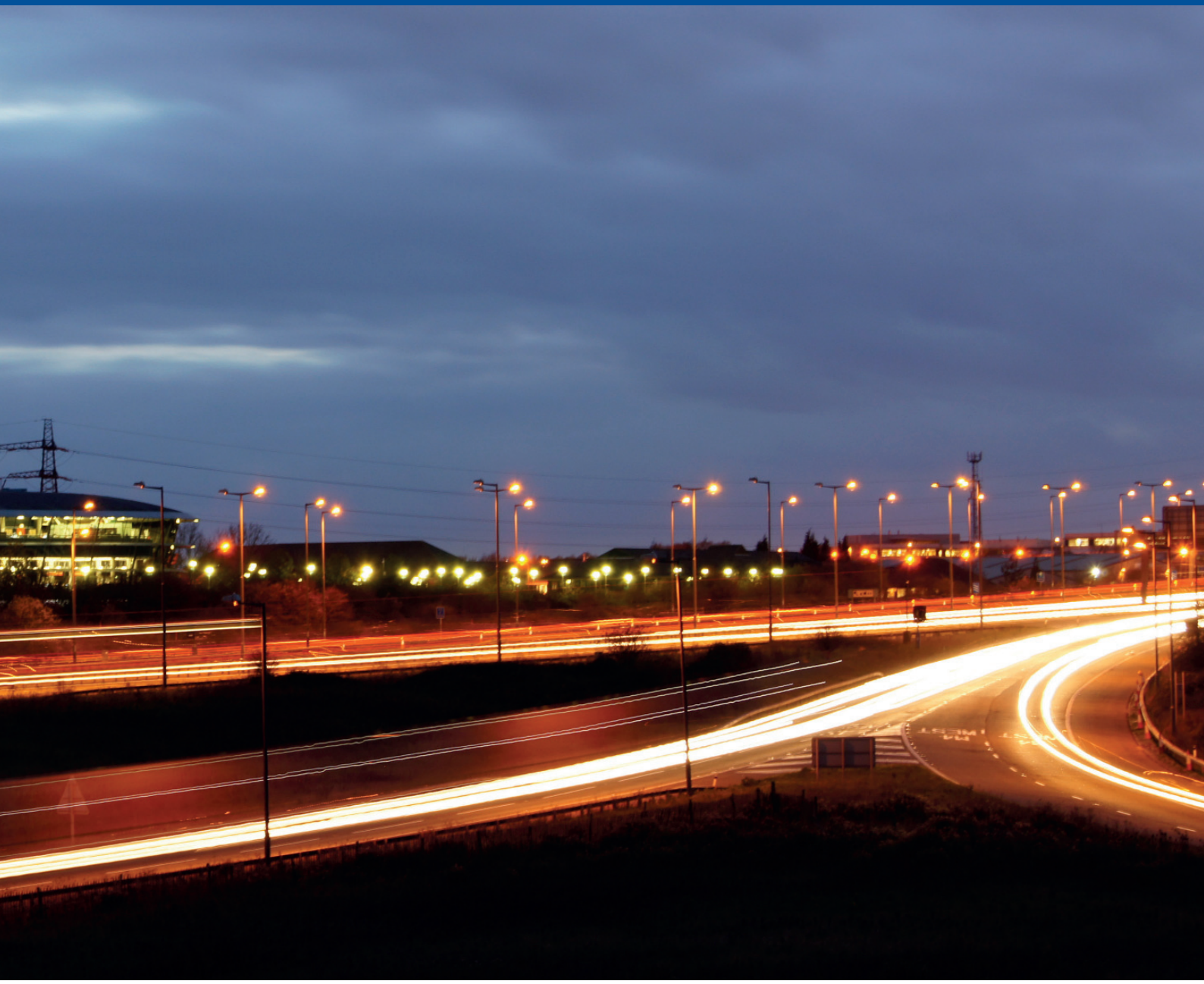
HIGHWAYS AGENCY

Safe roads, reliable journeys, informed travellers

Birmingham to Exeter Route Strategy Evidence Report

April 2014



An executive agency of the Department for Transport

Document History

Birmingham to Exeter route-based strategy evidence report

Highways Agency

This document has been issued and amended as follows:

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FF1	17/11/13	Draft of Chapters 1 & 2	Ian Parsons	Andrew Page-Dove
2	26/11/13	Revised Draft Chapters 1 - 3	Ian Parsons	Andrew Page-Dove
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4	09/01/14	New Template	Ian Parsons	Andrew Page-Dove
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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 (RBSs) represent a fresh approach to identifying investment needs on the strategic road network. Through adopting the RBS approach, we aim to identify network needs relating to operations, maintenance and where appropriate, improvements to proactively facilitate economic growth.

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

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

1.1.6 Building on the learning from those pilot strategies, we have divided the SRN into 18 routes. A map illustrating the routes is provided in Appendix A. The Birmingham to Exeter route is one of that number.

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

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

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

1.1.10 Using the evidence base and solutions identification studies, we will establish outline operational and investment priorities for all routes in the

strategic road network for the period April 2015 – March 2021. This will in turn feed into the Roads Investment Strategy, announced by the Department for Transport in Action for Roads.

1.2 The scope of the stage 1 RBS evidence report

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

1.2.2 The evidence reports:

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

1.2.3 The 18 evidence reports across the SRN will be used to

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

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

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 Birmingham to Exeter route comprises the M5 Motorway, a 169 mile motorway corridor from junction 4A south-west of the Birmingham conurbation to junction 31 south of Exeter. The strategy also includes a short section of the A4 at Avonmouth, which is also part of the SRN. Figure 1 shows the extent of the route.

1.3.2 The northern section of the M5 Motorway from M5/M6 interchange to junction 4A is not within the scope of the Birmingham to Exeter RBS, it forms part of the London to Scotland West route. The southern end of the M5 intersects with the A30 and A38 trunk roads, which are included in the South West Peninsula RBS.

1.3.3 The route is mainly a three-lane motorway (D3M), built during the 1960s and 70s with short localised sections of four lane motorway (D4M). It also consists of the A4 which is a short section of two lane dual carriageway in the Avonmouth area of Bristol. The motorway is currently being upgraded and the Agency has implemented a smart motorway scheme between junctions 15 and 17 west of Bristol to vary the speed limits and use the hard shoulder in peak times.

1.3.4 The Birmingham to Exeter route is of national importance, connecting Birmingham and the West Midlands with the South West and through its interchange with the M6 provides a vital link to the northern part of the UK. Its intersection with the M4 Motorway at junction 15 provides the connection for traffic towards London and Wales.

1.3.5 It links several towns and cities along the route, for example, Birmingham, Bromsgrove, Droitwich, Worcester, Tewkesbury, Cheltenham, Gloucester, Bristol, Bridgwater, Taunton and Exeter. The motorway is used for both long distance travel and shorter local commuter trips, such as Worcester to Birmingham, Gloucester to Bristol and Taunton to Bristol or Exeter.

1.3.6 One of its important functions is freight distribution between the Midlands, wider UK and South West. It is used by freight traffic accessing the ports at Bristol Port, Plymouth and Weymouth and plays a key role in the distribution of fresh produce from the South West. Several sources of freight traffic are located in proximity to the route, such as the industrial area of Severnside and warehousing/distribution at Bridgwater.

1.3.7 The M5 Motorway carries around 56,500 vehicles per day each way on its busiest sections south of the M5/M4 interchange to the west of Bristol. Freight constitutes at least 15% of traffic across the entire M5 and represents a third of traffic on busiest sections.

1.3.8 During the summer, the M5 plays a key role in seasonal tourist traffic travelling to holiday destinations in Devon and Cornwall. Traffic volumes increase significantly in June, July and August. For example, the busiest sections south of the interchange of the M5 and M4 motorways carry around 65,000 vehicles per day each way in August. This demonstrates the importance of the M5 Motorway to the South West tourism industry.

1.3.9 The Agency manages its network through area teams. With respect to these areas, the route spans two – these being Areas 2 and 9. The A4 section and the M5 south of J9 are part of Area 2; the section between J9 and J4A is within Area 9.

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

- London to Scotland West – at M5 J4A with the M42
- South Midlands – at M5 J9 with the A46
- Midlands to Wales & Gloucestershire – at M5 J8 with the M50, at M5 J11 with the A40 and at M5 J11A with the A417.

- London to Wales – at M5 J15 with the M4
- South West Peninsula – at M5 J31 with the A30/A38


Figure 1
Birmingham to Exeter
Route-based strategy overview map
Birmingham to Exeter route
Port
Airport
Junction number
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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 The SRN in the Birmingham to Exeter route-based strategy is the M5 Motorway between J4A and 31. The route experiences high traffic volumes, particularly on the western fringe of the Bristol conurbation (notably between junctions 15 and 19), in the vicinity of the M5/M4 interchange and Bristol Port. For example, the two way average Daily Traffic (AADT) flow on the M5 J16-17 is in the region of 113,000 vehicles per day. (See rows 2 and 3 in Table 2.1 below).

2.1.3 The route also experiences significantly high traffic volumes on its northern extent on the approaches to Birmingham (junctions 7 to 4A). For instance, the two way AADT flow on the M5 J5-4A is in the region of 110,000 vehicles per day. Table 2.1 illustrates that five of the most trafficked sections on the M5 are between J4A and 7 (Bromsgrove to Worcester south).

2.1.4 The ten busiest sections of this route are presented in Table 2.1. This is for the reporting period 1 April 2012 to 31 March 2013. Five of these links are on the M5 between junctions 15 and 19.

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

Rank	SRN section	Annual Average Daily Traffic Flow (AADT) One directional flows	National Rank
1	M5 between M5 J15 and M5 J16 (LM693)	57,807	209
2	M5 between M5 J16 and M5 J17 (LM695)	56,839	226
3	M5 between M5 J17 and M5 J16 (LM694)	55,945	244
4	M5 between M5 J5 and M5 J4A (LM730)	55,765	247
5	M5 between M5 J6 and M5 J5 (LM736)	55,166	261
6	M5 between M5 J4A and M5 J5 (LM731)	54,626	272
7	M5 between M5 J19 and M5 J18 (LM700)	53,950	283
8	M5 between M5 J5 and M5 J6 (LM737)	51,102	345
9	M5 between M5 J18 and M5 J19 (LM701)	50,383	356
10	M5 between M5 J7 and M5 J6 (LM738)	49,622	370

Table Note – National Rank based on 2,475 links. Rank 1 is the busiest section.

2.1.5 The M5 experiences different traffic patterns to other parts of the SRN across England. Traffic volumes are higher during the summer, as tourist traffic uses the M5 Motorway to travel to holiday destinations in Devon and Cornwall. The two way Average Daily Traffic on the M5 J16-17 (just south of the interchange of the M5 and M4 motorways) increases to 131,000 vehicles per day during the month of August. Flows across the Avonmouth Bridge are around 20% higher than average.

2.1.6 Traffic flows on the southern section of the M5 between junctions 29 and 30 are in the region of 73,000 vehicles per day. However, they increased to 97,000 vehicles per day through August 2013. Average flows on Saturdays during August 2013 rose considerably to around 110,000 vehicles per day. This is a considerable 50% increase in traffic volumes compared to the annual average (based on 1 April 2012 to 31 March 2013 data). Saturdays are the typical change over day for rental accommodation in Devon and Cornwall. This pattern demonstrates the importance of this section of the route to seasonal traffic and hence the tourism industry.

2.1.7 Freight traffic constitutes at least 15% of traffic across the entire M5 Motorway. Individual sections of the M5 have a higher proportion of freight traffic, for example, freight is around a third of traffic on links near Exeter, Western-super-Mare, Cheltenham, Gloucester and Worcester.

2.1.8 However, busy roads in themselves don't necessarily represent an issue – our customers' experience of driving on the network is important to us. The SRN 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'.

2.1.9 It should be noted that data contained within the national database appear to indicate that the M5 from J17 to 18A is one of the worst performing sections in the whole country. However it has been identified that there was a reporting error in that it did not take into account the roadworks and associated speed limit in place for the construction of the smart motorway. Therefore in agreement with the Highways Agency Regional Intelligence Unit we have removed this section of carriageway from Table 2.2.

2.1.10 The M5 J5 and M5 J6 are operating over capacity, and M5 J7 is operating close to capacity with queuing back from the local highway network. Queuing on diverge slip roads from the M5 towards the roundabouts occurs during the morning and evening peak hours with queuing extending back onto the M5 main line on some days. Queuing and delay also occurs on local side road approaches to the three junctions. In addition, a proposed development on the Worcester Strategic Employment Site near M5 J6, and major housing

developments near Droitwich and Worcester will increase traffic demand through all three junctions.

2.1.11 Table 2.2 provides further evidence of issues with journey time reliability on the eastern fringe of Exeter. Between junctions 29 and 30 only around two thirds of journeys are classed as reliable (ranked third and sixth for Birmingham to Exeter). This section of the motorway carries strategic M5 traffic, connects with the A30 trunk road, carries local traffic accessing the city and is an area that has experienced significant growth to the east of Exeter. This is further compounded by high traffic volumes during the summer tourist peak.

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

Rank	Location	On-time reliability measure	National Rank
1	A4 between A403 and M5 (AL806)	58.0%	46
2	M5 between M5 J30 and M5 J29 (LM726)	62.1%	133
3	M5 between M5 J17 and M5 J16 (LM694)	64.4%	233
4	M5 between A403 and M5 J18 (LM679)	65.1%	263
5	M5 between M5 J29 and M5 J30 (LM727)	66.0%	314
6	M5 between M5 J18 and M5 J19 (LM701)	66.9%	393
7	M5 between M5 J18A and M5 J18 (LM699)	67.4%	438
8	M5 between M5 J18 and M5 J18A (LM698)	69.2%	604
9	A4 between M5 and A403 (AL807)	71.1%	868
10	M5 between M5 J18 and A403 (LM678)	72.3%	1,028

Table Note – National Rank based on 2,497 links. Rank 1 has the lowest on-time reliability measure. High score is better

2.1.12 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.

2.1.13 Figure 2.1 illustrates the average speeds during weekday peak periods between 1 April 2012 and 31 March 2013 showing that the majority of the M5 Motorway operates at the national speed limit. Average peak hour speeds illustrated on Figure 2.1 are between 61-70 mph. There are two specific links where the average speeds were lower than the national speed limit. These were the links on both the M5 southbound and northbound carriageways between junctions 15 and 17. However it should be noted that this may be due to the construction of the smart

motorway scheme where 50mph speed limits were in force. (See also 2.1.10).

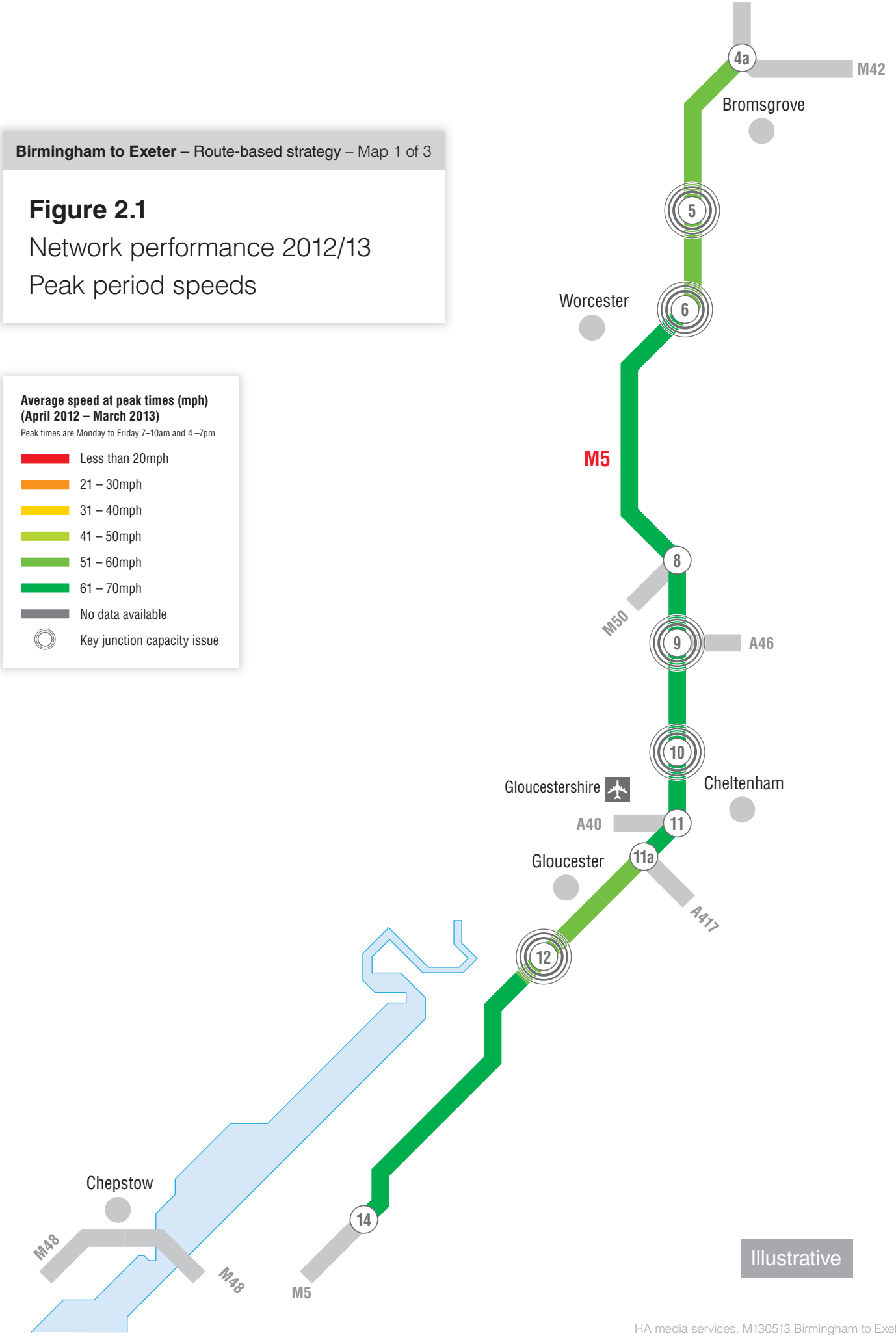
2.1.14 Figure 2.1 provides further evidence for issues on the northern section of the M5 Motorway between Worcester north and Droitwich. This section of the motorway is used for the daily commute between Worcester and the West Midlands conurbation. Average speeds drop to 51–60 mph in the am and pm peak periods between 7 – 10am and 4 – 7 pm.

Birmingham to Exeter – Route-based strategy – Map 1 of 3

Figure 2.1

Network performance 2012/13

Peak period speeds

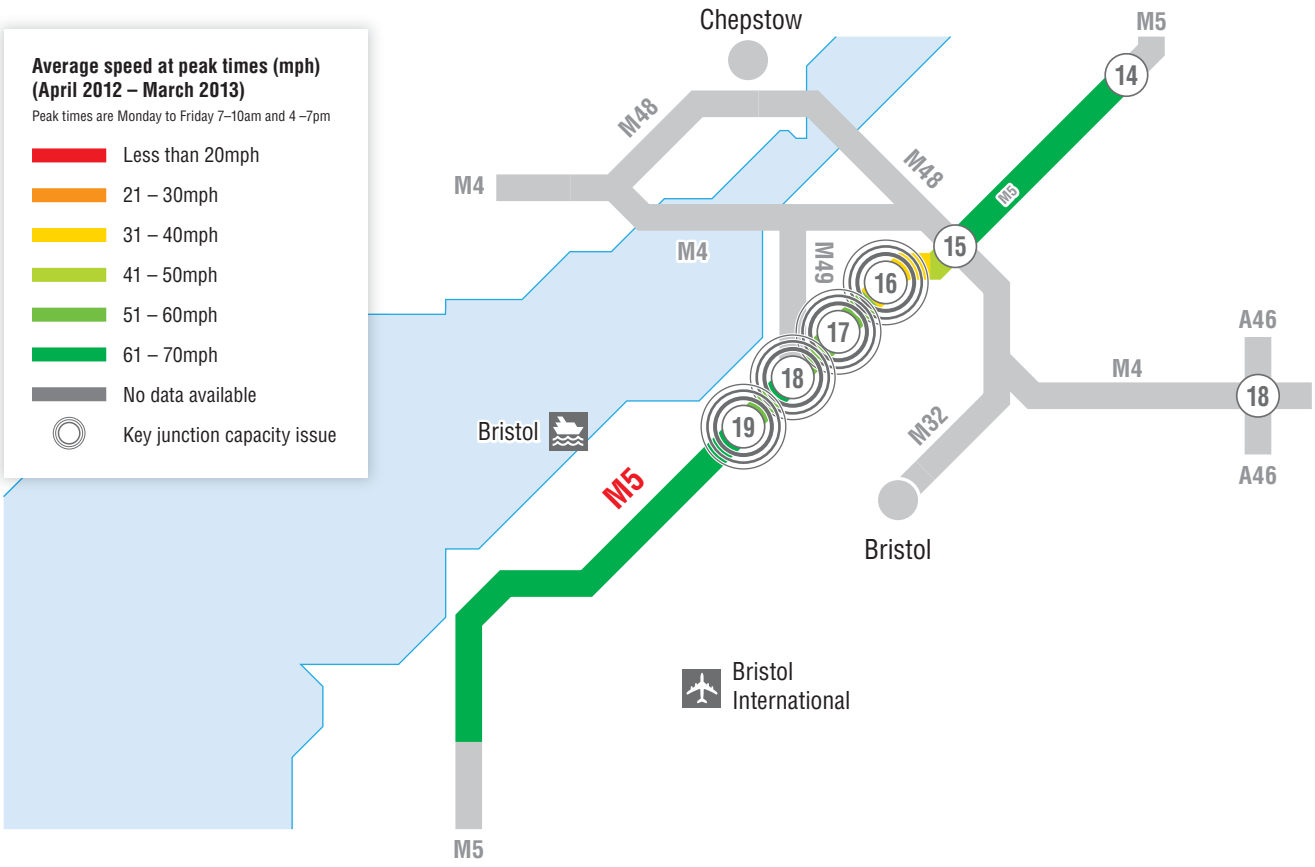


HA media services, M130513 Birmingham to Exeter

Figure 2.1

Network performance 2012/13

Peak period speeds



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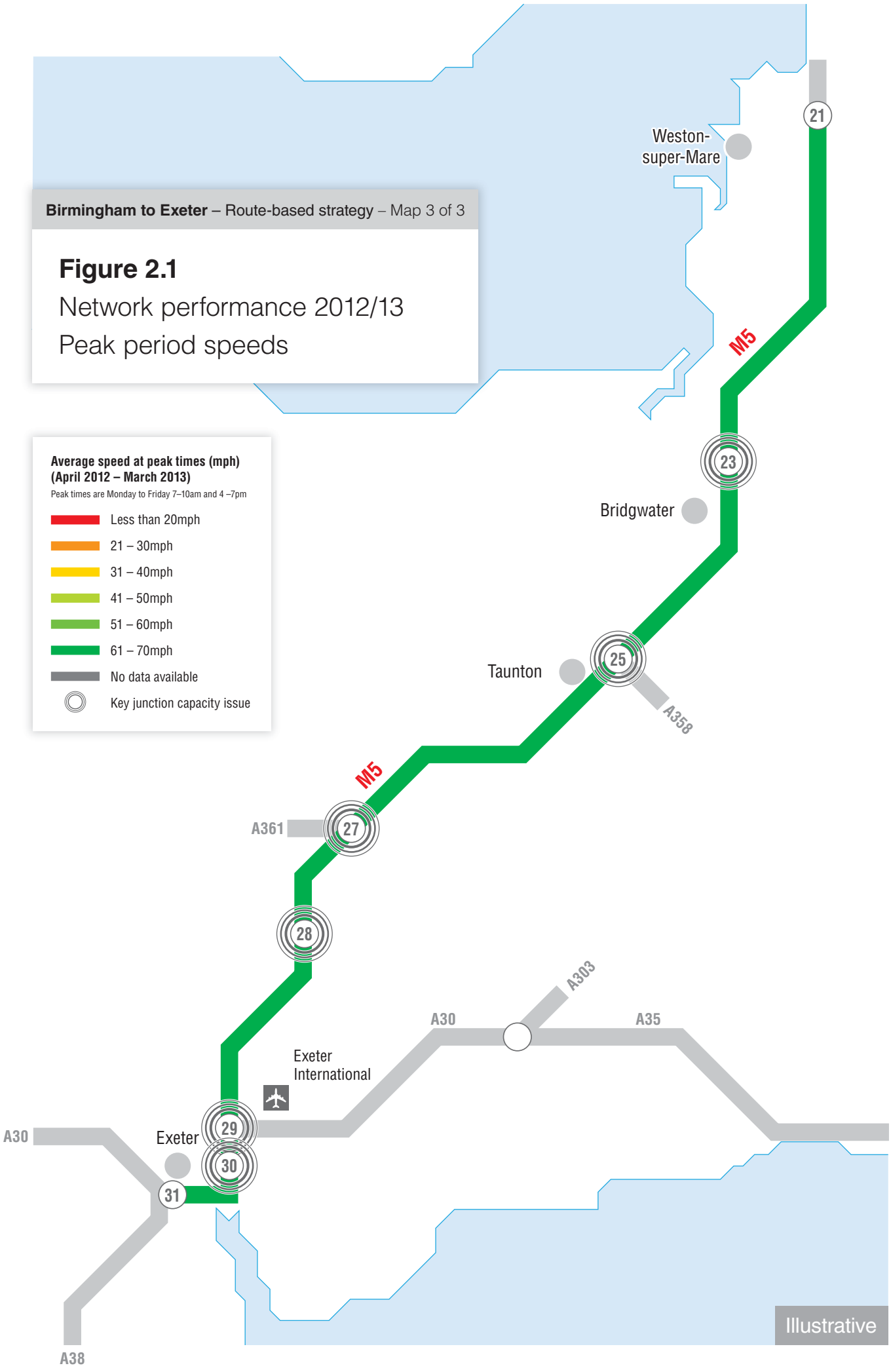
Birmingham to Exeter – Route-based strategy – Map 3 of 3

Figure 2.1

Network performance 2012/13

Peak period speeds



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

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

2.1.17 The diagram illustrates several sections of the M5 Motorway that are likely to benefit from congestion relief. This represents vehicle hours delay over the period from 1 April 2012 to 31 March 2013. Travel time experienced by all users is compared free flow travel conditions. There are three sections which experience significant vehicle hours delay, as follows:

- J6 – 4A (Worcester North to M5/M42 Interchange)
- J11A – 12 (Gloucester)
- J14 – 22 (north of Bristol to Burnham-on-Sea)

2.1.18 Utilising the range of measures, it is evident that several sections perform poorly across multiple criteria:

- M5 Motorway, J4A – 7 (M5/M42 Interchange to Worcester South)
  - High traffic volumes, reduced speeds in peaks and vehicle delay. This section also has junction capacity issues at J5 and J6 with J7 nearing capacity. This section of the M5 motorway is also used for strategic trips and freight, plus commuter traffic between Worcester and the West Midlands conurbation
- M5 Motorway, south of M5/M4 Interchange and west of Bristol
  - High traffic volumes, low traffic speeds in peak periods, vehicle delay and poor journey time reliability. This is an area that typically experiences severe congestion between the interchange of the M5 and M4 motorways and Avonmouth Bridge
- M5 Motorway, J29 – 30 (eastern fringe of Exeter)
  - Poor journey time reliability and issues during the summer peak. This motorway section carries strategic and local traffic and is located at the intersection with the A30 trunk road in the Exeter and East Devon growth point. This part of the M5 Motorway is heavily used by tourist traffic accessing Devon and Cornwall

Birmingham to Exeter – Route-based strategy – Map 1 of 3

Figure 2.2

Network performance 2012/13

Delay

Vehicle Hours Delay
(April 2012 – March 2013)

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

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

Explanation of data can be found in the Technical Annex.

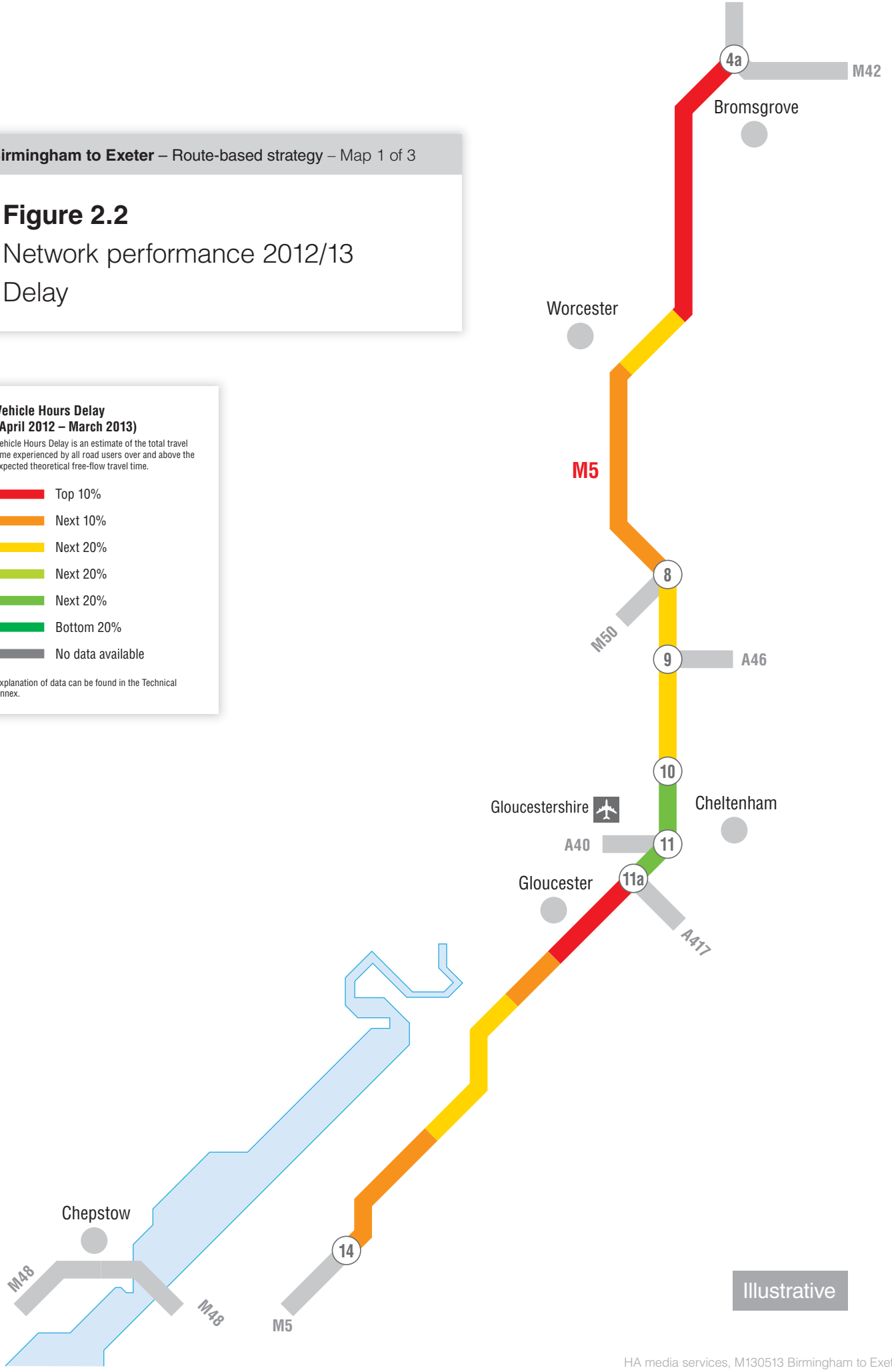


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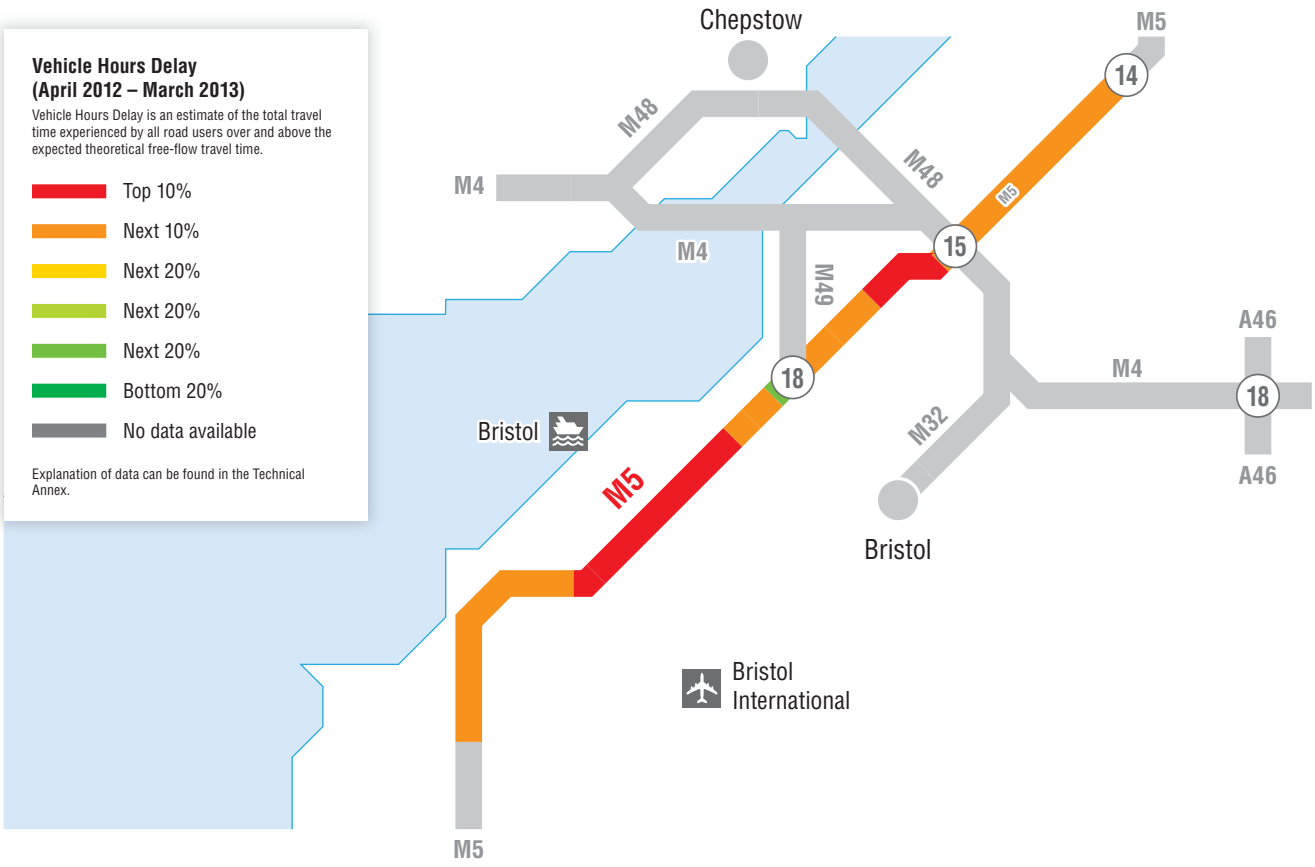
Figure 2.2

Network performance 2012/13

Delay



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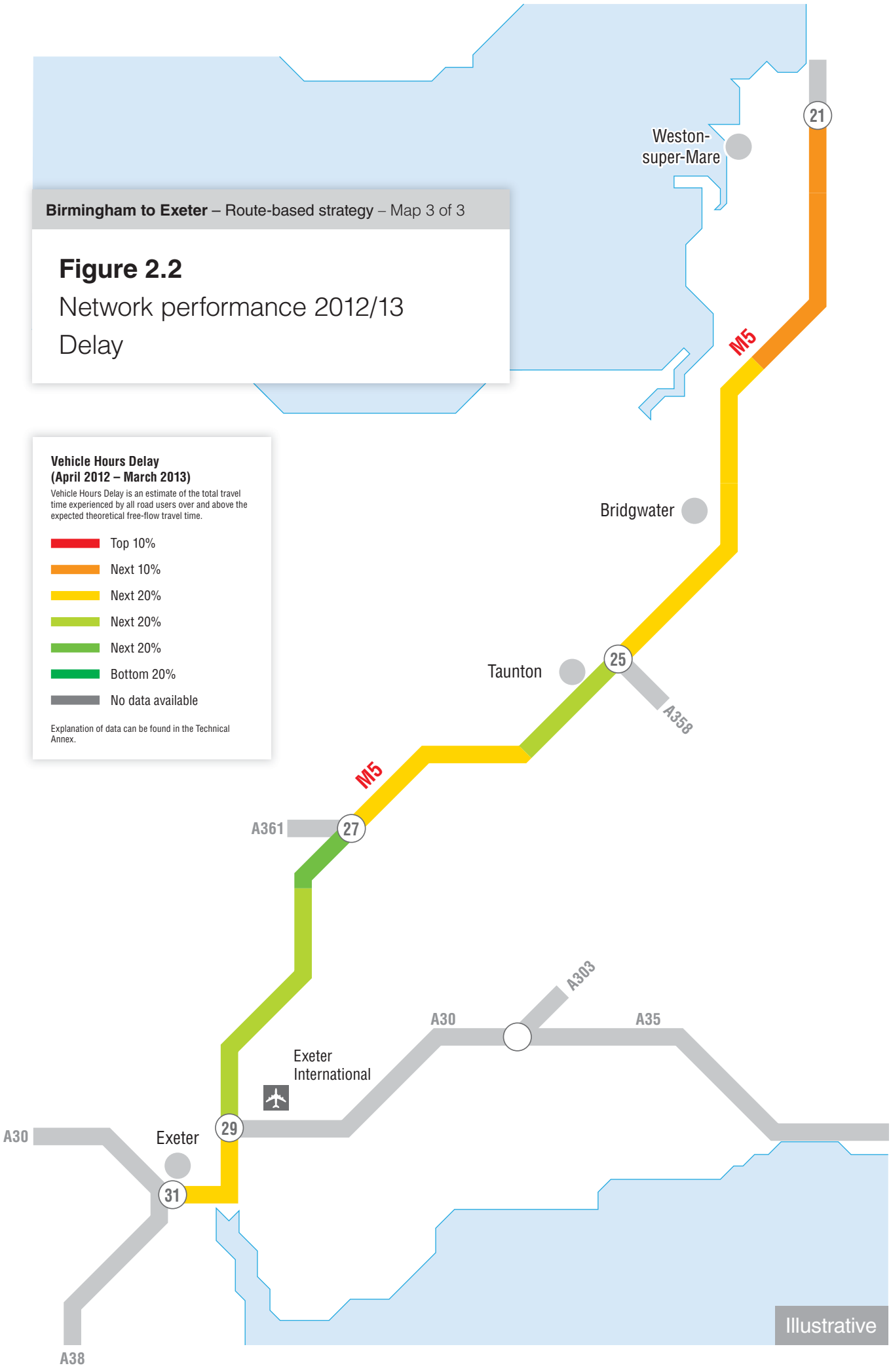
Birmingham to Exeter – Route-based strategy – Map 3 of 3

Figure 2.2

Network performance 2012/13

Delay



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- Top 10%
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- Next 20%
- Bottom 20%
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2.2 Road safety

2.2.1 As a responsible network operator and through the SRN 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 casualties 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 With respect to the M5 Motorway, the diagram illustrates that for the majority of the route the motorway has the lowest casualties per billion vehicle miles. The only exception is the northbound carriageway of the M5 north of the intersection with the M50 to junction 4A. A review of collisions on this section indicates they often relate to loss of control.

2.2.5 The positive safety record is further substantiated by analysis of Personal Injury Collision (PIC) data for the M5 Motorway (refer to technical annex).

2.2.6 This illustrates that the number of injury collisions on the motorway has fallen by 34% comparing 2011 data to a 2005-2009 baseline. Similarly, the collision rate (collisions per 100 million vehicle miles) fell by 34% to 6.1 in 2011 and the casualty rate for killed and seriously injured casualties fell by 22%.

2.2.7 However, it must be noted that on 4 November 2011, a multiple-vehicle collision occurred on the M5 near junction J25 at Taunton. The accident involved several cars and heavy goods vehicles and resulted in 7 fatalities, and 51 people were injured.

2.2.8 In terms of casualty cluster sites from Birmingham to Exeter, there are three locations ranked in the worst 250 locations across the country. These are:

- J27 Tiverton (rank 81)
- J29 Exeter North (rank 123)
- J16 Bristol (rank 158)

2.2.9 Between 2010 and 2012 there were 778 collisions on the route. The number per year has ranged from 236 to 287 over this three year period.

2.2.10 Of the 778 collisions recorded, 47 (2.2%) included fatalities, 95 (12.2%) were classified as resulting in serious injuries and the remaining 666 (85.6%) included only slight injuries.

2.2.11 Within the 778 collisions recorded there were 1,325 casualties at a rate of 1.7 casualties per collision.

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

- M5 J21 – related to shunts on northbound exit slip (stationary/slow moving traffic)
- M5 J23-24 southbound – involved southbound vehicles colliding with central reserve (one in wet conditions/5 in dry conditions). All loss of control in daylight hours
- Where the age of the drivers was known, 2.6% were young drivers (aged 16 – 19 years); and
- 14.0% were older drivers (aged 60 or more).

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

- 15.9% failed to judge other person's path or speed
- 14.0% occurred where the driver 'failed to look properly';
- 11.0% involved loss of control
- 8.9% were travelling too close
- 5.1% involved sudden braking
- 4.6% involved a poor turn or manoeuvre
- 4.5% swerved
- 3.9% fatigued
- 3.3% careless, reckless or in a hurry
- 3.3% slippery road, due to weather

NB: 20% of collisions on this route had no contributory factors assigned.

2.2.14 Safety initiatives across the Birmingham to Exeter RBS are led or promoted by the Regional Partnerships and focus on enforcement initiatives relating to mobile phone use and speeding plus educational initiatives to promote road safety. In addition the Agency is promoting a road worker safety campaign including driver engagement at motorway services areas.

2.2.15 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 opportunity to save lives and reduce the severity of injury.

Birmingham to Exeter – Route-based strategy – Map 1 of 3

Figure 2.3

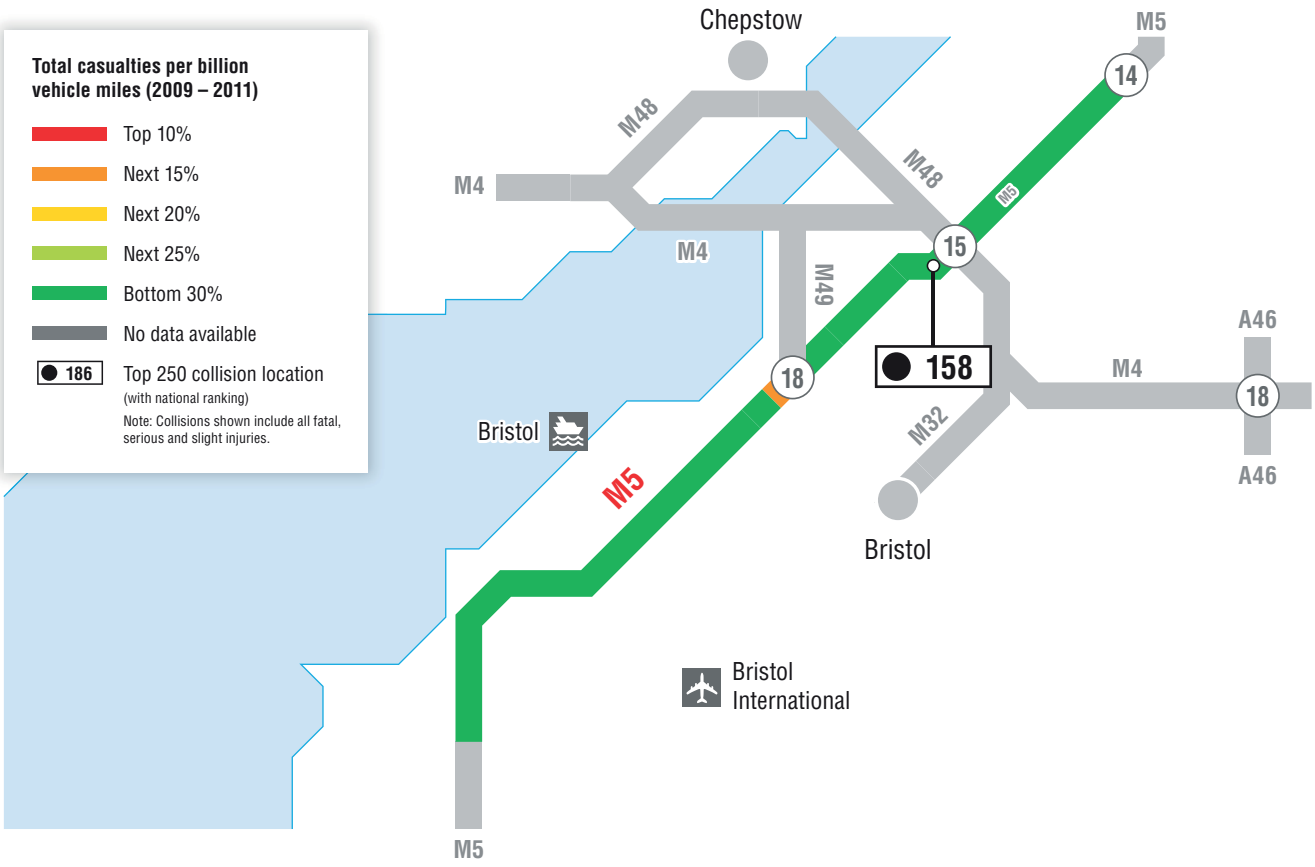
Safety on the network

HA media services, M130513 Birmingham to Exeter

Birmingham to Exeter – Route-based strategy – Map 2 of 3

Figure 2.3

Safety on the network



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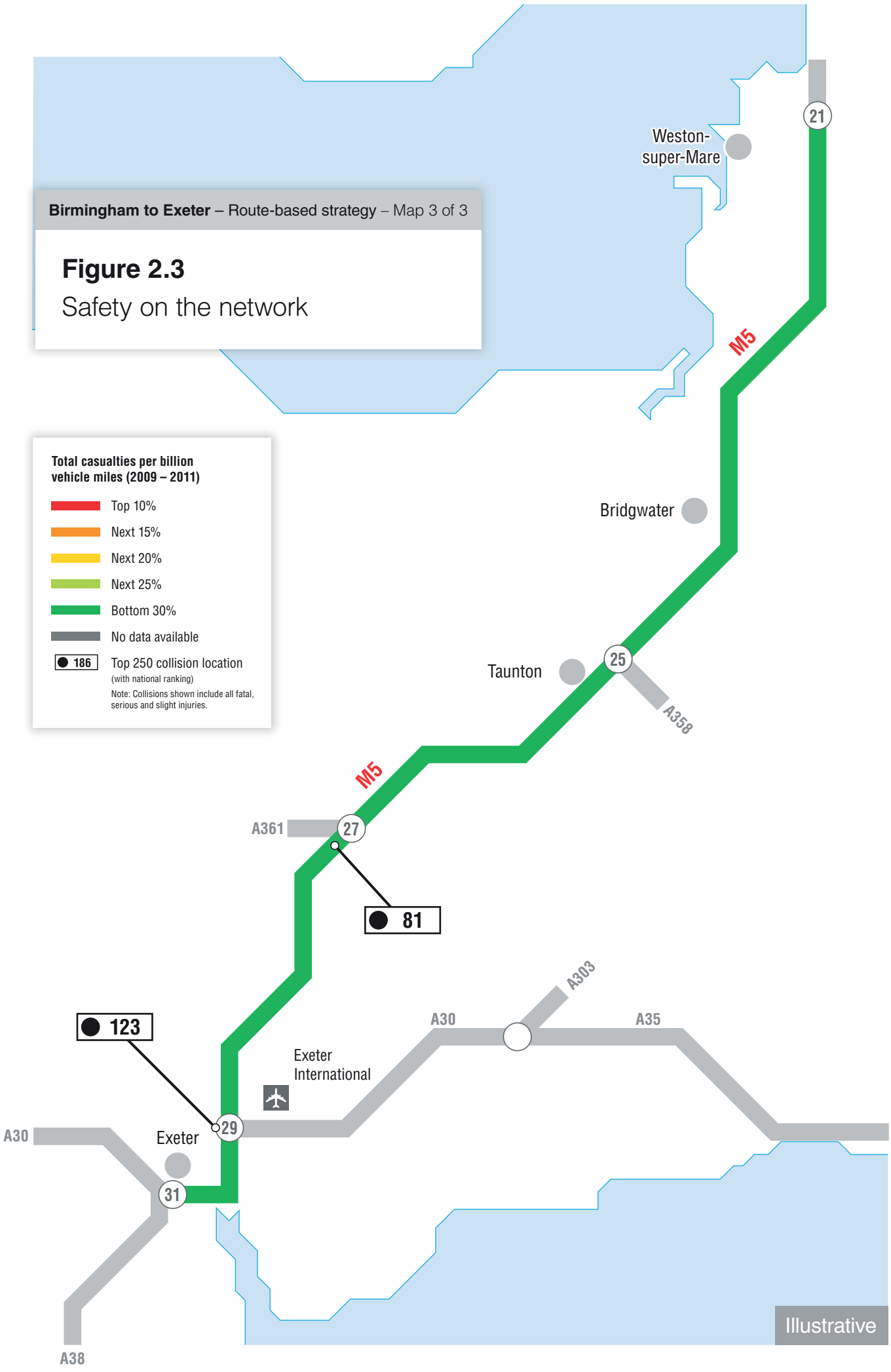
Birmingham to Exeter – Route-based strategy – Map 3 of 3

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 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. 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 With respect to Birmingham to Exeter, there are carriageway sections across the entire motorway from junction 4A to 31 that will reach the end of the design life by 2020. Fretting and cracking have been identified as particular problems on the M5 south of the interchange with the M42 Motorway to the intersection with the M50. The southbound carriageway between junctions 4a and 8 and the northbound section between junctions 6 and 5 are included in the Agency's 2014 renewals bid, as are sections further south between junctions 11 and 10 & junctions 27 and 26.

2.3.7 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. This does not represent an issue on the M5 Motorway, as the motorway surface is not composed of concrete sections.

Structures

2.3.8 The M5 Motorway has a range of structures along the route, most of which date from the 1960s and 1970s when the motorway was constructed. These include bridges for the motorway itself, notably the Avonmouth Bridge which is the most valuable but vulnerable structure on the entire route requiring significant annual maintenance to ensure its integrity. There are numerous other bridges that span the motorway, small span structures, large culverts, retaining walls and masts. Sign and signal gantry structures have largely been introduced post 2000 in line with the change in emphasis towards managing the network and technology upgrades.

2.3.9 The following bridge and large culvert major structures have been identified as critical to the operation of the network requiring enhanced maintenance regimes:

- M5 Avonmouth Bridge
- M5 Almondsbury Interchange
- M5 Exminster Viaduct
- M5 Exe Viaduct
- M5 Huntworth Viaduct
- M5 Wynhol Viaduct

2.3.10 Some of the structural issues faced on this route concern the integrity of the waterproof layers. Other problems relate to construction techniques and material specifications. This has since resulted in underlying defects which impact on the original 120 year design life. For example, thaumasite (sulphate) attack and alkali carbonate reaction (ACR) (which were unknown at the time of construction). It is understood that the material specification used on a section of the M5 (J9 – 13) has resulted in deterioration of 13 structures where ACR is a contributory factor. These structures are either subject to reconstruction, additional protective measures or an enhanced inspection regime. Many of our bridges, after a long period of time, can be subject to deterioration erosion and bearing failure caused by severe weather and natural erosion. This is an issue for the Timber Hanger Lane and Rashwood interchange structures which will continue to be monitored at regular intervals to trigger early intervention and maintenance when required. Two further under-bridges with steel plates bonded to abutments between J5 and 6 (Cockshute Hill Farm and Kingsland Hill Farm) are subject to a monitoring regime and may require repair in the future. Towards the southern end of the route at the Exe & Exminster viaducts

a multi-million pound project is being developed to replace the parapets and central restraint system which are nearing the end of their serviceable lives.

Other key asset issues for routes

2.3.11 There are many locations along the route where the Agency has identified the need for maintenance works to an aging drainage infrastructure. The ongoing maintenance programme includes projects at many locations, including between junctions 4A and 5 where the filter drains are in poor condition and experience blocking of filter materials to numerous locations further south where parts of the drainage infrastructure is approaching the end of its serviceable life.

2.4 Route Operation

Incident Management

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

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

2.4.3 The Traffic Officer Service provides a maximum level of service on the M5 Motorway from Birmingham to Exeter. This includes support from the National Traffic Operations Centre, regional control centres in Bristol and Birmingham and on-road patrols. The service includes:

- Customer information via Traffic England, a website which provides the up to date traffic situation on England's motorways and trunk roads
- Traffic information via smart phone apps
- Incident detection (virtual patrolling) led by the National Traffic Operations Centre
- A dedicated Traffic Officer Service providing on-road response capability
- Co-ordination of incident response from Traffic Officers, the police and other parties. This is led by the Regional Control Centre (RCC)
- RCC out-stations at Strensham, Almondsbury and Chelston
- National vehicle recovery service
- Review of strategic traffic operations, event planning and co-ordination
- Control of on-road technology – closed circuit television (CCTV), emergency roadside telephones, smart motorways and variable message signs (VMS).

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

2.4.5 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.

2.4.6 From Birmingham to Exeter, information from the Traffic Officer Service indicates that the average lane impact duration on the motorway is either within 30 minutes or less than an hour. This is based on latest twelve months data from April 2012 to March 2013. There is only one section of the motorway between junctions 12 and 13 where it generally takes longer to clear up incidents where motorway lanes are affected by incident durations over one hour. Analysis of the data confirms this is related to flooding on the carriageway. This is examined further in Section 4.4.

Flooding

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

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

2.4.9 From Birmingham to Exeter, several sections of the M5 have been defined as high flood risk. These include:

- Sections of the M5 Motorway between junctions 11 and 14
- Several sections between junctions 17 and 22
- Near junction 24 at Bridgwater & junction 25 at Taunton

2.4.10 All of which demand a greater level of monitoring during periods of severe weather.

Severe Weather

2.4.11 The HA aims to minimise the impacts of severe on network performance and the safety of road users.

2.4.12 The South West has experienced repeated flooding and extreme weather events over the last few years. The Heart of the South West Local Enterprise Partnership and several local authorities jointly commissioned a study to examine the impact of these events, The South West – Extreme weather resilience: 2012 and early 2013 (Sept 2013).

2.4.13 The study highlighted that monthly rainfall totals from April to August 2012 were almost 50% higher in the South West than the UK average. Prolonged wet weather resulted in rainfall on already saturated ground and severe flood events were experienced across the region. Precipitation in November and December 2012 was also significantly higher than the previous years and the UK average, as illustrated in the technical annex. The combination of precipitation on saturated ground and 'flash' rainfall conditions resulted in severe flood events in the South West.

2.4.14 From extensive research, it is considered that climatic change results in an increased incidence of extreme weather events, including intense rain storms. These events experienced in the South West are potential evidence to substantiate a change in our climate.

2.4.15 Extreme weather events cause major disruption to transport networks in the South West, including closures of the SRN. The motorway has been closed as a result of both flooding and incidents caused by heavy rain, hail and snow conditions. All of the severe flooding events recorded occurred in the South West. Recorded data held by the Agency highlights the following severe flooding events:

- 25 June 2007 – M5 southbound junctions 11A-12, severe flooding in lane 1
- 20 July 2007 – M5 southbound junctions reported flooding of carriageway from junctions 9-10, 11-11A and 11A-12. Gloucestershire Police requested full closure of the M5 Motorway. Issues reported from 11-11A related to run-off from adjacent land and maintenance of drains
- 21 November 2012 – M5 southbound junctions 14-15, run-off from field resulted in flooding of hard shoulder and all three lanes following extreme rainfall over the previous days. Problems from junction 12-13 occurred as water from a motorway ditch was unable to discharge into a stream flowing through a culvert, which was already at capacity. Lanes 1 and 2 of the carriageway were closed
- 4 September 2008 – M5 southbound junctions 14-15, flooding in lane 1
- 24 December 2012 – M5 junctions 12-13, as a result of heavy rainfall, a stream next to the motorway burst its banks
- 25 November 2012 - M5 southbound junctions 25-26, flooding resulted in extremely hazardous driving conditions and the motorway was closed between Taunton and Wellington for 1 hour
- 25 January 2013 – M5 southbound junctions 25 – 26, flooding resulted in motorway closure for 1 hour

2.4.16 These unique weather related incidents demanded a multi-agency response to minimise network disruption.

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, eg 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 speed limits to help keep traffic moving. Managed motorways use both variable speed limits and the hard shoulder as an additional live traffic lane during periods of congestion. Ramp metering manages traffic accessing the network via slip roads during busy periods to help avoid merging and mainline traffic from bunching together and disrupting mainline traffic flow.

2.5.4 The Agency is currently implementing a smart motorway project between junctions 15 and 17 of the M5 Motorway south of the M5/M4 interchange. Construction started in January 2012 and is due to be completed early in 2014. The project will use technology to vary the speed limits during congested periods and allow use of the hard shoulder as a running lane at peak times to create additional capacity.

2.5.5 The feasibility of introducing a smart motorway project between junctions 4A and 6 is currently being considered. This section of motorway is used for strategic and local commuter trips between Worcester and Birmingham.

2.5.6 Technology plays an integral role in operation and management and the M5 Motorway and includes the following technologies:

- VMS
- CCTV
- Automatic Number Plate Recognition (ANPR) cameras
- Meteorological instruments and road surface sensors
- Emergency roadside telephones
- Motorway Incident Detection and Automatic Signalling (MIDAS)

2.5.7 A summary of technology provision on the M5 Motorway (J4A-31) is provided in the Technical Annex at Table A2.5.

2.6 Vulnerable road users

2.6.1 The Birmingham to Exeter route has a number of interactions with long distance public rights of way and national trails, as well as many other local public footpaths and bridleways, for example:

- Monarch's Way, Worcestershire - between J5 & J4A
- Wychavon Way - between J5 and J6
- Gloucestershire Way – between J11 & J11A
- Severn Way – between J17 & J18
- River Avon Trail – between J18 & J19
- Mendip Way – between J21 & J22
- River Parrett Trail, Somerset – between J23 & J24
- West Country Way – between J24 & J25
- East Deane Way – between J24 & J26
- Exe Valley Way – between J30 & J31

2.6.2 Traffic-free sections of the national cycle network intersect the M5, particularly around the urban areas of Exeter, Taunton, Bridgwater, Bristol, Gloucester, Tewkesbury and Worcester. Given the nature of the route, the majority of these interactions are physically separated with cyclists and pedestrians crossing under the network on local routes.

2.6.3 Many of the cross-network needs and demands for vulnerable road users are concentrated on junctions with the route and it is at these locations where the provisions for such road users are focused.

2.6.4 The following issues were raised at the stakeholder engagement events relating to the M5 and vulnerable road users:

- Along the M5 there are inadequate crossing points for non-motorised users, which impacts on pedestrians and cyclists (Sustrans)
- Crossing the M5 is not easy for non-motorway users, especially walkers and cyclists. The problem is particularly bad at M5 J16 Aztec West/Almondsbury (Bristol Cycling Campaign)
- It can be very hard to cross strategic road junctions, for example, the M5 at Tewkesbury is particularly difficult for cyclists. Traffic resulting from growth planned east of Tewkesbury will make the M5 junction even harder to cross (Gloucestershire County Council)

2.6.5 Following the engagement events, the Bristol Cycling Campaign and Heart of the South West LEP raised the following issues in relation to cycling:

- The need to Integrate cycling provision into maintenance and development schemes. For example, where traffic signals are being replaced on slip roads, the opportunity should be made to include cycling improvements

- New developments should be supported by strong and well funded Travel Plans and high quality facilities
- Cyclists and pedestrians have difficulty crossing motorway junctions, for example, M5 junction 21
- Given significant development will occur on both the east and west sides of the M5 at junctions 23 and 24, any provision must cater for all categories of road user

2.7 Environment

2.7.1 As a responsible network operator and through the SRN 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 With respect to Birmingham to Exeter, the following Air Quality Management Areas (AQMAs) have been identified in proximity to the M5 Motorway:

- Worcester Road AQMA, Bromsgrove – reasonable proximity to M5 J4a-5. Stakeholders raised concerns about air quality in Bromsgrove due to rat running when there are congestion issues on the M5
- Newtown Road AQMA – a radial route into Worcester with proximity to the M5 J6-7
- Cheltenham AQMA – covers the whole borough in vicinity of M5 J10-J11
- Cribbs Causeway AQMA, Bristol – an area adjacent to M5 J17
- Cullompton AQMA – an area encompassing the entire built up area of the town of Cullompton immediately adjacent to M5 J28
- Exeter AQMA – this covers an area of major roads within Exeter, in reasonable proximity to J29 & J30

2.7.5 Defra identifies exceedances of European air quality limits for annual average levels of nitrogen dioxide (NO_2) in all of these AQMAs. 2.7.5 in green text.

Cultural heritage

2.7.6 Wherever possible, Agency schemes are designed to avoid impacts on cultural heritage assets.

2.7.7 Locations of cultural heritage sensitivity on the route identified in proximity to the motorway include:

- Spetchley Park, Worcester – a grade II listed property, deer park, landscape park and gardens, near J6 and 7
- Motte castle, moated site and medieval agricultural remains, Worcester – scheduled monument in immediate proximity to M5 J7
- Pirton Park, south of Worcester – a registered park & garden between J7 and 8
- Croome Court, south of Worcester – grade I listed, registered park & garden between J7 and 8
- Tithe Barn, Bredon – near J8 intersection with M50 Motorway
- Hucclecote Roman villa, Gloucester – in immediate proximity to J11a
- Poundisford Park, Taunton – registered park & garden between J25 and 26
- Clyst St Mary bridge and causeway, east of Exeter – scheduled monument near J30

Ecology

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

2.7.9 From Birmingham to Exeter, designated nature conservation sites exist close to the motorway route. These include the following Sites of Special Scientific Interest (SSSIs) and wetlands of international importance, known as Ramsar sites:

- Upton Warren Pools, Droitwich – habitat for wintering and passage waterfowl and wader species, located between J4 and J5
- Upham Meadow and Summer Leasow, Bredon – floodplain which attracts breeding birds, located between J8 and J9
- Hucclecote Meadows, Gloucester – ancient pastures, located near J11A
- Severn Estuary, Bristol – this incorporates the tidal area of the Avon before it flows into the Severn Estuary. The area is proposed as a Special Protection Area under the terms of the European Community Directive on the Conservation of Wild Birds

and for inclusion on the list of Wetlands of International Importance under the Ramsar Convention. This SSSI and Ramsar site is located immediately beneath the Avonmouth Bridge between J18 and J19

- Court Hill, near Clevedon – evidence for glaciation. This SSSI is bisected by the M5 between J19 and J20
- Banwell Caves, near the Mendip Hills, demonstrate mineralisation process, located near J21
- Crook Peak to Shute Shelve Hill, Mendips - woodland and grassland. This site is immediately east of M5 motorway J21-22
- Maiden Down – lowland heath. This SSSI is immediately adjacent to the M5 between J26 and J27
- Exe Estuary, Exeter – area of international importance for wintering wildfowl and waders. This SSSI and Ramsar site is located beneath the M5 Motorway between J30 and J31

Landscape

2.7.10 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.

2.7.11 From Birmingham to Exeter, there are three Areas of Outstanding Natural Beauty (AONB) in immediate proximity to the M5 Motorway. These are:

- Cotswold Hills – a limestone escarpment between the Severn Valley, Evesham Vale and upper Thames. This AONB extends along the east side of the M5 Motorway from J8 in the north to J14 north of Bristol
- Mendip Hills – this AONB stretches eastwards from the Bristol Channel and includes Cheddar Gorge. The M5 cuts through the western fringe of the Mendips between J21 and J22
- Blackdown Hills – an escarpment near Wellington and Cullompton. The AONB is immediately adjacent to the east side of the M5 Motorway between junctions 26 and 27

Noise

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

2.7.13 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.

2.7.14 In 2012, Defra completed the first round of noise mapping and action planning which identified the top one per cent of noisiest locations

adjacent to major roads. These were based on the conditions in 2006. The locations in this top one per cent are known as Important Areas.

2.7.15 From Birmingham to Exeter, several locations have been designated as Important Areas where noise from traffic from the SRN has been shown by Defra to impact on nearby properties. For example:

- An extended section of the motorway from J5-6 immediately to the east of Droitwich
- Several locations near J10 and J11 for Cheltenham and Gloucester
- An extended section of the motorway south of J11A to the east of Gloucester
- Several locations between J16 and J18 on the west fringe of Bristol
- Several locations near J25 and J26 including an extended section of the motorway near Taunton
- An extended area between J27 and J28
- Several locations on the eastern fringe of Exeter between J29 and J31

Water pollution risk

2.7.16 The Agency has 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.

2.7.17 From Birmingham to Exeter, several sections of the M5 Motorway have been identified with a high pollution risk. These include locations where surface water run-off from the carriageway has a potential pollution impact on local water courses:

- J8-9 elevated section of the M5 Motorway over the River Avon and floodplain
- The M5/M4 Interchange
- Several sections from J19 Gordano to J21 Weston-super-Mare
- Between J26 and J27 on the fringe of the Blackdown Hills

3 Future considerations

3.1 Overview

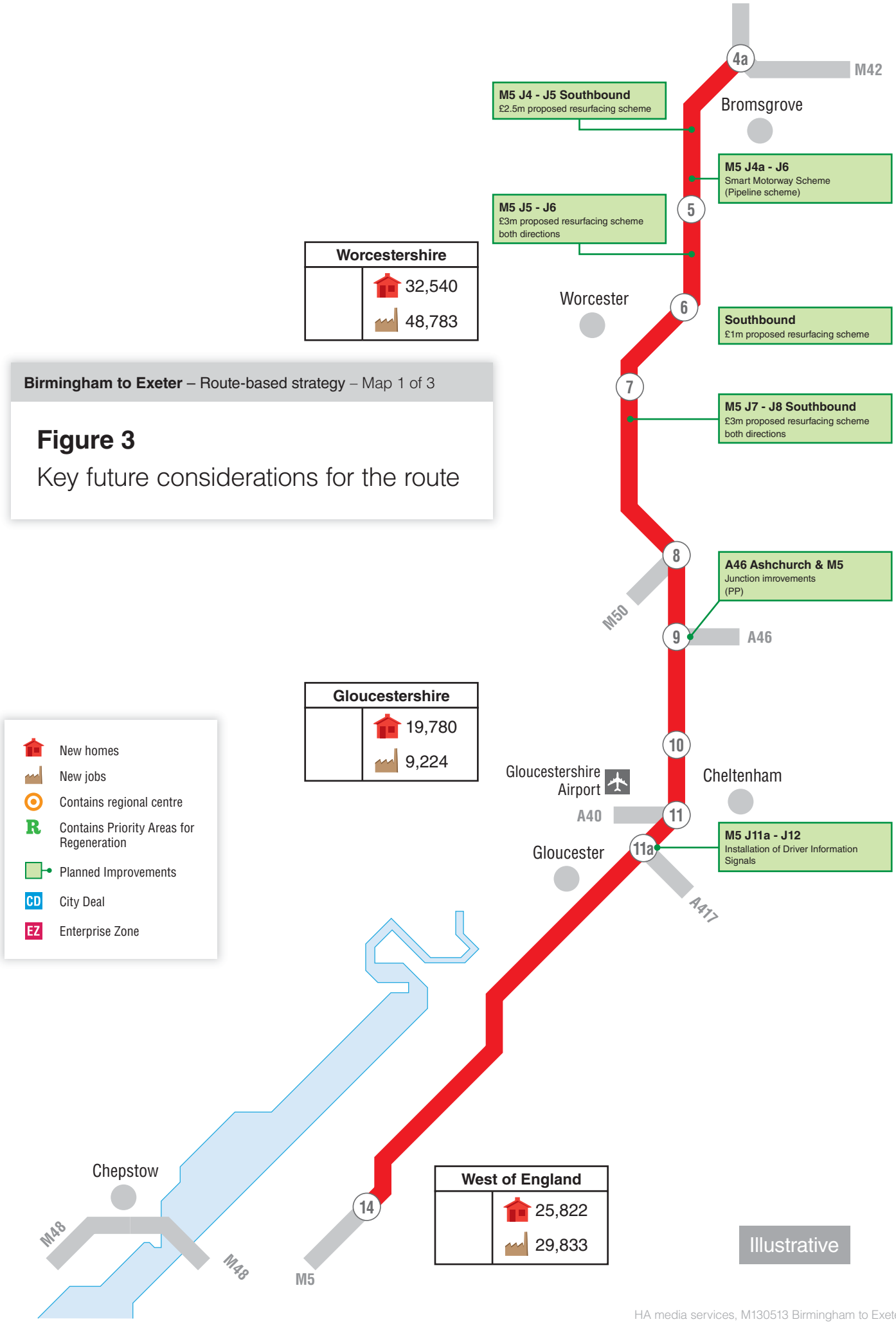
3.1.1 There is already a lot known about planned changes to and around the route. Local authorities and the development community are already pushing forward the delivery of their housing and economic growth aspirations, as set out in their local plans. The Highways Agency has a large programme of schemes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

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

Birmingham to Exeter – Route-based strategy – Map 1 of 3

Figure 3

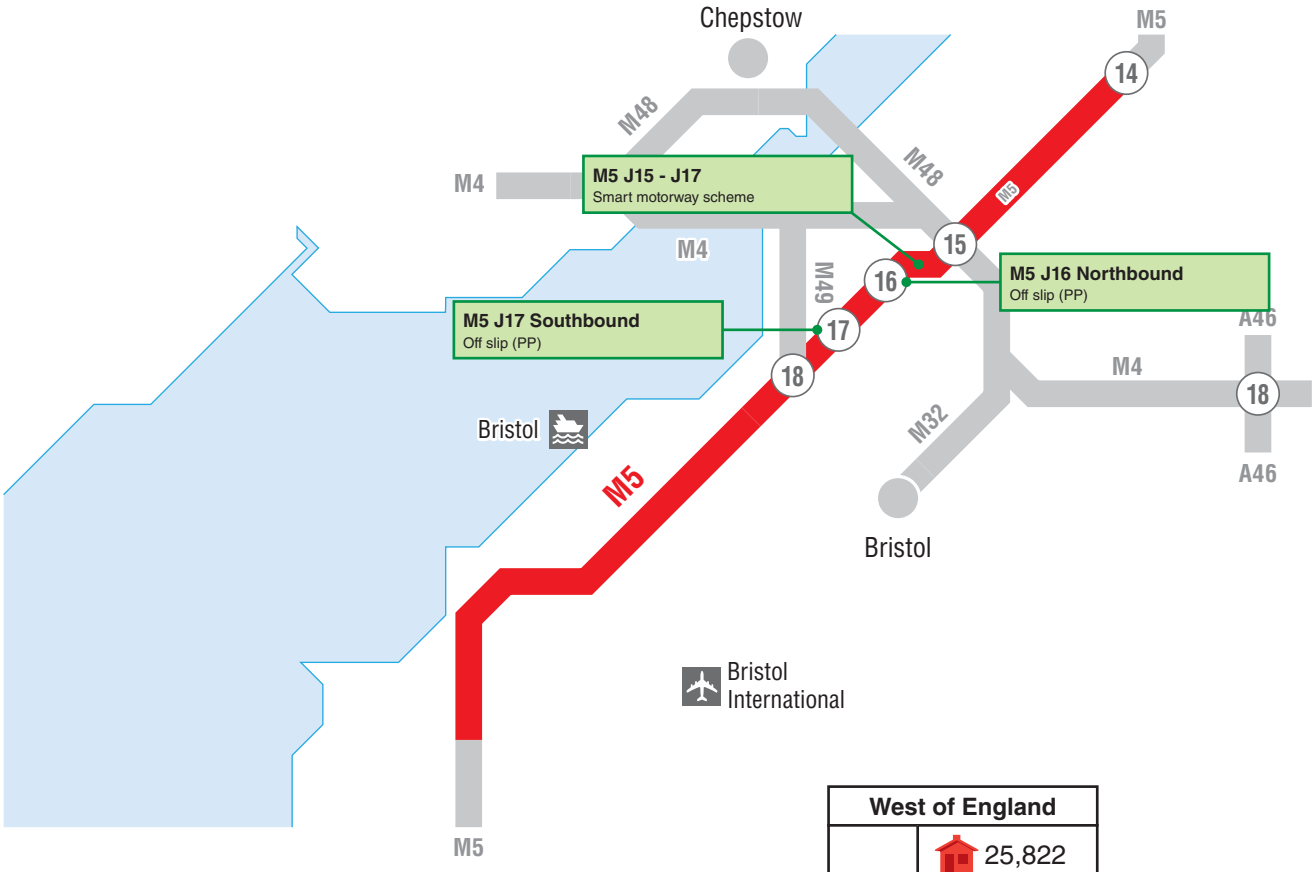
Key future considerations for the route



HA media services, M130513 Birmingham to Exeter

Figure 3

Key future considerations for the route



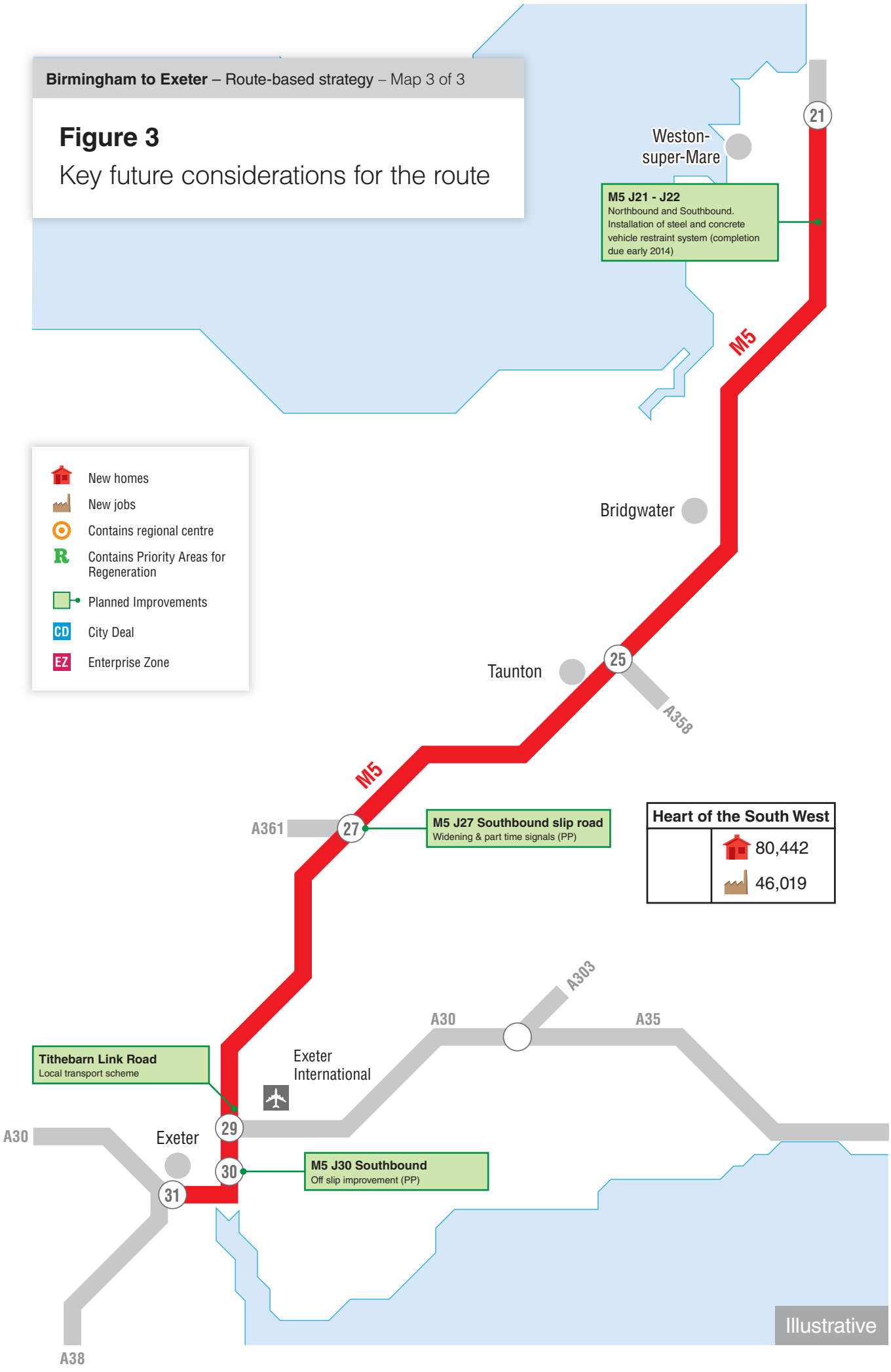
- New homes
- New jobs
- Contains regional centre
- Contains Priority Areas for Regeneration
- Planned Improvements
- City Deal
- Enterprise Zone

Illustrative

Birmingham to Exeter – Route-based strategy – Map 3 of 3

Figure 3

Key future considerations for the route



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3.2 Economic development and surrounding environment

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

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

3.2.3 Table 3.1 summarises key housing and economic growth proposals by Local Planning Authority Area. It then outlines specific proposals which are likely to have an effect on the SRN (due to both their size and proximity to the SRN). In order to source this information, use has been made of the most recent Development Plan Document [DPD] available for the authority. This provides information at an 'area' level. It must be noted that consideration has been given to adopted plans and in some cases, plans emerging through the consultation process. This gives the best view of likely future development aspirations.

Table 3.1 Key housing and economic growth proposals

Location of Development	Development Type	Scale by 2015	Scale by 2021	Scale by 2031	Anticipated Location of Impact on Route
Bromsgrove District Council (total)	Residential Commercial	1,380 units 476 jobs	3,450 units 1,189 jobs	6,457 units 2,509 jobs	M5 J4a to 5
Key development areas within Bromsgrove: - Perryfields Road	Residential Commercial	246 units 85 jobs	616 units 212 jobs	1,235 units 448 jobs	M5 J4a to 5
South Worcestershire (Malvern Hills / Worcester / Wychavon)	Residential Commercial	2,388 units 2,719 jobs	9,553 units 10,877 jobs	23,200 units 26,415 jobs	M5 J4a to 8
Key development areas within South Worcestershire: - Broomhall and Norton Barracks Community - Temple Laughern - Worcester Technology Park Kibury Drive	Residential Commercial Residential Commercial Commercial Residential	289 units 538 jobs 115 units 56 jobs 177 jobs	1,157 units 2,153 jobs 459 units 222 jobs 710 jobs 250 units	2,450 units 3,201 jobs 975 units 472 jobs 1,509 jobs 250 units	M5 J7 M5 J7

Location of Development	Development Type	Scale by 2015	Scale by 2021	Scale by 2031	Anticipated Location of Impact on Route
Ronkswood & Land South of Leopard Rise	Residential		300 units	300 units	M5 J7
Gwillims Farm	Residential		250 units	250 units	M5 J6
Copcut	Residential		740 units	740 units	M5 J6 & J5
Tewkesbury Borough Council (total)	Residential Commercial	1,111 units 611 jobs	4,444 units 2,444 jobs	10,100 units 5,500 jobs	M5 J8 to 11a
Key development areas within Tewkesbury:					
- Former MOD site strategic allocation	Residential Commercial	233 units 210 jobs	933 units 839 jobs	2,100 units 1,887 jobs	M5 J8 to 11a
- Ashchurch strategic allocation	Commercial	150 jobs	600 jobs	1,349 jobs	
- Innsworth and Twigworth	Residential			861 units	
Cheltenham Borough Council (total)	Residential Commercial	1,111 units 611 jobs	4,444 units 2,444 jobs	10,000 units 5,500 jobs	M5 J10 to 11a
Key development areas within Cheltenham:					
- North West Cheltenham	Residential	516 units	2,065 units	4,647 units	M5 J10 to 11a
- Leckhampton	Residential	117 units	469 units	1,055 units	
- Up Hatherley Way	Residential	83 units	332 units	747 units	
Gloucester City Council (total)	Residential Commercial	1,456 units 1,200 jobs	5,822 units 4,800 jobs	13,100 units 10,800 jobs	M5 J11a to 12
Key development areas within Gloucester:					
- Innsworth and Twigworth	Residential	246 units	984 units	2,214 units	M5 J11a to 12
- North Churchdown	Residential	68 units	270 units	608 units	
- North Brockworth	Residential	124 units	496 units	1,115 units	
Stroud District Council (total)	Residential Commercial	917 units 1,307 jobs	2,751 units 3,921 jobs	4,000 units 6,100 jobs	M5 J12 to 14
South Gloucestershire Council (total)	Residential Commercial	8, 508 units 9, 250 jobs	21,607units 18,500 jobs	29,716 units 28,300 jobs	M32, M48, M49 M4 J18 to J22 & M5 J14 to 18
Key development areas within South Gloucestershire:					

Location of Development	Development Type	Scale by 2015	Scale by 2021	Scale by 2031	Anticipated Location of Impact on Route
- Cribs Patchway	Residential	90 units	2,371 units	5,700 units	M5 J15 to 17
	Commercial	unknown	unknown	12,000 jobs	
- Rest of Bristol North Fringe	Residential	2,830 units	7,011 units	6,616 units	M4 J19, & J20 M32 J1 & 2
	Commercial	unknown	unknown	7,000 jobs	
- Yate / Chipping Sodbury	Residential	755 units	2,371 units	3605 units	M4 J18 & M32 J1
	Commercial	unknown	unknown	8,000 jobs	
Bristol City Council (total)	Residential	1,932 units	3,478 units	5,410 units	M5 J17 to 19
	Commercial	1,7356 jobs	3,124 jobs	4,859 jobs	
Key development areas within Bristol City:					
- Avonmouth	Commercial	Unknown	Unknown	Up to 4,000 jobs	M5 J18
- Severnside	Commercial	Unknown	Unknown	Up to 8,00 0 jobs	M5 J15 to 18
- Bristol Docks	Commercial	Unknown	Unknown	1,500 jobs	M5 J18a to 19
North Somerset Council (total)	Residential		6,291 units	9,786 units	M5 J18 to 22
	Commercial		15,748 jobs	24,496 jobs	
Key development areas within North Somerset:					
- Burnham-on-Sea/ Highbridge	Residential	405 units	675 units	1,050 units	M5 J22
	Commercial	378 jobs	630 jobs	980 jobs	
Sedgemoor District Council (total)	Residential	2,064 units	3,870 units	6,020 units	M5 J22 to 24
	Commercial	1,872 jobs	3,510 jobs	5,460 jobs	
Key development areas within Sedgemoor:					
- Bridgwater	Residential	1,917 units	3,195 units	4,970 units	M5 J23 to 24
	Commercial	1,728 jobs	2,880 jobs	4,480 jobs	
Taunton Deane Borough Council (total)	Residential	4,377 units	8,206 units	14,588 units	M5 J24 to 27
	Commercial	2,861 jobs	5,364 jobs	9,711 jobs	
Key development areas within Taunton:					
- Taunton Urban Area	Residential	2,753 units	6,882 units	12,235 units	M5 J25
	Commercial	2,011 jobs	5,029 jobs	8,941 jobs	
- Wellington	Residential	529 units	1,323 units	2,352 units	M5 J26
	Commercial	133 jobs	334 jobs	769 jobs	
Mid Devon District Council (total)	Residential	1,984 units	3,306 units	4,684 units	M5 J27 to 29
	Commercial	749 jobs	1,248 jobs	1,941 jobs	
Key development areas within Mid Devon:					

Location of Development	Development Type	Scale by 2015	Scale by 2021	Scale by 2031	Anticipated Location of Impact on Route
- Cullompton	Residential Commercial	470 units 136 jobs	1,175 units 340 jobs	1,665 units 528 jobs	M5 J28
East Devon District Council (total)	Residential Commercial	2,511 units 3,778 jobs	4,185 units 6,298 jobs	6,800 units 9,797 jobs	M5 J28 to 29
Exeter City Council (total)	Residential Commercial	4,834 units 1,182 jobs	9,389 units 4,137 jobs	15,049 units 10,047 jobs	A30 and A38 around Exeter
Key development areas within Exeter: - Matford, Exeter - Hill Barton, Exeter - Newcourt	 Commercial Commercial Commercial	 492 jobs 164 jobs 526 jobs	 1,724 jobs 575 jobs 1, 838 jobs	Exeter city advised unable to disaggregate figures between these sites.	A38 and A30 around Exeter

3.2.4 Temple Quarter in Bristol was designated an Enterprise Zone in 2012. Its targets are to create 4,000 jobs in the first five years and around 17,000 in the 25 year lifespan of the project. Alongside the Enterprise Zone, there are also five Enterprise Areas in the West of England; Avonmouth Severnside, Bath City Riverside, Emersons Green, Filton and Junction 21.

3.2.5 As part of the Bristol City Region Deal, the Government has devolved new responsibilities to give the City the flexibility it needs to attract private investment, close skills gaps and attract new jobs. The Bristol City Region expects the deal to help deliver 95,000 jobs and over £1 billion of investment to support local growth over the next 30 years. This scale of development is likely to have an impact on the M5 Motorway, between junctions 15 and 19.

3.2.6 During the stakeholder workshops, attendees highlighted the importance of economic growth and jobs and the key role that transport and infrastructure plays in facilitating this growth. The focus of new jobs and housing is felt to be around existing towns and centres.

3.2.7 During the engagement events, particular mention was made to the following developments:

- Major development across the south and eastern periphery of Worcester
- Development of various sizes is planned close to junctions along the entirety of the M5 route. For example, significant development is planned close to M5 Junctions 9, 10, 11 and 12 in Gloucestershire

- Severnside is major growth area, with the potential to create up to 8,000 new jobs. This includes a proposal for Avon Power Station.
- A power station is also proposed on the bank of the River Severn to the north of the M48 crossing (Oldbury Power Station), which could affect the M5 and M48.
- North Fringe and South Bristol are priority locations for residential development in Bristol
- Hinkley Point C. The Secretary of State for Energy and Climate Change granted a Development Consent Order in October 2013 to EDF Energy to build and operate the nuclear power station
- Huntspill Energy Park, a growth point focusing on nuclear supply chain industry, near junction 23
- Several proposals in the Exeter and East Devon growth point

3.2.8 The route serves and Bristol, Exeter and Gloucestershire airports and Bristol Port. This information is covered under the Wider Transport Networks in Section 3.4.

3.3 Network improvements and operational changes

3.3.1 The Agency is already delivering a large capital programme of enhancement schemes nationally. This includes Major Schemes greater than £10m in value, plus smaller enhancement schemes including the current pinch point programme. Table 3.2 below summarises the current committed enhancement schemes proposed along the route, which have also been represented in Figure 3.

Table 3.2 Committed SRN enhancement schemes

Location	Scheme Type	Completion Year	Anticipated Benefits
A46 Ashchurch and M5 J9	Pinch point Scheme	2014	Reduced congestion by realigning junctions and installing traffic signals. The improvement will help to deliver around 800 jobs and 2,000 new homes in neighbouring areas.
M5 Junction 11a-12 Southbound Gloucester	Installation of Driver Information Signals	2015	The scheme will improve the quality and consistency of driver information along this stretch of the M5 and give the South West Regional Control Centre greater visibility of this area of our network in order to detect and warn approaching traffic of any incidents or queuing ahead. It will also improve driver information through message display.
M5 Junction 16 Northbound Off-slip	Pinch point Scheme	2015	The scheme improvements will result in improved flow through the junction and reduced conflicts between merging traffic streams. The proposals achieve wider benefits in supporting growth in the surrounding

Location	Scheme Type	Completion Year	Anticipated Benefits
			area, such as at Filton Airfield, Patchway and Cribbs Causeway.
M5 Junction 17 Southbound Off-Slip	Pinch point Scheme	2015	The scheme improvements will result in improved flow through the junction and reduced conflicts between merging traffic streams. The proposals achieve wider benefits in supporting growth in the surrounding area, such as at Filton, Cribbs Causeway and Patchway
M5 J15 – 17	Smart motorway project	2014	Reduced congestion by using technology to vary speed limits and hard shoulder running. Benefits delivered at a significantly lower cost than conventional motorway widening and with less impact on the environment.
M5 Junction 21-22 Northbound and Southbound	Installation of steel and concrete Vehicle Restraint System	2014	The installation of concrete and new steel barrier will reduce the need for traffic management for periodic maintenance inspection and has an increased design life.
M5 Junction 27 southbound	Pinch point Scheme	2014	The scheme improvements will result in improved flow through the junction by increasing its traffic capacity. Part-time traffic signals are to be installed. These react to approaching and waiting traffic to maximise green light timings. The proposals support growth in the surrounding area by improving access for the new Tiverton urban extension and Tiverton Parkway Station.
M5 Junction 30 Southbound	Pinch point Scheme	2015	The scheme improvements will result in improved flow through the junction by increasing its traffic capacity. Part-time traffic signals are to be installed. These react to approaching and waiting traffic to maximise green light timings. The proposals support growth in the surrounding area, such as at Cranbrook to the north-east of this junction, Newcourt to the south-west and at the nearby Sowton Industrial Estate. It supports development in the East of Exeter Enterprise Area.

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
M5 J4a-6 south of Birmingham	All Lane Running or smart motorway scheme Reduced congestion by using technology to vary speed limits and hard shoulder running. Benefits delivered at a significantly lower cost than conventional motorway widening and with less impact on the environment.

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
Bromsgrove Rail Interchange	Public Transport	2015	Proposals involve re-locating the station further south to allow Network Rail to electrify the line from Barnt Green to Bromsgrove. Rail improvements promote modal shift. Potential transfer of some trips from M5 to rail
Worcester Transport Strategy	Package of multi-modal measures	2016	Project promotes shift to alternative transport modes and could take some trips off the M5 Motorway
Elmbridge Transport Scheme	Public Transport	2017	Scheme close to M5 J11 aimed at increasing bus use. New 1000 space park and ride site and improved junction at Elmbridge Court. Could remove local traffic from the SRN
C&G and Walls Roundabouts Improvement Scheme	Road Scheme	2014	Aims to address capacity issues at these two roundabouts close to M5 J11a
Metro Bus Ashton Vale to Temple Meads	Public Transport	2016	Improved BRT could remove some local traffic from the M5
Metro Bus North Fringe to Hengrove	Public Transport	2018	Improved BRT could remove some local traffic from the M5
West of England Better Bus Area	Public Transport	2012 onwards	Improved bus services could remove some local traffic from the M5
MetroWest Phase 1	Public Transport	2019	Scheme involves reopening the Portishead rail line. This provides enhanced train services on both the Yate to Weston-super-Mare and Cardiff to Westbury corridors. Could remove some local traffic from the M5.

Project	Scheme Type	Completion Year	Anticipated Impacts on the Route
Weston Package Phase 1	Package	2014	Improved highway access between the M5 motorway and Weston. Reduces traffic congestion
Taunton Northern Inner Distributor Road	Road scheme	2015	An additional east-west link close to M5 J25 which will reduce congestion within Taunton. May have positive impact on SRN
Exeter Principal Urban Area scheme	Public Transport	2013	Construction of bus lanes and a new park & ride facility close to M5 J30. Promotes modal shift from car to public transport
Tithebarn Link Road, Exeter	Local pinch point project - Highways	2015	Construction of a Link Road scheme which will give access across the motorway to approximately 1,000 new homes and will also unlock approximately 5,800 homes in Monkerton and Cranbrook, as well as employment development which could generate 3,000 jobs in the Exeter and East Devon Growth Point. This route will ease congestion and reduce the impact of traffic on Junction 29 of the M5.
Bridge Road widening, Exeter	Highways	2016	By providing two lanes outbound the scheme will reduce queuing and exit blocking at Countess Wear, improving conditions for traffic exiting the city and in particular on the outer bypass. In addition, by addressing the sole single lane section on the outer bypass, additional capacity will be provided to encourage more local trips to use the route instead of the SRN.

3.4.2 Worcestershire's Local Transport Plan 3 (LTP3) outlines that there is a potential scheme to improve the capacity of M5 junction 6. This scheme includes enhancements to both the junction and the approaches, together with the provision of a sustainable transport link.

3.4.3 As part of the Worcester Transport Strategy, further aspirations for improvement to the Worcester Southern Link Road involve dualling from Powick Hams to M5 Junction 7. This would involve the development of a new bridge adjacent to the existing Carrington Bridge and the replacement of the railway bridge over the Southern Link Road.

3.4.4 Worcestershire County Council is currently developing the business case for a new Worcestershire Parkway Railway Station at the intersection of the Cross Country and Cotswold rail lines. This proposal has potential to promote modal shift from the north-south M5 motorway corridor to the parallel rail line.

3.4.5 Gloucestershire's LTP3 outlines the Council's aspiration for improvements to M5 J10 in order to create an all-movements junction.

A second phase of improvements at M5 J12 introduces additional traffic signalisation, over and above the scheme planned in the medium term.

3.4.6 From 2026 onwards, the West of England Joint LTP states that there will be investigation of additional transport links including a new road link between the M5 and South Bristol, A36/A46 link and M4 link. The Highways Agency and local authorities have also jointly examined the feasibility and design for improvements to the operation of M5 J19.

3.4.7 Somerset's Future Transport Plan outlines growth at Bridgwater, Taunton and Wellington are significant concerns. In order to accommodate growth, aspirations include new park & ride sites, bus priority routes and improved junctions between Norton Fitzwarren, Monkton Heathfield, M5 and Taunton town centre.

3.4.8 The Devon LTP3 sets out various projects which could have an effect on the Birmingham to Exeter route. Devon Metro is the name given to an extensive plan to expand the role of railways serving Devon and Torbay over the next fifteen years. Some of the train services including those on the Avocet rail line (connecting Exeter with Exmouth) and the Tarka line (from Barnstaple) suffer from overcrowding during peak periods.

3.4.9 Recently completed improvements to the M5 Junctions 29 and 30 and the provision of the Clyst Honiton Bypass will help to unlock development to the east of the motorway, provide access to Science Park and Skypark and maintain the efficient operation of the network for long distance travel in and out of the Peninsula.

3.4.10 Devon County Council has been successful in securing local road pinch point funding for the Tithebarn Link Road (refer to Table 3.4), which will provide improved facilities for both private cars and buses, relieving the SRN. In the future, it is noted that possible measures to make best use of the existing network could include smart motorway techniques.

3.4.11 Cornwall Council's *Connecting Cornwall: 2030 Strategy* states that they will work with partners to deliver a second strategic route to the south west to reduce reliance on the M4/ M5 strategic link.

3.4.12 Bristol, Exeter and Gloucestershire airports and Bristol Port are in proximity to the Birmingham to Exeter route.

3.4.13 Bristol Airport is located in North Somerset, approximately 8 miles south-west of Bristol City Centre and operates with around 6 million passengers per annum[1]. The airport published plans for significant expansion and aims to increase passenger numbers to 10 million by 2030.

3.4.14 Exeter Airport is located close to the M5 J29. The airport offers both scheduled and holiday charter flights within the United Kingdom and

[1] Aeronautical Information Service:

http://www.nats-uk.ead-it.com/public/index.php%3Foption=com_content&task=blogcategory&id=36&Itemid=85.html

Europe. The masterplan for Exeter Airport predicts an average annual growth of 6.2% per annum between 2000 and 2030.

3.4.15 Gloucestershire Airport (formerly Staverton Airport) is located close to the M5 J11. Many of the flights to and from the airport are for business purposes, but there are also a large proportion of domestic, recreational and training flights. The airport runway was lengthened in 2012 to accommodate additional air traffic.

3.4.16 Bristol Port is a key employer supporting some 7,600 jobs either directly, through associated activity, or through linkages within the local economy.

3.4.17 In March 2010, Bristol Port received planning consent for the construction of a Deep Sea Container Terminal (DSCT). It is projected that the proposed port expansion will generate about 1,500 jobs when fully operational, in both direct port employment and port associated activities such as transport services, shipping and freight forwarding. A further 260 jobs would be generated through multiplier effects. Some 360 new full-time equivalent jobs are expected during the construction phase[2].

[2] 2012, *Avonmouth Severnside Outline Development Strategy*, AMION Consulting Limited

4 Key challenges and opportunities

4.1 Introduction

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

4.1.2 Figure 4 summarises some of the key issues and challenges that the route will experience during the 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 have been used to inform the development of this evidence report. This included getting their views on what they deemed to be the priorities within their area and identifying their “top priorities” locally. This has been collated according to the route to which those views related.

4.1.6 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 rather it 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 the limitations of the reporting of stakeholder priorities as we move into the second stage of RBS.

4.2 Operational challenges and opportunities

4.2.1 The stakeholder engagement consistently highlighted the lack of resilience of the transport network to severe weather events (including heavy rain, hail and snow conditions), major incidents and potential security threats. This is considered to be a high priority.

4.2.2 Poor resilience severely impacts on the operation of the Birmingham to Exeter route. For example, the multiple-vehicle collision on 4 November 2011 discussed in chapter 2 led, to a 48 hour closure of the motorway network between junctions 24 and 25 for major re-surfacing and repair work. Stakeholders raised specific issues with respect to resilience of the network at Avonmouth Bridge, given the lack of a suitable alternative diversion route and particular concerns relate to severe weather and flooding across the route.

4.2.3 As discussed earlier, the report *The South West – Extreme weather resilience: 2012 and early 2013* emphasised that extreme weather events experienced in the South West in the last two years are likely to occur on a more frequent basis. The paper cites a report published by the Met-Office on 3 January 2013 which predicts a greater incidence of extreme rainfall events than experienced in the past. The analysis showed that in the Exeter area the current 1:100 year winter rainfall event would become a 1:35 year event by 2040.

4.2.4 Section 2.6 of this report discussed the major disruption and closure of the transport network including the M5 as a result of flooding and incidents caused by heavy rain, hail and snow conditions. The report on extreme weather resilience also highlighted the impact of flooding on routes close to the SRN. During flood events in November 2012 and January 2013 the M5 diversion route on the A38 between Taunton and Wellington was closed due to flooding. This meant that there was no access beyond Taunton to the South West on the M5 or via the diversion route.

4.2.5 The report commented on the results of a survey undertaken by Devon and Somerset county councils and the Heart of the South West LEP which targeted 600 businesses in the worst affected areas. It was found that the financial impact on these businesses was in the region of £7.5 million.

4.2.6 Given a potential increased frequency of extreme weather events, resilience of the M5 is considered to be a key area of focus for the Agency. There is a clear opportunity to improve dialogue between the Highways Agency, DfT, Local Authorities, Environment Agency, Network Rail, bus and rail operators to improve resilience and offer other transport choices and an alternative route if the SRN and the diversion route are affected. There are challenges associated with securing additional funding for highway repairs and ongoing maintenance.

4.2.7 The Highways Agency's Traffic Officer Service provides a maximum level of service on the M5 Motorway from Birmingham to Exeter. As described previously, the data from the Traffic Officer Service indicates that incidents generally impact on the network for up to half an hour or one hour. The section of the motorway from junction 12 to 13 in Gloucestershire appears to take longer for incidents to be resolved. Analysis of the data illustrates that this is largely due to flooding. It is recommended that drainage is assessed on this section of the M5 and the Traffic Officer Service reviews the approach towards operational management of flood events.

4.2.8 Stakeholder engagement identified that police operations are hampered due to the current configuration of M5 Junction 10. Gloucestershire Police has provided evidence of where the layout without southbound access/egress impacts on their response to incidents. The following recorded incidents from 1 January 2012 and 8 October 2013 are examples where officers have had to travel to junction 9 to turn and return to the scene due to the current restrictions on junction 10:

- 16 April 2012 - Debris in the carriageway
- 03 June 2012 - Concern for welfare of member of public
- 10 November 2012 - Debris in the carriageway
- 26 December 2012 – Road Traffic Collision
- 23 April 2013 - Debris in the carriageway
- 19 August 2013 – Road Traffic Collision.

4.2.9 The Agency has introduced Variable Message Signs (VMS) along the M5 motorway, to assist in managing the network by providing advanced warning to drivers of emergencies and incidents. This helps customers using the road network make informed choices about their journey, for example by taking an alternative local road if there is a major incident on the motorway ahead. VMS is incorporated in smart motorway projects.

4.2.10 Stakeholder engagement identified that there are potential gaps in VMS provision on some parts of the network. Analysis of asset data held by the Highways Agency illustrates there are no variable message signs on the following sections of the motorway:

- M5 motorway between junctions 13 and 15
- M5 motorway between junctions 20 and 24

4.2.11 On some other sections VMS provision is patchy with either one or two signs. There is only one VMS between J17 and J18 while there are two signs on each of the following sections; J9-J10, J17-J18, J26-J27, J27-J28, J28-J29.

4.2.12 There is an opportunity for the Highways Agency to introduce message signs to ensure consistent provision of information to customers using the SRN. Message signs prior to J15 would enable customers to make informed choices about their journey should there be major congestion on the busy section south of the M5/M4 interchange. Similarly,

information on the section of the motorway between Bristol and Bridgwater would enable drivers heading north or southbound to consider an alternative route.

4.2.13 As part of the stakeholder engagement, Gloucestershire County Council provided information related to the diversion route through Gloucester via the A40 and A430 should traffic be diverted from the M5 Motorway between J9 and J12. Gloucestershire CC highlighted the requirement to review the adequacy of this route and associated signage. This presents an opportunity for the Agency to review emergency plans in conjunction with the local highway authority.

4.2.14 Stakeholders at the West of England event commented on the adequacy of the A38 as a diversion route when the M5 is closed. Whilst this is a parallel route to the motorway, there can be severe tailbacks on the A38. Based on stakeholder views, there is opportunity to review the diversion routes for the entire M5 and potentially identify further diversion routes.

4.3 Asset condition challenges and opportunities

4.3.1 The Birmingham to Exeter route presents an important challenge, as there are carriageway sections across the entire motorway from junction 4A to 31 that will reach the end of their design life by 2020. In terms of carriageway pavement, 79 locations have been identified in Area 9 and 61 in Area 2.

4.3.2 With respect to structures, there are key challenges in managing assets constructed in the 1960s and 1970s which are now in structural deterioration. As highlighted in chapter 2, this applies to 13 structures from junction 9-13 of the M5 and four under-bridges from J4A-6, as illustrated in Figure 4.

4.3.3 Maintaining the integrity of an aging drainage infrastructure will be an ongoing challenge for the Agency throughout the route. Especially given the likelihood of more extreme weather events.

4.4 Capacity challenges and opportunities

4.4.1 The Birmingham to Exeter route faces major challenges with respect to capacity on key sections and several junctions across the M5. Capacity issues are pronounced in am and pm peaks and problems are intensified during the summer period. Planned growth resulting from major residential and employment development will further exacerbate capacity issues on the SRN. This was a consistent theme across all stakeholder engagement workshops held with local authorities, local enterprise partnerships and a range of other organisations.

4.4.2 Stakeholders identified significant capacity issues at almost all junctions along the route and highlighted that these issues will be exacerbated by the proposed employment and housing growth defined in emerging Local Plans. Table 4.1 provides a summary of comments and those categorised as top and medium priorities are discussed below. It should

be noted that this categorisation is based only on views from the stakeholder engagement events.

4.4.3 **M5 Motorway Junction 4A–5** – stakeholders at the Worcestershire engagement event raised issues in relation to 'rat running' on the A38, the parallel route to the M5 to avoid congestion on the M5 Motorway. The Agency is currently examining the feasibility of introducing a smart motorway project from junction 4A to 6. Traffic modelling for this scheme indicates that the proposed improvements would result in reassignment of traffic from the A38 to the M5.

4.4.4 **M5 Motorway Junction 5** – the motorway junction at Droitwich currently experiences congestion and capacity issues. Micro-simulation modelling provides evidence to support this. The Managing Agent Contractor has highlighted that capacity issues regularly result in queuing traffic on the mainline. Bromsgrove District Local Plan allocates significant residential and commercial development in Bromsgrove. This adds further pressure to M5 junction 5.

4.4.5 **M5 Motorway Junction 6** – there are significant capacity issues on the Worcester north junction. Several stakeholders highlighted this is a critical location, which is evidenced by micro-simulation modelling illustrating traffic flows over junction capacity. Worcestershire County Council has drawn attention to significant planned growth across the City, including commercial development at the technology park and further residential development to the east of the City. This puts significant pressure on a junction already at capacity.

4.4.6 **M5 Motorway Junction 9** – as summarised in Table 4.1, stakeholders raised issues with congestion at this junction. There are significant development proposals at the MOD site in the vicinity of the junction. The Agency is currently planning a pinch point scheme on the A46 at Ashchurch and M5 J9 (see Table 3.1), which includes signal control of the A438 approach from Tewkesbury. The project helps to support local housing and economic growth, although potential further improvements specifically at the junction with the M5 are required.

4.4.7 **M5 Motorway Junction 10** – there is a desire for this junction to become an all-movements junction. As part of the stakeholder engagement, several stakeholders raised issues with the current configuration. The draft Joint Core Strategy (JCS) for Gloucester City, Cheltenham Borough and Tewkesbury Borough councils sets out broad locations for development and provides strategic allocations, including an urban extension to the north-west of Cheltenham in the vicinity of junction 10 of the M5 motorway. The local authority and Local Enterprise Partnership consider the junction limits opportunities for growth. Surveys, as part of research commissioned by Gloucestershire's Local Enterprise Partnership, also found that over half of businesses consider M5 J10 impacts on their operation. Tewkesbury Borough Council is currently putting together a business case to set out the justification and value for money for an all-movements junction at junction 10.

4.4.8 **M5 Junction 15 (M5/M4 Interchange) to 19** - major employment and residential development is proposed around the City of Bristol (South Gloucestershire, City of Bristol and North Somerset local authorities), in particular, at Cribbs Causeway and across the Northern Fringe. Further growth is planned at Avonmouth, Bristol Docks and Severnside. Provided land is unlocked through infrastructure improvements in Severnside, this Enterprise Area has the potential to attract major investment in the logistics and manufacturing sectors. Such major development significantly contributes to the West of England economy. This economic growth is in the vicinity of the interchange of the M5 and M4 motorways, between junctions 15 and 19.

4.4.9 The M5 is currently being upgraded between junctions 15 and 17 to a smart motorway and two pinch point schemes are to be implemented at junctions 16 and 17. As part of the stakeholder engagement, the West of England Local Enterprise Partnership noted that the motorway links may be over-capacity even with the introduction of the smart motorway scheme. Challenges may still exist in relation to operation of junctions accessing the motorway. A potential opportunity exists for the Agency to extend the smart motorway beyond junction 17 through Avonmouth to junction 19.

4.4.10 The Heart of the South West Local Enterprise Partnership has highlighted that growth in the South West is principally located on the M5 Motorway axis from Bristol to Taunton and Exeter. This will continue to put pressure on a number of junctions on the M5 corridor and supports the case for prioritising future investment in this corridor.

4.4.11 **M5 Junctions 23 and 24** – in Sedgemoor, the district must host the National Strategic Infrastructure Project (NSIP) Hinkley Point C power station plus accommodate local growth on its transport network. Significant evidence is available to demonstrate the congestion levels around Bridgwater and the impact of the consented NSIP. This has a major impact on the operation of junctions 23 and 24 of the M5 Motorway, the junctions at which traffic and HGVs leave the SRN to access the site through Bridgwater. The Council is seeking to establish a growth hub, driven forward by the NSIP project, for the supply chain industry. This includes the Huntspill Energy Park, one of the largest brownfield sites in the region, at junction 23 and Bridgwater Gateway at junction 24.

4.4.12 Sedgemoor has highlighted the challenges associated with growth related to a national project, effectively ‘absorbing’ network capacity ahead of local growth as set out in the Local Development Framework.

4.4.13 **M5 Junction 25** – this junction has capacity issues with traffic queuing on the M5 mainline. The junction acts as a cross-road for M5 north/south movements and A358 east/west movements. Stakeholders consider junction capacity issues are a major inhibitor to growth. Significant development is also planned at Taunton, including residential at Monkton Heathfield and proposals for a strategic employment site south of junction 25.

4.4.14 **M5 Junction 28** – stakeholders highlighted challenges at Cullompton as a result of significant growth. Queues from the motorway junction regularly extend back to the town. The adopted Local Plan for Mid Devon outlines significant allocations for future residential and employment growth. It describes a mixed use urban extension to the north of the town.

4.4.15 **M5 Junction 30** – the Heart of the South West cited challenges in relation to continuing growth to the east of Exeter. This junction also provides the last motorway service area on the M5 and queues regularly extend around the circulatory carriageway. Evidence in chapter 2 illustrates issues with poor journey time reliability between junctions 29 and 30 and very high traffic volumes during the summer peak. There are obvious challenges on this stretch of the network and opportunities to consider capacity enhancements through more effective use of the existing carriageways, potentially smart motorway improvements.

4.5 Safety challenges and opportunities

4.5.1 Chapter 2 of this report discussed safety challenges and identified the following locations of concern:

- M5 Motorway Junction 8 (M50 interchange) to 4A – collisions on northbound carriageway relating to loss of control, close following and some accidents in wet conditions
- M5 J16 Bristol
- M5 J21 – related to shunts on northbound exit slip
- M5 J23-24 southbound – involved southbound vehicles colliding with central reserve
- M5 J27 Tiverton – shunt accidents on northbound exit slip

4.5.2 As part of the stakeholder engagement, the Camping & Caravanning Club identified specific issues at Motorway Service Areas, as vehicles towing caravans must park in the area designated for heavy goods vehicles. There is an opportunity for the Agency to review parking arrangements for long vehicles, in partnership with the Motorway Service Area operators, with a view to providing segregated areas.

4.6 Social and environmental challenges and opportunities

4.6.1 There are challenges in reducing trips on the SRN and encouraging travellers to choose alternative transport choices rather than travelling by car. With respect to Birmingham to Exeter, there are opportunities to encourage trips by rail. As discussed in chapter 3, Worcestershire County Council is currently promoting a new parkway rail station, close to junction 7 of the M5 Motorway. This has the potential to promote some modal shift from the motorway to the parallel Cross Country train service. Evidence exists in terms of the Transport Assessment in support of the planning application and demand forecasting for the Business Case.

4.6.2 As described in chapter 2, pedestrians and cyclists experience challenges crossing the SRN at junctions on the M5. Roundabouts pose particular safety concerns for cyclists and stakeholders highlighted the following locations:

- Junction 9
- Junction 16
- Junction 21
- Junction 23
- Junction 24

4.6.3 Several challenges exist along the route with respect to impact on the environment. As discussed in chapter 2, Air Quality Management Areas (AQMAs) are located in proximity to the M5 Motorway. These are:

- Worcester Road AQMA, Bromsgrove
- Newtown Road AQMA, Worcester
- Cheltenham AQMA
- Cribbs Causeway AQMA, Bristol
- Cullompton AQMA
- Henlade AQMA
- Exeter AQMA

4.6.4 With respect to noise, Defra has designated several locations adjacent to the M5 as Important Areas. These include:

- Junction 5-6, east of Droitwich
- Near junctions 10 and 11, Cheltenham and Gloucester
- South of J11A, east of Gloucester
- J16 and J18, west of Bristol
- J25 and J26, near Taunton
- Junction 27-28, Tiverton to Cullompton
- J29 and J31, Exeter

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	M5 Junction 11-31	Lack of the resilience of the transport network to severe weather events, including heavy rain, hail and snow conditions, major incidents and a potential security threat	✓	✓			✓			✓
	M5 Junction 12-13	Traffic Officer Service. Longer timeframe to clear up incidents. Data shows relates to flooding	✓	✓			✓	✓		
	M5 Junction 10	Junction is not all-movements junction. Current configuration without southbound access/egress hampers police operations	✓	✓			✓			✓
	M5 Junction 13-15	Consistent provision of road user information. Lack of VMS	✓	✓			✓	✓		
	M5 Junction 20-24	Consistent provision of road user information. Lack of VMS	✓	✓			✓	✓		
	M5 Junction 9-12	Adequacy of diversion route and diversion signs	✓	✓			✓		✓	
	M5 Junction 14-15	Adequacy of diversion route	✓	✓			✓		✓	
	Birmingham to Exeter RBS wide	Limited provision of technology especially in the South West region	✓	✓			✓			✓
	M5 Almondsbury to Exeter	Congestion due to the impact of seasonality	✓	✓			✓			✓
Asset Condition	Route wide	Maintaining integrity of structures, elements of which are approaching end of serviceable life such as waterproofing	✓	✓			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	Many concrete bridge structures have evidence of sulphate attack and alkali carbonate reaction including thirteen between junctions 9 to 13.	✓	✓			x			✓
	Route wide	Maintaining integrity of ageing drainage infrastructure parts of which are approaching end of serviceable life.	✓	✓			x		✓	
	M5 Junction 4A-5	Under-bridge material deterioration due to chloride	✓	✓			x			✓
	M5 Junction 5	Under-bridge bearing failure creates 'bouncing effect'	✓	✓			x			✓
	M5 Junction 5-6	Steel plates bonded to abutments on two under-bridges. Requires monitoring	✓	✓			x		✓	
	M5 Junction 4A-5	Identified issues with filter drains	✓	✓			x		✓	
Capacity	M5 Junction 4A – 5	Congestion on M5 results in traffic using A38, parallel route to M5, through Bromsgrove	✓	✓			✓			✓
	M5 Junction 5	Congestion at M5 junction 5 results in queuing traffic on mainline and A38 local road. Allocated development in Bromsgrove adds pressure to SRN junction	✓	✓						✓
	M5 Junction 6	Significant capacity issues. Planned employment and residential development creates additional pressure	✓	✓			✓			✓
	M5 Junction 9	Congestion at this junction is significant. Pressure from nearby housing and employment proposals	✓	✓			✓			✓

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	M5 Junction 10	Configuration of junction restricts potential for development growth	✓	✓			✓			✓
	M5 Junction 11	Junction considered to be operating satisfactorily, although will be under pressure from development				✓	✓		✓	
	M5 Junction 15 (M5/M4 Interchange) to 19	Major employment and residential development puts pressure on already congested section of M5, south of interchange of M5 and M4 motorways. Junctions may experience capacity problems post implementation of J15-17 smart motorway. Opportunity to extend smart motorway scheme	✓	✓			✓			✓
	M5 Junction 19	Capacity issues likely to be exacerbated by future growth at Portishead	✓	✓			✓	✓		
	M5 Junction 21	Immediate capacity issues	✓	✓			✓			✓
	M5 Junction 22	Leisure development impacts on network capacity at Burnham-on-Sea and Highbridge	✓		✓		✓		✓	
	M5 Junction 23 and J24	Hinkley Point power station is National Strategic Infrastructure Project (NSIP). Traffic and HGVs impact on operation of junctions 23 and 24. National project 'absorbs' capacity ahead of growth defined in LDF. Huntspill Energy Park and Bridgwater Gateway add further pressure on network	✓	✓			✓			✓
	M5 Junction 25	Junction acts as a crossroads for M5 and A358. Capacity issues with traffic queuing on M5 mainline. Major inhibitor to growth. Significant residential and employment development planned at Taunton	✓	✓			✓		✓	

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement?	Stakeholder Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	M5 Junction 26	Planned growth at Wellington. Increases pressure on SRN			✓		✓		✓	
	M5 Junction 27	Significant expansion plans around M5 J27 Tiverton. Local Plan under review. Low priority subject to pinch point scheme completion due 2014.	✓	✓			✓	✓		
	M5 Junction 28	Queues at junction regularly extend back to Cullompton. Significant development pressure from mixed use urban extension to north of town	✓	✓			✓		✓	
	M5 Junction 30	Continuing growth to the east of Exeter. Last motorway service area on M5 motorway. Queuing on circulatory carriageway. Challenges in summer peak. Opportunities to consider more effective use of the existing carriageways, potentially smart motorway improvements	✓	✓			✓		✓	
Safety	M5 Junction 8 (M50 Interchange) to 4A	Collisions on northbound carriageway relating to loss of control, close following and some in wet conditions		✓			✓	✓		
	M5 J27 Tiverton	Shunt accidents on northbound exit slip	✓	✓			x	✓		
	M5 J21	Shunt accidents on northbound exit slip	✓	✓			x	✓		
	M5 J23-24 southbound	Vehicles collide with central reserve	✓	✓			x	✓		
	M5 J16 Bristol	Congestion and delays	✓	✓			x	✓		
	Strensham, Michael Wood, Gordano, Sedgemoor, Bridgwater, Taunton Deane, Cullompton and Exeter	Caravans park next to heavy goods vehicles at Motorway Service Areas	✓	✓			✓	✓		

	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	M5 Junction 7	Worcester Parkway Rail Station provides opportunity for modal shift from M5 Motorway to rail			✓		✓	✓		
	M5 Junctions 9, 15, 21, 23 and 24	Pedestrians and cyclists experience challenges crossing the SRN at junctions on the M5. Roundabouts pose particular safety concerns for cyclists	✓	✓				✓		
	M5 Junction 4A-5, 6-7, 10, 17, 28, 29 & 30	Air Quality Management Areas (AQMAs) located in proximity to M5 Motorway. These are located in Bromsgrove, Worcester, Cheltenham, Bristol, Cullompton and Exeter.	✓	✓			✓ Bristol, Cullompton	✓		
	M5 Junction 5-6, 10 and 11, 16-18, 25 7 26, 27-28, 29-31	Noise impacts. Locations designated by Defra as Important Areas. These are at Droitwich, Cheltenham, Gloucester, Bristol, Taunton, Cullompton and Exeter	✓	✓			x			✓

4.7 Conclusion

4.7.1 The evidence compiled about the route has shown that:

- The Birmingham to Exeter route is of national importance, connecting Birmingham and the West Midlands with the South West and through its intersections with the M4 and M6 motorways links to London, Wales and the north of the UK
- The key challenges relate to capacity and operational issues to ensure resilience of the network
- Capacity issues are identified on three main sections of the M5 near the urban areas and challenges exist at nearly all junctions across the entirety of the route. Stakeholders have highlighted how these will be exacerbated by future development growth
- A key theme from stakeholder engagement relates to resilience and ensuring the future network is resilient to extreme weather events, major incidents, a potential security threat, high traffic volumes in holiday periods and during roadworks
- Challenges and opportunities exist in relation to asset condition, safety and the environment, although the over-whelming themes identified by stakeholder engagement relate to capacity and operational resilience

4.7.2 The route based strategy provides evidence for route performance issues on three main sections of the M5 Motorway. Identified links are as follows:

- M5 Motorway, J4A – 7 (M5/M42 Interchange to Worcester South) – a section of the M5 motorway used by strategic traffic and for local trips between Worcester and the West Midlands conurbation which experiences severe congestion
- M5 Motorway, J15-19 (south of M5/M4 Interchange and west of Bristol) - an area that typically experiences severe congestion between the interchange of the M5 and M4 motorways and Avonmouth Bridge
- M5 Motorway, J29 – 30 (eastern fringe of Exeter) –a link which carries strategic and local traffic and experiences severe congestion in the peak summer period by tourist traffic accessing Devon and Cornwall.

4.7.3 The motorway connects several towns along the route and significant growth is planned in Bromsgrove, Droitwich, Worcester, Tewkesbury, Cheltenham, Gloucester, Bridgwater and Taunton. Development growth clearly puts additional pressure on a motorway network which is already at or nearing capacity at locations close to these growth areas.

4.7.4 The sections of the network with capacity issues are in proximity to the major conurbations (Bristol, Birmingham and Exeter), where the network is used for both strategic trips and by commuters travelling to work. Birmingham to Exeter is critical to the growth agenda and the cities are

also the focal point for current and future economic growth, including the urban fringe of Birmingham, throughout Bristol and the Avonmouth area and Exeter.

4.7.5 Challenges currently exist at junctions across the entirety of the M5 route, exacerbated by employment and residential development allocated in Local Plans. Additional growth is also expected from growth aspirations of ports, for example, Bristol Port, and airports, including Bristol International, Exeter International and Gloucester in proximity to the M5.

4.7.6 Seasonal tourist traffic presents a major challenge during the holiday period where traffic flows increase significantly in June, July and August particularly on the southern section of the M5 between junctions 29 and 30 where Saturday August traffic volumes rise by 50% to 110,000 vehicles a day. This pattern demonstrates the importance of this section of the route to seasonal traffic and hence the tourism industry. The two way Average Daily Traffic on the M5 south of the interchange of the M5 and M4 motorways (J16-17) increases to 131,000 vehicles per day during the month of August. Flows across the Avonmouth Bridge are around 20% higher than average. This pattern demonstrates the importance of this section of the route to seasonal traffic and hence the tourism industry.

4.7.7 The M5 is currently being upgraded between junctions 15 and 17 to a smart motorway, which uses technology to vary speed limits and introduces hard shoulder running during congested periods. Whilst the project will clearly improve operation of the M5 south of the M5/M4 interchange during peak flows, the motorway section from junction 17 to 23 also experiences congestion and the entire motorway is congested in the summer. Capacity issues are anticipated to worsen with significant economic growth including the construction period of Hinkley Point power station, the development at Bridgwater Gateway, Taunton, Burnham-on-Sea and Portishead. Stakeholder engagement has highlighted that problems may still exist at the motorway junctions and approaches following introduction of the smart motorway section.

4.7.8 The Highways Agency is currently examining the business case for a smart motorway project in Worcestershire from junction 4A to 6. Earlier chapters of this report provide evidence of congestion on this section of the motorway. Significant growth is planned in Worcestershire, in particular to the south and on the eastern periphery of Worcester in the vicinity of the M5 Motorway and in Bromsgrove, in proximity to M5 junction 5. This residential and employment growth puts increased pressure on the SRN. A potential smart motorway project should be supported by improvements to local access to the SRN to facilitate economic growth.

4.7.9 Strategic sites for local economic growth are allocated across the entire M5 route. To facilitate this growth we aim to identify network needs relating to operations, maintenance and where appropriate improvements across further sections of the motorway will be required.

4.7.10 Taking into account evidence used in this report, there are some parts of the network that perform well and could potentially support growth (for example, south of Gloucester to Bristol). Whilst these sections are mainly in more rural locations and do not necessarily align with areas allocated for major development, there are some areas, such as Severnside, with significant opportunity for growth.

4.7.11 Stakeholder engagement highlighted the lack of the resilience of the transport network to severe weather events, including heavy rain, hail and snow conditions, major incidents and potential security threats, high traffic volumes and during holiday periods.

4.7.12 Stakeholders raised specific issues with respect to the resilience of the network at Avonmouth Bridge, given the lack of a suitable diversion route. Particular concerns were also expresses regarding extreme weather and flooding across the entire M5 route. Recent storms over the Christmas 2013 period have provided further evidence for the impact of severe weather on the South West. Any future strategy for the Birmingham to Exeter route will need to fully consider the increasing incidence of extreme weather events.

4.7.13 An opportunity is the consideration to maximise technology provision in future management of the M5. Many stakeholders clearly felt technology must play a key role in improving resilience to unexpected incidents and managing seasonality. Future proposals will need to ensure a consistent provision of accurate, meaningful and timely customer information from Birmingham to Exeter.

4.7.14 In formulating the future strategy, stakeholders requested that the Agency jointly reviews incident management plans in conjunction with other agencies, local authorities and transport providers. Stakeholders commented on the capability, resilience and signage of current diversion routes, for example, the A38 and A40. There may be opportunities to identify additional diversion routes and increase use of technology in managing incidents. Stakeholders requested that any future plans must consider a possible closure of both the motorway and a diversion route to ensure resilience and continued access to and from the South West.

4.7.15 The Agency states that ‘our roads are the safest in the world’ as one of the key goals in delivering its vision. In terms of Birmingham to Exeter, the majority of the route has the lowest casualties per billion vehicle miles nationally.

4.7.16 While there is a distinct positive trend towards a reduction in collisions on the M5, the evidence has identified some locations for further investigation.

4.7.17 The Birmingham to Exeter route faces many maintenance challenges over the RBS period (April 2015 to March 2020). These cover all asset types ranging from carriageway resurfacing, the deterioration of structures located either over or below the route, and maintaining an aging drainage infrastructure fit for purpose in the face of more extreme and unpredictable severe weather events.

4.7.18 There are several environmental designations and identified environmental issues along the route relating to air quality and noise. Air Quality Management Areas (AQMAs) are identified in Bromsgrove, Worcester, Cheltenham, Bristol, Cullompton and Exeter. These are located in urban areas in proximity to the route and where future development growth allocations are concentrated. Defra identifies exceedances of European air quality limits for annual average levels of nitrogen dioxide (NO_2) in all of these AQMAs. Defra has also designated several Noise Important Areas across the entirety of the M5 where noise from the motorway has an impact on neighbouring properties.

4.7.19 Stakeholder engagement has highlighted challenges for pedestrians and cyclists crossing the SRN at junctions on the M5. Roundabouts pose particular safety concerns for cyclists, and stakeholders specifically identified junctions 9, 15, 21, 23 and 24 in this regard.

4.7.20 In summary, the stakeholder events were generally well received and were taken as a sign by stakeholders of a new collaborative approach to the identification of future transport solutions.

Figure 4

Key opportunities and challenges for the route

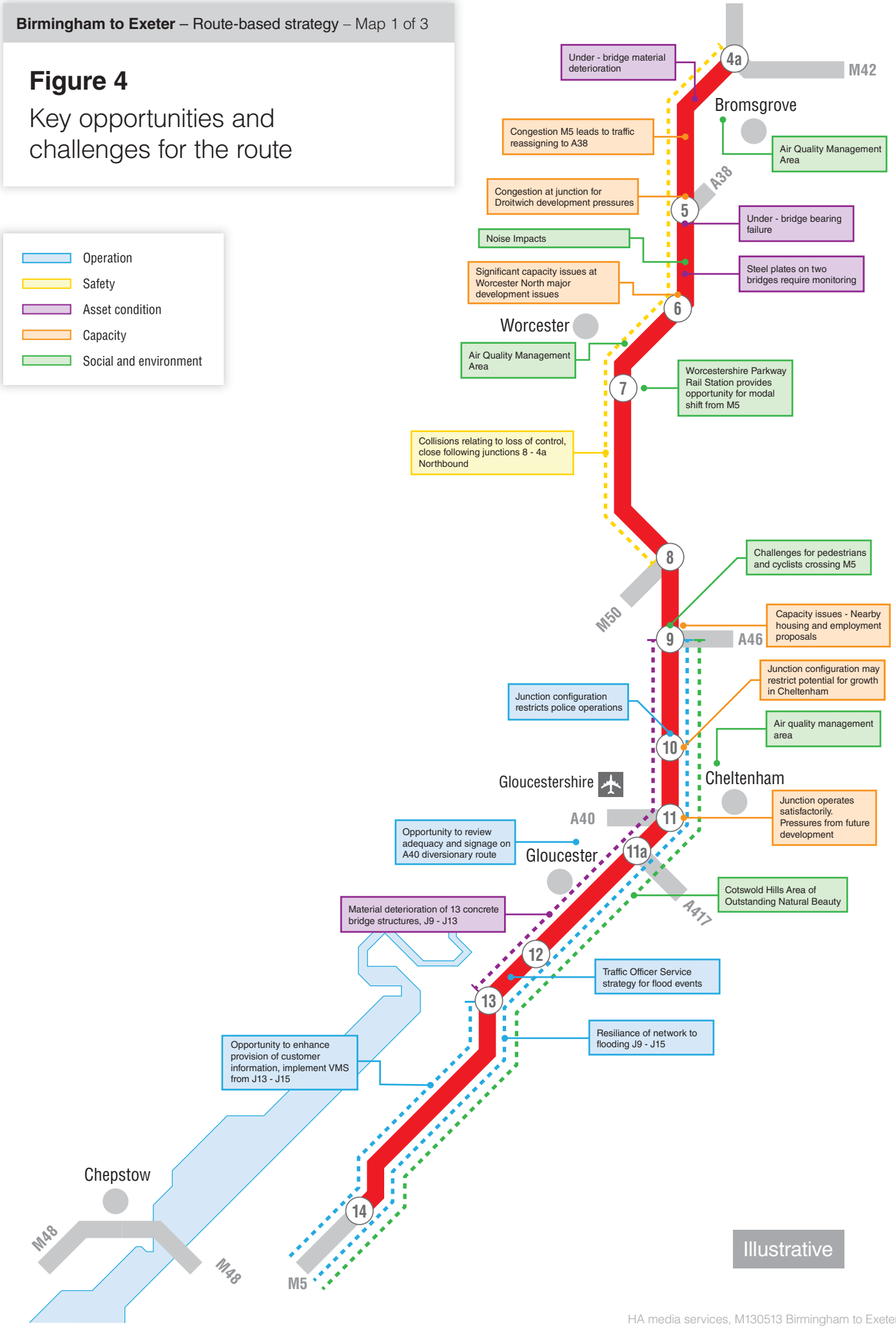
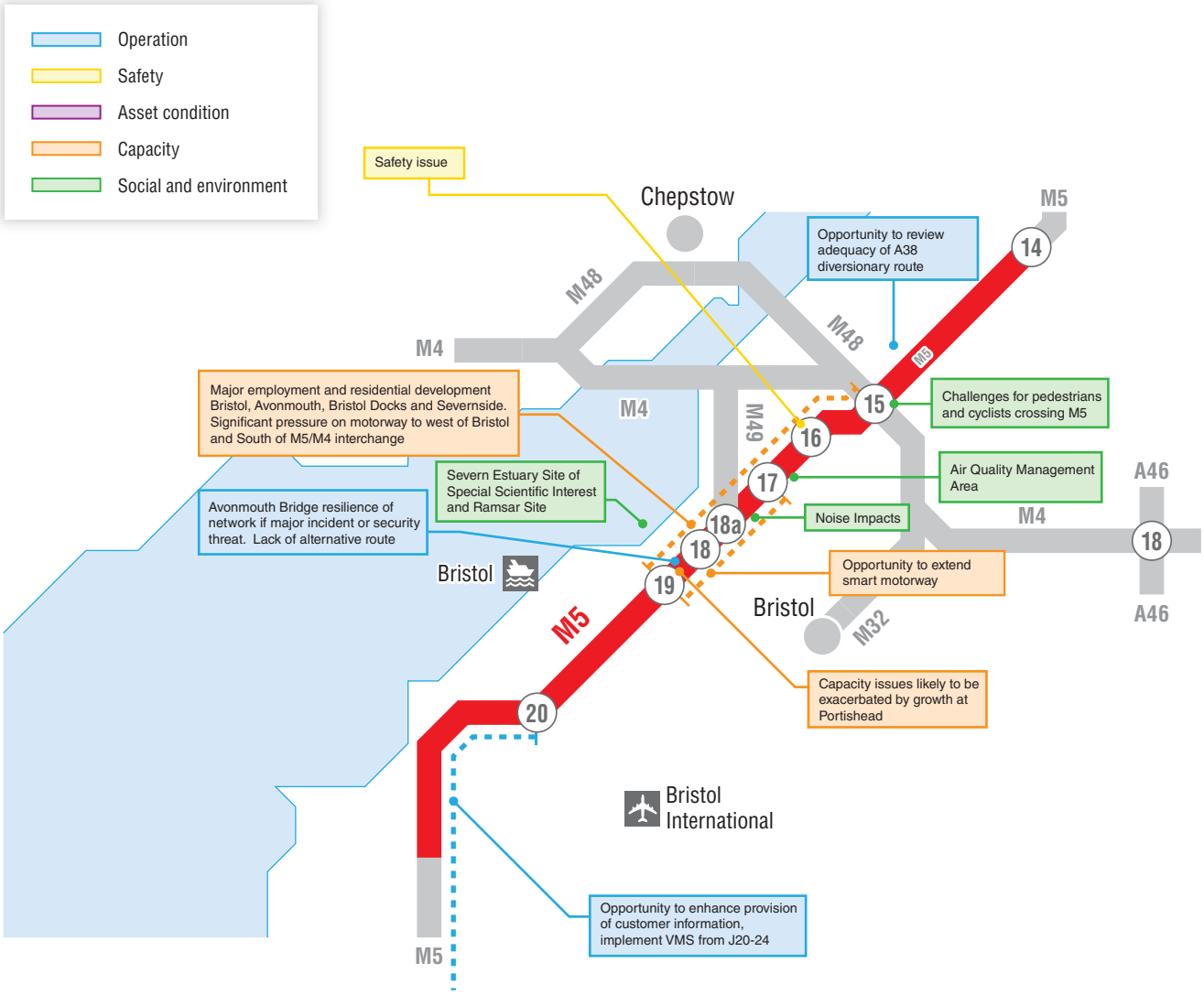


Figure 4

Key opportunities and challenges for the route

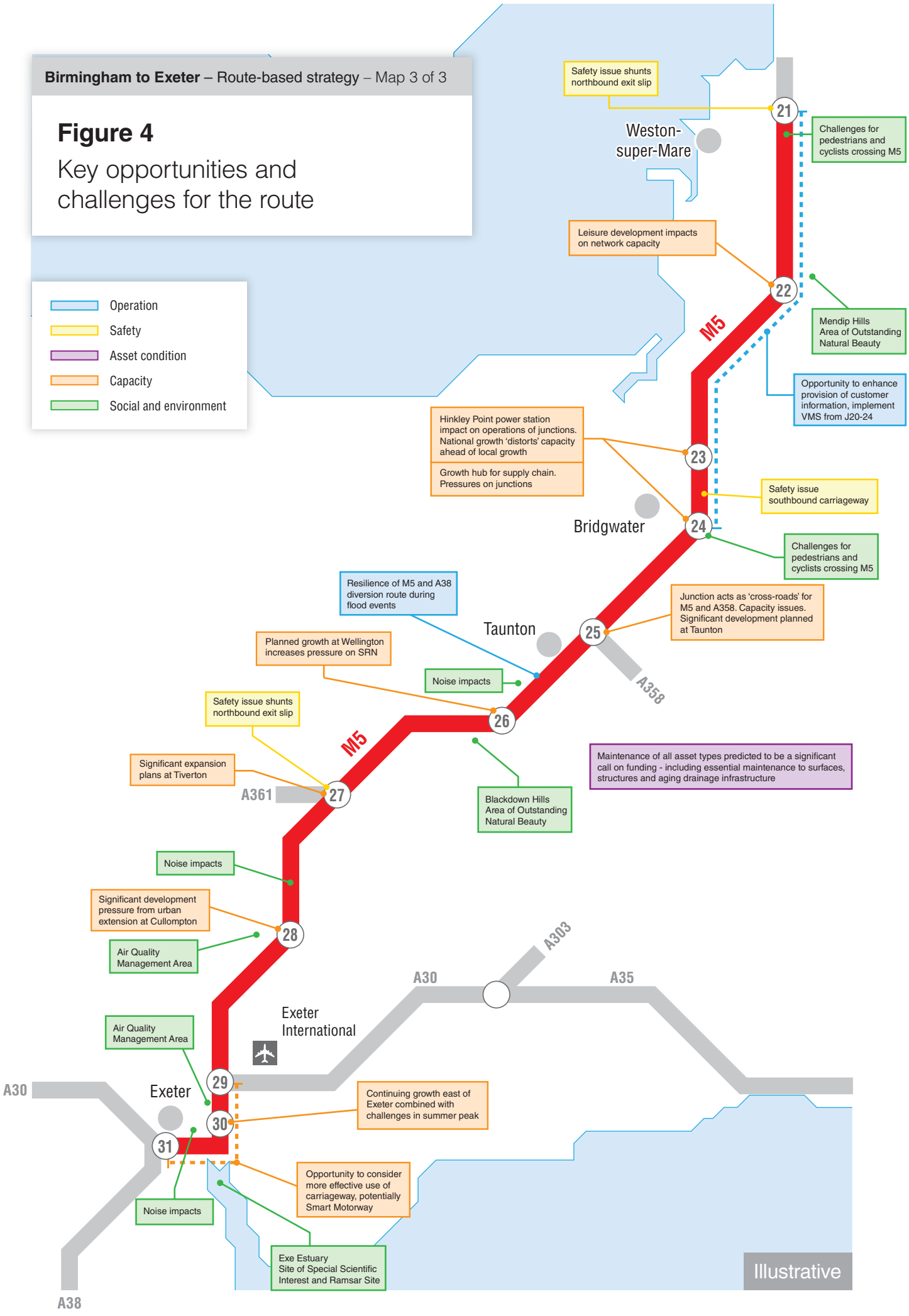


Illustrative

Birmingham to Exeter – Route-based strategy – Map 3 of 3

Figure 4

Key opportunities and challenges for the route

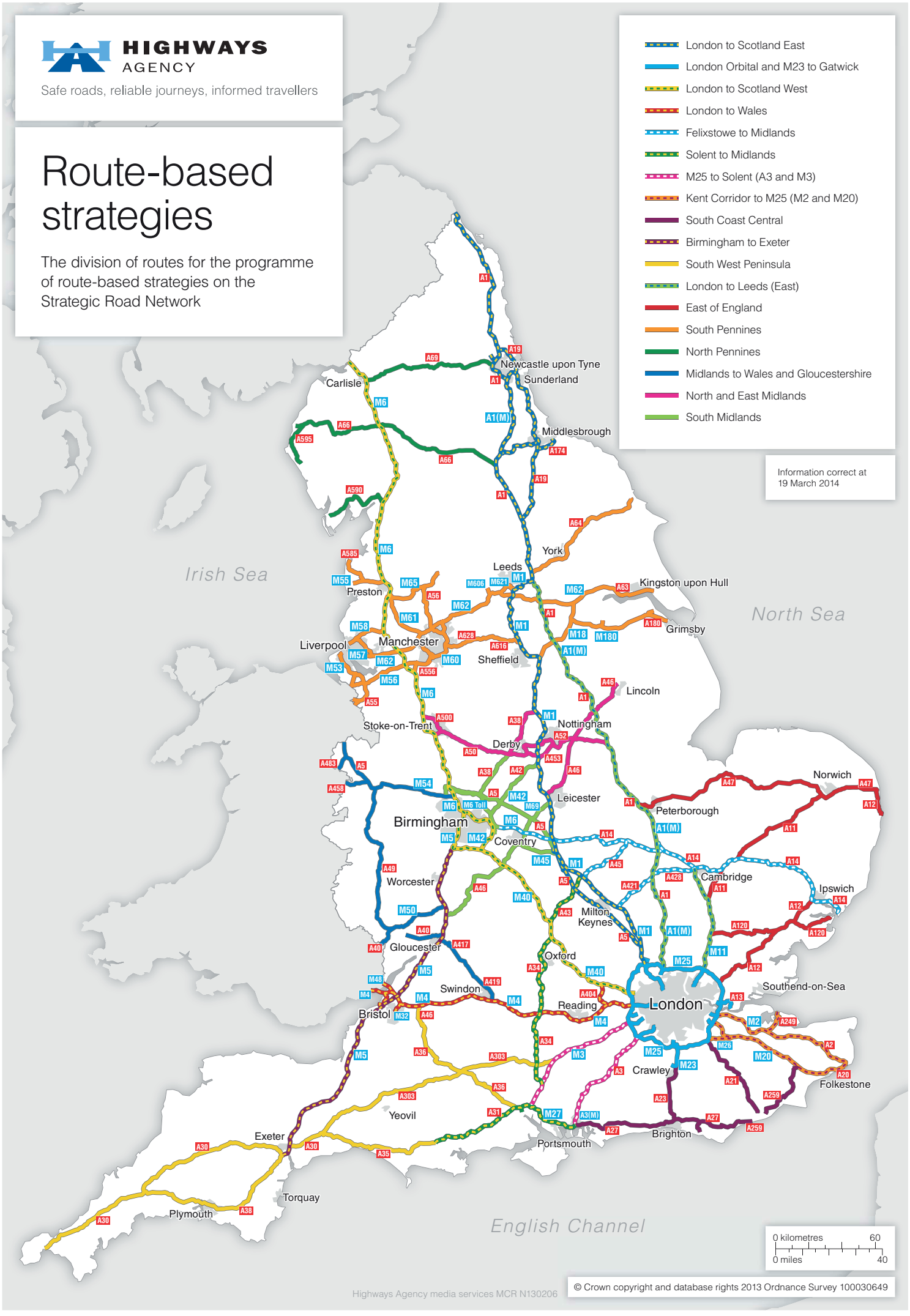


HIGHWAYS AGENCY

Safe roads, reliable journeys, informed travellers

Route-based strategies

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



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Appendix B Glossary

Abbreviation	Description
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
HAWIS	Highways Agency Weather Information System
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
NVRS	National Vehicle Recovery Service
RBSs	Route-based strategies
RCC	Regional Control Centre
SACs	Special Areas of Conservation
SPA	Special Protection Area
SRN	Strategic road network
SWP	South West Peninsula
STO	Strategic Traffic Operations
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

Organisation	Contact Name	Provided Input
Avon and Somerset Constabulary	Matt Ayres	Yes
Bath and North East Somerset Council	Peter Dawson	Yes
Birmingham Airport	Will Heyes	Yes
BIS	Andrea Whitworth	Yes
Black Country Chamber of Commerce	Bhanu Dhir	Yes
Black Country Director of Transport	Laura Shoaf	Yes
Black Country representative	Richard Banner	Yes
Bristol City Council	Laurence Fallon	Yes
Bristol Cycling Campaign	Martin McDonnell	Yes
British Motorcycling Federation	Carenza Ellery	Yes
British Motorcycling Federation	Johnny Curtis	Yes
British Motorcycling Federation	Pete O'Brien	Yes
Bromsgrove District Council	Rosemary Williams	Yes
Bromsgrove District Council	Michael Dunphy	Yes
Bus user group	David Redgewell	Yes
Campaign for Better Transport	Christine Shine	Yes
Campaign for Rural England	Gerard Kells	Yes
Cannock Chase District Council	John Morgan	Yes
Caravan Club	Heddwyn Owen	Yes
Centro	Maria-Pilar Machancoses	Yes
Cheltenham Borough Council	Jeremy Williamson	Yes
Cornwall and Isles of Scilly LEP	Chris Pomfret	Yes
Cornwall County Council	Andy England	Yes
Cornwall County Council	Steve Foster	Yes
Cornwall County Council	Steve Havers	Yes
Cornwall County Council	Tim Wood	Yes
Cornwall County Council	Vicky Fraser	Yes
Cornwall Ramblers Association	Graham Ronan	Yes
Cotswold District Council	Nigel Robbins	Yes
CTC – the national cycling charity	John Franklin	Yes
CTC – the national cycling charity	Roy Russell	Yes
Department for Business, Innovation & Skills (BIS)	Kevin Postones	Yes
Department for Business, Innovation & Skills (BIS)	Anthony Werren	Yes
Devon & Cornwall Constabulary	PC Dave Trout	Yes
Devon and Cornwall Business Council	Ben Rhodes	Yes
Devon County Council	Dave Black	Yes

Devon County Council	Mark Dauncey	Yes
East Devon District Council	Matt Dickens	Yes
East Staffordshire Borough Council	Philip Somerfield	Yes
Environment Agency	Fiona Keates	Yes
Environment Agency	Dan Hambrook	Yes
Environment Agency	Hugh Davey	Yes
Exeter City Council	Karime Hassan	Yes
Falmouth Port	Colin Jarvis	Yes
First Bristol	Axel Fisher	Yes
Freight Transport Association	Sally Gilson	Yes
Freight Transport Association	Ian Gallagher	Yes
Freight Transport Association	Sally Gilson	Yes
Friends of the Earth	Adam McCusker	Yes
GFirst LEP	Mally Findlater	Yes
Gloucester City Council	Louise Follet	Yes
Gloucestershire Constabulary	Jason Keates	Yes
Gloucestershire County Council	Amanda Lawson-Smith	Yes
Gloucestershire County Council	John Cordwell	Yes
Greater Birmingham and Solihull LEP and Birmingham City Council	Ann Osola	Yes
GVA	Colin Bell	Yes
HA Asset Manager	Ed Halford	Yes
HA Asset Manager	Nigel Dyson	Yes
Herefordshire County Council	Jeremy Callard	Yes
Highways Agency	Orminder Bharj	Yes
Highways Agency	Adrian Slack	Yes
Highways Agency	Lisa Maric	Yes
Highways Agency	Andy Butterfield	Yes
Highways Agency	Matt Taylor	Yes
Highways Agency	Andy Roberts	Yes
Highways Agency	Dave Stock	Yes
Highways Agency	Sean Walsh	Yes
Highways Agency	Serena Howell	Yes
Highways Agency	Patrick Thomas	Yes
LEP Transport Special Interest Group	Ian Harrison	Yes
Lichfield District Council	Elizabeth Boden	Yes
Local transport Board	James Llewellyn	Yes
Local Transport Board	Liz Waugh	Yes
Mendip District Council	Stuart Brown	Yes
Mid Devon District Council	Jonathan Guscott	Yes
Midlands Expressway Ltd	James Hodson	Yes
NEC group	Gary Masters	Yes
Neighbouring HA area route lead	Patricia Dray	Yes
Newcastle under Lyme Borough Council	Guy Benson	Yes

Plymouth City Council	Philip Heseltine	Yes
Plymouth City Council	Sunita Mills	Yes
Redditch Borough Council	Emma Baker	Yes
Representing Sheryl Murray MP	Bernie Ellis	Yes
Road Haulage Association	Ann Morris	Yes
Road Haulage Association	Nick Payne	Yes
Sedgemoor Council	Claire Pearce	Yes
Shropshire County Council	Jan Cooke	Yes
Solihull Metropolitan Borough Council	Amrik Manku	Yes
Somerset County Council	Mike O'Dowd-Jones	Yes
South Gloucestershire Council	Jon Munslow	Yes
South Gloucestershire Council	Pete Slane	Yes
South Gloucestershire Council	Steve Evans	Yes
South Staffordshire Council	Patrick Walker	Yes
South West Ambulance Service Trust (SWAST)	Joel Freeland	Yes
Staff & Stoke LEP	Peter Davenport	Yes
Staffordshire County Council	Will Spencer	Yes
Stagecoach	Robert Williams	Yes
Stoke-on-Trent City Council	Austin Knott	Yes
Sustrans	Paul Hawkins	Yes
Sustrans	Rupert Crosbee	Yes
Sustrans	Henry Harbord	Yes
Sustrans (Cornwall)	Simon Murray	Yes
Taunton Deane Council	Brendan Cleere	Yes
Tewkesbury Borough Council	Holly Jones	Yes
Visit Cornwall	Malcolm Bell	Yes
Walsall Council	Paul Leighton	Yes
Walsall Council	Mark Corbin	Yes
Welsh Government	Andy Falleyn	Yes
Welsh Government	Sheena Hague	Yes
West Devon Borough Council	Rebecca Black	Yes
West of England LEP	Pete Davis	Yes
Worcester County Council	Stephen Harrison	Yes
Worcestershire LEP	Peter Pawsey	Yes
Wychavon District Council	John Pattison	Yes

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