

Solent to Midlands Route Strategy Evidence Report April 2014



Document History

Solent to Midlands route-based strategy evidence report

Highways Agency

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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.

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 Strategic Road Network](#), published in November 2011. He recommended that the Highways Agency, working with local authorities (LA) and local enterprise partnerships (LEPs), should initiate and develop route-based strategies for the strategic road network.

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

1.1.5 The Highways Agency completed the following three pilot strategies which have been published on the [Agency website](#):

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

1.1.6 Building on the learning from those pilot strategies, we have divided the strategic road network into 18 routes. A map illustrating the routes is provided in Appendix A. The Solent to Midlands 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 strategic road network will be used to

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

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

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 Solent to Midlands RBS route covers approximately 162 miles of the strategic road network and is shown in Figure 1. The route is made up of a mixture of trunk roads that have developed over time, and purpose-designed and built motorways. The route is made up of the following sections of road:

- A31 from A35 junction (Bere Regis) to the M27 junction 1 (Cadnam)
- M27 junction 1 to M27 junction 12 (Portsmouth)

- A27 from M27 junction 12 to A3(M) junction 4-5 (Havant)
- A34 from the M3 junction 9 (Winchester) to M40 junction 9 (Wendlebury)
- A43 from M40 junction 10 to M1 junction 15A

1.3.2 Roads on this route include the main arteries to assist economic growth:

- M271 serves Southampton Docks
- M27 serves Southampton and Southampton Airport
- M27 and A27 serve Portsmouth Docks
- A34 is the main corridor for traffic to the Midlands & the North carrying freight traffic from Southampton and Portsmouth Docks and is heavily used by HGV traffic.
- A43 provides a critical link for east / west traffic from the M40 in Oxfordshire across to the M1 at Northampton as well as providing for commuting in the East Midlands.

1.3.3 The A31 section is approximately 33 miles long and is rural in nature. At its western end the route runs north of the Bournemouth and Poole conurbation. This section is single carriageway subject to the national speed limit in the main apart from small sections of 40 mph speed limits at Canford Bottom and between Bere Regis and Sturminster Marshall. The route becomes a dual carriageway north of Ferndown and is restricted to 50 mph to Ashley Heath, from where the national speed limit applies. It then runs for a length of 12.1 miles through the New Forest National Park to the start of the M27 at Cadnam.

1.3.4 The A31 between Ameysford and Merley is subject to a memorandum of understanding between the Highways Agency and local authorities to seek contributions towards a dual carriageway scheme from developers in the area in order that the additional capacity will allow for economic development to proceed.

1.3.5 The A31 provides access to Bournemouth and Poole from the east and as such has daily commuting peaks. However, the busiest period of the year is the summer due to the influx of seasonal visitors and the associated increase in local business activity.

1.3.6 The M27 section from Cadnam to M3 junction 4 is 10 miles in length and runs to the north of Totton and Southampton. The M271 is a spur that runs south from M27 junction 3 to serve Southampton City Centre and port. The M27/A27 section continues east for a further 21 miles to the north and east of Southampton and serves the settlements of Fareham, Gosport, Portsmouth and Havant.

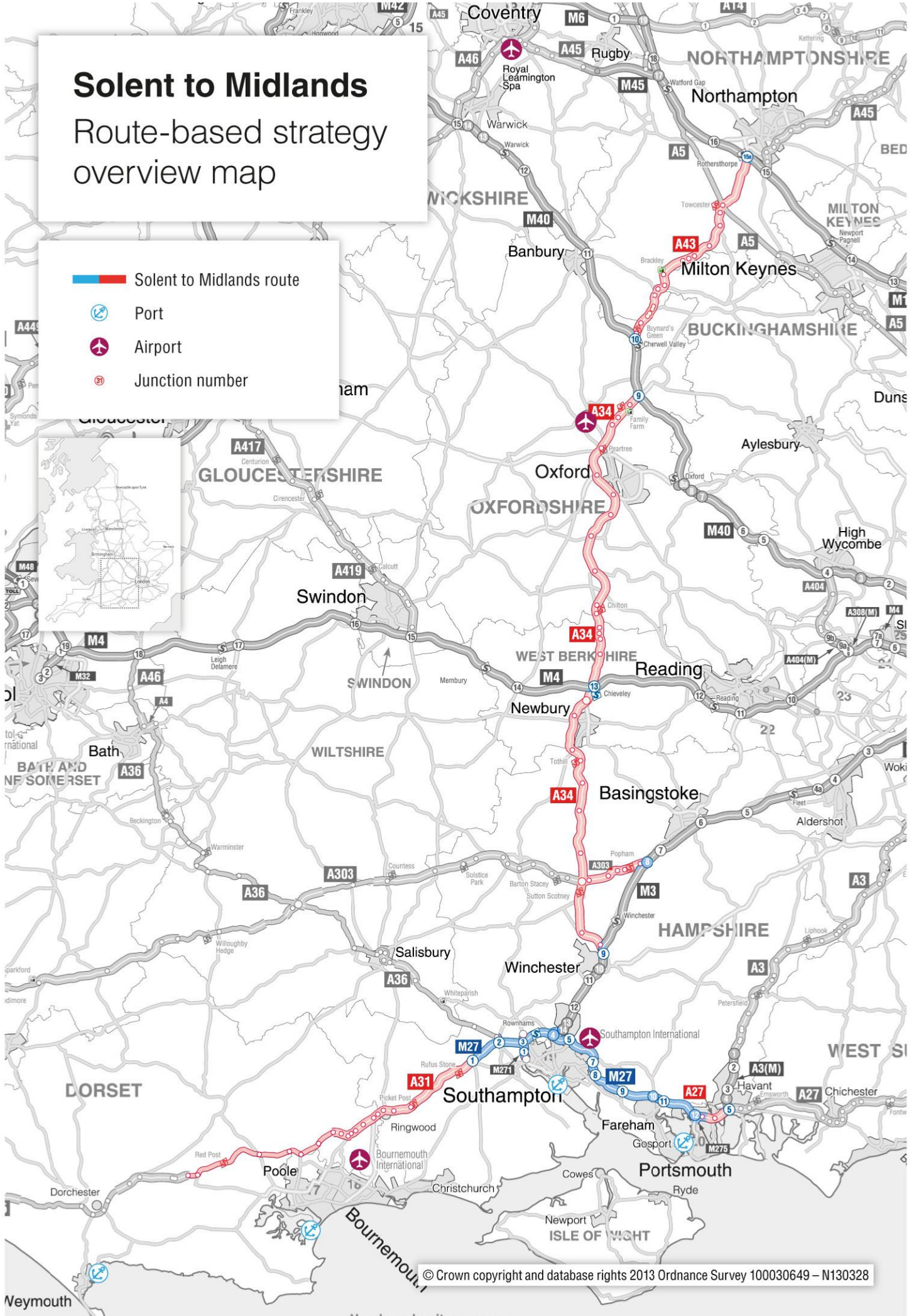
1.3.7 The A34 section is linked to the M27 by the M3 junctions 14 at Eastleigh to 9 at Winchester. The south bound section approaching the M3 junction 9 is subject to a 60mph speed limit, reducing to 50mph closer to the junction. The A34 then heads north for a distance of 64.5 miles to M40 junction 9 at Wendlebury. The southern part of the route from

- Winchester includes the Newbury bypass before crossing the M4 at junction 13 (Chieveley).
- 1.3.8 North of the M4, the A34 then passes through rural part of West Berkshire before passing close to the towns of Didcot and Abingdon before forming the Oxford southern and western bypass. It then passes to the east of Kidlington before its junction with junction of the M40. The whole of the A34 is dual carriageway and generally national speed limit apart from a section of the Oxford southern and western bypass, through Botley, which is 50mph.
- 1.3.9 This section of the route has been carefully examined by Oxfordshire County Council which has shared its draft document entitled *A34 Oxfordshire – Route Based Strategy* (September 2013 Draft V.1.2.) with the Agency.
- 1.3.10 The A43 runs for 23 miles from M40 junction 10 to the M1 junction 15A. This section of the A43 is a dual carriageway and bypasses the towns of Brackley and Towcester. The A43 is closed every year for 3 days between Towcester and Brackley whilst the British Formula 1 Grand Prix is hosted at Silverstone in late June/early July.
- 1.3.11 The route connects with a number of other routes for which RBSs are also being developed. These are:
- London to Wales at M4 junction 13
 - M25 to Solent at M3 junction 9 (A34) to 14 and A3(M) junction 4
 - South West Peninsula at A34/A303 junction and at the A36 at M27 junction 2 and the A35, at Bere Regis
 - South Coast Central at A27/A3(M) junction
 - London to Scotland West between M40 junction 9 to junction 10
 - London to Scotland East at M1 junction 15A and at A43 / A5 Tove junction near Towcester.

Solent to Midlands

Route-based strategy overview map

-  Solent to Midlands route
-  Port
-  Airport
-  Junction number



2 Route capability, condition and constraints

2.1 Route performance

- 2.1.1 The strategic road network 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 Average Annual Daily Traffic volumes on the route range from just over 64,000 vehicles eastbound on the A27 north of Portsmouth to 8,400 vehicles on the A31 westbound between the A350 (Roundhouse Roundabout) and A35 (Bere Regis).
- 2.1.3 The ten most trafficked sections of this route are presented in Table 2.1. This is for the reporting period 1st April 2012 to 31st March 2013.

Table 2.1 Ten busiest sections on the route (1/4/12 to 31/3/13)

Rank	Strategic road network section	AADT	Direction	National Rank
1	A27 between A2030 and A3(M) J5 (AL1708)	64,279	Southbound	115
2	A27 between A3(M) J5 and A2030 (AL1707)	61,097	Northbound	151
3	M27 between M27 J4 and M27 J3 (LM390)	60,929	Eastbound	156
4	M27 between M27 J3 and M27 J4 (LM389)	59,443	Westbound	180
5	M27 between M27 J7 and M27 J5 (LM396)	59,290	Westbound	183
6	M27 between M27 J5 and M27 J7 (LM395)	58,620	Eastbound	195
7	A27 between M27 J12 and A2030 (AL1709)	57,170	Eastbound	222
8	M27 between M27 J8 and M27 J7 (LM398)	56,444	Westbound	232
9	M27 between M27 J11 and M27 J12 (LM383)	55,989	Eastbound	242
10	M27 between M27 J7 and M27 J8 (LM397)	55,674	Eastbound	250

Note: There are 2,495 strategic road network links.

- 2.1.4 Table 2.1 indicates that of the ten most trafficked sections on the Solent to Midlands route, all are on the A27 and M27 close to the Southampton and Portsmouth conurbations.

- 2.1.5 Traffic flows on the A31 are generally in the region of 16-23% higher in the month of August than they are in a neutral month such as March. This figure rises to 26-28% at the western end of the route between the A350 and A35, where average March daily flows are just over 8,000 vehicles in each direction, rising to around 10,500 vehicles in August. These figures highlight the importance of this section of the route to seasonal traffic and hence the tourism industry.
- 2.1.6 There are also higher seasonal flows in the summer months on the A34 in the area between the M4 and A303, with August flows some 15-18% higher than in March.
- 2.1.7 August flows are typically 4% higher than March flows across the rest of the network.
- 2.1.8 The A34 and A43 carry a higher proportion of freight traffic than is generally seen along the other parts of the route with sections of the A43 having 24% freight and the A34 carrying in the region of 20%. This is well above the average across the entire strategic road network (14.7%).
- 2.1.9 However, busy roads in themselves don't necessarily represent an issue – our customers' experience of driving on the network is important to us. The [Strategic road network performance specification 2013-15](#), sets us high level performance outcomes and outputs under the banner of an efficiently and effectively operated strategic road network. We currently measure how reliable the network is based on whether the 'journey' time taken to travel between adjacent junctions is within a set reference time for that period, ie 'on time'.
- 2.1.10 The ten least reliable sections of the Solent to Midlands route are provided in Table 2.2. The least reliable link is located on the A34 southbound link to the M3 at Winchester, where only 54.1% of the vehicle miles are completed on time. This suggests considerable capacity issues on this section, which is the 22nd least reliable on the entire strategic road network.

Table 2.2 Ten least reliable journey-time locations (1/4/12 to 31/3/13)

Rank	Location	On-time reliability measure	National Rank
1	A34 between A33 and M3 J9 (AL36)	54.1%	22
2	M271 between M271 and A33 (LM376)	61.6%	120
3	A31 between A338 and A338 (AL732)	63.8%	199
4	A43 between A413 and A5 (AL2551)	64.4%	234
5	M27 between M27 J7 and M27 J8 (LM397)	65.5%	288
6	M27 between M27 J8 and M27 J7 (LM398)	65.9%	312
7	A43 between M40 J10 and A421 (AL3810)	66.1%	339

8	A34 between A4183 and A423 (AL55)	66.3%	345
9	A34 between A44 and A420 (AL2460)	66.3%	346
10	A34 between A420 and A44 (AL2461)	66.7%	373

Note: There are 2,495 strategic road network links.

- 2.1.11 The other sections that fall in to the top ten on this route include the M271 at the southern end where it meets the A33, the A31 at Ringwood and the A43 north east bound to the A5 at Towcester. All of these are known pinch points on the network.
- 2.1.12 The Highways Agency's Quarterly Network Performance Report for the first quarter in 2013 includes a Network Stress Link Map showing the probability of experiencing congestion during peak hours on all strategic road network links in England. In terms of the Solent to Midlands route the area where congestion is mostly likely is the M27 Eastbound (east of M3) with a probability of experiencing congestion being between 50.1% and 70%. Other sections of the M27 near the M3 and the M3 between the M27 and Winchester have a 30.1% to 50% probability of experiencing congestion during the peak. The A31 near Ringwood and westbound across the New Forest and the A34 around Oxford and to Wendlebury show a 0.1% to 30% probability, as do the A43 north of M40 junction 10 and A34 approach to M3 at Winchester.
- 2.1.13 Figure 2.1 illustrates the average speeds during weekday peak periods between 1st 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.
- 2.1.14 Overall, the lowest speeds experienced on the route are on the A34 to the west of Oxford up to the M40 junction 9 at Wendlebury, the A34 southbound approach to the M3 at Winchester, on the A43 approaches to the M40 junction 10, around the A421 junction and the north east bound approach to the A5 and on the M271 southbound to the A33. Average peak hour speeds on these sections are below 40mph.
- 2.1.15 It should be noted that a section of the A34 that forms the Oxford Western bypass is subject to a 50mph speed limit.
- 2.1.16 The locations of the slowest peak hour speeds on the network are on the approaches to key junctions, such M40 junctions 9 and 10, the A421 and the A5 at Towcester and the M271/A33 junctions.
- 2.1.17 The strategic road network is key in promoting growth of the UK economy, and alleviating congestion can realise economic benefits.
- 2.1.18 Figure 2.2 shows the delay on our network compared with a theoretical free-flowing network.
- 2.1.19 The sections of the route which experience the most delay are closely related to those which are least reliable as shown in Table 2.1. Notable additions to those in Table 2.1 are the M27 at Portsmouth, the A34

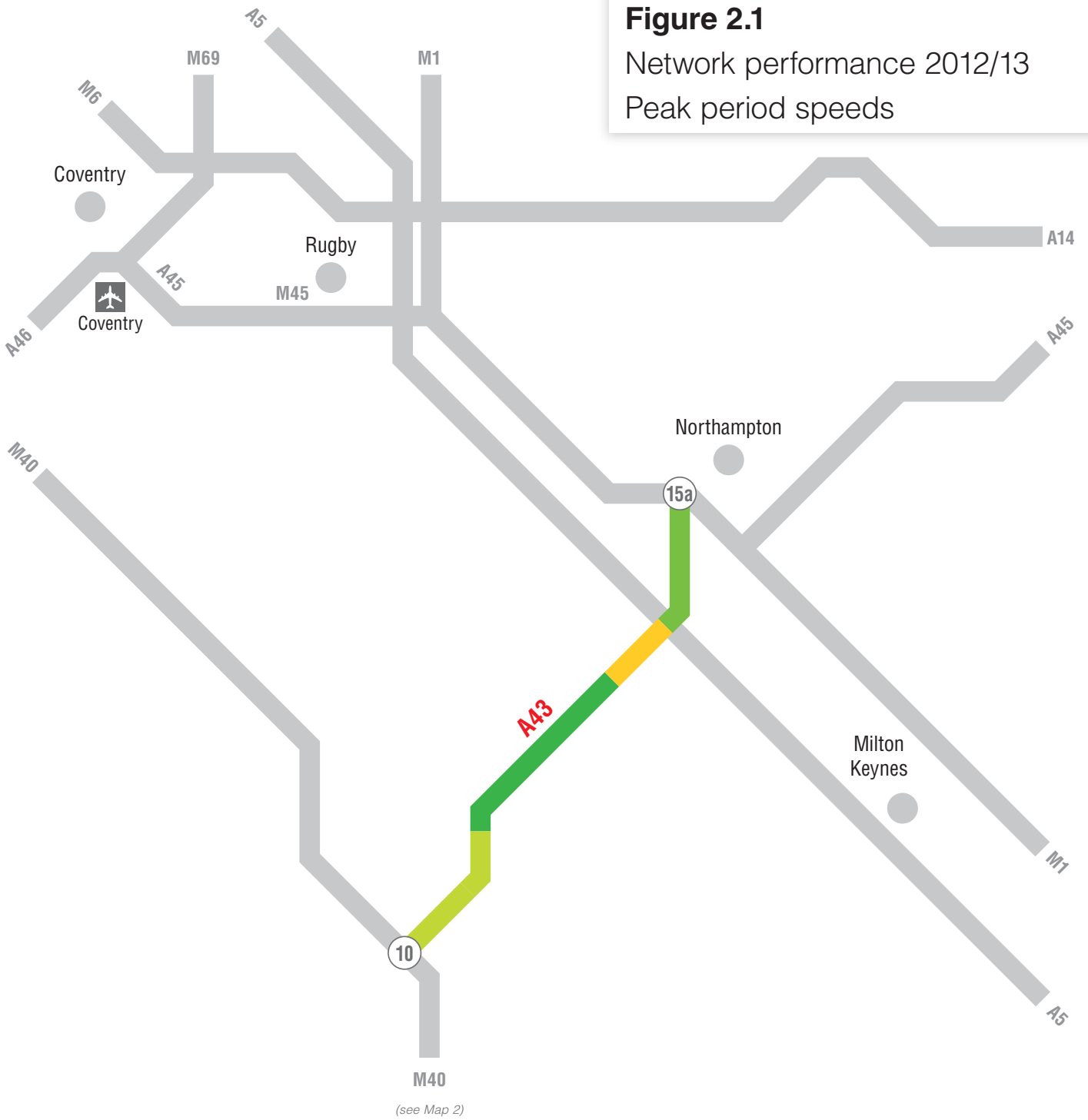
approaches to the M4, the A34 north of Oxford until it reaches the M40 and the A43 southbound approach to the M40.

2.1.20 Sections of the route which experience relatively little delay are the A43 north of the A421 (other than the section mentioned in Table 2.2), the A34 south of Oxford between the A4144 and the A4185 and the A34 south of the M4 to its junction with the M3.

2.1.21 Given that the same sections of the Route perform poorly on each of the three indicators – unreliable journeys, slow speeds and significant delay – the evidence is considered to be robust and reliable.

Figure 2.1

Network performance 2012/13
Peak period speeds



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

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

- Less than 20mph
- 21 – 30mph
- 31 – 40mph
- 41 – 50mph
- 51 – 60mph
- 61 – 70mph

Key junction capacity issue

Illustrative

Figure 2.1

Network performance 2012/13
Peak period speeds



Illustrative

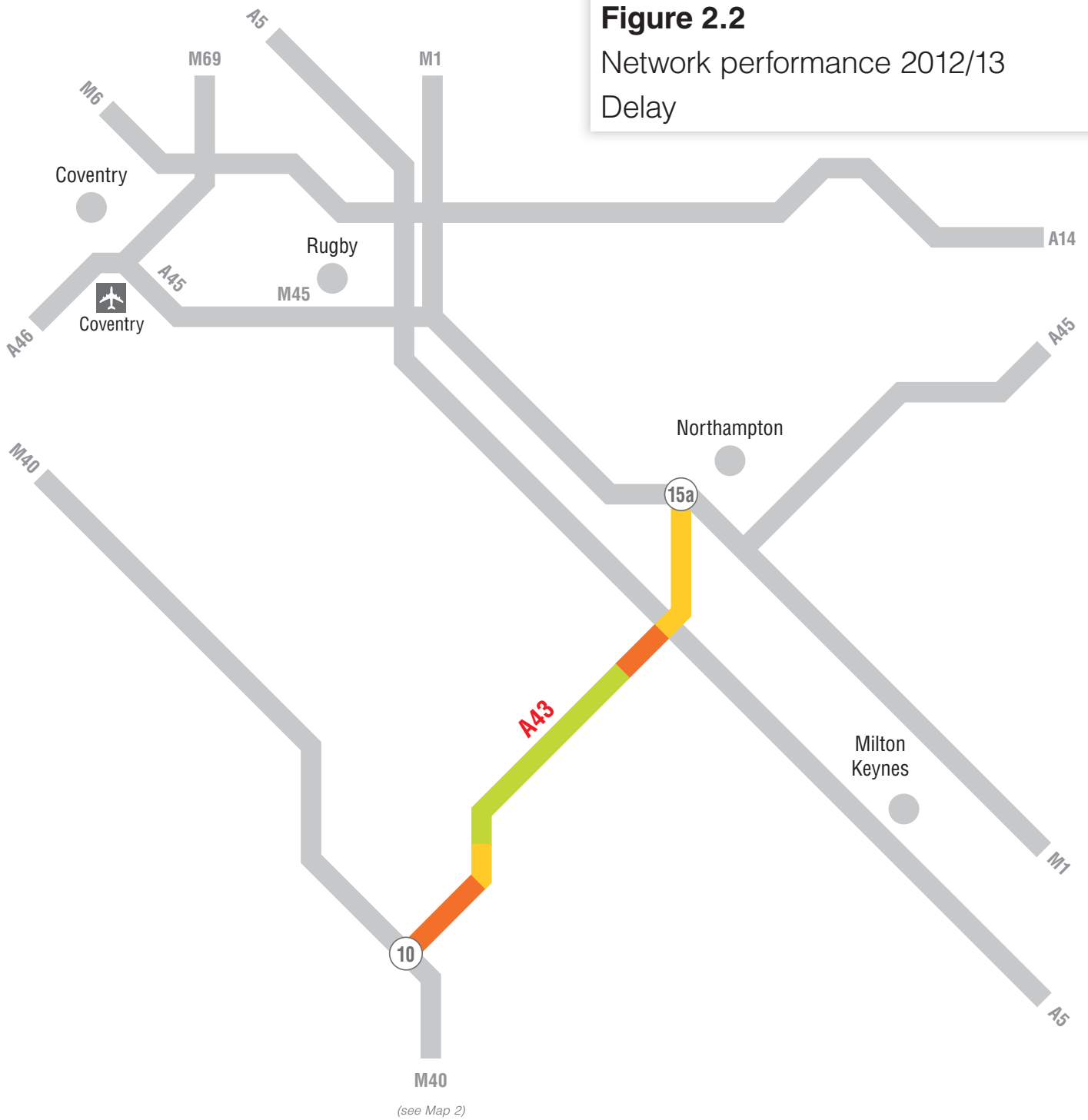
Figure 2.1

Network performance 2012/13
Peak period speeds



Figure 2.2

Network performance 2012/13
Delay



(see Map 2)

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%
- Bottom 20%

Illustrative

Figure 2.2

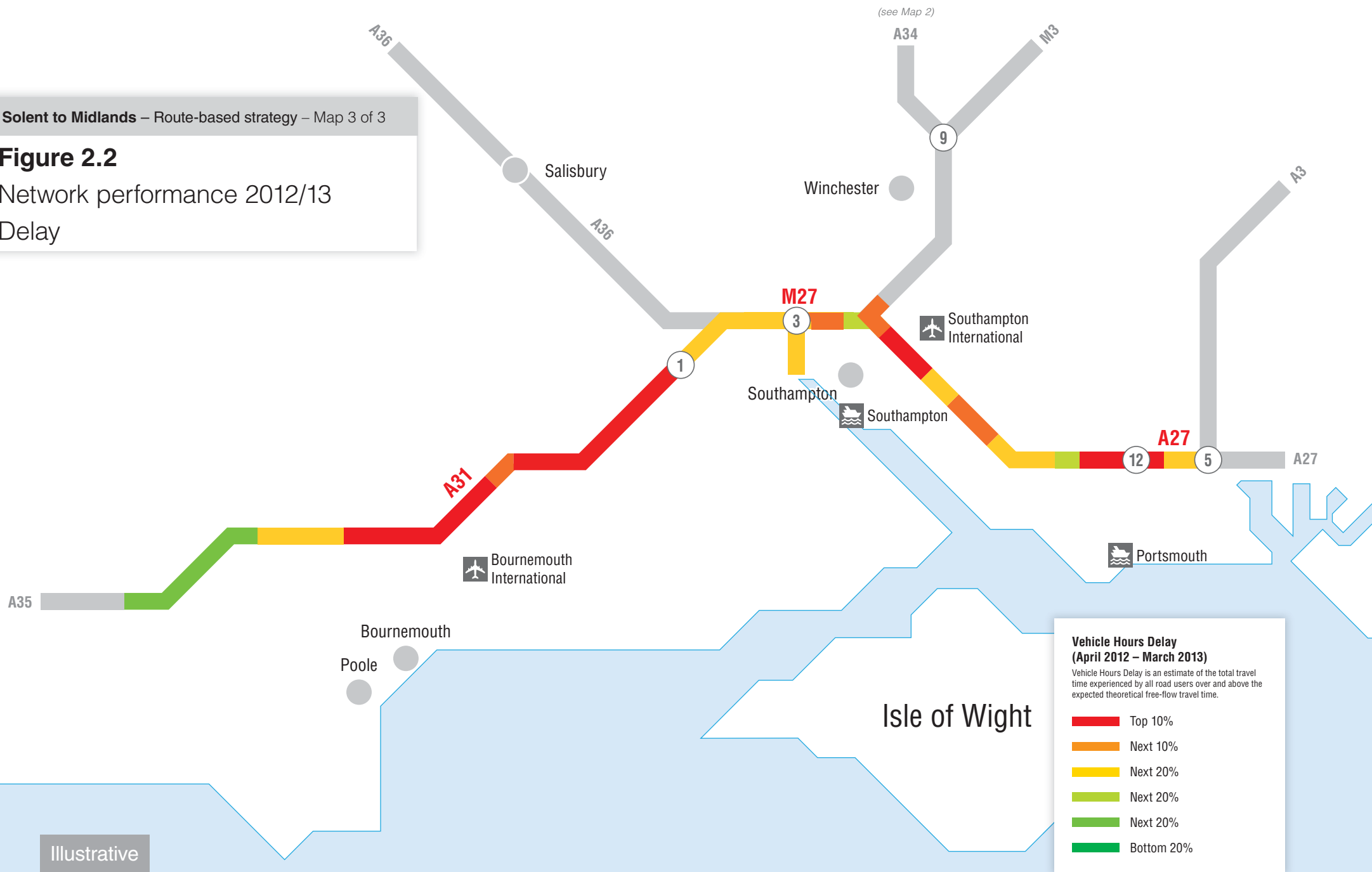
Network performance 2012/13
Delay



Illustrative

Figure 2.2

Network performance 2012/13
Delay



Illustrative

2.2 Road safety

- 2.2.1 As a responsible network operator and through the [Strategic road network performance specification 2013-15](#), the Highways Agency works to ensure the safe operation of the network.
- 2.2.2 By 2020, [The strategic framework for road safety 2011](#) forecasts the potential for a 40% reduction of the numbers killed or seriously injured on the roads compared with 2005-2009. We are working toward this aspirational goal.
- 2.2.3 Between 2008 and 2012 there were 1,900 collisions on the Route which resulted in at least one casualty. The number per year has ranged from 370 to 393 over this 5 year period, but there is no noticeable trend up or down.
- 2.2.4 Of the 1,900 collisions recorded 34 (1.79%) included fatalities, 261 (13.74%) included serious injuries and the remaining 1,606 (84.53%) included only slight injuries. The number of fatalities appears to have steadily dropped across the 5 year period, with 10 in 2008 and 5 in 2012.
- 2.2.5 Within the 1,900 collisions there 2,894 casualties, at a rate of 1.52 casualties per collision.
- 2.2.6 In terms of vehicles/road users involved in the collisions:
- 75.1% involved more than one vehicle;
 - 17.7% of vehicles involved were HGVs;
 - Where the age of drivers was known 4.2% were young drivers (aged 16-19); and
 - 10.9% were older drivers (aged 60 or over).
- 2.2.7 The causation factors for accidents indicate that in the main driver error or behaviour were the main causes. A summary of the main factors are as follows:
- 38.7% occurred where the driver 'failed to judge other person's path or speed';
 - 32.3% occurred where the driver 'failed to look properly';
 - 21.5% were 'travelling too close';
 - 17.8% involved 'loss of control';
 - 15.9% involved 'sudden braking';
 - 12.5% cited 'Careless, reckless or in a hurry'
 - 10.6% were travelling too fast for conditions;
 - 10.2% cited 'slippery road';
- 2.2.8 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

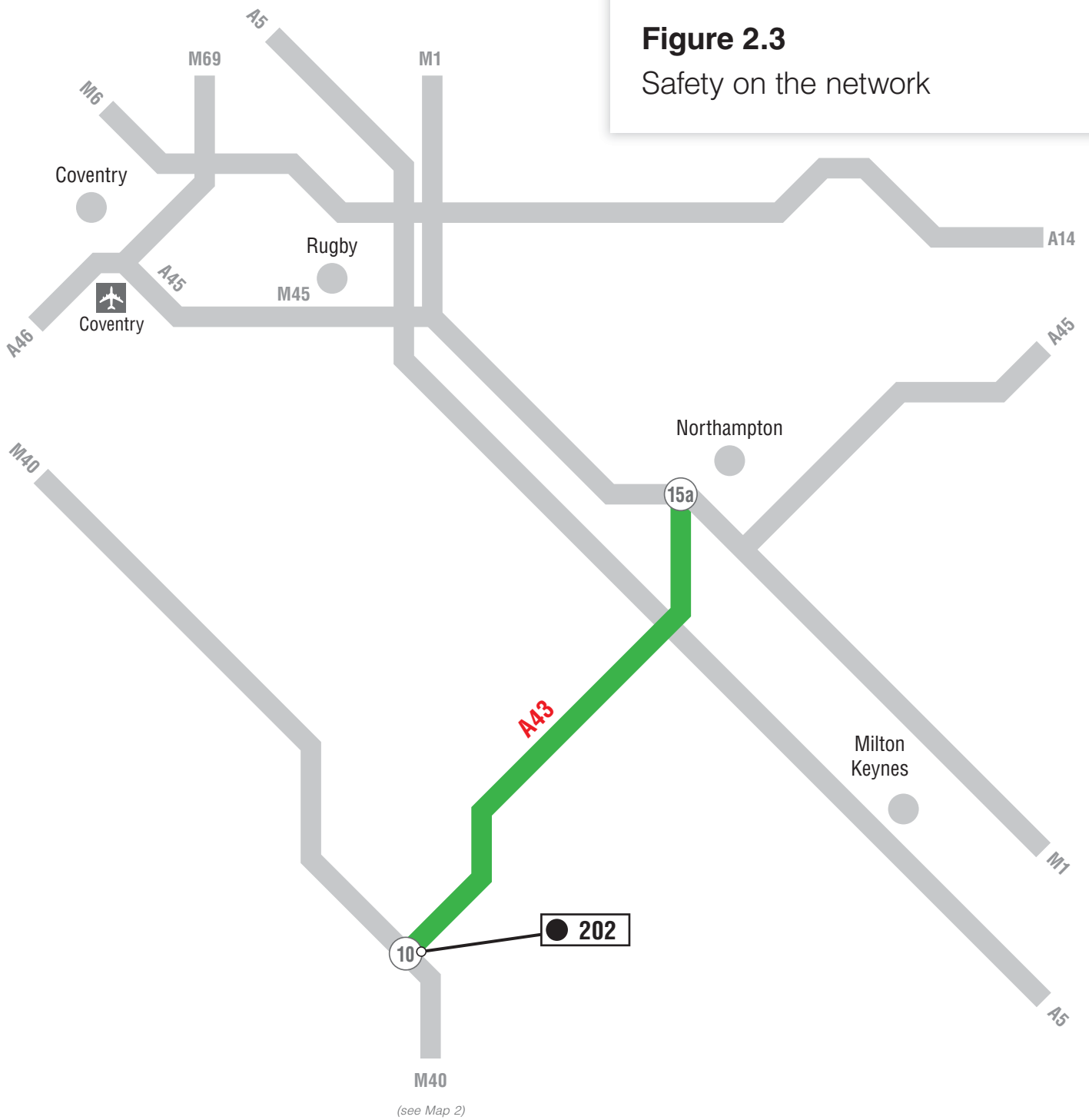
prioritisation process to help us and we review this regularly to ensure we are targeting the locations with the greatest opportunity to save lives and reduce the severity of injury.

- 2.2.9 Figure 2.3 illustrates the rates of injury accidents and the top 250 casualty locations on the strategic road network between 2009 and 2011. Injury accidents are collisions where people were injured and their injuries were slight, serious or fatal. Damage only incidents have not been included. The top 250 casualty locations have been calculated nationally, and are based on the number of casualties which occurred within a distance of 100m. 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.
- 2.2.10 On the Route there are three locations in the top 50 sites for casualties – the M27 Junction 3, the M27 Junction 8 and the M40 Junction 9 – and nine further sites in the top 250.
- 2.2.11 The link based data shows that nearly the whole route falls within the lower bands for casualties with notable exceptions being the M271, the A31 near Ringwood, the A34 immediately north of M3 Junction 9 and the A34 northbound approach to M40 Junction 9.

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Figure 2.3
Safety on the network



(see Map 2)

Total casualties per billion vehicle miles (2009 – 2011)

- Top 10%
- Next 15%
- Next 20%
- Next 25%
- Bottom 30%

186 Top 250 collision location (with national ranking)

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

Illustrative

Figure 2.3

Safety on the network



Illustrative

Figure 2.3

Safety on the network



Illustrative

2.3 Asset condition

- 2.3.1 We carry out routine maintenance and renewal of roads, structures and technology to keep the network safe, serviceable and reliable. We also ensure that our contractors deliver a high level of service on the strategic road network to support operational performance and the long-term integrity of the asset.
- 2.3.2 From new, assets have an operational 'life' within which, under normal conditions and maintenance, the risk of failure is expected to be low. Beyond this period, the risk of asset failure is expected to increase, although for many types of asset the risk of failure remains low and we do not routinely replace assets solely on the basis that they are older than their expected operational life. We use a combination of more regular maintenance and inspection along with a risk-based approach to ensure that assets remain safe while achieving value for money from our maintenance and renewal activities.
- 2.3.3 We maintain a National Asset Management Plan as an annual summary of the Agency's network asset inventory and condition. It is aimed at ensuring there is sight of future issues affecting the asset and enabling strategic decision making.

Carriageway Surface

- 2.3.4 The road surface on the strategic road network is primarily surfaced with two types of flexible bituminous materials, namely Hot Rolled Asphalt (HRA) which has an approximate design life of 25 years and Thin Surface Course System (TSCS) with a lower construction cost and shorter design life of 10-15 years. Large tranches of HRA were laid in the 1990s and TSCS tranches laid in the 2000s resulting in a significant proportion of the network reaching the end of its design life by 2020.
- 2.3.5 It should be noted that, although carriageway surfacing may be identified as reaching or exceeding its design life, the surfacing will not necessarily require treatment at this point. Carriageway surfacing that is beyond its design life is at a higher risk of failure, with such risk increasing the further that the surfacing exceeds its design life. The increasing age of the surfacing could manifest in an increased frequency of maintenance interventions which, if a renewals scheme is not funded, may result in a higher cost both financially and in terms of disruption to road users to maintain the asset in a safe and serviceable condition.
- 2.3.6 The pavement condition figures show that there are very large sections of the route that may reach end of life by 2020. This is particularly true of the M27 and the northern and southern sections of the A34. The exception on the A34 is on the newer section that forms the Newbury bypass. The figures show that there are parts of all the routes that could reach the end of its life. The A43 also exhibits significant structural and surface defects. 50 percent of the route appears to have structural damage indicating the pavement is reaching the end of its serviceable life. Over the past 12 months a substantial number of schemes have

been developed to address both aged and failing surface as well as structural deficiencies on the A43. This particularly concerns sections built in 2001 at Silverstone Bypass, Syresham Bypass and the stretch between the M40 and B4031 where a number of issues have been identified and are being monitored.

2.3.7 Potholes on some of the network are also an issue, for example over the past 6 months alone a total of 220 potholes have appeared along the A43 stretch.

2.3.8 We also have concrete road surface material but this is only a very small proportion when compared to the length of flexible road surfaces. The amount of concrete road surface is also reducing as it is replaced by flexible material at the end of its serviceable life. Concrete is not a material we now use in new carriageway construction on any of the motorway and trunk road network.

2.3.9 Specific issues that are highlighted in the Asset Management Plans include;

- The A31 single carriageway is an evolved road with gradual widening into verges by overlaying the original carriageway. This has resulted in weak edges.
- The A34 has evolved in places from single to dual carriageway resulting in differential rates of deterioration across carriageways due to different construction materials and total thicknesses.

Structures

2.3.10 There are a number of structures on the route that are now old and will be in need of maintenance during the next 5 years. Due to the heavy freight traffic on the A34 the issue is one of load bearing on many bridges on this section.

Other key asset issues for routes

2.3.11 The other key asset issues of note in relation to the Solent to Midlands route is lighting on the A31 as the majority of the lanterns are reaching the end of serviceable life and require replacement.

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.

2.4.3 The level of service is broken down into 3 categories:

- Level of Service A - (Do Maximum) All Traffic Management Directorate current services - Information services and strategic overview (National Traffic Operations Centre (NTOC)), Regional

Control Centre (RCC) tactical overview and dedicated Traffic Officer Service (TOS) on-road incident management response.

- Level of Service B - (Standard) Reduced on-road services - Information services and strategic overview (NTOC), RCC tactical overview and partial TOS on-road incident management response (when required and if available).
- Level of Service C - (Do Minimum) Significantly reduced on-road services - More emphasis on information services and strategic overview (NTOC), more emphasis on RCC tactical overview but no dedicated TOS on-road incident management response.

2.4.4 The majority of the Solent to Midlands Route is covered by Level of Service C the exceptions to this are the M27/M271 and A34 between the A303 and M3 which are covered by Level of Service A.

2.4.5 We measure how effective we are at managing incidents by looking at the time incidents affect the running lanes. Data available from the motorway network indicates that for most of the relevant network on the Solent to Midlands route the 'Average Lane Impact Duration' of incidents is less than 30 minutes. The exceptions to this are the M27 between Cadnam and the A36 and the M40 junctions 9 to 10 where the average duration increases to 30 to 60 minutes.

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

2.4.7 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. We have, for example, worked together with the Thames Valley Local Resilience Forum and the Hampshire and Isle of Wight Local Resilience Forum to produce the *A34 Response Plan* (January 2013), which explains the roles and responsibilities for the highway and emergency services should an incident occur on between the M3 and the M40.

Flooding

2.4.8 We have a responsibility to reduce flooding. Flooding of the Agency's 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. .

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

2.4.10 Areas on the network at significant risk include (Source: Environment Agency Flood Mapping – First Priority Locations);

- A31 between Winterbourne Zelston and Almer, Dorset

- A31 North of Corfe Mullen, Dorset
- A31 Winterbourne Minster, Dorset
- A31 west of Ringwood, Dorset
- A27 east of M27 junction 12
- A34 Upper Bullington.

2.4.11 Whilst not an Environment Agency priority location, the A34 (M4 Underpass) at Chieveley has been vulnerable to flooding in heavy rain. Flooding has been a recognised risk on the A43 near Brackley where Highways Agency drainage schemes have been programmed to address this.

Severe Weather

2.4.12 The Agency aims to minimise where possible the impacts of severe weather, ie strong winds and snow, on network performance and the safety of road users. Identified issues on the Solent to Midlands route are:

- A34 Gore Hill – Steep incline with problems for HGVs in snow and ice
- A34 approach to M40 junction 9 – Inclined approach to junction may cause problems for HGVs.

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

2.5.4 On this route, technology installations including VMS and CCTV are found on the M27 and M3 between the M27 and the A34. There two

CCTV installations on the A34 north of the M3, on the approaches to Chieveley. There are no other items of technology infrastructure on the route.

2.6 Vulnerable road users

2.6.1 The route has numerous public rights of way and other designated routes due to the nature of the area itself with numerous Areas of Outstanding Natural Beauty. The popularity of the area as a holiday location means that larger numbers of leisure walkers and cyclists use these routes.

2.6.2 There is a number of long distance walking paths in the area that cross or are crossed by the trunk road network. These include The Ridgeway which crosses beneath the A34 at Gore Hill near East Ilsley and the Thames Path crosses beneath the A34 at Lower Wolvercote.

2.6.3 There are also a number of public rights of way which lie close to or cross the route although many of these are grade separated from the highway.

2.6.4 There are many National Cycle Network (NCN) Routes that cross or interact with the route. These are:

- Route 50 crosses over the A43 between Syresham and Biddlesden on a structure
- Route 51 crosses over the A34 near Weston – on – the - Green on a structure and again at Kidlington
- Route 57 crosses over the A34 at North Hinksey on a structure
- Route 54 crosses over the A34 at Harwell
- Route 4 passes beneath the A34 at Newbury
- Route 23 passes through M3 junction 9 using underpasses and crosses the M27 at Southampton airport
- Route 236 crosses the M27 at Port Solent.

2.6.5 In addition to the NCN there are many local cycle routes that run close to the Route but mostly these are segregated from the highway. The locations that were specifically highlighted as a concern to stakeholders were the A31 between Ferndown and Ringwood and M4 junction 13.

2.6.6 Infrastructure improvements are not the only area which needs to be considered, maintenance is also important. Stakeholders did raise the issue that poorly maintained infrastructure acted as a barrier to travellers being able to make full use of footpaths, cycle routes and bridleways.

2.7 Environment

2.7.1 As a responsible network operator and through the [Strategic road network performance specification 2013-15](#), the Highways Agency works to enhance the road user experience whilst minimising the

impacts of the strategic road network on local communities and both the natural and built environment.

Air quality

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

2.7.3 The Highways Agency is committed to delivering the most effective solutions to minimise the air quality impacts resulting from traffic using our network. We will operate and develop our network in a way that works toward compliance with statutory air quality limits as part of our broader [Environmental Strategy](#).

2.7.4 Along the Solent to Midlands route the following Air Quality Management Areas (AQMAs) exist that are seen as a direct consequence of being located on the strategic road network (Source: Defra);

- Botley AQMA – An area encompassing a number of properties in Westminster Way, Coles Court, Stanley Close and along the Southern bypass – declared by Vale of White Horse District Council in April 2008 (Pollutants: Nitrogen Dioxide NO₂)
- Eastleigh AQMA No. 2 - An area extending either side of the M3 motorway between junctions 12 to 14 - declared by Eastleigh Borough Council in July 2006 (Pollutants: Nitrogen Dioxide NO₂)
- Eastleigh AQMA No. 1 - Encompasses an area extending 30m to either side of the A335 from the junction of Leigh Road and Bournemouth Road to Wide Lane (north of the roundabout with the M27 spur) – declared by Eastleigh Borough Council in February 2005 (Pollutants: Nitrogen Dioxide NO₂) Redbridge Road AQMA at southern end of M271

Cultural heritage

2.7.5 Wherever possible, balanced against other factors, Agency schemes are designed to avoid impacts on cultural heritage assets. These include the following scheduled monuments:

- Tusmore medieval settlement, A43 north of M40 junction 10
- Godstow Abbey, A34 west of Oxford
- Seacourt medieval settlement 760m west of Manor Farm, Binsey – A34 west of Oxford
- North Hinksey Conduit House – A34 south of Oxford
- Barrow A34 - North of Ridgeway, Hodcott Down
- Long barrow on Sheep Down, A34 – 0.6 miles north of East Ilsley
- Group of Long Barrows straddling A34 North of Litchfield

- Tidbury Ring, A34 North of A303
- Worthy Down Ditch, A34 South of South Wonston
- Malwood Castle Hillfort, A31 Minstead
- Bowl Barrow, A31 Stoney Cross
- Bowl Barrow, A31 Bratley Plain
- Roman Camp, A31 Lambs Green
- Bowl barrow A31, Bloxworth Down

Ecology

- 2.7.6 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.
- 2.7.7 The Solent to Midlands Route runs through the following designated Ramsar sites:
- Dorset Heathlands
 - Avon Valley (near Ringwood)
 - New Forest.
- 2.7.8 There are also a large number of Sites of Special Scientific Interest adjacent to parts of the Solent to Midlands route. These include;
- Slop Bog And Uddens Heath – A31 Fernwood bypass
 - Moors River system – A31 east of Fernwood
 - St Leonards and St Ives Heaths – A31 west of A338 Hurn Road junction
 - Avon Valley – A31 west of Ringwood
 - River Itchen – M27 east of junction 5
 - Moorgreen Meadows – M27 north of junction 7
 - Downend Chalks Pit – M27 east of junction 11
 - Portsdown – M27 east of junction 11
 - Portsmouth Harbour – Adjacent to M27/M275 junction
 - Langstone Harbour – South of A27 (near junction with A2030)
 - River Itchen – M3 south of Winchester and A34 north of M3 junction 9
 - River Test – A34 south of A303 junction and South West of Whitchurch

- Highclere Park – A34 south of Newbury
- Snelsmore Common – A34 north of Newbury
- Wytham Woods – A34 west of Oxford
- Pixey and Yarnton Mead – A34 North West of Oxford.

Landscape

- 2.7.9 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.
- 2.7.10 As indicated previously, part of the A31 passes through the New Forest National Park. In addition the A34 passes through the South Downs National Park just north of the M3 junction 9.
- 2.7.11 The A34 from Whitchurch to Didcot passes through the North Wessex Downs Area of Outstanding Natural Beauty (AONB).

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 A number of Noise Important Areas are found on the Solent to Midlands Route. These include areas on:
- A31 west of Ringwood
 - M27 east of Cadnam
 - M27/M3 junction (West to North bound slip)
 - A34 Winchester
 - A34 Oxford Southern Bypass.

Water pollution risk

- 2.7.16 We have a duty not to pollute water courses and ground water. We have identified those highway discharge locations across our network where there is an existing potential water pollution risk. The following sites have been identified:
- Five sites on the single carriageway section of the A31 between Bere Regis and Cadnam.

- Seven sites on the M27 between Cadnam and the M3, including a cluster of sites just west of the M271.
- Five sites on the M3 between the M27 and Winchester
- Six sites on A34 between M3 and A303
- Two sites on A34 between A303 and M4
- Three sites on the A34 Oxford southern and western bypass

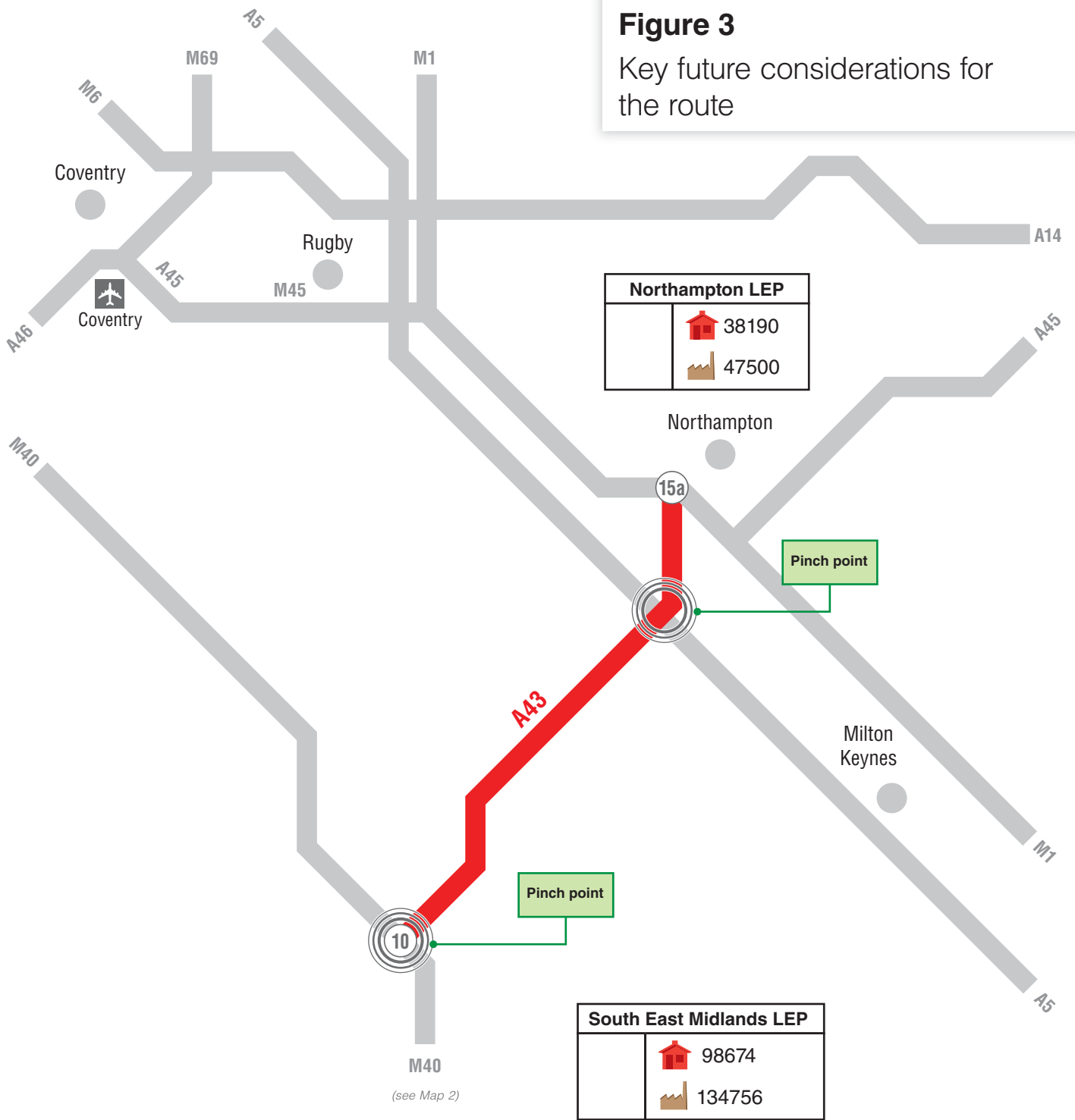
3 Future considerations

3.1 Overview

- 3.1.1 There is already a lot known about the planned changes to and around the route. Local authorities and the development community are already pushing forward the delivery of their housing and economic growth aspirations, as set out in their local plans. The Highways Agency has a large programme of schemes it has to deliver, plus an even larger programme of pipeline measures that could come forward after the general election. Local authorities, together with port and airport operators, are progressing measures to improve the operation and performance of their transport networks and facilities.
- 3.1.2 All of these issues have the potential to directly influence the ongoing performance and operation of the route. Figure 3 summarises the anticipated key future issues and the following sections summarise those issues in more detail.

Figure 3

Key future considerations for the route



Pinch point

Pinch point

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

Illustrative

Figure 3

Key future considerations for the route

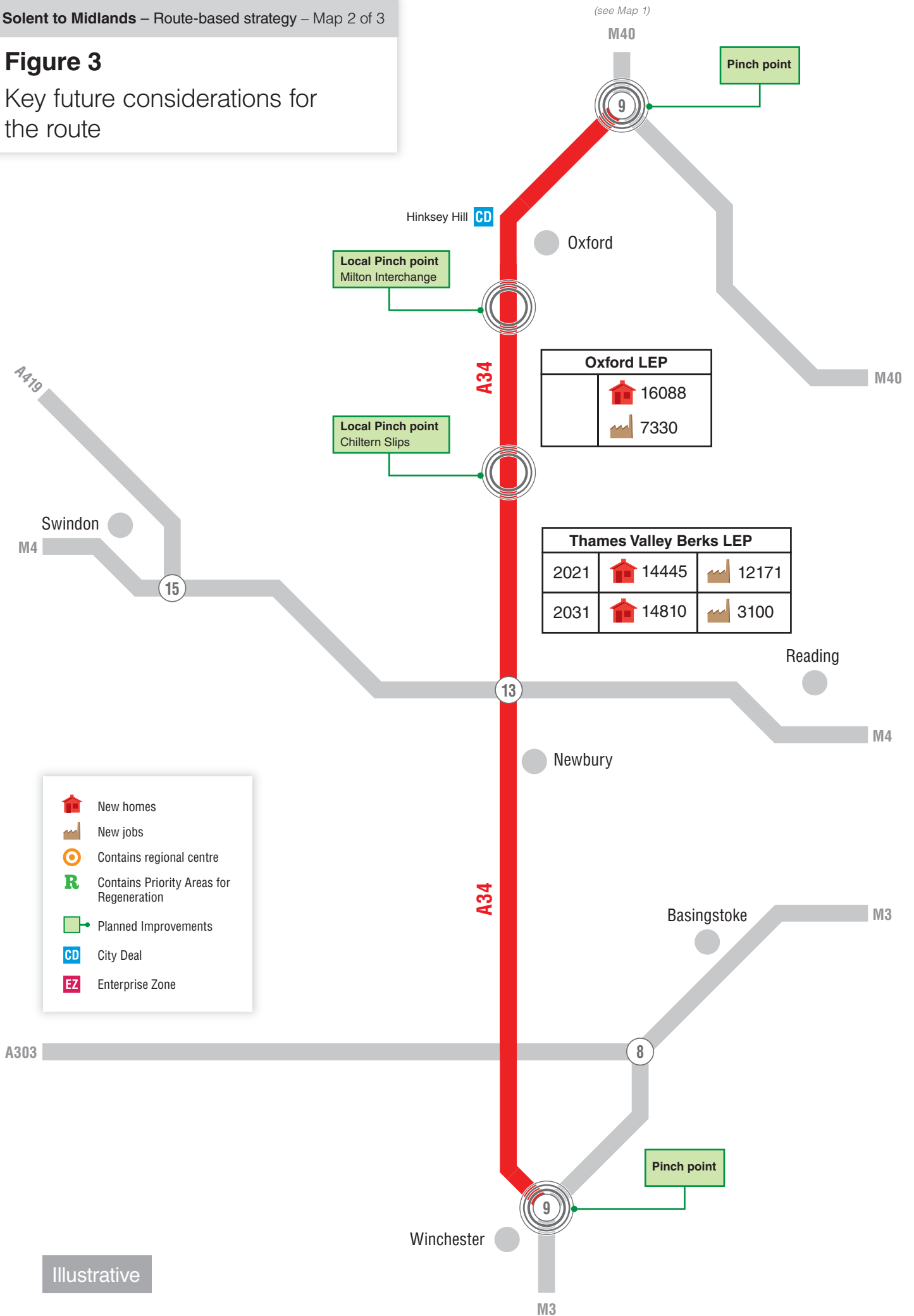
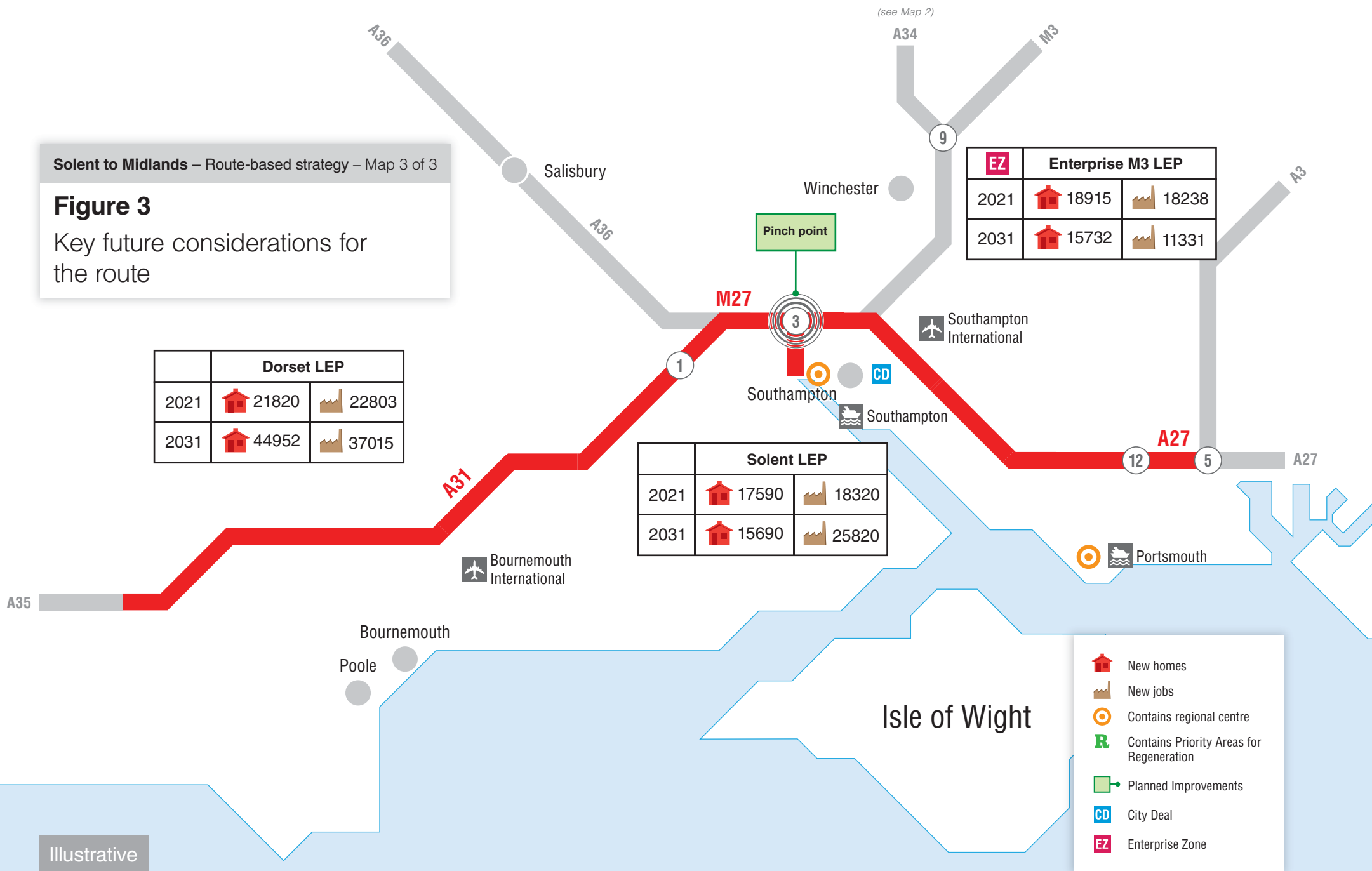


Figure 3

Key future considerations for the route



Illustrative

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. The key challenges in the area are likely to include:

- Several new housing developments are planned in the Portsmouth area and north of the M27 between Portsmouth and Southampton. Over 55,000 new homes identified as required across South Hampshire.
- Development pressures on the A34 surrounding Winchester in the south and Science Vale and other significant developments at Oxford and Bicester towards the north of the A34;
- The Bournemouth/Poole/Christchurch conurbation is the fastest-growing on the south coast which will have an impact on the already congested A31 in the area. Growth of Bournemouth Airport both as an air hub and also growth of employment adjacent to the airport
- Substantial development of Southampton container port will increase HGV traffic on A34 M3, M27 and M271 over the next 10 years. Container traffic is expected to almost double from 2005 levels by 2020 and automotive volume is expected to increase by 33% over the same period.
- Southampton also expects to experience a 113% increase in cruise passengers and traffic by 2020 when compared to 2005.
- On the A43 major housing growth is proposed at Towcester (2750 homes), Brackley (1900 homes) and employment growth at Silverstone racing circuit (4000 jobs). The proposals at Towcester and Silverstone both involve new junctions onto the A43 and are also tied to junction mitigation work to the A43 Abthorpe roundabout. Growth at Brackley requires improvements at the A43 junctions in that location.
- Maintaining and improving access to airports at Heathrow and Gatwick.

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- Southampton also expects to experience a 113% increase in cruise passengers and traffic by 2020 when compared to 2005.
- On the A43 major housing growth is proposed at Towcester (2,750 homes), Brackley (1,900 homes) and employment growth at Silverstone racing circuit (4,000 jobs). The proposals at Towcester and Silverstone both involve new junctions onto the A43 and are also tied to junction mitigation work to the A43 Abthorpe roundabout. Growth at Brackley requires improvements at the A43 junctions in that location.
- Maintaining and improving access to airports at Heathrow and Gatwick.

Table 3.1 Key housing and economic growth proposals

Location of Development	Development Type	Anticipated growth			Anticipated Location of Impact on Route
		2011 – 2015	To 2021	To 2031	
Silverstone Circuit (Current Status: Planning Approval for Masterplan granted)	Employment (B1, B2 & B8) Hotels Education (Including Student Accommodation)			183,000m2 3 35,000m2 (20-year Masterplan)	New development access onto A43 and junction improvements at A43 Abthorpe.
North West Bicester Eco Town (Current Status: Phase 1 Approved – remaining Masterplan being developed for consultation)	Residential Employment		393 (Phase 1 to 2018)	5,000 Dwellings 5,000 jobs (Up to 2035)	A34/M40 junctions 9 & 10
Kingsmere, South West Bicester (Current Status: Development commenced)	Residential	1,585 Dwellings (Phase 1)			A34/M40 junction 9
Graven Hill, Bicester (Current Status: Permission Granted)	Residential		1900 Dwellings (by 2018)		A34/M40 junction 9
Oxford Northern Gateway (Current Status: In adopted Core Strategy – AAP to be produced)	Employment (B1 Led)	20,000m2 (by 2016)		55,000m2 (Total by 2026)	A34/M40 junction 9
Science Vale Enterprise Zone	Employment			Up to 370,000m2	A34
Newbury racecourse	Residential		1500 dwellings		A34
Sandelford	Residential		500 dwellings	1000 dwellings	A34
Barton Farm, Winchester (Current Status: Outline permission Granted. Reserved Matters Application for Phase 1 submitted)	Residential	425 Dwellings (Phase 1A and 1B)		2,000 (Dwellings – Total in 5 Phases)	A34/M3 junction 9
North/East of Hedge End	Residential			6,000 Dwellings (Up to 2026)	M27 junctions 7 & 8
Welborne, New Community North of	Residential			6,500 Dwellings (up	M27 (Particularly

Fareham (NCNF) (Current Status: Draft Plan)	Employment			to 2041) (78,000 m ²)	junction 10)
North Whiteley Major Development, Winchester LP	Residential			3,500 Dwellings	M27 junction 9
Towcester South Extension	Residential		2,750 dwellings plus employment and services		New access onto A43 providing Towcester relief road through to the A5 with requirements to improve A43 Abthorpe roundabout.
Brackley	Residential		1900 dwellings		Tied to mitigation to A43 junctions.

3.2.3 It should be noted that the developments provided are not an exhaustive list, but does highlight where the likely pressures on the network will occur as a result of future planned local development. Furthermore, there are also a number of sites known to the Agency which are not in the above table as these have not been formally allocated in local development plans. Furthermore, recently published Local Enterprise Partnership targets are not included in the table above as these have yet to be described at specific locations.

3.2.4 It should also be borne in mind that the cumulative impact of smaller scale developments in areas adjacent to the route will also have an impact that will need to be considered, as will the potential cumulative impact of large scale development further afield and not considered here.

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 on Figure 3.

Table 3.2 Committed strategic road network enhancement schemes

Location	Scheme Type	Completion Year	Anticipated Benefits
A34/ M3 J9 Winnall roundabout – Easton Lane Signalisation	Pinch Point Scheme.	2013	The works are aimed at reducing congestion and journey times for road users, and improving the safety of the Winnall roundabout
A34/M40 junction 9 (Wendlebury)	Pinch Point Scheme.	2014	As part of the Pinch Point Programme, this scheme aims to:

			<ul style="list-style-type: none"> - Help to reduce congestion on the A34 northbound carriageway and on the A41 southbound carriageway - Reduce journey times for road users - Boost the local economy and support the Bicester Master Plan - Improve safety for road users using the interchange
M27 junction 3/M271 junction 2	Pinch Point Scheme	2014	<p>As part of the Pinch Point Programme, this scheme aims to:</p> <ul style="list-style-type: none"> - Help to reduce daily congestion, particularly during peak hours - Reduce journey times for the travelling public - Boost the economic growth of the area - Improve safety at the motorway interchange
A43 Tove junction Pinchpoint	Pinch point Scheme	2014	<p>As part of the Pinch Point Programme, this scheme aims to:</p> <ul style="list-style-type: none"> - Support the creation of 4,300 jobs and 2,000 homes by 2020 - Support the significant link between the M40/A34 and M1/A45/A14 routes - Help to reduce daily congestion - Reduce journey times for the travelling public - Boost the economy - Improve safety.
M40 junction 10	Pinch Point Scheme	2015	<p>As part of the Pinch Point Programme, this scheme aims to:</p> <ul style="list-style-type: none"> - Support the local economy and housing proposed - Reduce congestion at this junction - Alleviate conflicting traffic movements

3.3.2 Whilst [the 2013 Spending Review](#) and subsequent report from HM Treasury [Investing in Britain's Future](#) referenced a series of potential new pipeline schemes for the strategic road network, none are on the Solent to Midlands route.

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 3.3 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 3.3 Committed local transport network enhancement schemes

Project	Scheme Type	Completion Year	Anticipated Impacts on the Route
A4130/A34 Milton Interchange Enhancements	Road	2015	The scheme will provide additional junction capacity to enable development at Didcot. This will reduce congestion for traffic joining and leaving the A34.

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 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 stakeholder events and in conversations with stakeholders who were unable to 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 and certain priorities may not have been identified as a

“top priority”. We will be conscious of the limitations of the reporting of stakeholder priorities as we move into the second stage of RBS.

4.2 Operational challenges and opportunities

4.2.1 There are a number of key operational challenges which were identified by the stakeholders at the workshops. These tended to fall into different types of challenge depending on the standard of the route.

4.2.2 For the motorway sections, the M27 and the M40, the operational issues focussed on the lack of ability to manage traffic flows based on demand which consistently leads to flow breakdown and congestion.

4.2.3 On the all-purpose dual carriageway sections the operational challenges were more strongly related to inability to attend to and clear up incidents due to emergency vehicles becoming caught in queues which had formed on approach to an incident.

4.2.4 Another common issue on the dual carriageway sections was the operational challenges posed by managing traffic through road works as these generally required the removal of lanes and carriageways.

4.2.5 The route has very little coverage from Traffic Officers, and although this was not identified by stakeholders as a particular issue, a number of the concerns are consistent with a lack of surveillance of the route. Further, a lack of variable message signs on the route mean that information cannot be disseminated to drivers to give them the opportunity to make alternative arrangements.

4.2.6 Stakeholders were also keen to identify that diversion routes – either formal or informal – were often used without the local highway authority having time to prepare for additional traffic.

4.2.7 Operational challenges at specific junctions were identified by stakeholders as having an impact on the future ability to deliver housing or support economic development. The specific locations were the Towcester A43 / A5 junction (a current Pinch Point scheme), the A43 Abthorpe junction, M40 junction 10 (a current Pinch Point scheme), M40 junction 9 and the A34 junctions in Oxfordshire north of Chilton. At the southern extent of the route, the operational issues on the whole of the M27 were seen to be a constraint on growth.

4.2.8 An operational challenge highlighted during the workshops was the collection of litter, especially on the central reservation, as there are very few opportunities to reduce the carriageway capacity and clear litter safely. In the Road Users' Satisfaction Surveys 4% of respondents said they had seen litter on the A34 and 5% on the A31. On the M27 this figure was 8% with 9% also saying they had seen debris.

4.3 Asset condition challenges and opportunities

4.3.1 Much of the pavement of the route south of the M40 is reaching the end of its design life by 2020. The main exceptions are the A34 approaches to Chieveley and the Newbury bypass – both have benefitted from recent major schemes.

- 4.3.2 The A43 has a greater variation in the proportion of the asset that will be reaching its design life by 2020 which is consistent with works on the route. The motorway junctions of the M40 have also benefitted from recent schemes. The M27 is similar to the A34 and the A31 is similar to the A43.
- 4.3.3 Given the operational challenges identified by stakeholders associated with roadworks on the route, any replacement works will be very disruptive to traffic and, when some traffic uses diversion routes, to local communities.
- 4.3.4 The asset is subject to high heavy goods vehicle flows, as the route connects the production centres of the West Midlands to the port of Southampton. As economic growth would increase the rate of growth of heavy goods vehicles this was identified as an issue as it will accelerate the deterioration of the asset.
- 4.3.5 The Road User Satisfaction Surveys indicated that 8% of users found the A34 to have bad patches and a poor surface. None of the other sections of the route were particularly identified by users are in need of repair.

4.4 Capacity challenges and opportunities

- 4.4.1 The capacity of the route was shown to be an issue at key locations as opposed to the route as a whole. These locations include the M27 and from there, the A34 to the A303 junction, the A34 north of Oxford to the M40 junction 9 and the A43 on the southbound approach to the M40, on the approaches to the A5 and on the northbound approach to the M1.
- 4.4.2 Many of the issues are related to junctions that have insufficient capacity to accommodate the volume of traffic using them in the peak periods. However, the A34 between Oxford and the M40 suffers link based capacity issues as the traffic volumes are particularly high in combination with a large proportion of heavy goods vehicles which are slow to pass one another causing tail backs.
- 4.4.3 Stakeholders reported that these capacity challenges needed to be addressed as they are all located in areas where significant development opportunities are being planned.
- 4.4.4 Along the A43 the issue of capacity in the vicinity of Towcester was identified as needing the greatest consideration. The vehicle delay map at the stakeholder event showed that substantial developments would realise substantial benefit if capacity constraints were removed. Capacity has been addressed through current Pinch Point funding for improvements to the A43/A5 Tove junction at Towcester by 2015. The capacity of the adjacent A43 Abthorpe junction becomes the next priority where improvements will also help facilitate the major developments at Towcester and Silverstone racing circuit.
- 4.4.5 The capacity issue was also identified by stakeholders as particularly important at the M40 junction 9 and junction 10 as there is significant growth planned in Bicester. These proposals impact on both the

motorway junctions on this part of the route as well as the already congested A34 section north of Oxford.

- 4.4.6 Capacity issues at the Peartree junction in Oxford were identified as important both to both strategic road network traffic, but also significantly for development in north Oxford, traffic on the local highway network and the potential for growth in towns such as Witney and further afield.
- 4.4.7 The capacity of junctions south of Oxford to accommodate east-west movements was also raised as an issue that has the potential to limit the growth aspirations around Harwell and Chilton. Although the mainline of the A34 is operating within capacity, the junctions are congested and do not have capacity to accommodate growth.
- 4.4.8 The capacity of the route at the southern end of the A34 and into Southampton was identified as a key constraint to the potential for the port to develop and consequently for the local economies reliant on exports to develop. It was identified here that much of the capacity is taken up by local traffic – approximately 50% of trips were reported to be short distance.
- 4.4.9 For each of the above locations on the Route already have capacity issues, demonstrated by delay and unreliable journey times which are likely to become worse as housing and employment development is delivered.
- 4.4.10 The single carriageway section of the A31 was identified as a capacity constraint and this was felt to have an adverse impact on the attractiveness of the area to tourists.
- 4.4.11 The Road User Satisfaction Survey did not suggest that congestion was felt to be a significant issue on most of the route, although 9% users of the M27 and 7% of those on the A34 did report that they had been delayed by congestion.
- 4.4.12 An opportunity identified that has released some capacity was the improvements on the rail network to enable more freight paths to be created between Southampton and the West Midlands. Stakeholders suggested that this would allow a large proportion of freight to be taken off the route as a whole and the opportunity to encourage this to happen should not be missed.

4.5 Safety challenges and opportunities

- 4.5.1 Safety challenges are relatively few on the route as most of it is operating without any significant issues. Only one location on the A43 features in the national top 250 casualty sites – the southbound approach to the M40. The northbound approach to the M40 on the A34 has a greater frequency of accidents and has two sites in the national top 250 casualty locations. Heading further south, Winchester and then the M27 are also noteworthy due to the relatively high casualty numbers.

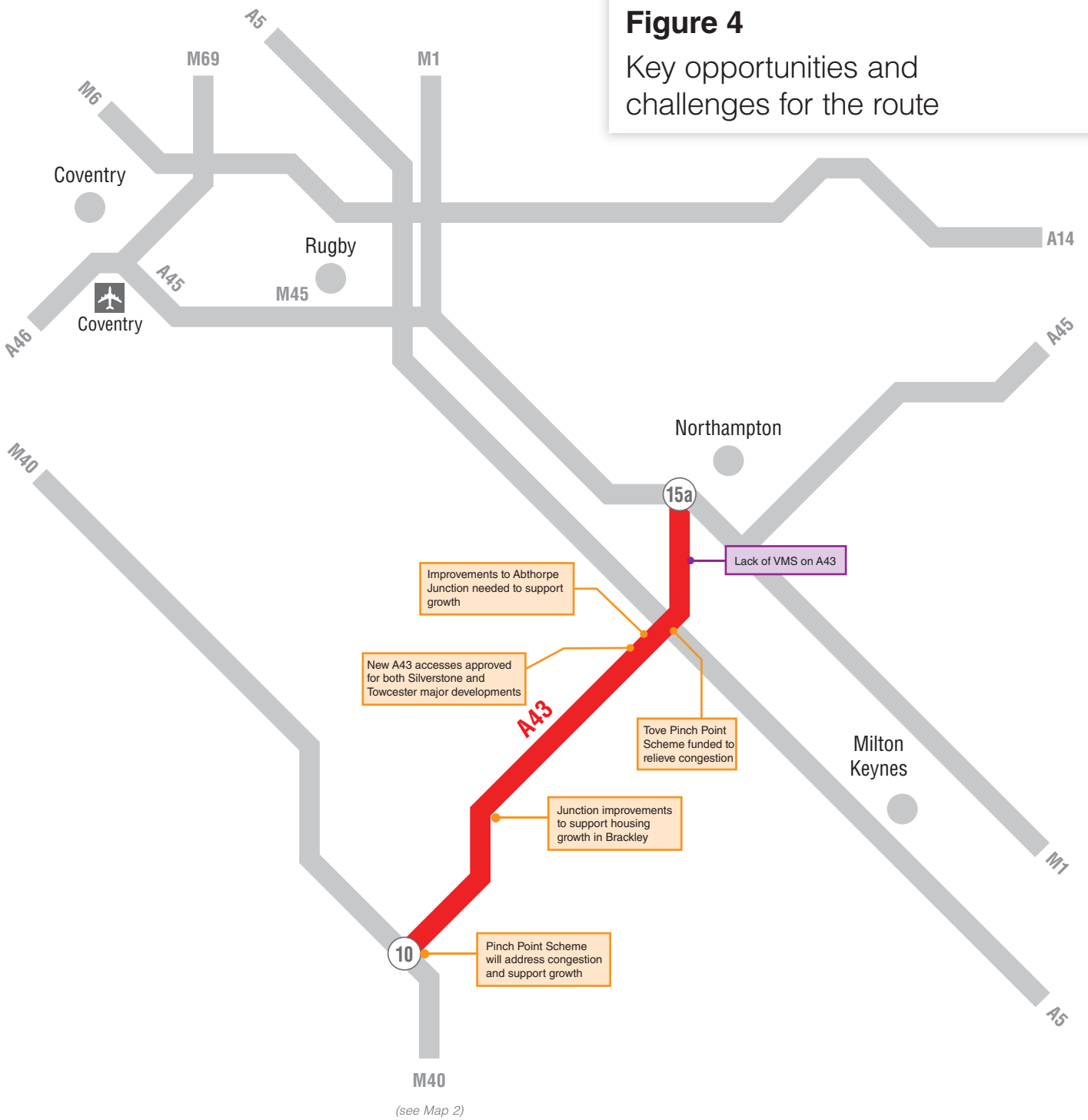
- 4.5.2 Stakeholders suggested that drivers were cautious about sections of the route where many junctions were substandard and this was reflected in lower casualty rates. This particular issue was identified as a characteristic of junctions on the A34 between the M4 and the M40, with many slip roads having very short merges and diverges.
- 4.5.3 Within Oxford itself, the A34 has some junctions which are little more than a residential street. The safety issue identified here characterises a more high level issue, that the A34 route is performing a local function when it should be a strategic route.
- 4.5.4 Another safety concern raised by stakeholders was driver behaviour on the A34 through the Downs. As heavy vehicles are slow on the uphill sections this can lead to cars becoming trapped behind them and pulling out dangerously. Further if the heavy vehicles overtake one another on the uphill sections, car drivers become frustrated which may lead to erratic behaviour when passing opportunities present themselves.
- 4.5.5 On the A43 concern has been expressed over the at-grade cross-over junctions in locations such as Whitfield, Holcote, Tiffield and Blisworth where high risks can be masked by low absolute collision statistics.

4.6 Social and environmental challenges and opportunities

- 4.6.1 In the feedback from stakeholders, social and environmental challenges tended to focus on three key areas; the impact on local communities when diversion routes are used, noise and air quality for local residents and facilities for pedestrians, cycle users and equestrians.
- 4.6.2 The first of these was felt to be a particular concern as many diversion routes do not have capacity to accommodate large volumes of traffic or large vehicles. The social and environmental impacts were considered to be significant and required some management.
- 4.6.3 Noise was identified as an issue in west Oxford where the A34 runs through the urban area and the M27 close to the built up areas around Southampton, Fareham and Portsmouth. The A34 was also cited as a source of noise on the sections that are older and were built with concrete. The Road User Survey revealed that 9% of users also found the M27 to be noisy.
- 4.6.4 The facilities provided to walk, cycle or ride across or along the route were considered to be lacking by many stakeholders. There was concern expressed about the maintenance of these facilities, with stakeholders reporting that consequently they felt that some infrastructure was no longer suitable for its intended uses. Other stakeholders suggested that additional facilities needed to be provided.
- 4.6.5 The needs of the bus operators were also highlighted as a social challenge – as this mode is very important to connect residents of market towns and villages to the cities. The A34 between Bicester and Oxford was identified as a critical location as the unreliability of journey times has a business impact on the operator and knock-on effects to users of the services.

Figure 4

Key opportunities and challenges for the route



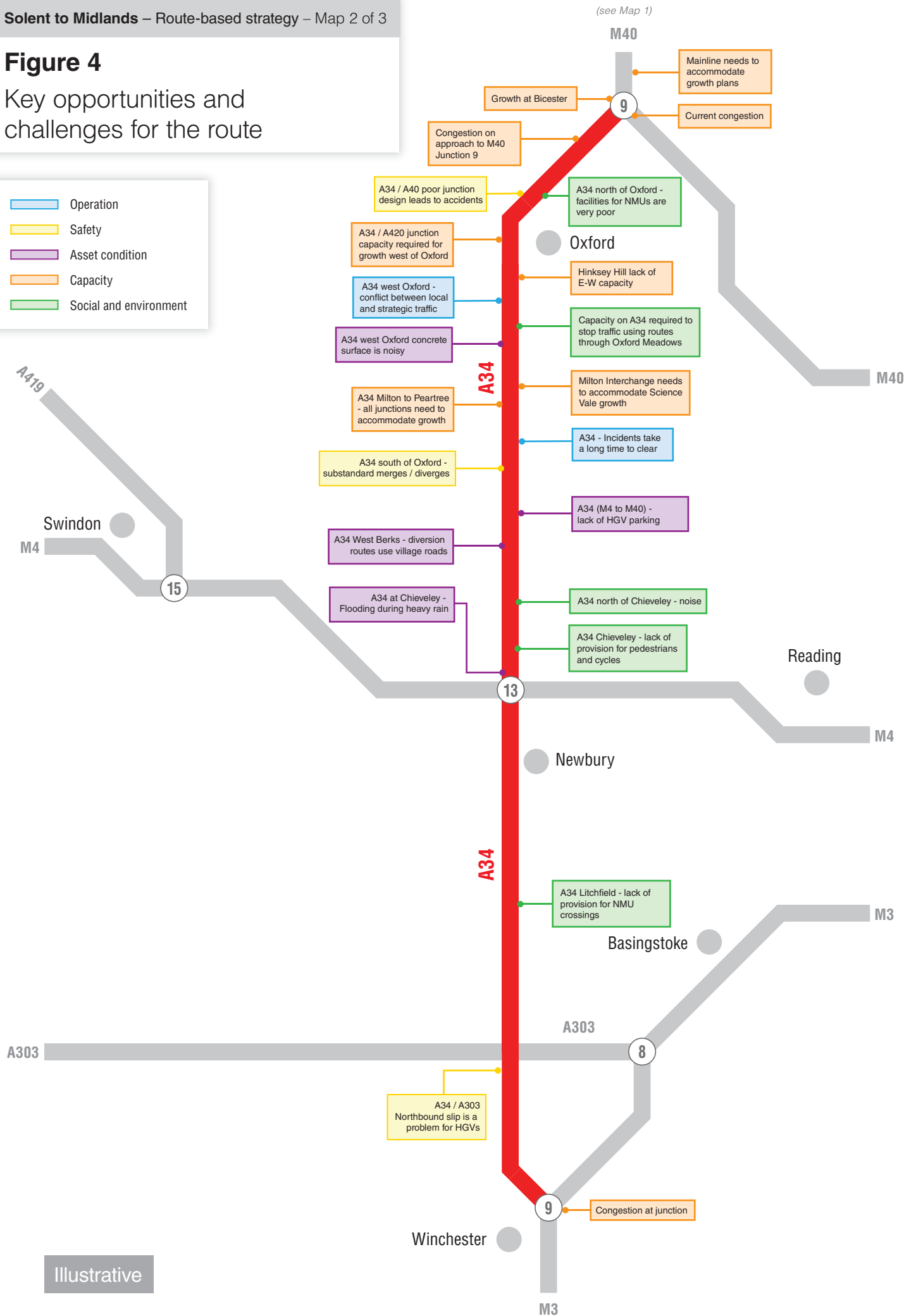
Illustrative

- █ Operation
- █ Safety
- █ Asset condition
- █ Capacity
- █ Social and environment

Figure 4

Key opportunities and challenges for the route

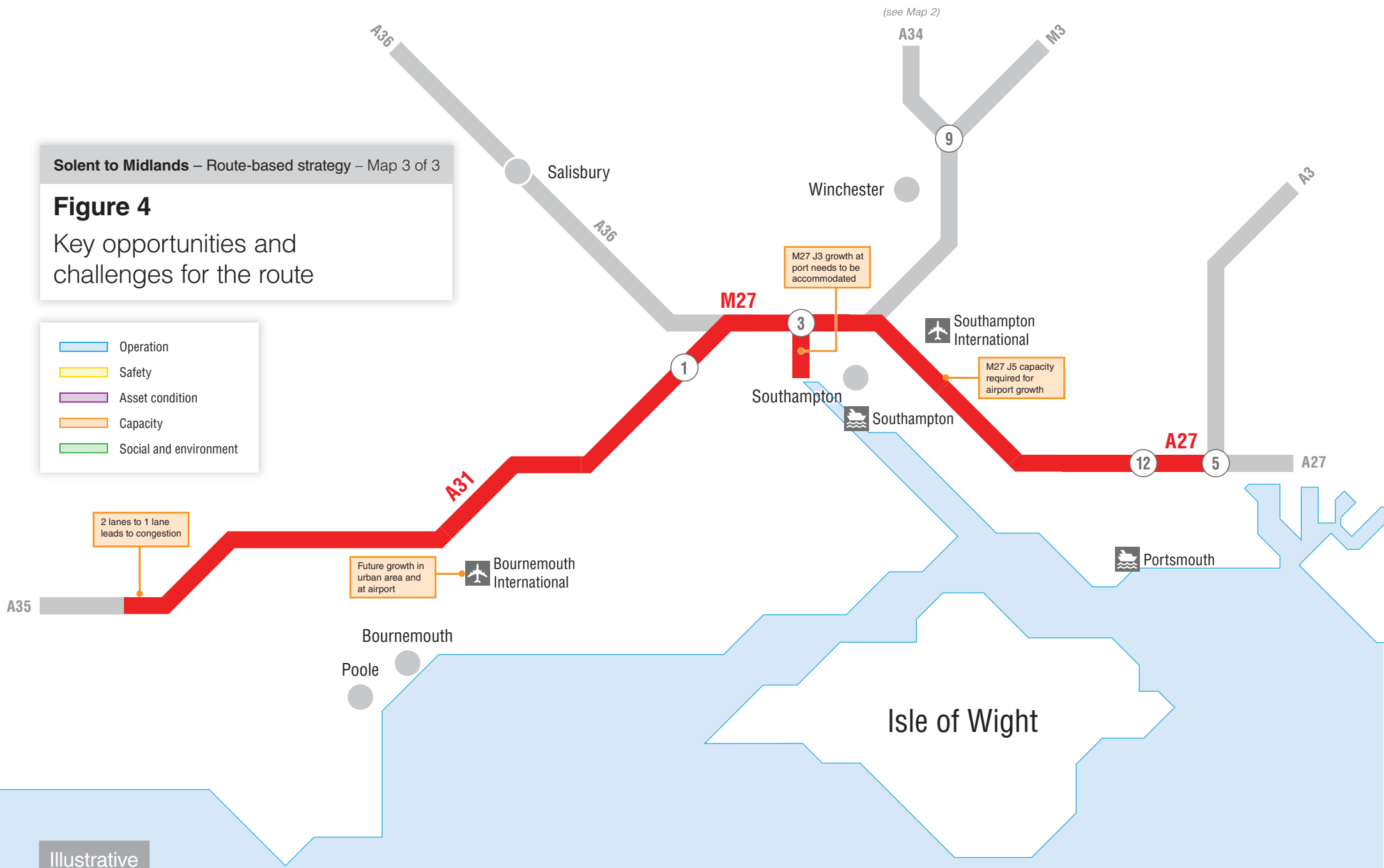
- Operation
- Safety
- Asset condition
- Capacity
- Social and environment



Illustrative

Figure 4
Key opportunities and challenges for the route

- Operation
- Safety
- Asset condition
- Capacity
- Social and environment



Illustrative

Table 4.1 Schedule of challenges and opportunities

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement ?	Stakeholder Top Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
Network Operation	M3 J9 to M27	Operationally poor, requires managed motorway	Y				Y			X
	M4 / A34	Diversion routes are through villages	Y				Y			X
	A34	Incidents take a long time to attend and clear	Y				N	X		
	A34	Lack of HGV parking on A34 leads to parking on local roads	Y				N	X		
	A34 West Oxford	Conflict between local and strategic traffic	Y				N	X		
	A roads	Level C TMD coverage means little route surveillance	Y				N	X		
Asset Condition	A34	Noise at Chieveley, East Ilsley and Compton	Y				N	X		
	A43	The A43 operates as a transfer route between the M40 and the M1, however it doesn't have effective VMS to enable this re-routeing and regional management of diversion routes seems poor	Y				N	X		
	A34 West Oxford	Concrete surface is very noisy	Y				N	X		
	A31	Weak edges / soft verges	Y				N	X		
	A34	Differential rates of deterioration due to different construction	Y				N	X		
	M4 junction 13 / A34 Chieveley	Flooding after heavy rainfall, slow drainage	Y				N	X		

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement ?	Stakeholder Top Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	A31	Lighting is in poor condition	Y				N	X		
	A roads	Little technology so no surveillance and little opportunity to provide information / manage traffic	Y				N	X		
Capacity	A43 / A5	Congestion at Tove and Abthorpe rbts impacting on growth proposals at Towcester and Silverstone. Pinchpoint funding for Tove shifts emphasis to Abthorpe.	Y				Y			X
	M40 J9-J10	Capacity to accommodate growth	Y				Y			X
	M3 J9	Capacity issues – access to ports, economy, RBS and Network Rail strategies for freight – holistic approach	Y				Y			X
	M27 J10	Capacity to accommodate Welbourne Strategic Site	Y				N	X		
	A31 whole length	Congestion on the A31 is a constraint on development as it cannot accommodate further growth. Developers have signed memorandum of understanding to contribute to improvement schemes	Y	Y			Y			X
	A31 Ringwood	Reduces to 2 lanes capacity issue particularly during peak tourist season	Y				Y	X		
	M27 J5	Growth/Airport Employment site in Eastleigh Docks – Future Development pressures	Y				N	X		
	A31	Development at Bournemouth Airport will lead to congestion issues. Up to 10k jobs proposed	Y				Y			

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement ?	Stakeholder Top Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	A31 North of Poole	Capacity north of Poole / Bournemouth – development permitted through MOU assumed dualling Ameyford – Merley	Y				N	X		
	M27 and M3 at Southampton	Large freight, cruise and automotive growth at Port of Southampton – if increased would add significant growth to an already constrained network.	Y				N	X		
	A34 North of Oxford	Congestion on the approach to M40 junction 9	Y				Y	X		
	A34 Milton / Chilton	Impact of Science Vale major development on the A34 and M4, as well as the knock-on impact on local routes	Y				N	X		
	A34 Hinksey Hill	Lack of E-W capacity	Y				N	X		
	A43 / A45	Silverstone / Motorsport Valley growth	Y				N	X		
	A34 Hinksey Hill	Lack of capacity to accommodate development	Y				N	X		
	A34 / A420	Lack of capacity to accommodate development	Y				N	X		
	A34 Milton to Peartree	All junctions will need to accommodate development plans	Y				N	X		
	M40 junction 10	Development plans need to be accommodated	Y				N	X		
	M40 junction 9	Bicester growth	Y				N	X		
	A34 Marcham Interchange	Pinch point scheme required	Y				N	X		
	M271	Most unreliable journey times on the route	Y				Y		X	

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement ?	Stakeholder Top Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	A34	Public Transport cannot be developed as a viable alternative whilst the network is capacity constrained, and there is limited scope to provide additional capacity	Y				Y		X	
Safety	A34 South of Oxford	Sub-standard merges / diverges	Y				N	X		
	A34 / A303	The northbound entry slip from the A303 onto the A34 presents a problem for HGVs, etc (Newbury bypass)	Y				N	X		
	A34 / A40	junction design contributes to accidents	Y				N	X		
	A31	Reduces from dual two lane all purpose carriageway to single carriageway which leads to poor driver behaviour and collisions	Y	Y			Y			X
	A43	At-grade cross-over junctions in locations like Tiffield, Holcote, Whitfield and Blisworth viewed as serious KSI risk	Y	Y			Y			X
Social and environment	A34 (Chieveley)	Unattractive infrastructure for walking / cycling	Y				N	X		
	A34 Litchfield	Lack of provision for non-motorised users	Y				N	X		
	A34 Oxford Meadows	Capacity needs to be provided on the A34 so routes through the Oxford Meadows are not used	Y				Y	X		
	A34 Peartree to Wendlebury	Facilities for non-motorised users have been removed	Y				N	X		
	A34 at Botley	AQMA in place	Y				N	X		

	Location	Description	Is there supporting evidence?	Timescales			Was this Identified through stakeholder engagement ?	Stakeholder Top Priorities		
				Short-term	Medium-term	Long-term		Low	Medium	High
	M3 at Eastleigh	AQMA in place	Y				N	X		
	A31	Several locations are prone to flooding and studies are planned to address this.	Y				N	X		
	A31	Lack of provision for non-motorised users	Y				N	X		

4.7 Conclusion

- 4.7.1 The evidence compiled about the route has shown that the performance of the network is characterised by existing capacity issues which are most prevalent within and surrounding the urban areas of the network. These capacity issues have consequences to for our customer in terms of journey time reliability, the speed they can travel at and the delay suffered.
- 4.7.2 The route is a focal point for future economic growth, most prevalently in the proximity to the urbanised sections of the route (Bournemouth, Poole, Southampton, Portsmouth, Oxford and Bicester). In addition to the future development aspirations of the Local Authorities (LAs) along the route, additional growth is expected to materialise from the wider aspirations of the Local Enterprise Partnerships (LEPs), the advancement of the Silverstone / Motorsport Valley, Harwell Science Vale and the growth aspirations of port of Southampton.
- 4.7.3 It is evident that the focus of future growth is in the locations that the network already experiences its greatest demands and operational pressures. The challenge, in ensuring that the route can adequately support these aspirations, and the traffic demands they will bring, is clear.
- 4.7.4 Detailed assessment of the various growth programmes and the ability of the strategic road network to accommodate the traffic flows arising from such growth will enable a clearer understanding to be established in relation to where future capacity problems are likely to arise and where intervention is likely to be required.
- 4.7.5 In considering the operational performance of the route, on the basis of the evidence presented in this report, it is clear that there are elements of the network that do perform well. These include sections of the A43 north east of M40 junction 10 (although there is congestion at the junctions), the A34 corridor (between Harwell and Winchester) and the A31 to the west of Poole. In many instances, these sections of the network are mainly in rural areas, which are not suitable for locating future growth. However, there are sections, such as along the A43, which could be considered have sufficient link capacity to support future growth.
- 4.7.6 Some stakeholders expressed views about the operational performance of the M3 junction 9 to the M27 being poor. Further comments were also made on the paucity of diversion routes between the M4 and the A34.
- 4.7.7 Issues with the condition of the asset have been identified as being increasingly susceptible to failure and requiring maintenance due to their age (eg much of the carriageway surfacing on the network reaching its design life by 2020). This will be a particular challenge on the A43.
- 4.7.8 Not surprisingly, the condition of the asset in the more rural areas is not as severe an issue, through a combination of being less trafficked but

also a greater ability to access the network for maintenance purposes. The challenge exists in accessing the network without causing severe operational implications to the road users, and in combining this with future growth aspirations, not adversely impacting upon them.

- 4.7.9 The enhancement of road safety is an existing priority for the Agency and will continue to be a key challenge. While overall data identifies a positive progression towards reducing collisions, further work is required in specific areas of the route, particularly with a view to future traffic flow increases (eg the safety issue at the M271 and M27 junction and the likely future traffic increases in this area).
- 4.7.10 A further key challenge identified during consultation related to the knock-on impacts of such collisions and the ability of the wider network to accommodate the traffic demand diverting as a consequence. Stakeholders also indicated that the design of the A31 which has single and dual carriageway sections leads to poor driver behaviour and collisions. Some of the at-grade junctions were also considered to present a high risk for serious collisions.
- 4.7.11 Environmental issues along the route have been recorded in evidence. AQMAs are located mainly in the urban areas where the greatest traffic demands exist, and future growth aspirations are focussed. Traffic on the route is a (or 'the') significant contributor in many cases and the need to meet EU guidelines is a key future consideration.
- 4.7.12 In relation to the challenges identified above, it is noted that is a small number of schemes that will contribute to improved network conditions at specific locations (these scheme being either committed, in the pipeline or on the wider transport network). Whilst these schemes are focussed on elements of the network which are currently operating with capacity issues and locations that will be the focus of future economic growth, it is unlikely that they will address all the capacity issues that the route may experience by 2021.
- 4.7.13 Consideration of these issues has already been initiated by some of the stakeholders. For example, the "A34 Oxfordshire Route Based Strategy"¹ which has been shared with the Agency by Oxfordshire County Council suggests the following:
- Further investigating the operational performance of the route with a view to establishing a clear view as to future operational performance, not only on the strategic road network itself, but also at the interactions with the local road network at junctions.
 - Opportunities for the further implementation of technology similar to managed motorway systems in the areas of most intense traffic activity. Stakeholders identified further potential technology solutions that could be worthy of investigation.
 - Opportunities to consider the TOS operation, but also the coordinated approach of managing the network with other partners

¹ Oxfordshire County Council (2013) *A34 Oxfordshire Route Based Strategy Draft V1.2*

(including emergency services and local highways authorities), in reacting to incidents on the network, with a view to the specific locations identified in this evidence reports that are more susceptible to lengthy incident durations.

- The need to provide a more resilient network, including through better management of diversion routes, in collaboration with partners, such that they are capable of catering for increased demands in the event of incidents (or indeed the need to access the network for future maintenance).
- The need to support the ability for vulnerable road users to navigate the route (by the nature of the route these are generally cross-route movements). In seeking to promote sustainable travel, the ability of such users to navigate the junctions on the network is an area worthy of further investigation, particularly where such locations of the network are the focus of future growth aspirations.

4.7.14 Whilst a range of issues has been identified as part of this evidence report, it is considered safe to say that there is agreement between the evidence and stakeholder inputs that the route has significant to the current economy and to future economic growth. The importance of this relationship is evidenced in Dorset as a memorandum of understanding has been signed between the Agency and the local planning authorities.



















4.7.15 The need to support economic growth extends beyond areas directly related to the route and the contribution that the route makes to the regional economies of the South and South Central England is also an important consideration.

4.7.16 As evidenced, the route has existing issues covering a range of areas and locations, many of which are going to be further increased by future traffic growth and economic aspirations. This amplifies the importance of the strategy that is ultimately developed, evidenced by the findings of this report, in developing a strategic approach and interventions to tackle the existing issues and ensure that the network is resilient to future changes. The need to balance the requirement to support economic aspirations and the additional traffic demands these bring with the wider needs with regard to road safety, the environment and the condition of the asset.

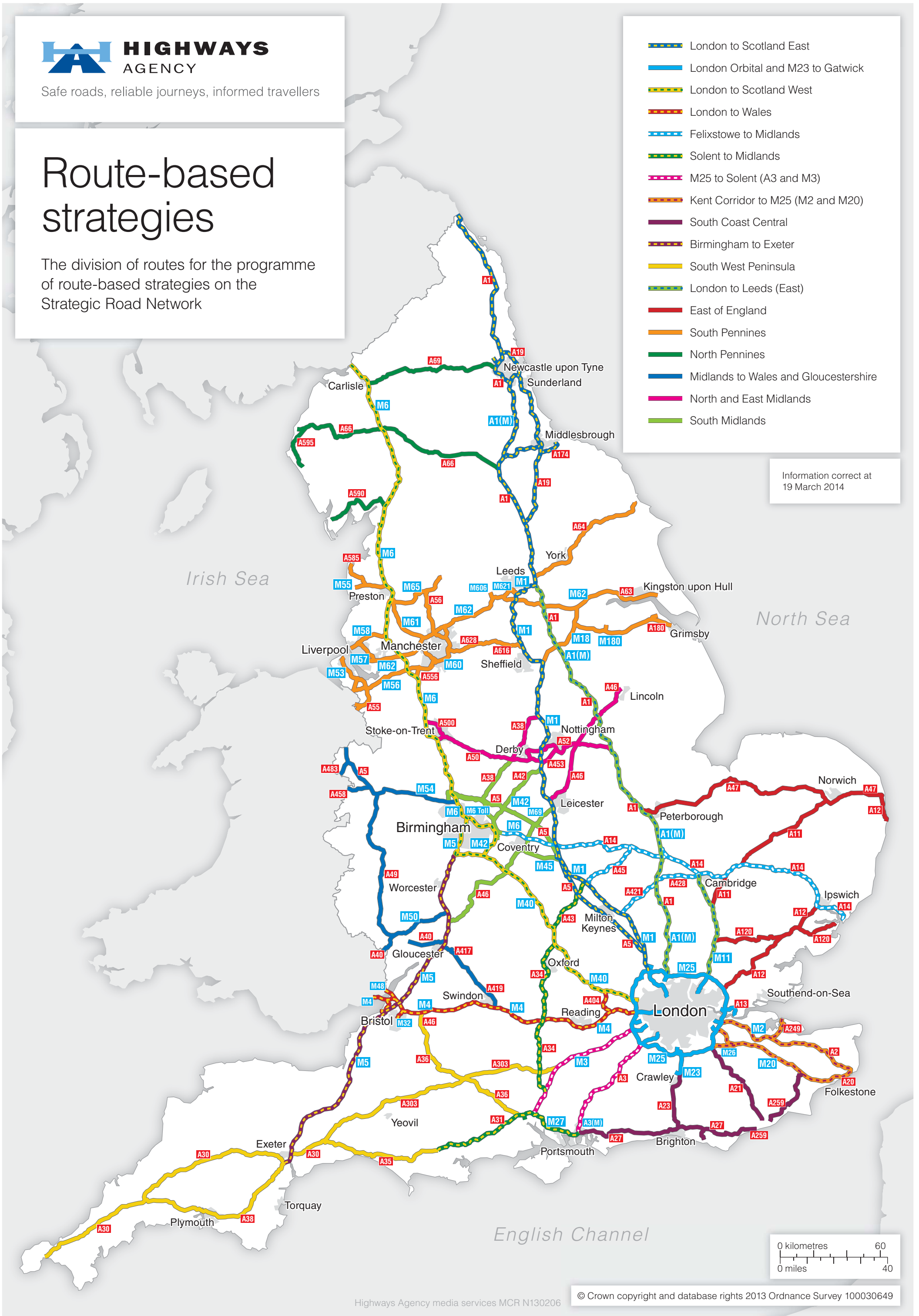
Appendix A Route map

Route-based strategies

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

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

Information correct at 19 March 2014



Appendix B Glossary

Abbreviation	Description
AADT	Annual Average Daily Traffic
AAP	Area Action Plan
AONB	Area of Outstanding Natural Beauty
AQMA	Air Quality Management Area
CCTV	Close Circuit Television
DEFRA	Department of the Environment, Food and Rural Affairs
HGV	Heavy Goods Vehicle
HRA	Hot Rolled Asphalt
LA	Local Authority
LEP	Local Economic Partnership
MOU	Memorandum of Understanding
NCN	National Cycle Network
NMU	Non-motorised user
NTOC	National Traffic Operations Centre
SRN	Strategic Road Network
RBS	Route Based Strategy
RCC	Regional Control Centre
TMD	Traffic Management Directorate
TOS	Traffic Officer Service
TSCS	Thin Surface Course System
VMS	Variable Message Sign

Appendix C Stakeholder involvement

Organisation	Contact Name	Provided Input
Member of Parliament Oxford West and Abingdon	Nicola Blackwood	Yes
Senior Parliamentary Researcher	Val Crawford	Yes
British Horse Society	Troth Wells	Yes
Moto Cherwell	Richard Godfrey	Yes
Natural England	Gerry Hamersley	Yes
Oxford Bus Company	Phil Southall	Yes
Oxford City Council	Adrian Roche	Yes
Oxford University	Sean O'Brien	Yes
Oxfordshire County Council	Tom Flanagan	Yes
Oxfordshire County Council	Llewelyn Morgan	Yes
Oxfordshire County Council	Martin Tugwell	Yes
Oxfordshire Local Economic Partnership	Nigel Tipple	Yes
Stagecoach in Oxfordshire	Martin Sutton	Yes
Vale of the White Horse / South Oxfordshire Council	Ian Matten	Yes
Vale of the White Horse / South Oxfordshire Council	Phil Moule	Yes
Vale of the White Horse / South Oxfordshire Council	Ian Robinson	Yes
Capita		Yes
Enterprise Mouchel		Yes

Note:

Named stakeholders were attendees of the Oxford RBS event. Attendees of other LEP events are recorded in companion RBS reports.

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