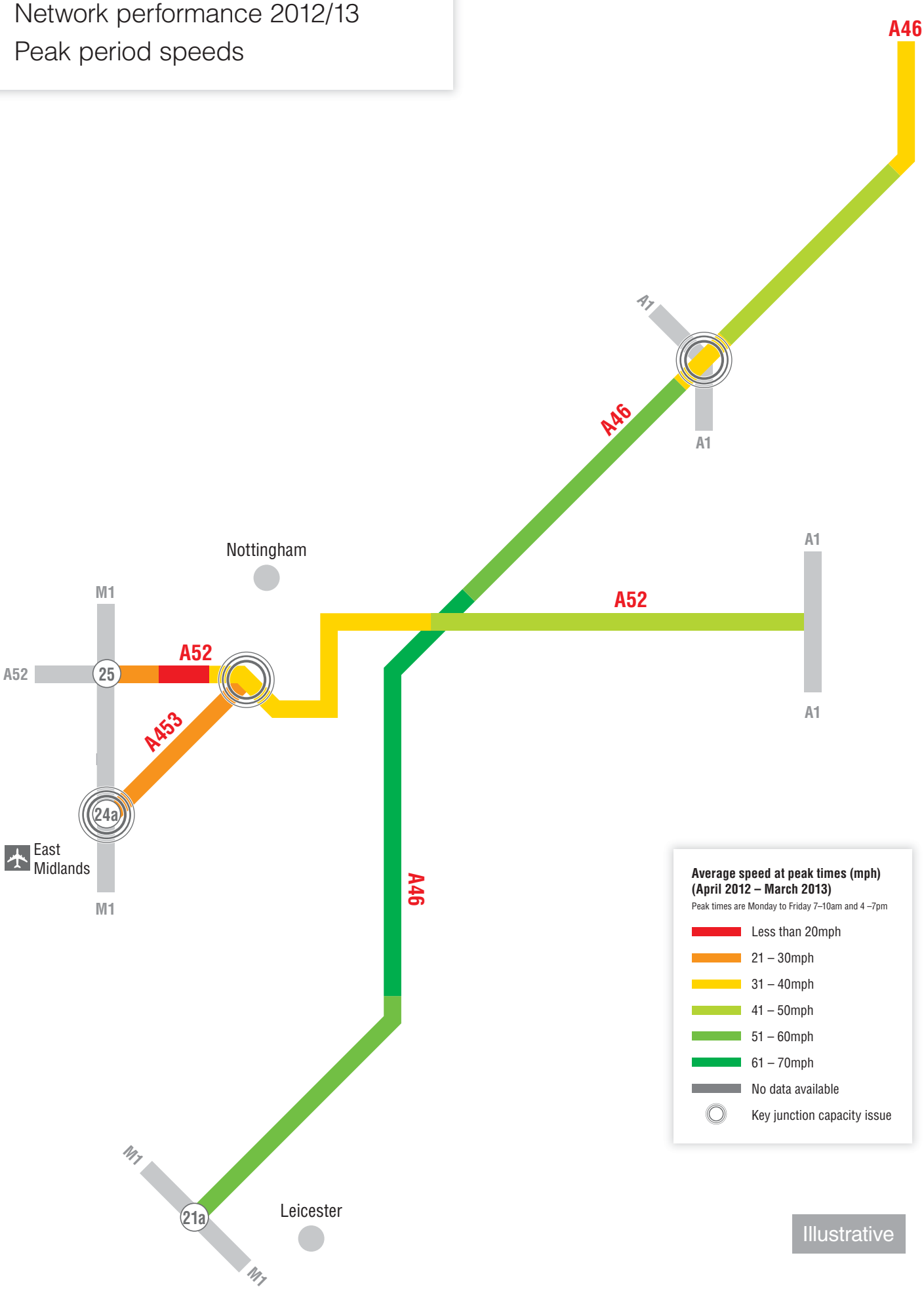
Network performance 2012/13

Peak period speeds

Figure 2.1

Network performance 2012/13

Peak period speeds



2.1.19 The SRN is key in promoting growth of the UK economy, and alleviating congestion can realise economic benefits.

2.1.20 Figure 2.2 shows the delay on our network compared with a theoretical free-flowing network.

Figure 2.2

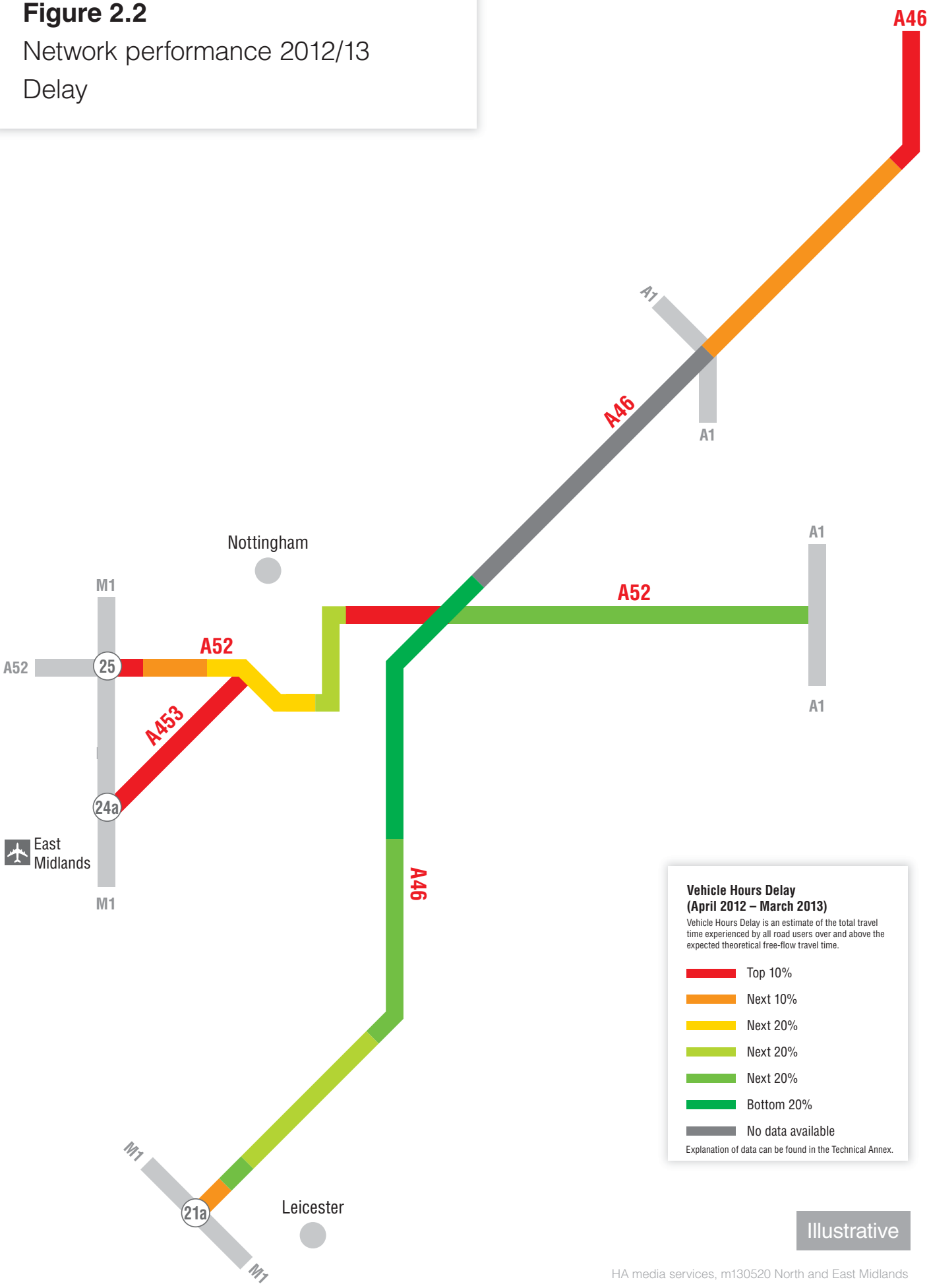
Network performance 2012/13

Delay

Figure 2.2

Network performance 2012/13

Delay



2.1.21 To the western end of the route, where it meets the M6, the A500 approach at junction 15 is experiencing delays and lower than expected average speeds. This is due to queuing back from the A519 roundabout in the morning peak period. In the afternoon peak there are queues on the A500 approach to the A519 roundabout travelling towards the M6.

2.1.22 The A50/A500 junction suffers from congestion due to queuing traffic particularly on the A50 approach to the junction. This junction is highlighted on Figure 2.1 as having a junction capacity issue with average speeds on this section between 21-30mph at peak times.

2.1.23 The A50 at Uttoxeter has junction capacity issues which are having an impact on the main carriageway, as demonstrated on Figure 2.2. This section also experiences a high proportion of HGVs, which is partly due to the JCB site located at Uttoxeter.

2.1.24 The A38 around Derby experiences delays, which is also evidenced as part of Table 2.2, where at grade junctions are having an impact on the main carriageway. The A38 within this route is predominantly grade separated apart from this section around Derby. Delays continue up to junction 28 of the M1, with queues on the approach to this junction.

2.1.25 The A52 around Nottingham experiences congestion problems which can be shown in Figure 2.1 and 2.2. Average speeds at peak times are lower than expected and it is recognised that the junctions along this stretch have capacity issues.

2.1.26 The majority of delays on this route are centred on the sections close to the major conurbations of Stoke-on-Trent, Derby, Nottingham and towards Lincoln. The sections around Stoke-on-Trent, Derby and Nottingham are performing poorly in comparison to the rest of the route on both delay and journey-time reliability.

2.1.27 Sections that perform well in comparison to the rest of the route are the more rural sections, such as the A46 between Leicester and Newark and the eastern part of the A52 between the junction with the A46 and the A1. Much of this section has recently been improved to dual standard.

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 aspirational goal.

2.2.3 Figure 2.3 illustrates the rates of injury accidents and the top 250 casualty locations on the SRN 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. 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 While we aim to reduce the numbers killed or seriously injured using and working on the SRN, 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 propensity to save lives and reduce the severity of injury.

2.2.5 Between 2008 and 2012 there were 3,022 collisions on the route. The number per year has ranged from 550 to 670 over this 5 year period, but there is no noticeable trend up or down.

2.2.6 Of the 3,022 collisions recorded 53 (2%) included fatalities, 329 (11%) included serious injuries and the remaining 2,640 (87%) included only slight injuries. The number of fatalities has decreased across the 5 year period, with 15 in 2008 and 8 in 2012.

2.2.7 Within the 3,022 collisions there 4,461 casualties, at a rate of 1.48 casualties per collision.

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

- 81% involved more than one vehicle;
- 16% of vehicles involved were HGVs;
- Where the age of drivers was known 5% were young drivers (aged 16-19); and
- 10% were older drivers (aged 60 or over).

2.2.9 The causation factors for accidents indicate that driver error or behaviour were the main causes. A summary of the main factors are as follows:

- 32% occurred where the driver 'failed to look properly';

- 26% occurred where the driver ‘failed to judge other person's path or speed’;
- 13% were ‘travelling too close’;
- 12% involved ‘poor turn or manoeuvre’;
- 12% involved ‘sudden braking’;
- 10% cited ‘careless, reckless or in a hurry’;
- 6% involved ‘loss of control’;
- 6% cited ‘slippery road’;
- 5% were ‘travelling too fast for conditions.’

2.2.10 The figures show generally lower rates of accidents on motorways than on all purpose trunk roads. Motorways have been constructed to a higher and more consistent safety standard. For historical reasons trunk roads have varied design standards and speed limits, with a greater mix of traffic.

2.2.11 The A453 has the highest killed and seriously injured rate (per 100 million vehicle miles), but a major scheme at this location is looking to improve the safety performance of this section.

2.2.12 We look at sites where at least five collisions have occurred in a 100m radius. This data indicates that particular concentrations of clusters are located on the following sections of the route; A38 Markeaton and Little Eaton junctions; A52, between the M1 junction 25 and A606 (Wheatcroft) junctions (Nottingham); A50 and the A500 in Stoke-on-Trent; and the A52 / A46 Bingham interchange. During the workshops, stakeholders raised specific concerns about safety along the A50 and A500 in Stoke-on-Trent.

2.2.13 We will continue to monitor and look to develop further safety improvement schemes where data analysis indicates there is a need.

2.2.14 The Highways Agency works with partners including the police and LAs to reduce road casualties and improve safety. Recent campaigns with partners in the North and East Midlands have targeted motorcyclists, cyclists and young drivers to raise awareness and educate road users.

Figure 2.3

Safety on the network

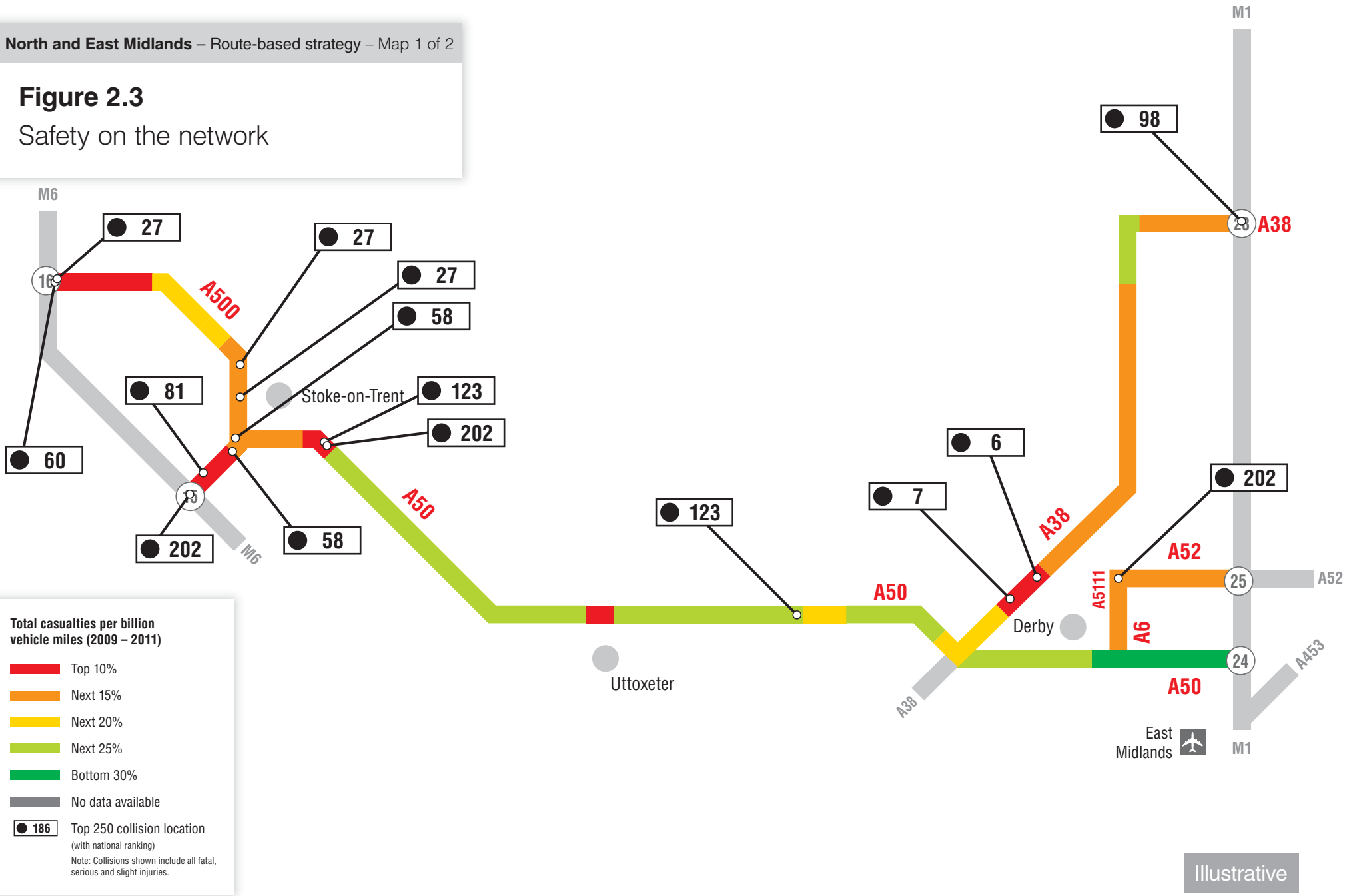
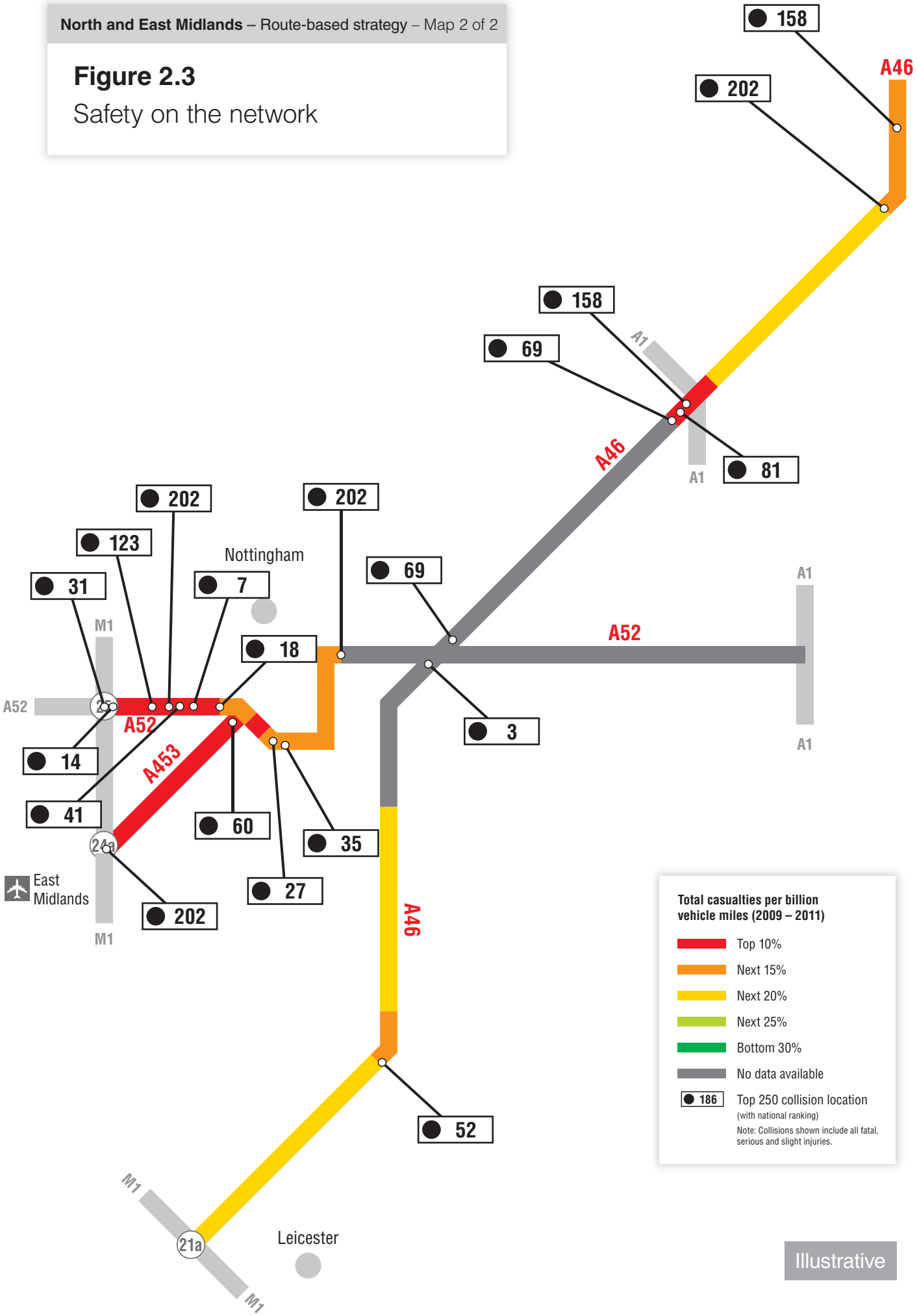


Figure 2.3

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 SRN 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 Highways 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 SRN 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 further 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 North and East Midlands route has a higher level of thin surfacing and non-standard surfacing than the national average. These surface types are more susceptible to deterioration. Significant sections of the route near Derby (on the A38) and Lincoln (A46) will reach the end of its design life by 2021.

2.3.7 There has been an increase in rutting along parts of the route from 2010/11 to date. Deep ruts are indicative of a surface and/or whole sub-structure reaching the end of its serviceable life.

2.3.8 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 is replaced by flexible material at the end of its serviceable life. Concrete is not a material we now use in new carriageway construction on any of the motorway and trunk road network.

2.3.9 Sections of road with concrete surfacing within this route include the A52 near Bottesford, the A46 south of Widmerpool, the A50 east of Blythe Bridge and a section of the A50 approaching M1 junction 24. Generally these sections are in good condition and it is anticipated that they will not require replacement before 2021.

Structures

2.3.10 The structures along this route are generally in good condition but due to age their deterioration can be at a faster rate as some elements (e.g. bridge joints) are reaching the end of their economically viable life.

Other key asset issues for routes

2.3.11 The majority of drainage systems are aging and as a result they are not always sufficiently adequate to remove water effectively. This is leading to saturated surface layers and increased water in and around structures. Rapid deterioration is a direct result of this, especially during the winter season.

2.3.12 Sections of this route serves East Midlands Airport where the vast majority of freight vehicle movements take place late at night (normally after 9pm) and early in the morning (between 2am and 5am). Also the peak season for airport travel for passengers is in the summer and for the movement of goods in the run up to the Christmas holiday. Therefore, consideration is needed for how road works are undertaken on the A50, A52 and A453 corridors.

2.3.13 There are no geotechnical or lighting issues along this route.

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 length of time incidents affect the running lanes.

2.4.3 There are no dedicated Traffic Officer Service patrols on any of the roads within this route due to the route being wholly made up of all purpose trunk roads. There is no data for this route on the average duration of incidents.

2.4.4 We have a good understanding of the types of incidents which are quick to clear up and those which take longer. The relative lack of technology

across this route restricts the ability to detect or react to incidents quickly.

2.4.5 In general, there are far more incidents which don't affect the running lanes for very long, and mostly these are caused by breakdowns in the live lanes, debris or damage only collisions. The longest duration incidents are mostly caused by infrastructure issues, such as road surface repairs, bridge strikes, barrier collisions and spillages.

2.4.6 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 Key issues raised by stakeholders were the inability to provide driver information in the Stoke-on-Trent area (A500, A50), Derby junctions (A38) and around Nottingham (A52) and issues with reliability around the A46 junction with the A1 near Newark-on-Trent.

2.4.8 Emergency diversion routes (EDRs) in the area vary substantially between those which are fully agreed and signed to others which lack any form of agreement with LA partners. This is particularly true of the routes around Derby as the Council have yet to formally agree any EDRs. A lack of an agreed diversion route can cause congestion on the surrounding local and SRN and confusion for road users. Feedback from the stakeholder events highlighted this issue.

2.4.9 The A500/A50 around Stoke-on-Trent is used by road users as a diversion route if there is an incident on the M6 between junctions 15 and 16. This can cause congestion issues on these routes and the surrounding local road network.

Flooding

2.4.10 We have a responsibility to reduce flooding. Flooding of the Highways Agency 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 risk of repeated flooding.

2.4.12 Where flooding issues exist across the network, the Highways Agency will look to address these through maintenance or schemes. For example, there are flooding issues at Little Eaton on the A38. We will look to address these issues through drainage works as part of the pinch point scheme. On the A52 at junction 25, flooding has been addressed through drainage works as part of a scheme to re-profile the carriageway.

Severe Weather

2.4.13 The Highways Agency aims to minimise where possible the impacts of severe weather, i.e. strong winds and snow, on network performance and the safety of road users.

2.4.14 There are no known extreme weather hotspots along this route and it is no more susceptible to severe weather than other parts of the network.

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, e.g. 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 also forms part of how we can 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 There is limited technology across the route. There are VMS at the A38/A50 Interchange and on the A38 southbound towards Little Eaton. On the A46 between Widmerpool and Farndon, there are VMS, electronic trigger signs and CCTV provision. There is no technology provision on the A52 and this is mainly due to limited space to house the equipment along this section.

2.5.5 Traffic technology assets along the route are considered to be in good condition as most have only recently been installed, including variable message signs on the A38 north of the Little Eaton junction and the A46 between Widmerpool and Newark.

2.6 Vulnerable road users

2.6.1 For the purposes of the document, vulnerable road users are defined as pedestrians, cyclists, motorcyclists and horse riders.

2.6.2 The Highways Agency, working in partnership with Sustrans, has considered a number of locations to improve the connectivity, accessibility and safety of cyclists on the SRN. Eight proposed cycle schemes are currently being taken forward along this route. These are located at:

- A38 Ashbourne Road to Kedleston Road;
- A38 Markeaton;

- A45/A43 junction near Northampton;
- A453/ A6/ A50 roundabout at M1 junction 24 in Leicestershire;
- A46/ A435 south of Alcester;
- A5111/ A52 Raynesway;
- A52 Bramcote to Dunkirk; and
- A52 Dunkirk to Clifton Cycleway.

2.6.3 Stakeholders are concerned that the A500/A50 route severs the Stoke-on-Trent conurbation; there are limited crossing points and opportunities for promoting sustainable modes.

2.6.4 A report on the latest Derby Road development on the A52 in Nottingham suggested increasing the width of pavements and improving cycling provision in the congested areas around Nottingham University and Wollaton Park. The cycle network near the University is perceived to discourage cyclists as it is not continuous.

2.6.5 Stakeholders also raised the difficulties experienced by cyclists in the Derby area, particularly on the A38, and the lack of crossing points on the network.

2.6.6 The A50 has seen some increases in casualties for motorcyclists. On the Stoke-on-Trent urban section, casualty numbers have increased amongst the elderly, pedestrian and pedal cyclist user groups.

2.6.7 Major employers around M1 junction 24, such as East Midlands Airport, are trying to increase the numbers of staff travelling to work on foot and bicycle as part of their Sustainable Travel Plans. These employers have expressed a desire to improve facilities for vulnerable road users to help achieve their Travel Plan targets.

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 SRN 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 A simple indicator of poor air quality is where a LA has declared an Air Quality Management Area (AQMA). An AQMA is a location – a whole, or a part of a LA - where air quality strategy objectives have been exceeded. Nitrogen dioxide, and to a lesser extent, particulates, are the main concerns for this route.

2.7.5 A number of AQMAs have been designated on, or close to, this route, including on the A46 around the junctions for Leicester near the former QDF foundry site and the A52 in Derby and Nottingham.

2.7.6 Air quality issues have also been recorded in Stoke-on-Trent on the sections of the A50/A500 that pass through the centre of the city, resulting in it being designated as an air quality management area.

Cultural heritage

2.7.7 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. These are described as a range of geographical components of the historic environment which have been positively identified as having a degree of significance meriting consideration in planning decisions.

2.7.8 The A38 follows the Roman Ryknild Street from Lichfield to Derby and, north of Derby, forms part of the former Derby to Chesterfield turnpike, upgraded in the 1960s and 1970s. There are a number of heritage assets along this route, which are dominated by industrial archaeology, particularly disused railways, tramways, collieries, quarries, canals and mills. It also passes close to the Derwent Valley Mills World Heritage Site.

2.7.9 The A46 follows the course of the Roman Fosse Way between Leicester and Lincoln. The route has extensive Roman remains, including scheduled forts and towns. Unimproved sections of the road run close to several medieval villages and country estates. The lower-lying northern stretches of the route pass several former Second World War airfields.

2.7.10 The A52 follows the course of a former salt route from Nantwich (Cheshire), used in the Roman, medieval and post-medieval periods. The eastern part of the route, from Holme Pierrepoint east of Nottingham to the A1 at Grantham, runs through or past a number of medieval villages and historic estates.

2.7.11 The A500 passes in close proximity to a number of industrial heritage assets including the famous Potteries. A number of these sites have been transformed into historic visitor attractions for which the A500 is a key access route.

2.7.12 The sensitivity of these sites will need to be carefully considered in any future works/development programmes, particularly the impact of new gantries, signing and lighting on the landscape

Ecology

2.7.13 The Highways 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 There are two Sites of Special Scientific Interest (SSSI) that are relevant to this route, these are;

- Willwell Cutting is immediately adjacent to A52; and
- the Twenty Acre Piece next to the A46. This site includes some of the best remaining examples of acidic clay grassland in Leicestershire.

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 route does not pass through any national parks or areas of outstanding national beauty. However, there are some World Heritage Sites along the route that have landscape sensitivity. Most notably, Derwent Valley Mills in Derbyshire is seen as an area of outstanding importance as the birthplace of the factory system where in the 18th Century water power was successfully harnessed for textile production.

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 (IAs).

2.7.20 The action plans require those IAs with 'First Priority Locations' (FPLs) to be investigated as a priority. FPLs are those IAs which have locations with road traffic noise levels in excess of 76 decibels according to the results of Defra's strategic noise maps.

2.7.21 The cause of noise can be the result of a number of factors including high flows of traffic, type of road surface in place, and variable

landscaping. The Highways Agency will consider all these factors when designing and managing its roads.

2.7.22 There are a number of FPLs present along the A52 and A38.

2.7.23 Sections of road with concrete surfacing within this route include the A52 near Bottesford (within an Important Area), the A46 south of Widmerpool, the A50 east of Blythe Bridge and a section of the A50 approaching M1 junction 24 (none of which not currently designated as IAs). Regular correspondence is received from local residents about the noise generated by this type of surface.

Water pollution risk

2.7.24 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.

2.7.25 The identification and control of areas of potential pollution are essential, when a spillage incident or flooding takes place across the network, it is necessary to ensure pollution controls are in place.

2.7.26 The Highways Agency has pollution control tools in place across its network including spill pod kits located at strategic areas and valve control over many of its balancing ponds. As further resilience the Traffic Officer Service are now carrying spill kits within their vehicles.

2.7.27 There are two sites on this route where water pollution is a risk, these are both on the A500 in Stoke-on-Trent.

3 Future considerations

3.1 Overview

3.1.1 There is already a lot known about the planned changes to and around the route. LAs 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. LAs, together with 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 and the following sections summarise those issues in more detail.

Figure 3

Key future considerations for the route

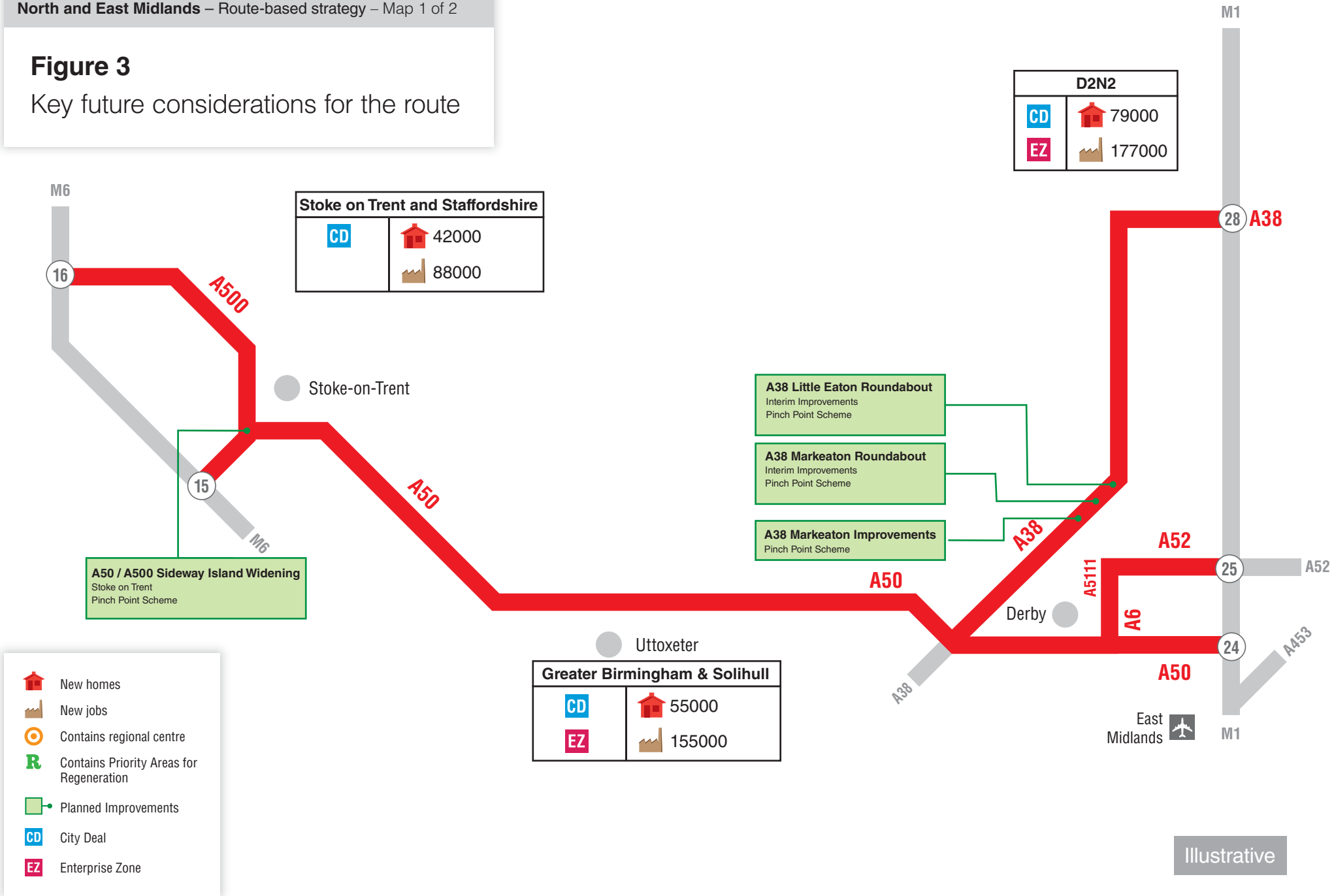
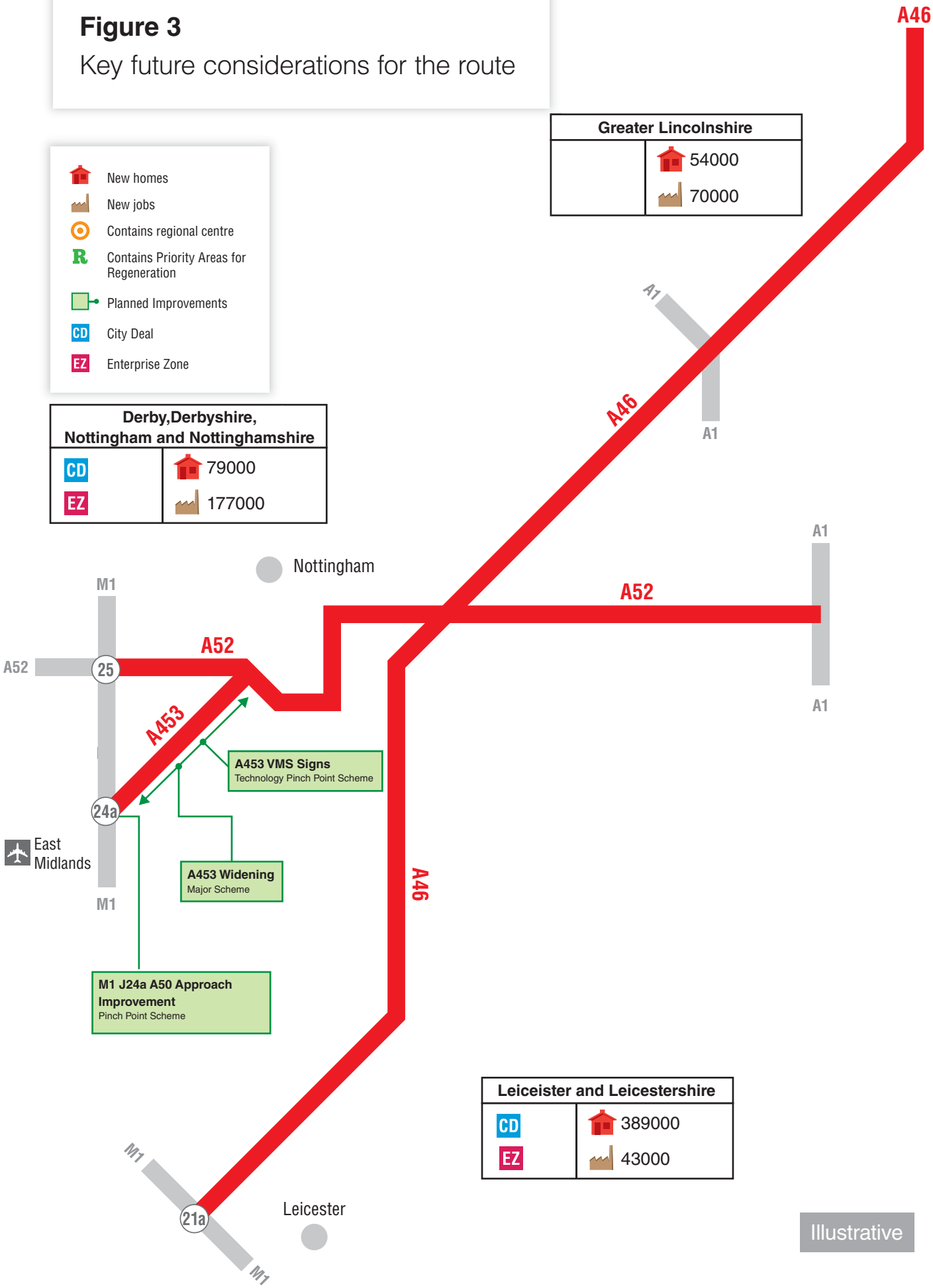


Figure 3

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.

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	
Etruria Valley, Forge Lane, Stoke-on-Trent	Residential and commercial		212 dwellings and 541 jobs	2703 jobs	A500/A50
JCB new factory, Uttoxeter	Commercial		2500 jobs		A50
Clifton SUE, Nottingham	Residential and commercial			3000 dwellings and 100, 000m^2	A453
East Midlands Gateway SRFI	Commercial			7,273 jobs	A453
Gamston SUE, Nottingham	Residential and commercial			4000 dwellings and 20 ha	A52
Nottingham Enterprise Zone	Residential and commercial			1150 dwellings and 20 ha	A52
Edwalton, Nottingham	Residential			1200 dwellings	A52
Etwall SRFI, Derby	Commercial			6000 jobs	A38/A50
Birstall SUE, Leicester	Residential and commercial			1500 dwellings and 15 ha	A46
North of Leicester SUE	Residential and commercial			4500 dwellings and 13 ha	A46
Teal Park, Leicester	Commercial			87 ha	A46
Ashton Green, Leicester	Residential			3000 dwellings	A46
Grantham	Residential and commercial		1214 dwellings	7646 dwellings and 90 ha employment	A52

				land	
Infinity Park, Derby	Commercial			87 ha employment land	A50
Chatterley Valley, Staffordshire	Commercial			700 jobs	A500
East Midlands Airport	Commercial			6.7million passengers per year (2030), 618,000 tons of cargo per year (by 2035)	A50/A453/A52
Derby Commercial Park, Derby	Commercial			65 ha employment land	A5111
Chaddesden Sidings, Derby	Commercial			28 ha employment land	A52/A5111

3.2.3 There are four LEPs (Stoke-on-Trent and Staffordshire, D2N2, Greater Lincolnshire, Leicester and Leicestershire), one of which has a designated enterprise zone relevant to the route in Nottingham which is shown in Table 3.1 above.

3.2.4 There are three areas with approval for City Deals. Nottingham was in the first tranche which focused on eight core cities. City Deals for Leicester and Leicestershire and Stoke-on-Trent and Staffordshire are currently subject to negotiation.

3.2.5 Considerable economic growth is proposed across the North and East Midlands route, particularly in the four city sub-regions of Stoke-on-Trent, Nottingham, Derby and Leicester. These proposals will inevitably have an impact on the SRN.

3.2.6 In Staffordshire, land west of Uttoxeter is intended to be the focus for a major Sustainable Urban Extension (SUE) including Chatterley Valley and Blythe Bridge, both of which are regarded as regional investment sites.

3.2.7 Staffordshire University, the University Hospital, Keele University and Keele Science Park are projected to be the focus for high value business growth in the area. JCB is a key employer in Uttoxeter, with their World Parts Centre and Heavy Products Factory in the town and the main headquarters in Rocester.

3.2.8 Stakeholders within the area highlight that regeneration and growth within East and North Staffordshire will be closely linked to the performance of the A50 and A500 routes. These act as key distributors and provide strategic links to the national motorway network. Chapter 2 provides evidence to show that these sections experience the highest traffic volumes on this route. Stakeholders were concerned that future developments could affect its future efficiency, safety and

performance. The future expansion of Uttoxeter and the performance of the junction at Rocester have been noted as key concerns.

3.2.9 In Derbyshire, the A38 around Derby has been highlighted as a barrier to future development, as it currently suffers performance issues. There is a significant amount of development coming forward as part of the emerging Derby and Derbyshire Core Strategies. Housing and employment development to the south of Derby will put the A50 corridor between A50/A38 and the M1 junction 24 under increasing pressure.

3.2.10 Elsewhere in Derbyshire, emerging proposals for a Strategic Rail Freight Interchange near the Toyota site at Burnaston are likely to have an impact on A38/A50 junction, both in terms of volume of traffic and also a change in the type of traffic using this section.

3.2.11 In Nottinghamshire, there are extensive growth proposals planned adjacent to the A453 and A52. The major improvement of the A453, which is currently under construction, will support growth by improving access between the Nottingham area and the national motorway network. The A52 will also need to perform effectively as both a local distributor and as a strategic link. Developments which are likely to require improvements to the SRN and local infrastructure include proposed Sustainable Urban Extensions (SUEs) at Clifton and Gamston, and the Nottingham Enterprise Zone (Boots).

3.2.12 The Nottingham Enterprise Zone at the Alliance Boots Campus in Nottingham comprises a multi-party investment deal which will address the constraints on the site and open it for investment. The Enterprise Zone has been extended to cover three other sites within Nottingham: the Beeston Business Park, the Nottingham Science Park and the MediPark site (at Queens Medical Centre) which together make up 286 acres (116 hectares). The zone, which has the potential to create approximately 4000 new jobs, is the UK's lead Enterprise Zone for health and life sciences. Also within the D2N2 LEP area, Markham Vale offers 80 hectares of employment land with direct access to the M1 motorway at junction 29A, of which approximately 20 hectares has Enterprise Zone status.

3.2.13 Three major developments included in the adopted Newark Core Strategy were highlighted by Stakeholders, including 7-8,000 dwellings and 80-90ha of employment land. It was considered that this growth needed to be supported by improvements to three key roundabouts on A46 bypass East of Newark, including its intersection with the A1.

3.2.14 Considerable growth is proposed in Leicestershire including the area north of Leicester in the vicinity of the A46. The future operation of the M1 and A46 is seen as an important factor in realising growth in the Leicester area.

3.2.15 Three large SUE's are proposed around Lincoln. The Central Lincolnshire Core Strategy published in July 2013 allocated 18,800 dwellings and 140ha of employment land for the Lincoln Principal Urban Area (PUA) between 2012 and 2031. Whilst the Core Strategy has recently been withdrawn, work is now continuing on producing a Local

Plan. It is likely that growth proposals for the Lincoln PUA within the new Local Plan will be of a similar scale to those originally proposed. It is anticipated that these three SUE's will have an impact on the A46.

3.2.16 The Raynesway employment area, to the east of Derby, straddles the A5111 near Derby. Major employers based there include Rolls Royce and Severn Trent Water. Since 2012 Rolls Royce have created an additional 838 jobs on the site and Severn Trent Water an additional 251 jobs. With poor public transport links to the area most employees travel to work by car. There has been sufficient capacity on the A5111 to accommodate this growth but further increases in employment levels could affect this section.

3.3 Network improvements and operational changes

3.3.1 The Highways 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. 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 SRN enhancement schemes

Location	Scheme Type	Completion Year	Anticipated Benefits
A50 / A500 Sideway Island widening, Stoke-on-Trent	Pinch point scheme	2014	Reduce congestion by improving driver information provision at the junction and increase the capacity of the junction
A38 Markeaton roundabout interim improvements, Derby	Pinch point scheme	2014	Increased capacity through additional lanes and signal controlled junction
A38 Little Eaton roundabout interim improvements, Derby	Pinch point scheme	2014	Increased capacity through additional lanes and signal controlled junction
M1 J24, A50 approach	Pinch point scheme. Increased junction capacity	2014	Increased capacity and reduced congestion by a new approach from A50 eastbound to M1 southbound
A52 Bardills	Developer funded scheme. Junction improvements	2014	Improvements to facilitate delivery of the Nottingham Express transit tram scheme
A453 VMS signs	Technology pinch point scheme.	2015	Improve provision of driver information by installing variable message signs, vehicle detecting loops and CCTV
A453 widening (M1 J24 to A52 Nottingham)	Major scheme. Widening	2015	Increased capacity and reduced congestion through widening and upgrading the section
M1 J21a / A46	Developer funded scheme. Junction improvement	2015	Capacity improvements to accommodate Glenfield Park development

A46 Newark	Technology pinch point scheme.	Completed 2013/14	Improvement to driver information through provision of a strategic message sign
M6 J16 improvement	Pinch Point Scheme	2015	Improved flow and journey-time reliability. Supports growth around Crewe and South Cheshire / North Staffordshire.

3.3.2 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 SRN. Table 3.3 below provides a summary of the pipeline improvement schemes that would impact this route, subject to value for money and deliverability.

Table 3.3 Declared pipeline schemes

Location	Scheme Description
Derby junctions (A38)	Junction improvements to three junctions at A38/A5111 Kingsway roundabout; A38/A52 Markeaton roundabout; and A38/A61 Little Eaton roundabout
A50 Uttoxeter	Improvements to the A50 around Uttoxeter to support local growth and housing, subject to the usual developer contributions

3.4 Wider transport networks

3.4.1 The June 2013 report from HM Treasury 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
A52 Congestion Management Integrated Transport Scheme. (A52 Wyvern-Pride Park)	Road	2017	Reduce queues on the A52 trunk road at Spondon. The Derby City promoted scheme will add extra lanes on both sides of the A52 between the highway's junctions with Wyvern Way and Raynesway. Work would also see changes in layout and signalling at the Toys R Us roundabout and a new footbridge across the highway into Chaddesden. There would also be a "realignment" of slip roads to and from the A52 via Wyvern Way to reduce the tightness of the bends.
Eturia Valley Access	Road	2018	Reduce congestion, improve reliability on both A500 and the local road

			network and unlock economic growth in the area
A50 Groby Road transport corridor improvements	Public Transport	2016	Improve transport infrastructure to address impacts of growth along the corridor
A500 Widening Scheme.	Road - Tranche 2 Local pinch Point	2014	Additional capacity, likely to increase flows through M6 J16.

3.4.2 East Midlands Airport is located near the A50, south of Derby and Nottingham. In 2013, the airport handled around 4.3 million passengers and 300,000 tonnes of cargo. The draft Sustainable Transport Plan (March 2014), forecasts the airport could achieve throughput of 10 million passengers a year (by 2030) and handle 618,000 tonnes of freight a year (by 2035). The airport is the largest employment site in Leicestershire outside the City of Leicester. Nearly 7,000 employees are based on the airport site and with the increase in throughput it is reasonable to anticipate employment numbers on the airport site will grow by 2030.

3.4.3 There is also the proposal for the East Midlands Gateway Rail Freight Interchange, which could be developed adjacent to the airport. Further discussion on these proposals is included in the London to Scotland East RBS.

3.4.4 A new station for HS2 phase 2 is proposed at Toton near the M1 junction 25. A direct access onto the A52 is proposed which is planned to open in 2033. The impact of the new station and construction traffic for the station and HS2 will need to be considered within the RBS period.

4 Key challenges and opportunities

4.1 Introduction

4.1.1 This chapter summarises the key challenges and opportunities as identified by our internal and external stakeholders and supported by evidence. It is not possible to show all the challenges and opportunities identified however a full list is provided in the Technical Annex.

4.1.2 Figure 4 summarises the key challenges and opportunities that the route will experience during the 5 years 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 in 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 the anticipated future operational performance needs, or when interventions may be needed to help facilitate local housing and economic growth aspirations.

Local Stakeholder Priorities

4.1.5 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 views on their “top priorities” locally.

4.1.6 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.

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

4.1.8 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. We will be conscious of these limitations in the reporting of stakeholder priorities as we move into the second stage of RBS.

4.2 Operational challenges and opportunities

4.2.1 Currently, the route has no coverage by our Traffic Officer Service, apart from exceptional circumstances, and data on the impact of incidents on the route is fairly limited. We know that reliability is an issue for sections of the route (including the A52 near Nottingham, A46 near Newark, A38 Derby junctions and A500 around Stoke-on-Trent), but this appears to be more of a capacity problem than incident led.

4.2.2 There is, however, an opportunity to increase our knowledge of incidents on the network through liaison with emergency services partners. Further local engagement, with regional Police forces who operate on the all purpose trunk road could support data gathering.

4.2.3 With limited technology, currently it is a challenge to provide real time information to road users. Stakeholders raised this challenge for two locations on the North and East Midlands route; on the A500 and A46. The priority for this issue was rated medium to low and is considered an existing problem.

4.3 Asset condition challenges and opportunities

4.3.1 The asset within this route is in relatively good condition with recent and upcoming maintenance schemes being delivered to address current issues. Ongoing deterioration is anticipated with a number of assets reaching the end of their design life over the route based strategy period. The main asset of concern within this route is the condition of the pavement. This is particularly the case along the A38 around Derby, the A52 through Nottingham and the A46 near Lincoln.

4.3.2 Managing the impact of maintenance schemes on road users and neighbours will be a key challenge. This route supports a higher level of freight distribution which is likely to continue with the development of Strategic Rail Freight Interchanges near the A50 and the operation of East Midlands Airport. As these will not necessarily follow the same peaks during the day or the year as ‘normal’ traffic, further consideration is required to minimise the impact of works.

4.3.3 These sections of pavement reaching the end of their design life are also located where there are existing performance issues in relation to journey-time reliability and delay. The works will need to take account of the impact on road users where capacity is already an issue.

4.3.4 The number of concerns raised by stakeholders regarding the condition of assets within this route was low. However, the general challenge raised regarding maintaining pavement condition and coordinating these and improvement works was given a high priority by stakeholders.

4.4 Capacity challenges and opportunities

4.4.1 On this route there are current capacity challenges which have been evidenced in this document and raised by stakeholders. Stakeholders have also identified where they think the priorities are and timescales for opportunities to support growth.

4.4.2 The key challenges for this route focus on the sections around the main towns and cities across the route, which accommodate different road users and have both commuters as well as strategic traffic.

4.4.3 The A50 and A500 around Stoke-on-Trent provide key cross country routes for through and local traffic and are regarded as key to delivering growth in North and East Staffordshire. There are a number of existing constraints including congestion, unreliable journey-times and safety issues. Further along the A50, the at grade roundabouts act as constraints to the route at Uttoxeter and Sudbury, including the A50/Rocester junction. This section in particular was a high priority for stakeholders in the medium to long term.

4.4.4 The A50 on the approach to the M1 at junction 24a and 24 experiences delays and is a major strategic junction interacting with the London to Scotland East route. This junction causes delays and queuing on both routes, which is likely to continue with the major developments anticipated at East Midlands Airport and with the strategic rail freight interchange.

4.4.5 The A52 trunk road provides a strategic link between the Nottingham and Derby areas and is an east-west link, intersecting the M1 at junction 25. Evidence in previous sections and stakeholder feedback has emphasised the existing issues along this section, in particular, where there are issues with junction capacity affecting the main carriageway. There is significant growth along this route and development of an Enterprise Zone in Nottingham. Numerous sections of the A52 were raised as high priorities for this route by stakeholders in the short, medium and long term.

4.4.6 A future challenge for the A52 will be the HS2 parkway station planned at Toton, near junction 25 of the M1. A direct access onto the A52 is proposed which is expected to open in 2033. This is a challenge after this RBS period up to 2021. However, consideration of how construction traffic and the planned station will impact the surrounding network will need to be undertaken within the RBS.

4.4.7 Another high priority with stakeholders was the A38 junctions around Derby. For much of its length, the A38 is grade separated but there are three major junctions in the Derby area that are at grade. These junctions, particularly at Markeaton and Little Eaton have pre-existing performance issues. Pinch Point schemes are being delivered at the Markeaton and Little Eaton junctions and these are anticipated to support growth over the short term. However, more significant schemes are expected to be required over the medium to long term. There are proposals in the pipeline to grade separate these three junctions. It is expected that such schemes would address the capacity concerns at these locations within and beyond the route base strategy period.

4.4.8 Existing delays were noted on the A38 approach to the M1 junction 28. These capacity issues are expected to be exacerbated by development planned in the area and the potential for increased demand as a result of the M1 junction 28 to 31 smart motorways scheme and the A38 Derby Junction schemes. Therefore, it is expected that capacity issues

here could constrain economic development over the short to medium term.

4.4.9 The A46 junctions at Newark were also considered to be under pressure at present, and stakeholders considered that future development in the area would exacerbate this situation. The A46 was seen as being vital to the prosperity of Lincolnshire, so addressing the A46 pinch point at Newark is also seen as key for growth in the Central Lincolnshire area. Stakeholders gave high priority to this section and identified that capacity issues here could constrain economic growth over the short and medium term.

4.4.10 In summary, the key locations where we currently anticipate that capacity improvements may be required by 2021 are:

- A500/A50 around Stoke-on-Trent;
- A50 / Rocester junction, Uttoxeter;
- A38 Derby Junctions;
- A38 / M1 junction 28;
- A52 Corridor including M1 junction 25;
- A50 / M1 junction 24a and junction 24; and
- A46 / A1 Newark.

4.4.11 There is an opportunity to work with developers, LEPs and LAs to secure funding for the delivery of capacity improvements that may be necessary to support economic development.

4.5 Safety challenges and opportunities

4.5.1 The overall safety performance of this route is variable. The highest casualty rates were noted along the A500 and A50 around Stoke-on Trent, on the A38 past Derby and on the approach to M1 junction 28, the A52 particularly through Nottingham and the A46 around Hobby Horse, Bingham Interchange and on the approach to Lincoln. Most of these sections carry high flows of traffic and have a number of at grade junctions. A lot of the collisions along these sections tend to cluster around the junctions with a high proportion of shunt, weaving and overtaking incidents.

4.5.2 The A453 has the highest killed and seriously injured rate (per 100 million vehicle miles), but the major improvement scheme which is currently being delivered at this location is looking to improve the safety performance. The challenge for this period will therefore be to monitor the impact of the scheme on the safety of the route.

4.5.3 There are numerous locations within this route that figure in the Highways Agency's top 250 collision locations. These tend to be on the routes noted in paragraph 4.5.1 with the highest ranking sites observed along the A500 around Stoke-on-Trent, the A38 around Derby, A52 through Nottingham and the A52 Bingham Interchange.

4.5.4 There are a number of improvements planned along these sections as part of the Pinch Point programme. This includes a scheme at A50/A500 Sideway, A38 Markeaton and A38 Little Eaton Junctions. Whilst the focus of these is on providing capacity enhancements, safety issues will also be considered as part of the scheme designs.

4.5.5 The highest priorities for safety identified by stakeholders at the workshop related to cyclists either using or crossing the network. This reflects the varied users of the trunk road sections on this route. Safety of cyclists was identified as a key concern from stakeholders in particular along the A38 in Derby as it was suggested there was a lack of cycling routes and crossing points

4.5.6 Another issue raised by stakeholders was in relation to the A50, where incidents are causing significant delay. Stakeholders also highlighted this section did not have incident management response provided by the Traffic Officer Service.

4.5.7 Overall the sections that perform not as well compared to the rest of the route in terms of reliability and delay also have issues with their safety performance.

4.6 Social and environmental challenges and opportunities

4.6.1 The route links major towns and cities and so we see greater impact on the environment at these locations, especially where congestion is already an issue. Stakeholders were particularly concerned about air quality in Nottingham with two AQMAs having been identified; one at Dunkirk close to the A453/A52.

4.6.2 The air quality issues here are a result of high levels of traffic and congestion along with the close proximity of buildings to the network. A major scheme to upgrade the A453 is currently being delivered and whilst this will improve congestion, concerns were raised that this may bring a further reduction in air quality along the A52. The impact of the scheme on air quality was assessed as part of the Environmental Impact Assessment.

4.6.3 The challenge for the period up to 2021 will be to monitor the impacts of the scheme as well as exploring opportunities to reduce the impact of traffic on the adjacent residents. Care will also be required to ensure that any capacity or safety improvements that may be identified do not adversely impact on air quality.

4.6.4 As this route consists wholly of trunk roads there are subsequently considerable interactions between different types of road users, especially in built up areas along the route. .

4.6.5 The Environment Agency attended the stakeholder workshops and they identified consideration of the Water Framework Directive as their highest priority. This subsequently emerged as a medium priority for the route as a whole. We have a Memorandum of Understanding with the Environment Agency and work closely with them to ensure all our maintenance, operations and improvements adhere to the relevant directives. There is an opportunity throughout this period to further

develop this working relationship to ensure we maintain an up-to-date understanding of legislation and best practice.

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	A46 North of Leicester M1 J21	Variable Message Signs (VMS) need to be better utilised to reduce burden on nearby towns when there is an incident on the SRN.	No	X			✓	✓		
	A500	Congestion at peak times could be alleviated with better traffic information/VMS	Yes	X			✓		✓	
	Route-wide	No current data on incident duration, challenge to understanding requirements for technology and operational needs	Yes	X	X		X			
	A52	Performance issues with this section and limited technology to inform road users and understand real time traffic conditions	Yes	X	X		X			
Asset Condition	All	Need to ensure that the SRN is properly maintained. Pavement is reaching the end of its design life – there is a need to coordinate maintenance works with improvement schemes both in region and between regions.	Yes	X			✓			✓
	A52 Nottingham	Significant sections will reach end of its design life by 2021.	Yes		X		X			
	A38 Derby	Significant sections will reach end of its design life by 2021. Important route locally which also have performance issues	Yes		X		X			
	A46 near Lincoln	Significant sections will reach end of its design life by 2021.	Yes		X		X			

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	Route-wide	Aging drainage asset typically experienced on this route	Yes		X		X			
Capacity	Newark, A1 / A46 Newark Triangle	A total of 7-8,000 dwellings and 80-90ha of employment land across 3 sites in Newark will be provided in the Newark Urban Area. Land South of Newark has planning consent for 3,150 dwellings and 50ha of employment land and it is anticipated planning applications will be received for the other 2 sites in the near future. Current pinch points exist; 3 key roundabouts on A46 bypass E of Newark. No obvious solution: dualling would be near impossible due to geographic constraints. Delay, people avoid Newark. Adverse impact on trade and business	Yes	X	X		✓			✓
	A453	Leicestershire County Council have concerns about the impacts the A453 upgrade will have on Kegworth (and possibly other areas in NW Leicestershire).	Yes	X			✓	✓		
	A52, Nottingham	Less flexibility in East Nottingham to accommodate traffic/road users than West Nottingham as fewer road links. West is better served by the vision of trying to improve Transport (has the tram etc). East is the challenge, but there are opportunities to develop the East.	Yes	X			✓	✓		
	Area-wide	Very few choices of route E-W and low total capacity. Some meeting points between E-W and N-S movements don't work efficiently.	Yes		X		✓	✓		

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	A46 Lincoln	An eastern bypass would relieve congestion in the area	Yes	X			✓	✓		
	A50 East of Stoke-on-Trent	Unreliable journey-times; delays on important trunk route.	Yes	X			✓	✓		
	A52 / A453	Lots of development E of J25 on A52; new journeys will treat the A52 as local distributor rather than strategic link. OD data required – how do people actually use the network? It may technically be strategic, but locals will consider it a standard link. A453 has a mixed function. There needs to be a way to influence passenger choice to improve efficiency of the network – ie separating local and strategic journeys. People don't trust the strategic network, eg those who use it once a month will avoid a section with a bad reputation and increase pressures on local roads. The network overall has poor resilience and reliability.	Yes	X			✓			✓
	All	Employment is needed ASAP, so the SRN shouldn't constrain anticipated growth. Growth more regionally outside of this region needs to be accounted for as they will impact on this route.	Yes	X			✓		✓	

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	A38, Derby. Toyota – J28	Key N-S movement with major congestion. Grade separation is planned in addition to pinch point schemes. Will unlock a lot of development land. Impacts on local land planning issues. Pattern of development around Derby will change significantly if problem junctions are solved.	No	X			✓		✓	
	A38 / M1 J28	Junction operating at capacity at peak times.	Yes	X			✓			✓
	A50 / M1 J24	There is a lot of development planned for Leicester which will affect the A50. There is a freight terminal planned for the area. The bypass is part of these plans. The airport has minimal impact on junction 24 in terms of passengers having to use the junction.	Yes	X			✓		✓	
	A52 Nottingham Enterprise Zone	The development of the Enterprise Zone (Boots) directly loads onto the A52 and modelling shows massive impacts on the A52 which would need addressing. This also results in access issues for the Nottingham Boots Enterprise Zone.	No		X		✓		✓	
	A52 / A453, SE Nottingham	Large residential development SE of Nottingham will contribute to even larger peak traffic levels. How will the existing network cope? Clifton Bridge (A453) to Bingham (A46) – number of junction capacity issues. Likely to worsen as considerable development proposed in the area.	Yes		X	X	✓			✓

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	A52 Nottingham between Priory Island and QMC	A52 between Priory Island and QMC is a major bottleneck; there is a constant increase in journey-times due to the congestion and buses are getting slower and slower which in turn makes the bus less attractive as an alternative to the car. The congestion levels result in the bus experience ruined between the University & QMC. It doesn't feel right that there is no bus priority. There is no evidence of it getting better despite some extra lanes in places and traffic lights on the roundabout.	Yes	X			✓			✓
	A52 between Bingham and Gamston	There is a constant increase in journey-times due to the congestion and buses are getting slower and slower which in turn makes the bus less attractive as an alternative to the car. Increased housing in the area will only add to the problem – increased demand will bring more problems and delay. The Radcliffe roundabout is a pinch point and slows everything down. Extra development is only going to make things worse too as increased housing will increase demand and car use.	Yes	X			✓			✓
	South Derby A50, M1 J24, A38 Derby junctions	Large amount of development is going to impact on these routes and junctions. This project has already been put forward to the Highways Agency but has been delayed.	Yes	X	X	X	✓			✓
	A38 / A50 junction	Background traffic growth, particularly with the introduction of Strategic Rail Freight Interchange – speculate 3,000 – 6,000 more jobs.	No			X	✓	✓		

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	A500 / M6 junctions	Getting on and off at junctions, especially A500 with M6 is difficult, leading to a constraint on economic development around the A500	Yes	X			✓		✓	
	All	Existing employers such as Jaguar Land Rover and JCB will provide the most significant growth in jobs. The RBS needs to cover existing employers particularly those that use/rely on the strategic network for access to their supply chain.	Yes	X		X	✓		✓	
	A50 Rocester	Rocester junction is not adequate for future growth. Concern that there is no strategy for A50.	Yes		X	X	✓			✓
Safety	A50 / M1 J24	There are issues at M1 junction 24 for cyclists - accidents have occurred.	Yes	X			✓		✓	
	A38 Derby	Key issue for cyclists - more crossings are needed in the area. There is the start of a good cycle network around the airport, this needs adding to. There is the potential to link into Derby as well.	No	X			✓			✓
	A50	Accidents caused by short slip roads. This creates traffic delays/congestion as the incidents are managed by local police, not HA traffic officers	No				✓	✓		
	A38 to M1 junction 28	In the top 250 ranked cluster sites nationally	Yes				X			
	A46 Hobby Horse junction, Leicestershire	In the top 250 ranked cluster sites nationally	Yes				X			
	A52 near M1 junction 25	In the top 250 ranked cluster sites nationally	Yes				X			
	A50/A500, Stoke-on-Trent	In the top 250 ranked cluster sites nationally	Yes				X			

	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	A46	There are issues relating to water quality; most of the water issues/ flooding come from the carriageway, not from flooding of surrounding rural area. Issues with drainage and ditches on highways. Maintenance is very poor, with no treatment of water, not even primary treatment, leading to the quality and quantity of water coming off the carriageways being substandard.	Yes	X			✓	✓		
	A500 / A50 Stoke-on-Trent	The route carries circa 50% of through traffic. The route severs the Stoke-on-Trent conurbation, as there are limited crossing points and limited opportunities for sustainable modes	Yes	X			✓	✓		
	A453	Upgrade of A453 will hopefully reduce congestion on A52 and improve access/links. However, it delivers more traffic into sensitive areas.	Partial	X			✓		✓*	
	Nottingham	Air quality in Nottingham is poor due to traffic congestion. 2 Air quality management areas; one at Dunkirk close to A543/A52. Dualling of the A453 will bring further reduction in air quality.	Yes.		X		✓	✓		
	A50 South Derby	The introduction of more residential development will impact on the road capacity. Development planned next to SRN, will be highly impacted by noise.	No			X	✓	✓		

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	A52 Wollaton	Significant report on the latest Derby Road development suggested increasing the width of pavements for pedestrians and improving cycling in the congested areas around University and Wollaton Park. This raised with the Highways Agency the problem of balancing traffic flow with those who travel in other ways and help to reduce traffic flow yet the document was ignored by the Highways Agency – more bothered about cars, discourages different modes of travel.	Yes	X			✓	✓		
	A52 Dunkirk	There is a current noise issue around Dunkirk which needs addressing	Yes	X			✓	✓		
	All	Flood risk map shows flooding issues to be a lot less extensive than the Environment Agency have ascertained. Need to improve forward planning of maintenance to address environmental damage caused by flooding at bridges and culverts. Night maintenance has improved network performance. Need to consider Water Framework Directive when planning new roads. Possible need for new drainage technology	Yes	X	X	X	✓		✓	
	A46 North of Leicester	Temporary crossovers for maintenance have led to reduction in infiltration and therefore flood issues actually caused by 'maintaining' the network	No	X			✓	✓		

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
Other	All	Need alignment with Emerging Strategic Economic Plans (showing priorities for growth up to 2021) currently being produced by LEPs? In addition, Area Action Plans in Birmingham, Wolverhampton, Solihull and for the Stratford Road. These are based on the LDFs, update key areas of development. In East Staffordshire new developments plans are being added/approved in the near future.	No	X	X	X	✓	✓		
	Nottingham	Development should be planned to account for trip generation and access without requiring major new investment – use the current network more efficiently.	No	X			✓	✓		

4.7 Conclusion

4.7.1 The North and East Midlands route links the major cities of Stoke-on-Trent, Derby, Nottingham, Leicester and Lincoln and is a key cross country corridor linking the West and East Midlands. The entire route is all purpose trunk road which is mostly dual carriageway carrying mostly locally bound trips.

4.7.2 The current capacity challenges focus on the sections around the main towns and cities across the route which accommodate different road users and have both commuters as well as strategic traffic. They also tend to be the key areas where economic development is planned.

4.7.3 There is already considerable investment planned to improve the capacity of the route. This includes the major improvement of the A453 and 6 Pinch Point schemes which will all be delivered by Spring 2015. The A453 scheme is expected to address capacity issues along this route. The Pinch Point schemes at the A38 Markeaton and Little Eaton are anticipated to address capacity concerns over the short term. However, the medium to longer term issues are expected to be resolved through the A38 Derby Junction schemes, which are declared pipeline schemes. The Pinch Point scheme at the M1 junction 24 will address capacity concerns over the short term. However, significant additional development adjacent to this junction is expected to result in additional capacity enhancements being necessary over the route based strategy period.

4.7.4 A Pinch Point scheme is planned on the A500/A50 junction near Stoke-on-Trent, however as there are capacity issues around this whole stretch of the A500 further improvements are expected to be required to accommodate expected growth in the area. The A500 is used as a diversion when there are issues on the M6 between junctions 15 and 16. Concerns have been raised regarding the impact on local road network and local traffic. Linked to this, stakeholders at the workshop gave a medium priority to providing better information to drivers along this section.

4.7.5 On 5 December the Autumn Statement announced that the government will provide funding to support improvements to the A50 around Uttoxeter. This is to support local growth, jobs and housing which was a high priority for our stakeholders at the workshops.

4.7.6 Currently there are no other improvements planned for the other locations where capacity has been identified as a current and future concern. These locations are as follows:

- A38 / M1 junction 28;
- A52 Corridor including M1 junction 25; and
- A46 / A1 Newark.

4.7.7 Elsewhere the route currently performs relatively well when looking at the capacity metrics and only limited development is planned in these locations. Whilst it could be argued that development would be more

suitable in such areas due to capacity on our network, there are wider planning considerations that mean significant development in these areas may not be appropriate.

4.7.8 The safety challenges for this route are particularly focused around key urban settlements and where there are also other performance issues such as journey-time reliability and delays. This includes the following:

- A453;
- A500 and A50 around Stoke-on-Trent;
- A38 past Derby and on the approach to M1 junction 28;
- A52 particularly through Nottingham; and
- A46 around Hobby Horse, Bingham Interchange and on the approach to Lincoln.

4.7.9 Whilst the A453 was shown to have current performance issues relating to safety, as shown in figure 2.3, the major improvement scheme which is currently being delivered at this location is looking to improve the safety performance. There are also schemes in the Pinch Point programme for the A38 Markeaton and Little Eaton junctions around Derby and the A500/A50 Sideway junction. Whilst the focus of these is on providing capacity enhancements, safety issues will also be considered as part of the scheme designs. The challenge for these locations over this period will be to monitor the impact of the schemes on the safety of the route.

4.7.10 There are a number of locations on the route, which are listed above, where elevated safety risks have been identified and no interventions are currently planned for the period of this route strategy.

4.7.11 The highest safety priorities identified by stakeholders at the workshop related to cyclists either using or crossing the network.

4.7.12 From an operational perspective, there was very little evidence available as the majority of the route is not covered by the Traffic Officer Service. There are opportunities to develop our understanding of the types of incidents, durations and management of incidents through further engagement with regional police forces. As there is limited technology along this route it is currently a challenge to provide real time information to road users. This issue was raised by stakeholders as a medium to low priority for two locations along the route; the A500 and A46.

4.7.13 An issue raised by stakeholders was in relation to the A50, where incidents are causing significant delay. Stakeholders highlighted this section did not have incident management response provided by the Traffic Officer Service.

4.7.14 The evidence compiled in this report shows that the asset is in reasonable condition however deterioration is expected over the RBS period. This is particularly the case for the pavement in key areas as significant sections are expected to reach the end of their design life by 2021. This is particularly along the A38 around Derby, the A52 through

Nottingham and the A46 near Lincoln. The drainage and structures assets across this route are relatively old and therefore deterioration is expected before 2021. Managing the impact of maintenance schemes on road users and road neighbours will be a key challenge.

4.7.15 The evidence presented in this report also shows a number of social and environmental issues to consider. For example, the route passes through an AQMA at the A453 / A52 junction and at A38 junction with the M1 (junction 28). This will present a particular challenge during this period as particular care will be required when developing any improvements to ensure that they do not adversely affect air quality in these areas.

4.7.16 As this route consists wholly of trunk roads there are subsequently considerable interactions between different types of road users, especially in built up areas along the route. Ensuring appropriate provision for such users, especially cyclists, will be a key challenge. Stakeholders raised the A38 around Derby as a key location where such facilities could be improved. There could be the opportunity of improving such facilitates at the same time as addressing other concerns.

4.7.17 This route interacts with other RBS and the key sections where these connect and have an impact are where this route meets the main north-south routes; London to Scotland West (M6), London to Scotland East (M1) and London to Leeds East (A1). Typically at the junctions where these routes connect, the North and East Midlands route experiences congestion. There is an opportunity to consider how the north-south routes interact with east-west traffic, usually travelling to local towns and cities.

4.7.18 The challenges evidenced within the report are consistent with those expected for all purpose trunk roads. For example, whilst overall traffic flows are lower than elsewhere on our network they become higher around key towns and cities. It is these locations where capacity and often safety issues occur. These are also the locations that have more notable economic development plans that are likely to generate additional traffic.

4.7.19 This report has identified a number of key challenges and opportunities. It has shown that capacity, safety and sometimes environmental issues often occur in similar locations. Of particular note within this report are as follows:

- A500/A50 around Stoke-on-Trent;
- A50 Uttoxeter;
- A38 Derby Junctions;
- A38 / M1 junction 28;
- A52 Corridor including M1 junction 25;
- A50 / M1 junction 24a and 24; and
- A46 / A1 Newark.

4.7.20 The issues that stakeholders identified as medium or high priority at the stakeholder workshops we held in September 2013 are supported by the evidence presented in this report.

4.7.21 Focusing efforts on these areas could result in improvements that address safety, capacity and environmental concerns.

Figure 4

Key opportunities and challenges for the route

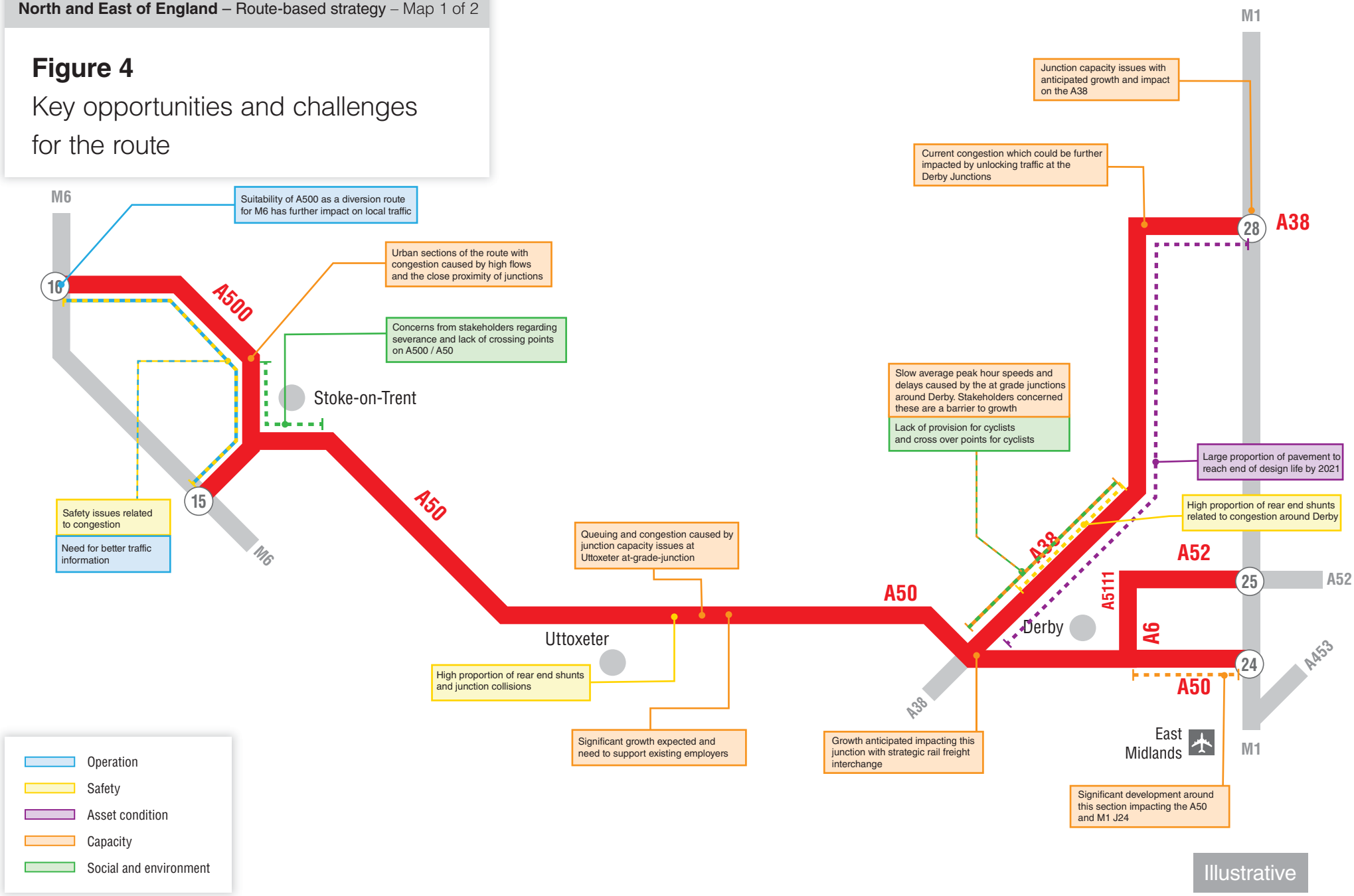
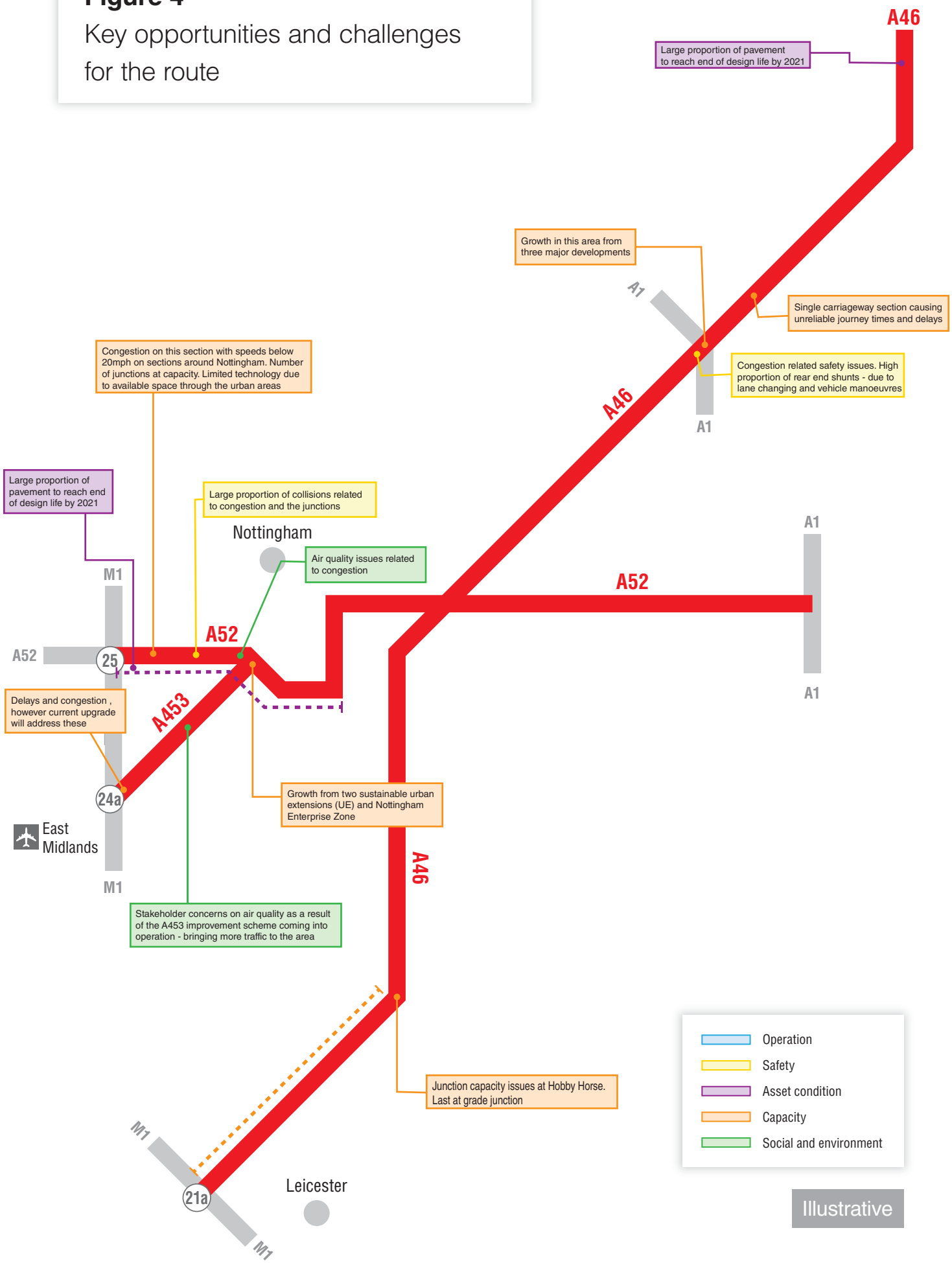


Figure 4

Key opportunities and challenges for the route



HA media services, m130520_Fig4 North and East Midlands

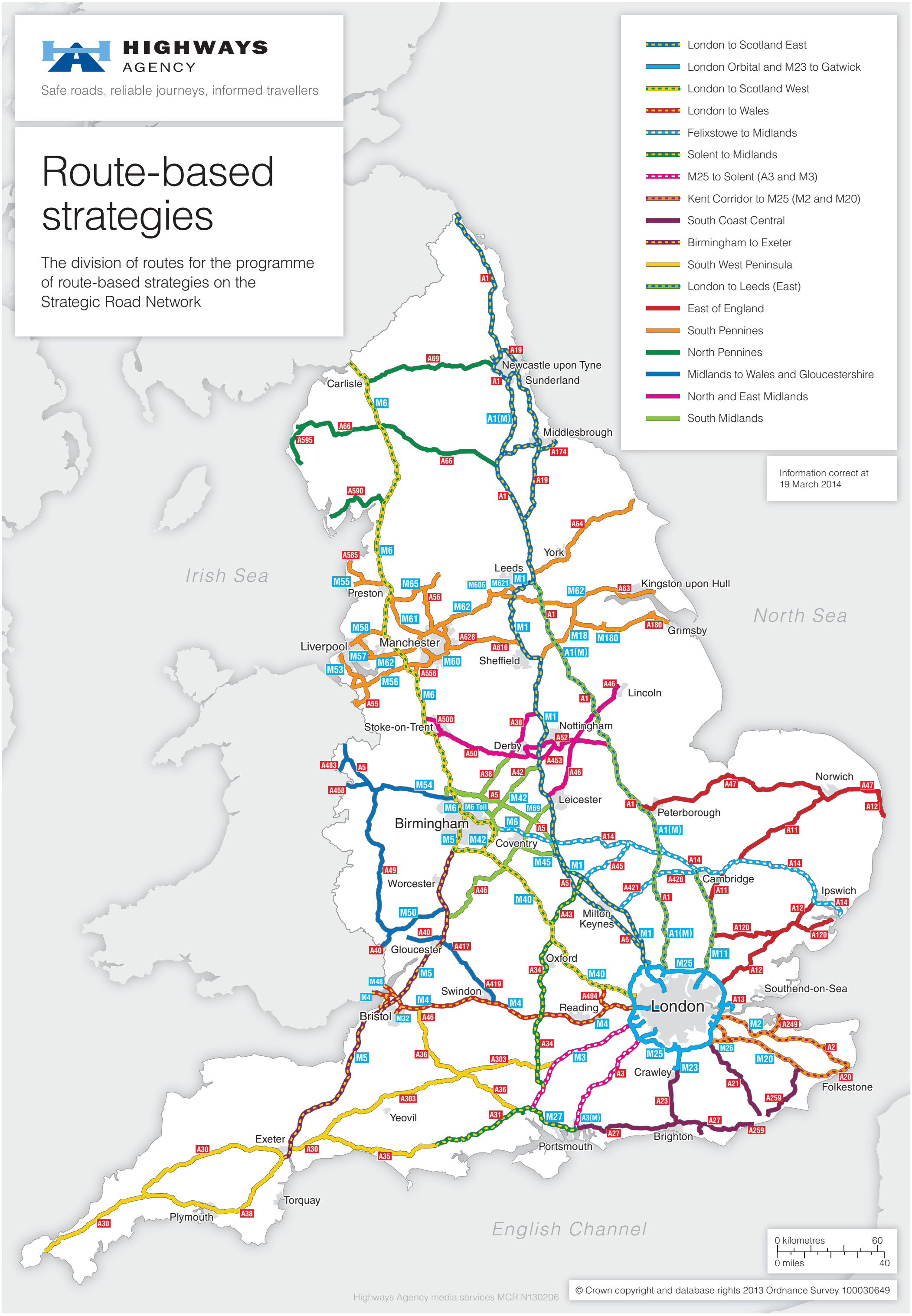
Appendix A Route map

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



- London to Scotland East
- London Orbital and M23 to Gatwick
- London to Scotland West
- London to Wales
- Felixstowe to Midlands
- Solent to Midlands
- M25 to Solent (A3 and M3)
- Kent Corridor to M25 (M2 and M20)
- South Coast Central
- Birmingham to Exeter
- South West Peninsula
- London to Leeds (East)
- East of England
- South Pennines
- North Pennines
- Midlands to Wales and Gloucestershire
- North and East Midlands
- South Midlands

Information correct at 19 March 2014

Appendix B Glossary

Abbreviation	Description
AADT	Annual Average Daily Traffic
ANPR	Automatic Number Plate Recognition
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
CCTV	Closed circuit television
Defra	Department for Environment, Food and Rural Affairs
DfT	Department for Transport
HRA	Hot Rolled Asphalt
LAs	Local Authorities
LEPs	Local Enterprise Partnerships
MIDAS	Motorway Incident Detection and Automatic Signalling
NO_2	Nitrogen Dioxide
NTOC	National Traffic Operations Centre
RBSs	Route-based strategies
RCC	Regional Control Centre
SACs	Special Areas of Conservation
SPA	Special Protection Area
SRN	Strategic road network
SSSI	Sites of Specific Scientific Interest
TEN-T	Trans European Transport Network
TSCS	Thin Surface Course Treatment
TOS	Traffic Officer Service
VMS	Variable Message Signs

Appendix C Stakeholder involvement

Further information on those stakeholders who were involved in the stakeholder events can be found within part B of the North and East Midlands Technical Annex.

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