

Route Strategy Initial Overview Report

# London to Scotland West (South)

May 2023





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# The routes

## Routes

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

## Sub-national Transport Bodies

- England's Economic Heartland
- Midlands Connect
- South West Peninsula
- Transport East
- Transport for the North
- Transport for the South East
- Western Gateway

There are 17 routes relating to route strategies across our strategic road network (SRN). To take better account of our customers' end-to-end journeys, we have split some of the longer routes into sub-strategies across 20 reports.



PENZANCE

PLYMOUTH



# Executive summary

## Introduction

Our strategic road network (SRN) is the backbone of the country. More than 4,500 miles of motorways and major A-roads connect people, build communities, create opportunities and help the nation thrive. To plan for the future, we take a long-term view of our network and the trends that could impact transport, road travel, and personal and commercial mobility. Route strategies are at the centre of this dynamic future planning of our network, informing how we operate, maintain and renew our network. This report is the Initial overview report for the London to Scotland West (South) route and summarises the outcomes of the route strategy. The report builds on the first two rounds of route strategies in 2015 and 2017. It aims to be more forward looking, integrated and collaborative, while being dynamic enough to respond to the future needs of our customers and neighbours.

In this report, we detail the route context, current constraints on the route, and opportunities for improved connections with local roads and rail links. We set out intelligence-led route objectives aligned with the Department for Transport's (DfT's) six strategic objectives. These objectives aim to ensure the route can serve its function, while mitigating the identified constraints and challenges. They conclude with locations for further consideration to achieve the route objectives. The route objectives and locations for further consideration will be presented to the Department for Transport to inform future decision-making about investment planning through the Road investment strategy (RIS). It should be recognised that not all aspirations outlined in this report can be funded or delivered.

### DFT'S SIX STRATEGIC OBJECTIVES FOR THE STRATEGIC ROAD NETWORK

-  Improving safety for all
-  Network performance
-  Improved environmental outcomes
-  Growing the economy
-  Managing and planning the SRN for the future
-  A technology-enabled network

For clarity, this document does not:

- identify committed schemes for delivery as part of future RIS periods. This will be part of the wider RIS setting process
- commit to the delivery of local plans or economic growth developments mentioned
- guarantee funding for any locations identified for further studying to understand the challenges and issues in more detail
- preclude the inclusion of other locations for consideration in the light of other evidence or imperatives

## Customers and neighbours

Engagement with our customers and neighbours has been central to developing our route strategies. We have already gathered a wealth of evidence from the previous rounds of route strategies and through our ongoing monitoring of road condition and performance.

Our performance is monitored through the National Highways' Performance Framework. This Performance Framework was established at the start of the second road period (2020 – 2025) and sets out National Highways' commitments to 2025. It is outlined in the *RIS2 Delivery plan (2020 – 2025)*<sup>1</sup>. We will continue this monitoring approach into the third road period (2025 – 2030). To add to this existing evidence, we carried out a detailed engagement programme for this round of route strategies to understand the current and future needs of those using and living alongside the SRN.

## The route

The London to Scotland West (South) route is made up of approximately 185 miles of motorway providing part of a north-south strategic link between London and Scotland. This route consists of the M40 from London through Oxfordshire to the Midlands, includes the sections of M42, M5, and M6 around Birmingham, commonly called the Birmingham Box, and continues north up the M6 to Junction 16, near Stoke-on-Trent in Staffordshire. (The rest of the M6 north of Junction 16 is covered by the London to Scotland West (North) route). The route also includes short sections of the A45, A452, and A446 providing an alternative for drivers travelling from M42 Junction 6 to M6 Junction 4. These roads will provide access to the new High Speed 2 (HS2) station at Solihull.

This route strategy report can be read alongside other interacting route strategy reports, including:

- Birmingham to Exeter
- London to Scotland West (North)
- Solent to Midlands
- South Midlands

## Challenges and issues

We have identified challenges and issues of those using the route and living alongside it. These correspond to the DfT's six strategic objectives, which are the strategic objectives for RIS3. They were agreed by National Highways and DfT, and are set out in the *RIS3 Planning ahead*<sup>2</sup> document in December 2021.

### Improving safety for all

- There are junctions and route sections on the M40, M42, M5, and M6 which are the sites of collisions where people have been killed or seriously injured
- The M42/M6 Interchange is classified as medium risk by the Road Safety Foundation

### Network performance

- There are seasonal delays on the M40
- There are regular average peak period delays on the M42, M5, and M6 around the Birmingham Box
- Reliability at M40 Junction 4, on parts of the M42 and M5, and on the M6 around the Birmingham Box and near Stafford
- Future development and traffic growth will have an impact on delay and reliability along the route

<sup>1</sup> Highways England (2020) *Delivery Plan: 2020–2025*. <https://nationalhighways.co.uk/delivery-plan/>

<sup>2</sup> Department for Transport (December 2021) *Planning ahead for the Strategic Road Network: Developing the third Road Investment Strategy*. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1045938/planning-ahead-for-the-strategic-road-network-developing-the-third-road-investment-strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1045938/planning-ahead-for-the-strategic-road-network-developing-the-third-road-investment-strategy.pdf)

### Improved environmental outcomes

- The route passes through Areas of Outstanding Natural Beauty with environmental designations and cultural heritage
- A desire to minimise greenhouse gas emissions
- The route needs to be resilient to future climate change
- There are Sites of Special Scientific Interest (SSSIs) along the M40, including the Aston Rowant Chalk Cutting. There are also SSSIs located close to the A45, A446, M42, and M6. Such sites need to be preserved
- There are a large number of noise and air quality receptors within close proximity of some sections of the M40, M5, and M6
- Air quality impacts on M5 Junctions 2 to 1 and M6 Junctions 6 to 7 have led to 60 miles per hour speed limits being imposed on these sections

### Growing the economy

- Levelling up category 1 areas surrounding the SRN in the Birmingham Box and Staffordshire
- Levelling up category 2 areas surrounding the parts of the route
- The proportion of heavy goods vehicles (including coaches) travelling along the route ranges from 16% to 45%
- Traffic volumes on M40 Junctions 9 to 10 are expected to exceed capacity by 2031
- High volumes of freight traffic contribute to congestion near M5 Junction 2 to the M5/M6 Interchange and along the M6 Junctions 5 to 7
- Use of the route by coaches and private cars during holiday periods, including access to Heathrow and Birmingham Airports, will continue to be important for the tourist economy

### Managing and planning the SRN for the future

- Contributing toward the national target of 96.2% or more of carriageway being in good condition
- Maintaining the good condition of the strategic road network's geotechnical assets
- Ensuring that drainage assets are maintained so that their good structural and service conditions can be upheld

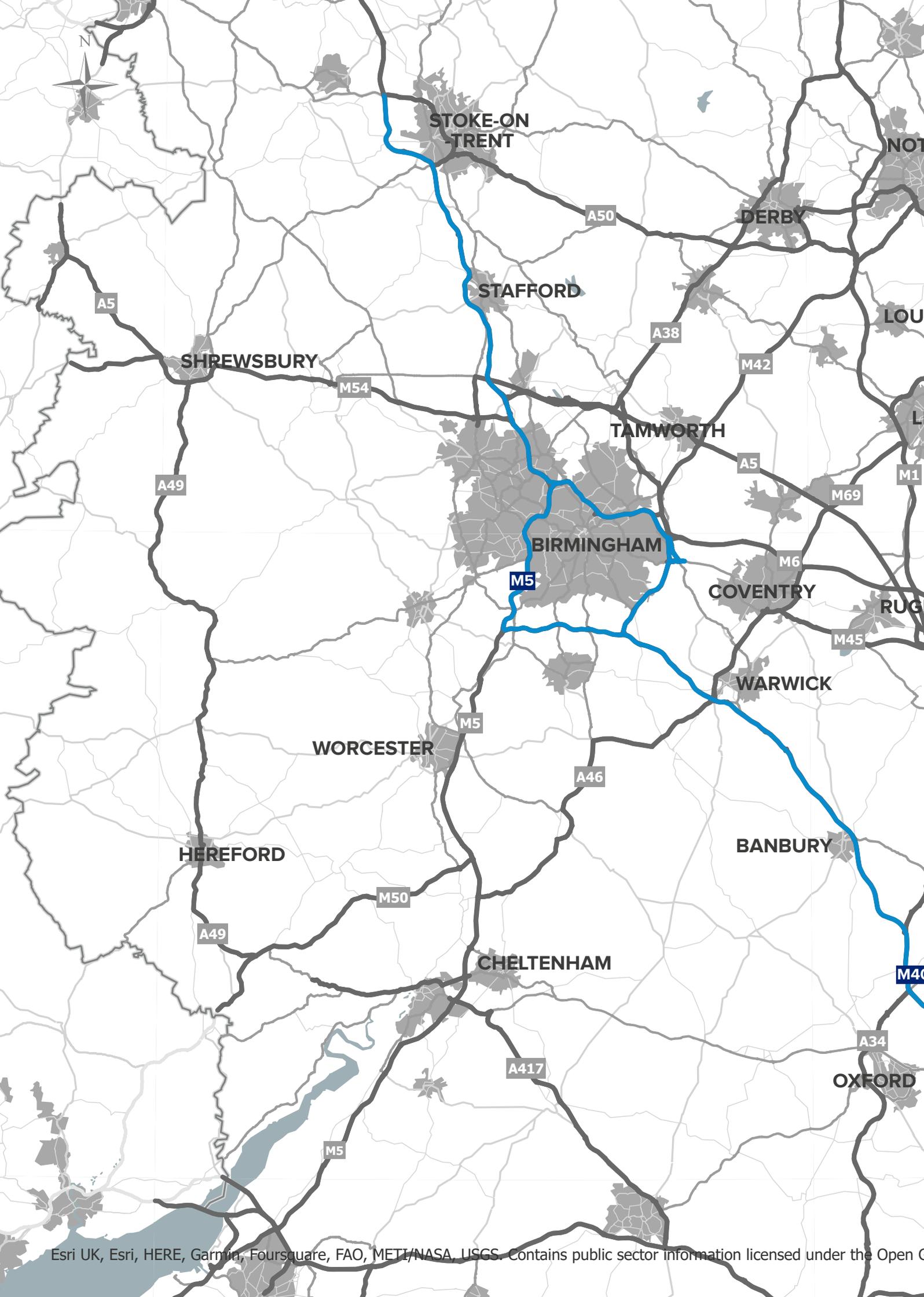
### A technology-enabled network

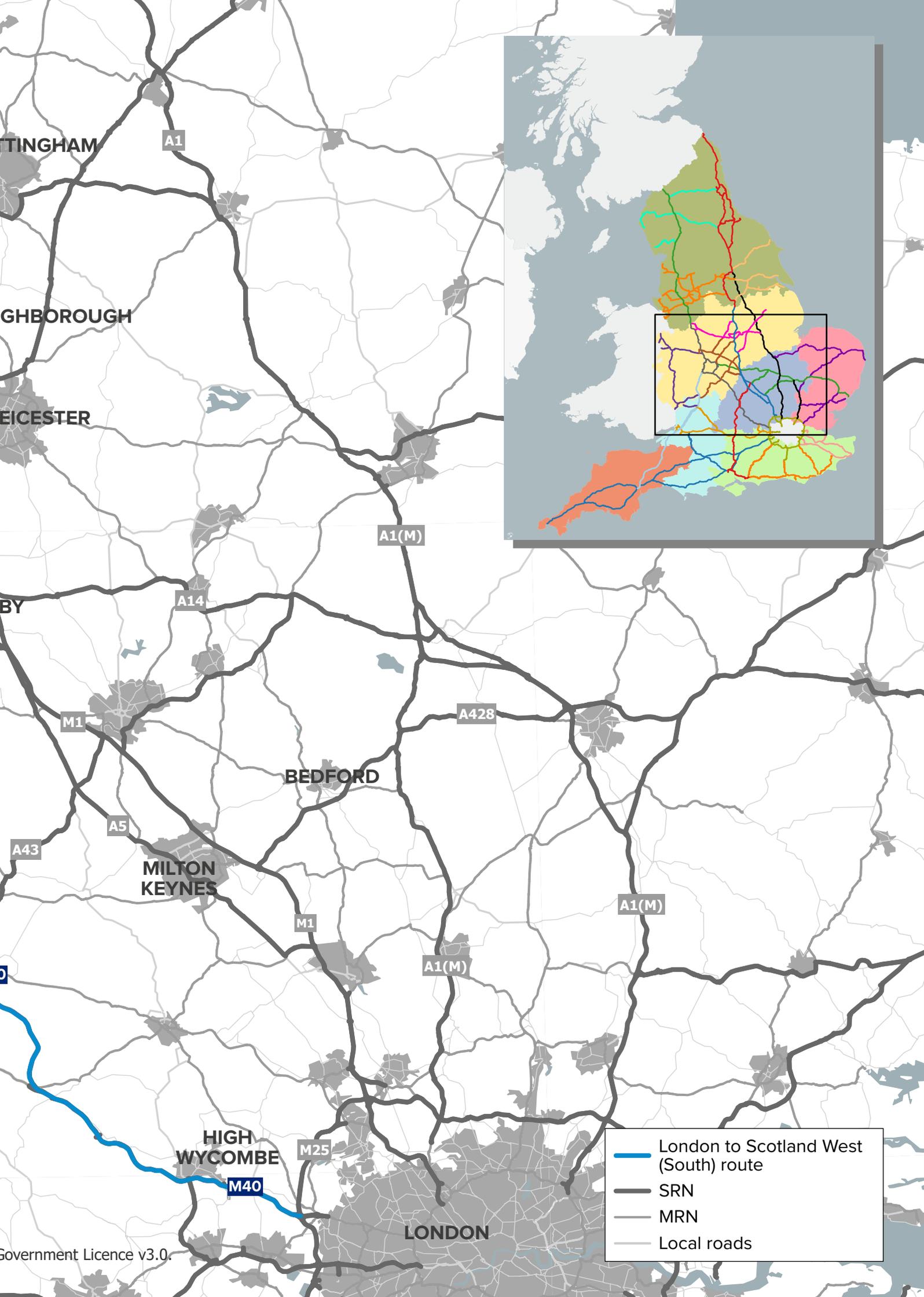
- There is limited technology provision on the M40
- Technology provision is variable on the M42, M5, and M6, and on the major road network approaching the SRN
- There are limited facilities for electric charging for all vehicles (private car or van, coach, and freight) to support transition to ending the sale of new petrol and diesel cars by 2030

Solihull  
Hampton  
Bickenhill  
Catherine -  
de - Barnes  
B4438  
Arden Hotel

Airport  
(Passenger  
Terminals) ✈️  
N.E.C. P  
Station 🚆  
Elmdon  
Trading Estate  
Marston Green







## Initial route objectives

We want to provide safer and more reliable journeys for all those who use or live alongside our network, and support the route in achieving the economic and housing growth ambitions of surrounding areas. Based on our engagement and data analysis, we have defined a set of objectives for the route. The table below shows the route objectives and how they contribute to the DfT's six strategic objectives for the SRN as a whole.

Ref.	Route objective	DfT's strategic objectives for our network					
		Improve safety for all	Network performance	Improved environmental outcomes	Growing the economy	Managing and planning the SRN for the future	A technology-enabled network
A	<b>Improve safety for all:</b>						
	provide safe journeys on the M40, M42, M5, and M6 to benefit road users, including walkers, cyclists, and horse riders crossing motorway junctions	✓	✓				
B	<b>Provision of a resilient and consistent network:</b>						
	support reliable strategic and cross-border connectivity for the UK for goods and people between London, the Midlands, the North West, and Scotland, promoting the UK and regional economies		✓		✓		✓
C	<b>Support sustainable economic growth and development:</b>						
	support sustainable economic growth and development, including local authority plan development, at key sites around the M40 (Oxford and Banbury), M42 (Solihull), M5 (Bromsgrove), M6 (Stoke-on-Trent), and along the wider corridor		✓		✓		
D	<b>Support connectivity with sustainable transport modes:</b>						
	support effective local connectivity through improved integration with sustainable transport modes to minimise the impact of short distance trips on the M5 and M6 to benefit the environment and local communities		✓	✓			
E	<b>Be a better neighbour:</b>						
	be a better neighbour by safeguarding the environment and reducing adverse air quality, noise, and severance impacts on local communities surrounding the route			✓			
F	<b>Better informed drivers:</b>						
	improve communications to better inform drivers and improve driver experience throughout the route, including on local roads approaching strategic road network junctions		✓				✓

## Next steps

The 20 route strategy Initial overview reports will combine with other related evidence to inform the broader *SRN initial report* as part of the RIS process for the third road period (2025-2030). The *SRN initial report* includes an assessment of the current state of the network and user needs from it, potential maintenance and enhancement priorities, and future developmental needs and prospects. DfT will consult on this *SRN initial report*<sup>3</sup>, which will serve to inform the RIS and *Strategic business plan*<sup>4</sup>.

We will finalise the Route strategy overview reports following feedback on the publication of these Initial overview reports. They will be used as a forward planning tool by National Highways to help identify investment opportunities for enhancements, as well as to support decisions around operating and maintaining our network. Providing an understanding of the strategies for each route will also help inform the decisions taken by our interested parties. These finalised Route strategy reports will also serve to inform the RIS and *Strategic business plan*.

<sup>3</sup> National Highways (2023) *SRN initial report*. <https://nationalhighways.co.uk/futureroads>

<sup>4</sup> National Highways' *Strategic business plan* will be published later in road period 2 (2020-2025)



**Helping  
the nation  
to thrive**

# 01 Introduction

Our strategic road network (SRN) is the backbone of the country. More than 4,500 miles of motorways and major A-roads connect people, build communities, create opportunities and help the nation thrive.

Our network provides safe, high-speed connections that:

- enable businesses to transport products and services
- provide access to jobs and suppliers
- facilitate trade and investment
- support commercial and housing development that is integrated with local roads and other modes of transport

The SRN also supports leisure journeys, connecting people and places, and will play a central role in delivering the social, economic and environmental needs of the nation, especially as we seek to reduce the carbon footprint of our network.

To plan for the future, we are taking a long-term view of our network and the trends that could impact transport, road travel and personal and commercial mobility. We consider factors ranging from climate change and low-carbon transport to increasing automation, digital technologies and changing travel preferences. Route strategies are at the centre of this dynamic future planning of our network. They build on our *Connecting the country: Our long-term strategic plan to 2050*<sup>5</sup> that sets out our vision and plan for the SRN until 2050, aligning with the government's *Ten point plan for a green industrial revolution*<sup>6</sup>.

## Purpose of route strategies

Our route strategies are based on 17 routes across England, with some split into two sub-strategies where this better reflects our customers' end-to-end journeys. There are 20 reports in total. We outline the objectives of each route along with the constraints faced and the current and predicted future performance based on analysis and widespread engagement with our customers and neighbours. Our customers and neighbours include:

- local authorities, devolved administrations, and Sub-national Transport Bodies
- other transport network operators (including local highway authorities, Network Rail, port and airport operators)
- operational partners (including, but not limited to, the emergency services)
- road users
- local communities
- other relevant interested parties with a significant stake in the long-term development of the network
- Members of Parliament

We also provide a list of locations for further consideration to inform investment planning across National Highways and for the Road investment strategy (RIS). We develop and publish these route strategies to:

- help us develop an understanding of the future state of the routes

<sup>5</sup> National Highways (2023) *Connecting the country: Our long-term strategic plan to 2050* <https://nationalhighways.co.uk/connectingthecountry>

<sup>6</sup> HM Government (November 2020) *The Ten Point Plan for a Green Industrial Revolution: Building back better, supporting green jobs, and accelerating our path to net zero.* [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/936567/10\\_POINT\\_PLAN\\_BOOKLET.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf)

- identify the locations for further consideration to inform our investment programmes and guide our vision
- give a practical tool to National Highways as a whole, while supporting external interested parties who anchor their infrastructure planning and investment around our network
- help ensure that all investment delivers safer and more reliable journeys for our customers and neighbours

For clarity, this document does not:

- identify committed schemes for delivery as part of future RIS periods. This will be part of the wider RIS setting process
- commit to the delivery of local plans or economic growth developments mentioned
- guarantee funding for any locations identified for further studying to understand the challenges and issues in more detail
- preclude the inclusion of other locations for consideration in the light of other evidence or imperatives

## Route strategy reports

These Route strategy initial overview reports have informed the *SRN initial report*<sup>7</sup> that sets out our vision and proposed priorities for the third road period (2025-2030) and beyond.

The final Route strategy reports will be published by the end of the RIS period, which covers 2020-2025. The three delivery phases of route strategies are shown in Figure 1.

## Purpose of the report

This report is the route strategy for London to Scotland West (South). In this report, we detail the route context, current constraints on the route, and opportunities for improved connections with local roads and rail links. We set out intelligence-led route objectives aligned with the DfT’s six strategic objectives. These objectives aim to ensure the route can serve its function, while mitigating the identified constraints and challenges. They conclude with locations for further consideration to achieve the route objectives.

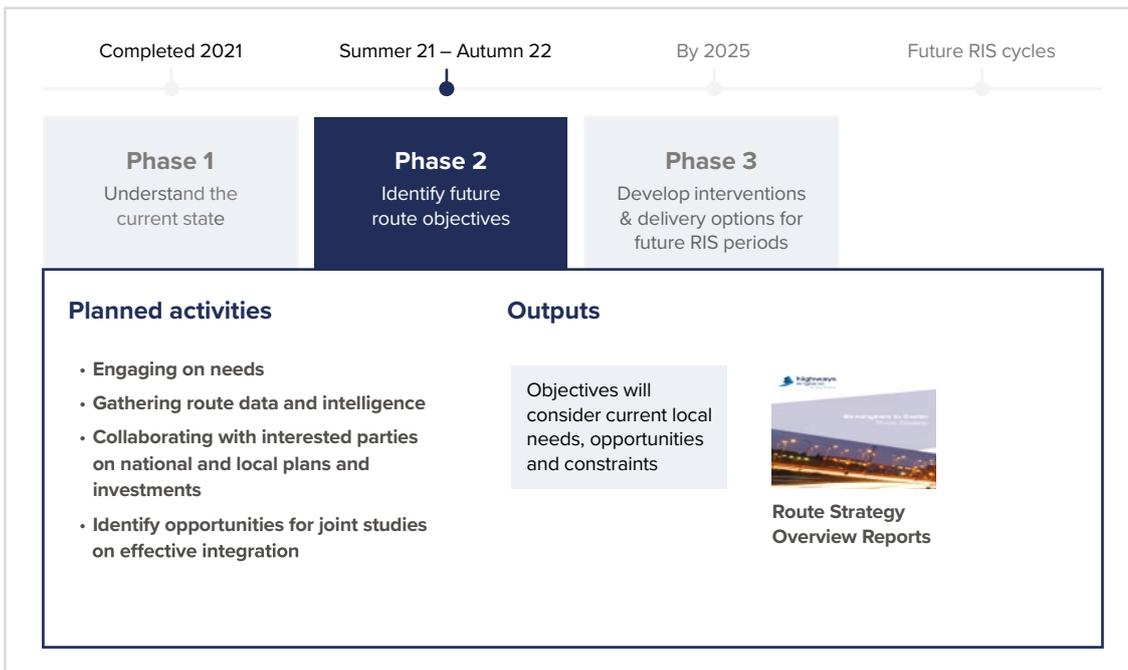


Figure 1: The route strategies delivery phases

7 National Highways (2023) *SRN initial report*. <https://nationalhighways.co.uk/futureroads>

The route objectives and locations for further consideration will be presented to DfT to inform future decision-making about investment planning through the RIS. It should be recognised that not all aspirations outlined in this report can be funded or delivered.

## The development cycle for the third Road Investment Strategy (RIS3)

Preparing route strategies is a requirement under the Infrastructure Act as well as a National Highways Licence requirement. The Licence sets out the Secretary of State for Transport's statutory directions and guidance to National Highways. It states that we must periodically prepare and publish route strategies covering the whole of the network to maintain an understanding of how the network is performing, while identifying any potential challenges. Each set of route strategies informs each RIS outlined by government, as well as supporting decision-making for the ongoing management and development of the network.

Route strategies are one of the key steps of research required by DfT to inform the setting of a RIS. Following the setting of RIS1 and RIS2, which covered the first road period (2015-2020) and second road period (2020-2025), we are now in our third round of route strategy planning informing RIS3 for the third road period (2025-2030) and beyond.

Looking across the whole of the SRN, our route strategies form one of the most important parts of the 'research' phase of the RIS3 development cycle. These strategies explore the current performance and future pressures on every stretch of the SRN, covering matters such as safety, reliability, congestion, environmental impacts, and local ambitions for economic and housing growth. Through the extensive engagement we have undertaken to inform the strategies, we provide insight to DfT and government into local, regional and national priorities for the SRN to support investment decisions for RIS3 and beyond. Grounded in evidence, the strategies identify the immediate needs of the network as well as highlighting longer-term issues or potential opportunities as shown in Figure 2.



Figure 2: The RIS development cycle

We have developed a revised approach to route strategies, building on past versions, to ensure they respond to the current and future needs of our customers and neighbours. The approach for route strategies is outlined in our approach document *Vision for route strategies: Planning for the future of our roads*<sup>8</sup>.

Our ambitions for route strategies, summarised in Figure 3, are to be forward-looking, widely supported, and integrated with other networks and modes of travel. They will consider the implications of local development plans and government ambitions and be dynamic to respond to the changing needs of our customers and neighbours in how they use and interact with our network. Such needs may evolve as a result of how people use our network due to COVID-19, environment considerations, or the need to support strategic connections and integrated solutions that connect locations, all of which will have an influence on the scale and type of future investments. We will work with interested parties to ensure that the route strategies are widely supported and integrated into regional and local strategies.

## Engagement with customers and neighbours

Engagement with customers and neighbours has been central to developing our route strategies. We have already gathered a wealth of evidence from the previous rounds of route strategies and through our ongoing monitoring of road condition and performance.

Building on engagement to date, we have worked with Sub-national Transport Bodies, Office of Rail and Road, Department for Transport, and Transport Focus to ensure a diverse range of people and their views are represented. This has allowed us to further improve our understanding of our customers and neighbours' requirements, helping us identify locations for further consideration to improve the SRN.

We will continue to evolve this engagement process for future cycles of route strategies. We used a range of methods to gather information from customers and neighbours throughout the route strategies' evidence collection period, which ran from August to December 2021 (Figure 7). These included round tables, workshops, and an online feedback form and we designed the approach to be more inclusive by engaging with, and learning from, a wide range of interested parties.

Thinking about how the SRN integrates with the surrounding rail and road network, including parts of the major road network (MRN) and local roads, we designed our engagement around the following objectives:

- To understand the current role of the SRN and how it could better support the aspirations of customers and neighbours of the future
- To gather views and seek evidence on current and future issues, challenges and opportunities – both local and strategic

We have also gained an in-depth understanding of what our road users want nationally from Transport Focus' *Strategic roads user survey 2021/22*<sup>9</sup> into road users' priorities for improvements to journeys on the SRN. This research was based on focus groups and interviews with all types of road users across the country, alongside a survey of more than 5,000 drivers. It asked for users' views on key issues, such as sustainability and electric vehicles, and the stress of driving on the SRN.

From this research, Transport Focus identified that the majority of road users want the focus of investment to be on keeping National Highways' existing roads in good order before building new ones. Their top priority for improvement to journeys on the SRN is road surface quality, followed by the safer design and upkeep of roads.

<sup>8</sup> Highways England (2021) *Vision for route strategies: Planning for the future of our roads*  
<https://nationalhighways.co.uk/media/w0vhd3un/vision-for-route-strategies.pdf>

<sup>9</sup> Transport Focus (July 2022) *Strategic Roads User Survey - 2021/22 summary report*.  
<https://www.transportfocus.org.uk/publication/strategic-roads-user-survey-2021-22-summary-report/>

**EASY TO MAINTAIN**

Minimal resource, cost and time to update, becoming an 'on the shelf' approach to strategic RIS planning.

**DYNAMIC**

Flexible and responsive to significant external influences, such as carbon reduction and the environment, between RIS settlements.

**WIDELY SUPPORTED**

Recognised externally, as the principal network planning tool for the strategic road network.

**BROAD**

Identify a full range of options and opportunities in each RIS cycle informing operational and investment priorities.

**FORWARD THINKING**

Priorities for all parts of the strategic road network to inform multiple RIS cycles.

**INTEGRATED AND COLLABORATIVE**

Recognise needs of customers and neighbours, approach to be widely accessible and integrated with the rest of the transport system where it benefits the strategic road network.

**PLANNING THE FUTURE OF OUR ROADS**

Figure 3: Our ambition for route strategies

Users also want to see better management of roadworks and of unplanned delays, such as incidents or breakdowns, and better information about unplanned disruptions to journeys. Walkers, cyclists and horse riders using the SRN highlighted concerns about the speed of traffic and want action on lighting and litter. This research will be used by Transport Focus to make recommendations about what National Highways should be required to deliver during the third road period (2025-2030).

The findings from the Transport Focus survey align with findings from our route strategies engagement with customers and neighbours across the SRN.

Engagement during workshops with interested parties (shown in Figure 6) identified the following national priorities:

- Better driver education aimed at teaching road users about new technology
- Deeper consideration of environmental constraints at the earliest stage of planning, and consideration for key environmental issues such as biodiversity, air quality and sustainable transport
- A resilient and reliable SRN to support economic growth
- Better integration between the SRN and local road network to improve journey times
- Greater support for the freight industry in terms of:
  - the future of low emission vehicles and commercial fleet
  - the impact of congestion on productivity, fuel cost, driver breaks, lorry park locations and delivery times
- Greater collaboration and early engagement with interested parties, and greater alignment between network operators, including consideration for joint funding opportunities

In addition, feedback on the SRN provided by communities and neighbours via the online tool, showed similar national priorities. The breakdown of the 1,700 responses we received via the online feedback tool are shown in Figure 4 and Figure 5.

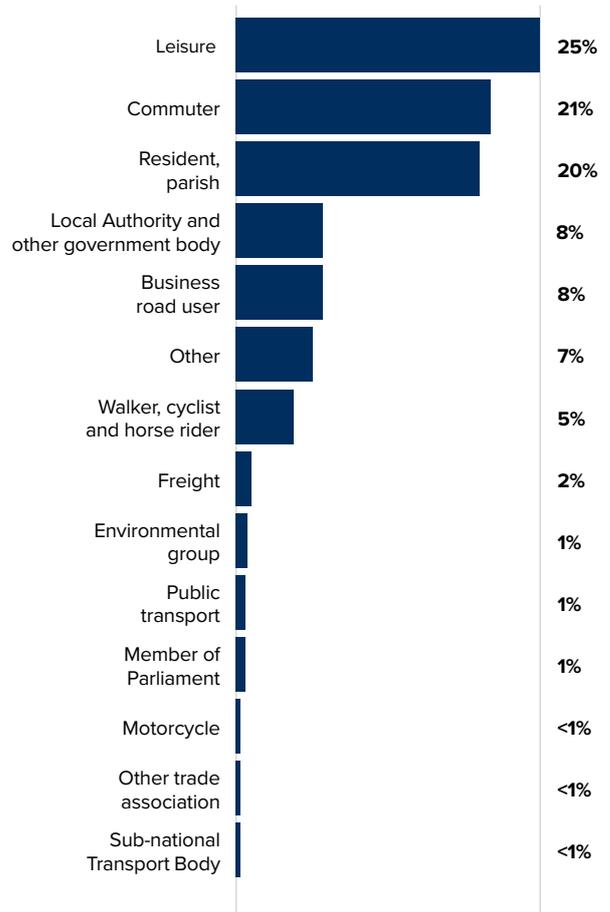


Figure 4: All responses to online tool by participant type

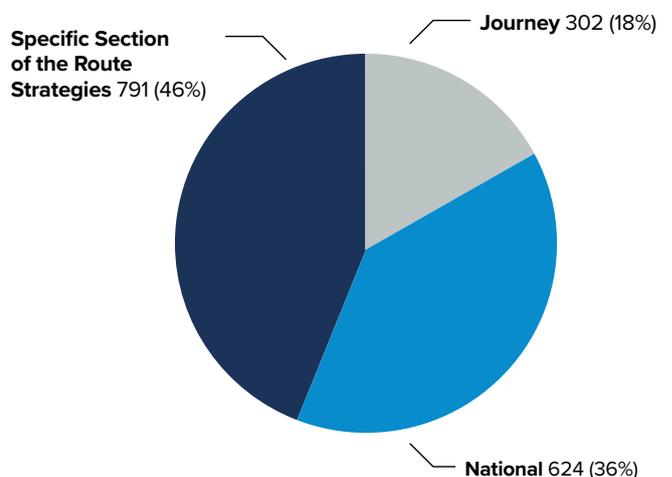


Figure 5: All response to online tool by type

A breakdown of the national issues and general feedback raised is shown in Figure 8, which highlights that, in terms of the issues identified:

- 26% were related to safety
- 23% were related to congestion
- 28% were related to the environment or carbon

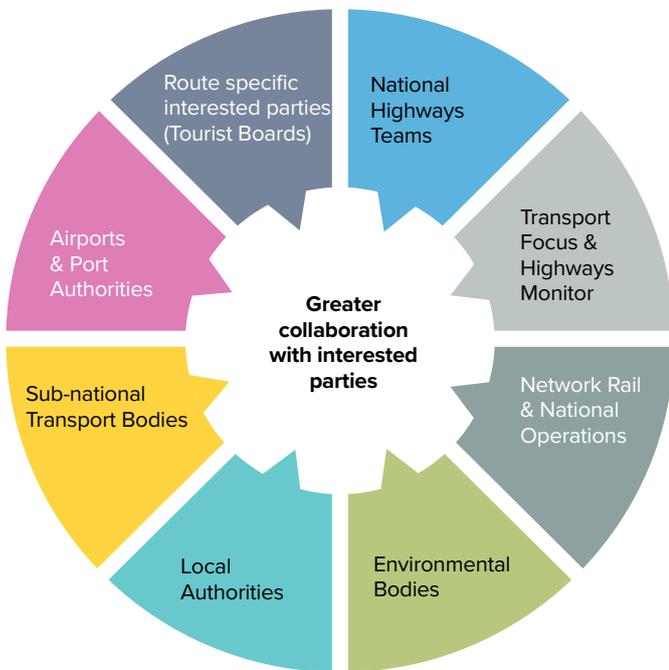


Figure 6: Interested parties involved in the route strategy engagement



Figure 7: Timeline of engagement with interested parties

## DfT’s strategic objectives for the strategic road network

DfT have published six objectives for the SRN. These are the strategic objectives for RIS3 (2025-2030) that have been agreed between National Highways and DfT and were set out in the *RIS3 Planning ahead*<sup>10</sup> document in December 2021. They cover safety, network performance, environment, economy, management and planning for the future and technology.

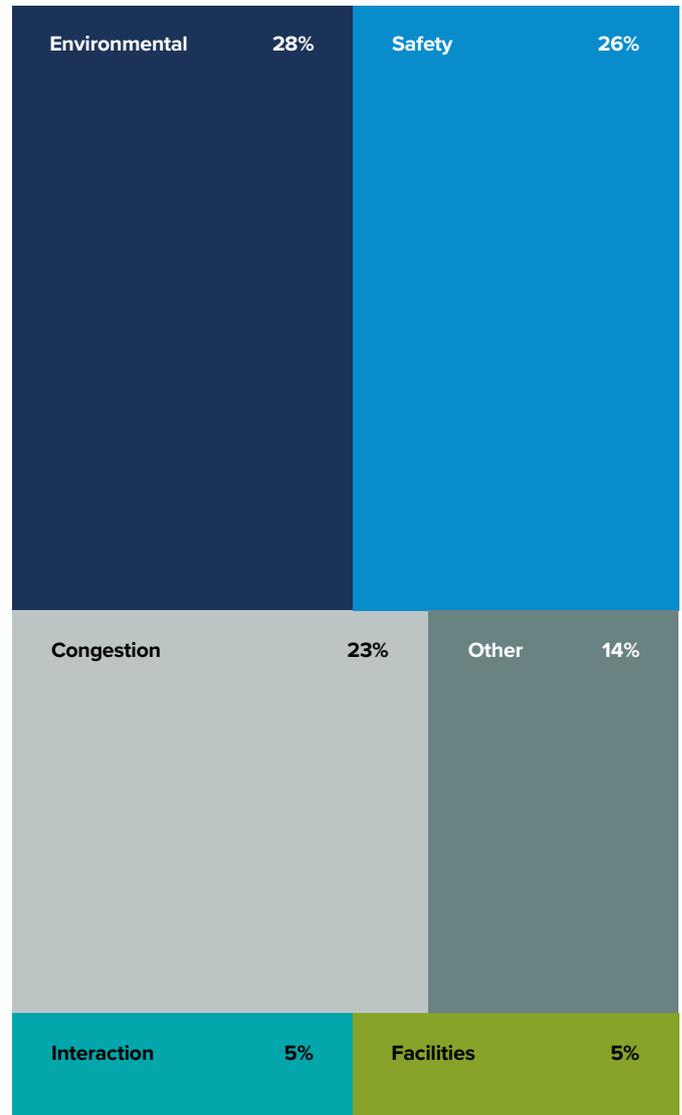


Figure 8: National themes from feedback through the online tool

<sup>10</sup> Department for Transport (December 2021) *Planning ahead for the Strategic Road Network: Developing the third Road Investment Strategy*. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1045938/planning-ahead-for-the-strategic-road-network-developing-the-third-road-investment-strategy.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1045938/planning-ahead-for-the-strategic-road-network-developing-the-third-road-investment-strategy.pdf)

All our route strategies need to show how they contribute to the delivery of the DfT's six strategic objectives for our network, to ensure we meet future challenges. These help us create relevant, meaningful and effective strategies that address evolving concerns. Such concerns include decarbonisation, ecology, the need for new homes and the desire for a better-connected country.

This aligns with the Infrastructure Act 2015, where National Highways has a statutory obligation to have regard to the effect of its functions on the environment, and the safety of users of highways.

At a national level, National Highways has existing commitments and ambitions to contribute to the DfT strategic objectives, as outlined below. The strategies for each route are aligned with these. They include:

#### **i) Improving safety for all**

- Our safety approach

#### **ii) Network performance**

- Expectations over COVID-19 and travel demand
- Our ambition for supporting freight, logistics and the coach industry
- Our ambition for supporting end-to-end journeys for a variety of modes
- Our approach to trunking and de-trunking for SRN

#### **iii) Improved environmental outcomes**

- *Net zero highways: Our 2030 / 2040 / 2050 plan*<sup>11</sup>
- Our plan for net zero carbon travel on our roads covering emissions from the vehicles using the SRN
- Our approach to improved environmental outcomes

### **DFT'S SIX STRATEGIC OBJECTIVES FOR THE STRATEGIC ROAD NETWORK**

-  Improving safety for all
-  Network performance
-  Improved environmental outcomes
-  Growing the economy
-  Managing and planning the SRN for the future
-  A technology-enabled network

#### **iv) Growing the economy**

- Our contribution to growing the economy and levelling up
- Our approach to spatial planning

#### **v) Managing and planning the SRN of the future**

- Our approach to asset management

#### **vi) A technology-enabled network**

- Our ambition for digital roads

<sup>11</sup> National Highways (2021) *Net zero highways: our 2030 / 2040 / 2050 plan*.  
<https://nationalhighways.co.uk/media/eispcjem/net-zero-highways-our-2030-2040-2050-plan.pdf>

## IMPROVING SAFETY FOR ALL



**OUR SAFETY APPROACH:** We are committed to reducing the number of road users killed or seriously injured on the strategic road network, by 50% (from the 2005-2009 baseline) by the end of 2025, with a long-term vision to eliminate harm arising from use of the SRN. We recognise:

- safety is National Highways' top priority. We believe that everyone who travels or works on our roads should get home safe and well
- billions of miles are travelled on the SRN each year, with the vast majority of these safe and reliable journeys
- our roads are some of the safest in the world, but we know there is more we can do. Every death or serious injury on our roads is a tragedy and we are committed to creating the safest roads in the world

## NETWORK PERFORMANCE



**EXPECTATIONS OVER COVID-19 AND TRAVEL DEMAND:** COVID-19 has had the biggest single-year impact on road traffic since records began in 1949. But car traffic on the SRN is now back to approximately 95% of pre-pandemic levels.

At the time of writing, while the onset of COVID-19 and the rapid rise in homeworking initially decreased demand for both public and private transport, the greatest impact has been on public transport, with private vehicle travel the first mode to rebound. Homeworking has not noticeably reduced demand for the SRN. An estimated 43% of UK jobs can be done entirely from home, but nearly two-fifths of businesses expect 75% of their workforce to eventually return to their normal place of work.

It is unclear if the scale of homeworking will continue or how it will affect long-term travel demand. For the short-term, transport flow data has generally shown that traffic peaks have become flatter but broader, with traffic more evenly spread across the day, suggesting some behaviour change.

Continued hybrid working could see a redistribution of demand, flattening the daily morning and afternoon peaks, and instead creating a mid-week peak.

The pandemic has also brought wider uncertainties, such as whether these loosened physical ties to employment locations could see increases in suburban living, as workers that are more 'knowledge-based' than 'location based' take advantage of greater geographic mobility across the country.

Changes in leisure trends caused by the pandemic could also have implications for the SRN, such as the changing demand for high street retail or choices around domestic versus overseas holiday-making. Such needs may evolve, all of which will have an influence on the scale and type of future investments.

**SUPPORTING FREIGHT, LOGISTICS AND THE COACH INDUSTRY:** We continue to collaborate with our freight and logistics customers to better understand how the SRN can support their operations, and work with wider government in the delivery of their *Future of freight*<sup>12</sup>. We recognise that lorry parking and facilities are key to enabling freight and logistics businesses to operate safely and efficiently. A lack of parking and good quality facilities impacts the recruitment and retention of drivers into a sector that is crucial to the country's economy. We are keen to play our part in ensuring good quality facilities are in the right places and that we support the sector in recruiting and retaining a diverse pool of drivers.

Our ambition is to improve lorry parking by:

- intervening where the market is not meeting the demand for lorry parking (areas of high demand with insufficient facilities)
- working with operators to improve the quality of existing facilities
- ensuring our major projects consider the needs of lorry drivers

<sup>12</sup> Department for Transport (June 2022) *Future of Freight: a long-term plan*. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1085917/future-of-freight-plan.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1085917/future-of-freight-plan.pdf)

In addition to supporting lorry parking, we remain focused on:

- reducing congestion on the SRN, which affects the speed, reliability and cost of logistics, as well as driver safety when journeys exceed regulated driving time
- improving the suitability of alternative routes and diversions off the SRN
- supporting the industry in achieving net zero carbon emissions by facilitating the adoption of alternative fuels linked to parking facilities
- ensuring resilience on key freight routes, such as between ports, airports, wharves and rail freight interchanges
- increased data sharing on incidents, roadworks and diversions
- understanding changes in how our freight and logistics customers use the SRN so we can continue to provide the best possible service

**IMPROVING END-TO-END JOURNEYS FOR A VARIETY OF MODES:** The SRN plays an important role in supporting a wide range of customer journeys by different modes of transport. We are exploring how to support customers' end-to-end journeys by creating travel choices that deliver our target of net zero carbon customer journeys by 2050. We recognise our role in supporting an integrated transport network that allows our current and future customers to re-route, re-time, re-mode and reduce their journeys, especially at peak times and during major disruption.

Through understanding National Highways' role in influencing and improving travel, we will identify how to support customers utilise the right mode for the right journey. By working closely with operators, we will ensure our network supports bus and coach services. And through the development of active travel networks we can help deliver health and wider social benefits.

Our focus is on delivering net-zero customer journeys by 2050 through behaviour change towards sustainable travel by:

- understanding travel behaviours to identify customer needs for end-to-end journeys, supporting the development of a travel demand management strategy
- ensuring our customers have the information they need to make the travel choices that are right for them
- improving integration of different modes of travel by working with key interested parties to deliver a range of active travel and public transport interventions
- using behaviour change and techniques to manage future travel demand and minimise disruption from major works
- continuously improving our offer for walkers, cyclists and horse riders

**SRN TRUNKING/DETRUNKING:** For RIS2, we were asked to explore changes to the SRN to ensure the network aligns with RIS2 strategic priorities, reflected in the *Strategic business plan*. This plan relates to improving connections between main urban centres, to international gateways, to peripheral regions (for levelling up) and strategic cross-border routes (to strengthen union connectivity). It included a commitment to explore potential asset ownership changes between ourselves and local highway authorities that could be implemented no earlier than the start of RIS3. DfT have produced a shortlist of 18 trunking and two de-trunking candidates, identified following the draft RIS2 public consultation in 2018, for us to assess desirability and viability of asset transfer. De-trunking is the process of returning a National Highways' road to the local highway authority control and vice versa for trunking. These candidates were put forward by a range of external interested parties, including local authorities, Local Enterprise Partnerships and chambers of commerce, then shortlisted by DfT.

There is ongoing work to review the assessment evidence and recommendations, after which government ministers are expected to announce the candidates that will progress to the detailed development stage, which will be led by National Highways and incorporated in the forward study programme and wider RIS3 process.

### IMPROVED ENVIRONMENTAL OUTCOMES

#### NET ZERO HIGHWAYS: NATIONAL HIGHWAYS' 2030/2040/2050 PLAN<sup>13</sup>.

We are committed to being a Net Zero Carbon Company by 2050 (2040 for Maintenance and Construction emissions).



We published our ambitious net zero carbon plan in July 2021. It details how we will achieve net zero emissions for: our corporate space by 2030, our maintenance and construction emissions by 2040, and road user emissions by 2050. We're keen to support a sustainable future and know that road travel is vital to enabling a thriving net zero economy. Our plan strengthens the decarbonisation of the transport sector, which remains the biggest emitting sector of greenhouse gases in the country.

We also need to consider how the SRN will be resilient to climate change. Our route strategies will need to recognise that the schemes we construct are likely to be subjected to changes to the climate, such as flooding.

Our route strategies demonstrate how we will continue to connect the country and ensure that the SRN is environmentally sustainable and resilient to climate change. This includes understanding the right schemes and options that support integration across different modes of travel, improve the SRN's capacity through digital roads, and deliver broader environmental enhancements. This will change the way we work both internally and with our supply chain and wider interested parties.

As part of our net zero commitment, we need to consider the contribution our schemes make to sustainable development. We are adopting the PAS2080 Carbon Management in Infrastructure Standard that will help us invest only where we can achieve our zero carbon goals. Guided by the PAS2080 Standard, we will use an investment hierarchy where we favour opportunities to deliver whole life value without undertaking construction. We will demonstrate that we have considered all interventions during our planning stages and that every effort is made to avoid negative impacts and maximise environmental benefits throughout the lifecycles of schemes. We will also work with government and the private sector to set out a clear proposition by 2023 for electric vehicle charging on our network. This will cover both customer need and the infrastructure required to deliver this.

More than ever we need to support the Government's wider plans for decarbonising transport. The SRN plays a pivotal role in supporting the transition to zero carbon cars, vans and heavy goods vehicles (HGVs), but we also recognise that we need to better integrate with other modes of transport too, including public transport and active travel

#### NET ZERO CARBON TRAVEL ON OUR ROADS COVERING EMISSIONS FROM THE VEHICLES USING THE STRATEGIC ROAD NETWORK:

We have set an ambition for all of our customers to be travelling using net zero transport by 2050, in line with the UK Climate Change Act. Many of the actions that will deliver this ambition are out of our direct control, but that does not mean we cannot play our part. Our priorities are to help roll-out solutions to decarbonise HGVs and support the uptake of electric cars and vans. We will also continue our work on integrating the SRN with other transport modes, while working to improve the efficiency of the network.

<sup>13</sup> National Highways (2021) *Net zero highways: our 2030 / 2040 / 2050 plan*. <https://nationalhighways.co.uk/media/eispcjem/net-zero-highways-our-2030-2040-2050-plan.pdf>

Our actions relating to reducing emissions from road users of our network include:

- publishing our proposed approach to zero carbon HGV trials by the end of 2022
- publishing a blueprint for electric vehicle charging services on our roads by 2023
- integrating a strong modal shift programme in the third road period (2025-2030), building on our work to date

#### IMPROVED ENVIRONMENTAL OUTCOMES:

We know there's a requirement to balance people's need to travel on our roads with doing all we can to protect and improve the environment. That means we will continue to consider a wider range of environmental factors in our future planning, such as improving biodiversity, protecting ancient woodlands, reducing pollution in Air Quality Management Areas, and protecting Sites of Special Scientific Interest. These will form part of our considerations during our early planning. In response to these emerging issues, our latest route strategies take a balanced view on expanding the future capacity of the SRN. We now seek to develop strategies that produce balanced investment plans with schemes of different magnitudes, delivering across multiple objectives: safety, journey time improvements, network resilience, maintenance and renewals, technology, environmental enhancement, and integration with more sustainable transport modes. The outcome will be an SRN that supports the economy but also delivers on the wider environmental challenges.

## GROWING THE ECONOMY



### GROWING THE ECONOMY

**AND LEVELLING UP:** The SRN is a vital part of England's – and the UK's – transport infrastructure. It facilitates the movement of people and goods nationally, regionally and locally through connections to the major road network and other transport infrastructure. The Government's levelling up agenda places emphasis on ensuring no community is left behind, particularly as we recover from the COVID-19 pandemic. With such a vital role in supporting the economy and facilitating connectivity - enabling access to jobs and homes, international gateways and supporting road-reliant sectors – National Highways and the SRN have a role to play in supporting the levelling up agenda and the wider aim of economic prosperity.

The Government is committed to strengthening transport connections across the UK. Sir Peter Hendy's *Union connectivity review*<sup>14</sup> was published in late 2021. The Review recommends the creation of UKNET, a strategic transport network spanning the entire United Kingdom based on a series of principal transport corridors between key urban and economic centres, including international gateways. The findings of this report have been considered in the context of our route strategies and will be a key objective for our cross-border routes and the roads connecting to important ports.

Additionally, the SRN plays a critical role in enabling international connectivity and trade by providing reliable and resilient access routes to global markets via the country's network of international ports, airports and the Channel Tunnel. Enhancing these links and supporting these gateway locations to thrive, including maximising the opportunities of Freeports, is a key part of National Highways' role in supporting the national economy.

<sup>14</sup> Hendy, P. (November 2021) *Union connectivity review: Final Report*. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1036027/union-connectivity-review-final-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1036027/union-connectivity-review-final-report.pdf)

**SPATIAL PLANNING:** We recognise that businesses operate from the location that best suits their business requirements in terms of access to customers, the supply chain and employees. Location is equally critical to decision-making in the residential market, both for the house builder and the potential purchaser or occupier. In enabling new employment spaces and homes to be developed, at National Highways we engage fully and positively as a statutory consultee in the planning system.

This is in line with our statutory responsibilities as set out in our Licence, and in support of wider government policy and regulation. Our focus is on securing sustainable development, managing cumulative impacts of strategic growth, and minimising the potential for any negative impacts on the SRN.

### MANAGING AND PLANNING THE SRN FOR THE FUTURE



We recognise that asset management is our core business. It is the service we provide to maintain, operate, and enhance the SRN safely, reliably and effectively for all our customers. We manage more than 4,500 miles of road, over 20,000 structures and 12 road tunnels, as well as drainage, earthworks, and technology equipment. We recognise that our customers rely on our roads to travel approximately 95 billion miles every year, and our work helps unlock housing and employment sites across the country. One of our main priorities is managing these assets effectively and efficiently, to deliver the outcomes our customers and interested parties want.

We have adopted an asset management approach in order to align our strategy and planning activities to create, maintain, operate, and renew all of the assets that make up our network. Asset management links all our activities and supports our three imperatives: safety, customer service and delivery.

We know that good asset management is about understanding our customers and interested parties, identifying what they need and then using our assets effectively to deliver the right level of service. We are working to understand what satisfies our customers, and what we can do to influence this.

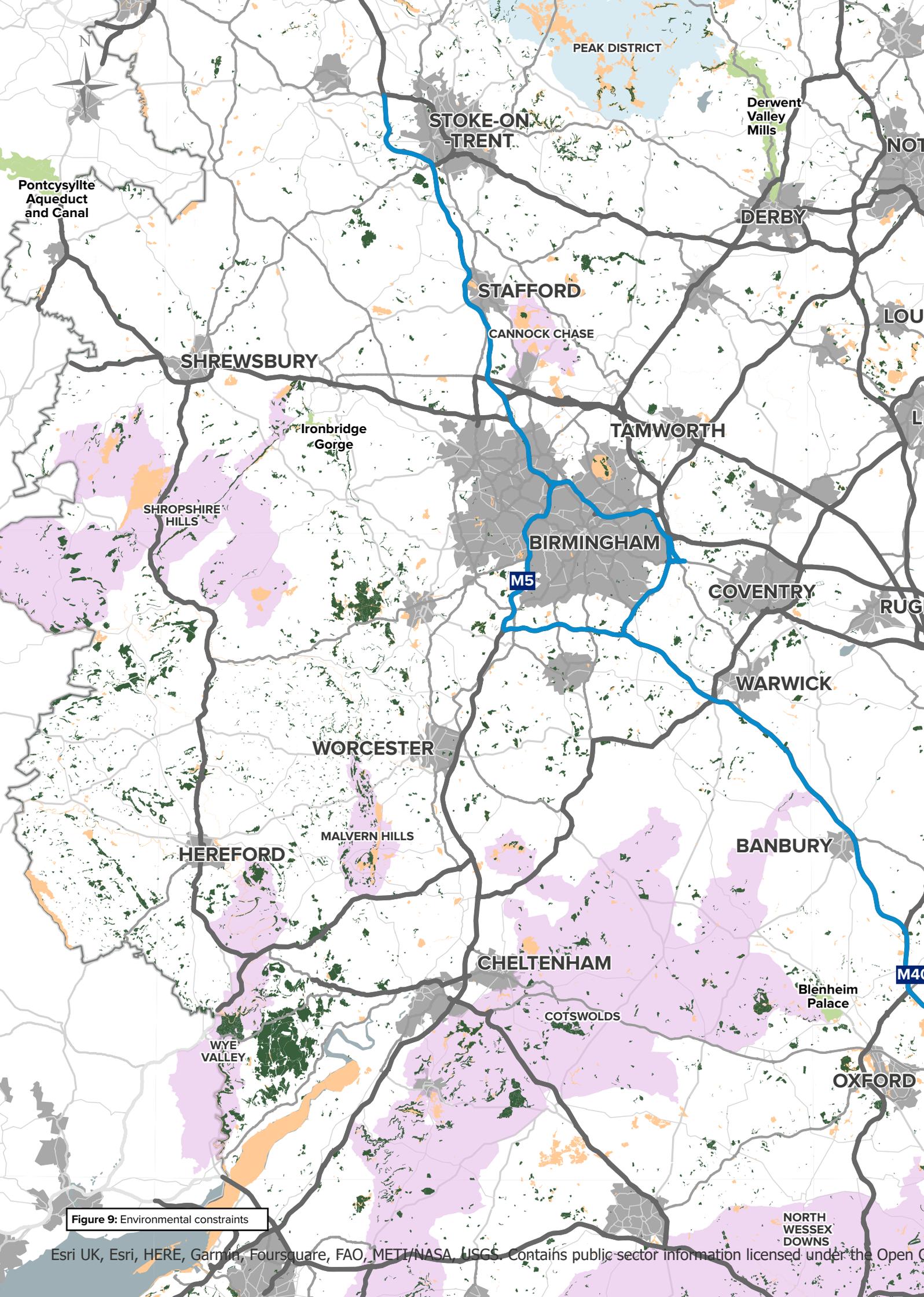
Our vision is to create an approach and establish ways of working that make sure all our asset management activity is aligned by following the key principles set out in our asset management policy. We work across the whole asset lifecycle, understanding that asset decisions we make may affect future service provision. This means that we are planning and accounting for emerging and evolving challenges around customer expectation, climate change and new technology. Since the beginning of the second road period we have continued on our journey to increase our asset management maturity, and our organisational objectives have developed significantly in light of COVID-19 and the Government's carbon plans.

### A TECHNOLOGY-ENABLED NETWORK

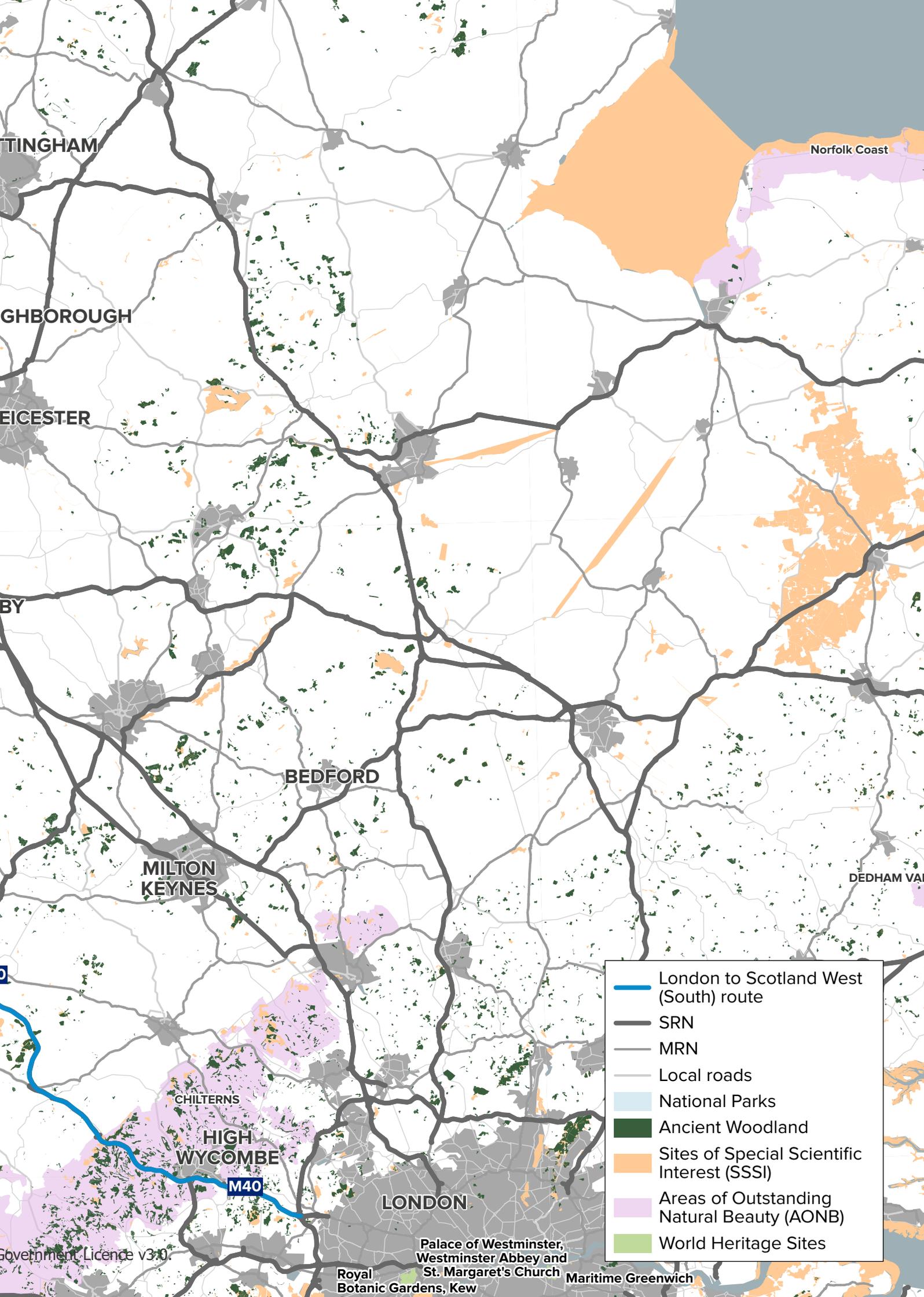


**DIGITAL ROADS:** Our ambition for digital roads is to continue to harness data, technology and connectivity of people to places and communities and networks to improve the way the SRN is designed, built, operated and used. Our recently published Digital roads strategy (September 2021)<sup>15</sup> sets out how we will harness data, technology and connectivity to improve the way the SRN is designed, built, operated and used. This will also support our ambitions to achieve net zero carbon on the SRN. We have established three themes: Digital design and construction, digital operations and digital for customer. These themes will continue to frame our vision towards 2030 and beyond, increasing connectivity, automation and data.

<sup>15</sup> National Highways (2021) *Digital roads*. <https://nationalhighways.co.uk/our-work/digital-data-and-technology/digital-roads/>



**Figure 9: Environmental constraints**



STAMFORD

NOTTINGHAM

LEICESTER

LEICESTER

BEDFORD

MILTON  
KEYNES

CHILTERNS

HIGH  
WYCOMBE

M40

LONDON

Palace of Westminster,  
Westminster Abbey and  
St. Margaret's Church

Royal  
Botanic Gardens, Kew

Maritime Greenwich

Norfolk Coast

DEDHAM VALLEY

-  London to Scotland West (South) route
-  SRN
-  MRN
-  Local roads
-  National Parks
-  Ancient Woodland
-  Sites of Special Scientific Interest (SSSI)
-  Areas of Outstanding Natural Beauty (AONB)
-  World Heritage Sites



**Our  
network  
connects  
the country**

## 02 The route

The London to Scotland West (South) route is made up of approximately 185 miles of motorway providing part of a north-south strategic link between London and Scotland. The route consists of the M40 from London through Oxfordshire to the Midlands, includes the sections of M42, M5, and M6 around Birmingham, commonly called the Birmingham Box, and continues north up the M6 to Junction 16, near Stoke-on-Trent in Staffordshire. (The rest of the M6 north of Junction 16 is covered by the London to Scotland West (North) route). The route also includes short sections of the A45, A452, and A446 trunk roads, providing an alternative for drivers travelling from M42 Junction 6 to M6 Junction 4. These roads will provide access to the new High Speed 2 (HS2) station at Solihull.

The route serves a mix of long-distance car, heavy goods vehicles, and coach traffic to strategic destinations outside of the route corridor. These include links to Shropshire, Mid and North Wales via the M54, the South-West via the M5, and the East Midlands and North-East via the M42, A42, and M1. The M40 also fulfils a key strategic function from Southampton Port and Solent Freeport to the Midlands via the Solent to Midlands route. However, local traffic is more common on the sections of the M42, M5, and M6 which make up the 'Birmingham Box'.

The route is predominantly 3- and 4-lane motorway, with short sections of 2-lane motorway on the M40 and dual carriageway on the A45, A452, and A446. There are junctions integrating with the major and local road networks as well as with other parts of the strategic road network (SRN) including the A500, M54, A5, A38, A46, A404, A43, and A34. The A404 and A34 connect to the M4, providing access to Reading, Swindon, Bath, Bristol, and South Wales.

The economies of the districts, towns, and cities along the route are heavily reliant on the SRN. Approximately 90% of England's population can be reached within a 4-hour drive of the Midlands.

Consequently, the route is identified in the Government's *Union connectivity review*<sup>16</sup> as one of the country's most important road corridors for freight.

South of the West Midlands, the M40 connects commercial and other traffic to Heathrow Airport (via the M25) and key economic centres in Oxfordshire, Buckinghamshire, and Warwickshire, including High Wycombe, Oxford, Bicester, Stratford-upon-Avon, and Warwick.

In the Midlands, the route connects to Birmingham Airport and will provide access to the new HS2 stations at Solihull and Crewe. The HS2 Interchange station at Solihull will have a direct access from the A452, and HS2 Ltd will be continuing to make alterations to the A45, A452 and A446 during the third road period (2025-2030) to support this. The M42 Junction 6 will also be important for traffic travelling to HS2 Interchange station, whilst M6 Junction 16 will be used for traffic travelling to the Phase 2a station at Crewe. The M5 and M6 are also major access routes to and from the key manufacturing and industrial centres of Birmingham, the Black Country, and Staffordshire.

<sup>16</sup> Hendy, P. (November 2021) *Union connectivity review: Final Report*. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1036027/union-connectivity-review-final-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1036027/union-connectivity-review-final-report.pdf)

The route provides access to tourist attractions such as Birmingham City Centre, Birmingham Museum and Art Gallery, the National Exhibition Centre (NEC), Oxford City Centre, Blenheim Palace UNESCO World Heritage Site, Silverstone racetrack, Bicester Shopping Village, and The Royal Shakespeare Theatre. The M40, and the M5 south of the route, are important roads for people travelling to holiday destinations in the south of England.

This route strategy is based on the road network as of the start of second road period (2020-2025). During the first (2015-2020) and second road periods, the M6 Junctions 10a to 13 and 13 to 15 smart motorway schemes opened to traffic on the London to Scotland West (South) route. The M6 Junction 10 improvement scheme will open later in the second road period. We recognise that some of the journeys on this route are part of longer trips and therefore need to be considered in conjunction with strategies on other routes.



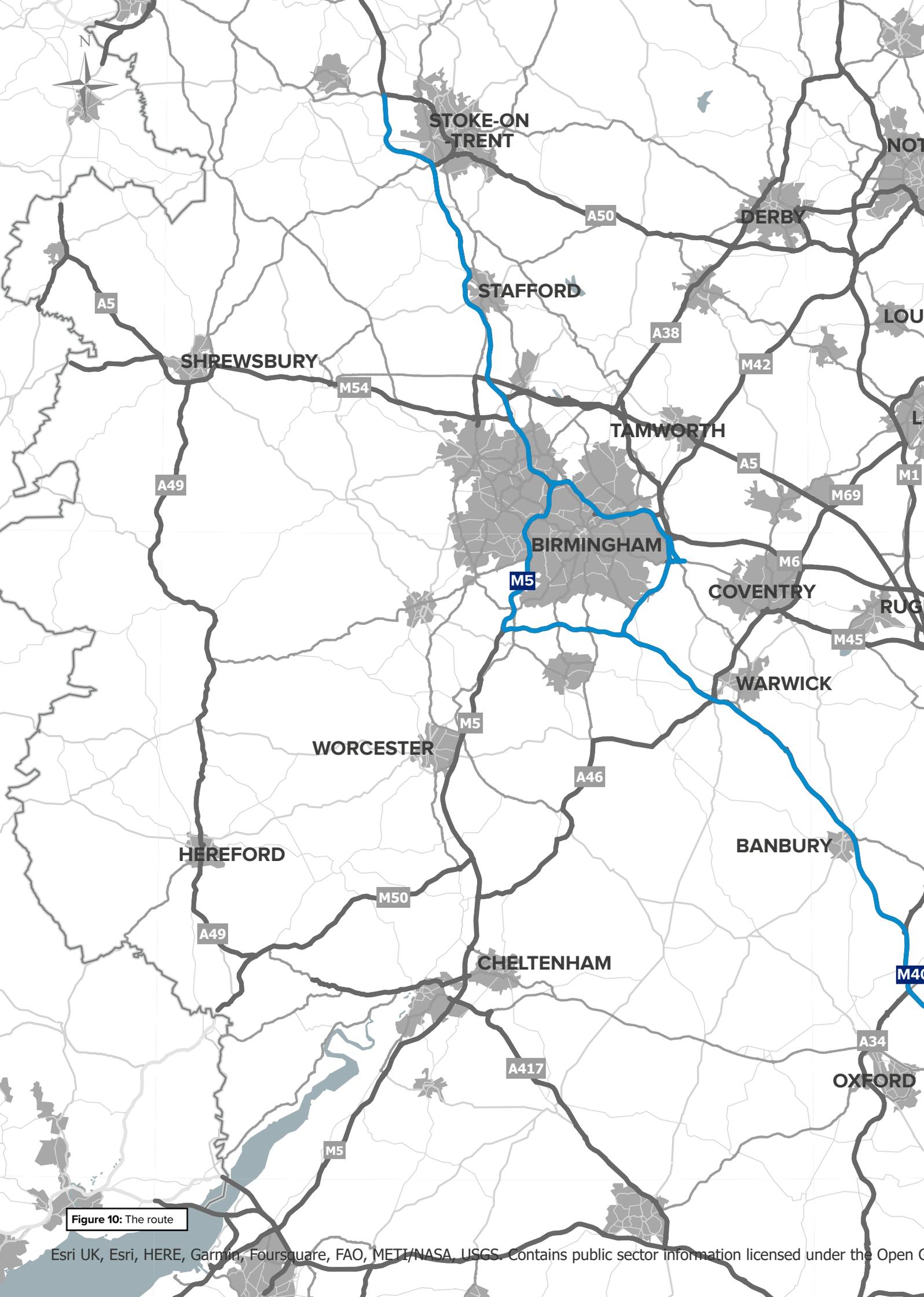
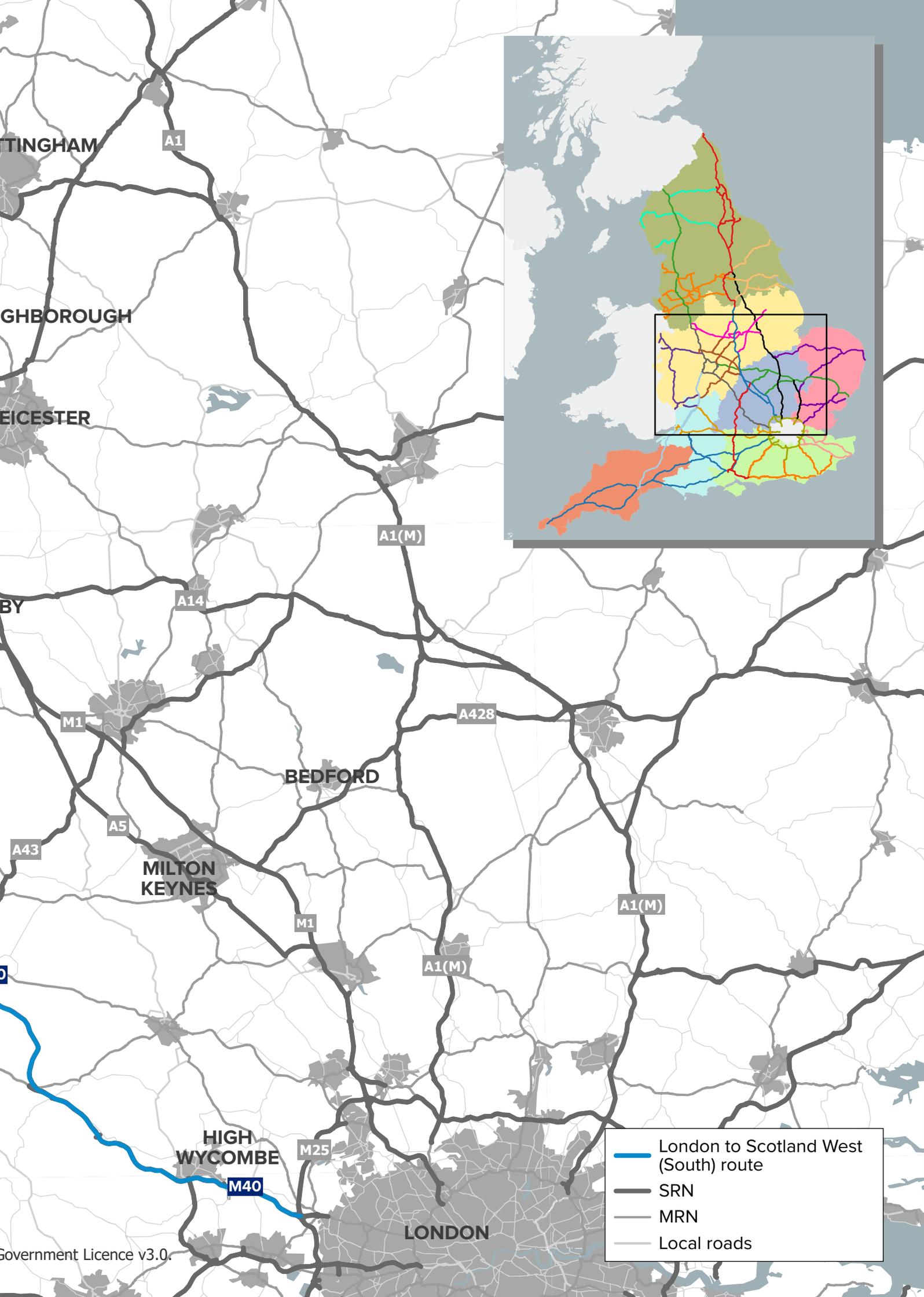


Figure 10: The route



- London to Scotland West (South) route
- SRN
- MRN
- Local roads



**Listening  
to your  
feedback**

# 03 Engagement with customers and neighbours

Engagement with customers and neighbours has been central to developing our route strategies. The development of the route strategies is one of the key steps of initial research in the development of the Road investment strategy (RIS). This engagement, together with data analysis, will inform RIS3 (2025 to 2030) and beyond. It builds on a wealth of evidence from previous route strategies and our ongoing monitoring of road condition and performance.

## Engagement with customers and neighbours along the London to Scotland West (South) route

Early engagement with the Department for Transport (DfT), Office of Rail and Road, Transport Focus, Midlands Connect and England's Economic Heartland (Sub-national Transport Bodies) and Network Rail shaped our engagement with customers and neighbours in the London to Scotland West (South) area. We gathered evidence from a cross-section of Members of Parliament (MPs), interested parties, road users and communities at a route level to understand their needs for the future. This built on engagement that had taken place with national interested parties, such as environmental groups, organisations representing road users, business organisations and transport campaigning groups. This engagement has informed the development of the route objectives.

Engagement took place through:

**MP roundtables:** MPs were invited to a regional roundtable with the Roads Minister to share their views on priorities for our customers and neighbours within their constituencies.

**Regional workshops:** As part of a programme of workshops with interested parties at a national and regional level, we invited interested parties to workshops on route strategies for the London to Scotland West (South) route in late 2021. Attendees included local authorities, airports and port authorities, transport operators, and other key route-based interested parties, such as major businesses.

We designed the workshops to seek views on both current and future challenges and opportunities for the strategic road network (SRN), in relation to the DfT's six strategic objectives. Views were sought on how the routes interacted with the major road network (MRN), local roads, public transport, walking and cycling, and links to the wider SRN. Interested parties also provided insight into key growth proposals and locations along the route, including committed and emerging economic and housing growth and infrastructure proposals. Interested parties shared their own data, studies and observations of the route area.

**Route strategies online feedback form:** Local interested parties, road users and communities were invited to give their feedback on specific locations on motorways and A-roads and routes, and general comments on the road network, through the route strategies online feedback form. For the London to Scotland West (South) route, regional interested parties were invited to workshops or to use the online form to share their views and feedback.

The information gathered was a mix of evidence, studies and personal experience. All the evidence gathered through these engagement methods was considered alongside route analysis and data to inform the development of the route objectives. The evidence was supplemented by route-based information from Transport Focus' *Strategic Road User Survey*<sup>17</sup> to gain an understanding of the breadth of feedback.

## Key themes from engagement

We have drawn out the common themes that emerged from our engagement with our customers and neighbours on the London to Scotland West (South) route to inform our route objectives. The themes have been aligned with the DfT's six strategic objectives:

### i) Views on: Improving safety for all

- Delays at M40 Junctions 14 and 15 lead to safety concerns associated with traffic queuing along the main carriageway in both directions
- Low sun causes visibility and safety concerns on the M40 corridor during spring and autumn
- Poor facilities for cycling and walking at Junctions 7 and 9 on the M6 present safety concerns for walkers, cyclists, and horse riders crossing the junctions, particularly those travelling to school
- The motorway interchanges are often congested, with a lot of vehicles changing lanes, which causes road users to feel unsafe
- The local network and its ability to manage traffic diverted off the SRN needs to be considered when looking at safety and safe operation of the SRN

### ii) Views on: Network performance

- Poor resilience of the M5 and M6 around the Birmingham Box leads to unreliable journey times on the SRN and the MRN and local roads that the SRN connects to. This is a particular concern for just-in-time freight and tourist traffic (including coaches)
- Likewise, poor resilience between Junctions 9 and 10, and 14 and 15 of the M40 leads to unreliable journey times on the SRN and the MRN and local roads that the SRN connects to. This is a particular concern for just-in-time freight and tourist traffic (including coaches)
- Delays at junctions on the route have an impact on traffic using the adjacent local roads, including public transport
- Use of the SRN for local journeys contributes to delays around the Birmingham Box
- There are capacity constraints on the M40, M5, and M6
- Limited (single-direction) access at certain SRN junctions, such as M40 Junction 3 (Loudwater), and M6 Junction 5 (Castle Vale), leads to increased reliance on the MRN and local road network
- Improved co-ordination between the SRN, MRN, and local road network could support better overall movement of traffic
- Better integration of sustainable transport options could benefit the SRN by reducing the amount of private car travel
- Many of the issues which affect lorry drivers also affect coach drivers

<sup>17</sup> Transport Focus Strategic roads user survey website: <https://www.transportfocus.org.uk/insight/strategic-roads-user-survey/>

### iii) Views on: Improved environmental outcomes

- The M40 has air quality impacts on communities near the route, such as High Wycombe and the Chalfonts and Oxford Meadows areas
- There are air quality and noise impacts on communities near the M5 between Junctions 1 and 2 and near the M6 through the Birmingham Box and Staffordshire
- The SRN severs communities in urban and semi-urban areas such as Birmingham, Walsall, and West Bromwich
- Greater integration with public transport, walking and cycling could support environmentally sustainable travel, improve safety, and reduce the impact of the SRN on adjacent communities
- Interested parties feel it is important that the network contributes to achievement of environmental targets, such as net zero carbon and improved biodiversity, and to reduce the impact of the SRN on the environment and climate change
- Consideration of future technology requirements should include electric vehicle charging for coach, freight, and private car, to support Government targets for transition to electric vehicles and reduce the impact of the SRN on the environment and climate change
- The transition to electric vehicle charging will not solve environmental issues associated with the number of vehicles using the network, such as particulates caused by the friction of tyres on the road surface and brake dust

### iv) Views on: Growing the economy

- Interested parties commented that the Midlands is one of the country's most competitive economies and needs an integrated SRN and MRN that meets its needs
- Links to the ports and airports on the route and further afield will be increasingly important as the economy develops
- There are significant employers located along the route, including Jaguar Land Rover and Aston Martin
- Developers are interested in strategic freight sites in the vicinity of the M6 in Staffordshire
- South Warwickshire and Oxfordshire are key economic growth areas, which are likely to put pressure on the M40
- The proposed Strategic Rail Freight Interchange at Oxford (M40 Junction 10) is expected to have a significant impact on traffic movements at the junction and on the M40 corridor
- The SRN could be used as a tool to support the levelling up of deprived communities along the route
- There are many growth sites planned along the route, including 10,000 homes near Bicester and 20,000 homes near Stoke-on-Trent
- Further preparation for the future needs of traffic using the SRN would ensure that it continues to support regional, national, and international connectivity

**v) Views on: Managing and planning the SRN for the future**

- Need to be able to consider how the roads can be maintained and the impact that they have on diverting displaced traffic onto the local road network and the SRN. Current diversions from the SRN often take traffic through urban areas

**vi) Views on: Technology-enabled network**

- Technology provision along the route is variable
- Providing information about conditions on the SRN before drivers join the network, for example on the MRN approaches to SRN junctions, could help them to take more informed decisions about their route and contribute to better traffic flow on the SRN
- Drivers are currently provided with information that tells them what the existing delay time is, even though this may have increased substantially by the time they reach the congestion. Developing the technology to tell drivers what the length of delay will be when they reach the back of a queue could be more helpful at managing driver expectations and enable them to take more efficient decisions about their journeys
- Technology could be used to tackle instances of poor driver behaviour, such as tailgating and undertaking
- The SRN will need to support advances in technology such as electric charging and connected autonomous vehicles

### Engagement quotes from customers and neighbours



Figure 11: Quotes from customers and neighbours

## Route satisfaction

Satisfaction scores have been obtained from Transport Focus through their Strategic Roads User Satisfaction Survey from the last 12 months to May 2022. It covers the roads in this route but it should be noted that the satisfaction scores may not fully align with the extent of the roads in the route. Figure 12 shows how satisfied drivers were with aspects of their journey and how they felt during their journey.

Additional comments and data from the Transport Focus survey of drivers on the SRN can be found on the Transport Focus data hub website<sup>18</sup>.

The engagement themes and feedback from MPs, interested parties, road users and communities has been considered as part of the wider analysis in Chapter 5.

### Strategic roads user survey satisfaction scores

The survey was not run between April 2020 and March 2021 due to COVID-19. It restarted in April 2021 with a new methodology, so results prior to March 2020 and from April 2021 are not directly comparable.



**National Highways Region:** Midlands,  
**National Highways Area:** Area 7 East Midlands, Area 9 West Midlands, Area 30 M40  
**Individual roads:** M5, M6, M40, M42  
**Last 12 months\*\*\*** May 2022 (last 12 months)

\*\*\* Before March 2019 and from April 2021 to February 2022 this is year-to-date, not past 12 months

Figure 12: Satisfaction scores from headline results

<sup>18</sup> Transport Focus data hub: <https://transportfocusdatahub.org.uk/>





**Working  
with our  
partners**

# 04 Network collaboration

The strategic road network (SRN) does not exist in isolation. Most journeys on the SRN are part of a longer journey, involving other road networks or different transport modes.

To deliver safe and efficient journeys for our customers and to support economic and housing growth, at National Highways we have built relationships with other organisations to ensure the SRN maximises its contribution to the overall transport system, which includes local roads, rail networks, links with the devolved nations and international connectivity. We work with other network operators (such as Network Rail), airports and ports, Sub-national Transport Bodies, Transport for Wales and Transport Scotland, as well as combined authorities and local highway authorities. This is in line with National Highways' Licence requirements to consider opportunities for collaborative solutions. We recognise that joint early planning of interventions outside our network will ultimately improve the SRN and deliver greater benefit to the customer than could be achieved alone, where this delivers value for money.

## An integrated transport network

Route strategies recognise the role that the SRN plays within the wider transport network. In planning for the future of the SRN, we recognise the importance of working closely with other network planners and operators to ensure our transport networks work well together, and that our investment priorities are aligned where possible.

Some parts of our network are operated on our behalf by a third party under Design-Build-Finance-Operate (DBFO) arrangements. We work closely with these operators to deliver a seamless experience for our customers. On the London to Scotland West (South) route this includes the M40 (Junction 1 to Junction 15) between Denham and Warwick, operated by UK Highways M40 Ltd until 2027.

The M6 Toll connects to the London to Scotland West (South) route at M42 Junction 7A and M6 Junction 11. Its construction and operation are managed and financed by a private company, Midland Expressway Ltd, under a concession agreement with DfT, which runs until 2054.

Sub-national Transport Bodies have a key role in their regions in creating transport strategy and identifying key areas for investment, including for highways. There are seven such bodies in England, who are tasked with developing transport strategies and studies for their particular area.

Through the collection of evidence with their local authorities and Local Enterprise Partnerships, their work highlights multimodal issues, needs and opportunities. A list of potential interventions for transport are then provided to the Secretary of State for Transport, including where to prioritise investment in the major road network (MRN). We work closely with the Sub-national Transport Bodies on interdependencies and align our approaches where possible. The Sub-national Transport Bodies that cover this route are:

- England's Economic Heartland (EEH)
- Midlands Connect

National Highways and Sub-national Transport Bodies have worked together to develop an engagement framework. The need for closer working was highlighted as a priority in *DfT's Road investment strategy*<sup>19</sup>, and within our *Strategic business plan*<sup>20</sup> and *Delivery plan*<sup>21</sup>.

<sup>19</sup> Department for Transport (March 2020) *Road Investment Strategy 2: 2020-2025*. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/951100/road-investment-strategy-2-2020-2025.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951100/road-investment-strategy-2-2020-2025.pdf)

<sup>20</sup> Highways England (2020) *Strategic business plan: 2020-2025*. <https://nationalhighways.co.uk/strategic-business-plan/>

<sup>21</sup> Highways England (2020) *Delivery Plan: 2020-2025*. <https://nationalhighways.co.uk/delivery-plan/>

It enables National Highways and Sub-national Transport Bodies to work together to achieve mutually beneficial outcomes for transport users, regional economies and the environment. Our approach to engagement is contained in *Our vision for route strategies*<sup>22</sup>, which sets out shared commitment for a continued open, constructive and collaborative relationship. This is supported by engagement and action plans for each Sub-national Transport Body, which are proving instrumental in ensuring consistency and transparency in the information we share. The plans are monitored and reviewed regularly, with annual reviews occurring ahead of each new financial year.

At a more local level we also work with local authorities, who are the highway authorities for local roads, including those on the MRN.

This collaboration ranges from operational matters to more strategic issues to ensure that the overall highway network operates safely, efficiently and effectively, providing high quality and seamless customer journeys. The local authority planning teams work closely with our spatial planning teams. In enabling new employment spaces and homes to be developed, we engage appropriately as a statutory consultee in the planning system and the evidence collected through the route strategies will support this decision making.

### England's Economic Heartland

England's Economic Heartland (EEH) published its Regional Transport Strategy titled *Connecting People, Transforming Journeys*<sup>23</sup> in 2021. The Strategy outlines the framework for enabling green economic growth, in a way which also creates a net zero transport network. The Strategy further details the importance of working with partners, local Growth Boards and national initiatives, including the Oxford to Cambridge Arc.

The four key priorities of EEH are:

- Achieving net zero carbon emissions from transport no later than 2050, with an ambition to reach this by 2040
- Improving quality of life and wellbeing through a safe and inclusive transport system accessible to all which emphasises sustainable and active travel
- Supporting the regional economy by connecting people and businesses to markets and opportunities
- Ensuring the Heartland works for the UK by enabling the efficient movement of people and goods through the region, and to and from international gateways, in a way which lessens its environmental impact

These strategic priorities set out how the region can reduce reliance on private car usage by creating better connectivity within communities. It also details how the Heartland will work to harness leading expertise in clean, green and smart technologies, allowing the region to have a competitive edge in global markets.

Whilst the transport strategy is ambitious, it aims to deliver the vision of EEH by supporting sustainable growth and improving the quality of life through a decarbonised transport network. This will encourage innovation and create further opportunities for residents and the local economy, whilst also benefitting the national and international economy.

### Midlands Connect

Midlands Connect is the Sub-national Transport Body for the Midlands and is the transport arm of Midlands Engine (which acts as a focal point to drive economic growth in the region).

It is a partnership of local authorities, Chambers of Commerce, Local Enterprise Partnerships, national agencies and airports.

<sup>22</sup> Highways England (2021) *Vision for route strategies: planning for the future of our roads*. <https://nationalhighways.co.uk/media/w0vhd3un/vision-for-route-strategies.pdf>

<sup>23</sup> England's Economic Heartland (February 2021) *Regional Transport Strategy: Connecting People, Transforming Journeys*. [https://www.englandseconomicheartland.com/documents/405/Connecting\\_People\\_Transforming\\_Journeys\\_av.pdf](https://www.englandseconomicheartland.com/documents/405/Connecting_People_Transforming_Journeys_av.pdf)

Midlands Connect published its first *Strategy*<sup>24</sup> in 2017, and since then it has researched, developed, and progressed transport schemes designed to deliver social, economic, and environmental benefits. The 2017 strategy was refreshed in 2022. Midlands Connect's new strategy, *Fairer, greener, stronger: a Strategic Transport Plan for the Midlands*<sup>25</sup>, sets out an investment programme that improves strategic connectivity between the East and West Midlands, to neighbouring regions and to Wales.

This strategic investment will be complemented by improvements to local connectivity made by local authorities and regional economic growth plans from the Midlands Engine.

Midlands Connect has identified three grand challenges that strategic transport investment must help tackle to achieve its vision of a fairer, greener and stronger Midlands:

1. **Fairer:** Levelling up and strengthening the region and UK. Being ready for HS2; enhancing quality of life; and integrating transport networks
2. **Greener:** Decarbonising transport and adapting to climate change. Contributing to achieving net zero by 2050; ensuring resilient networks; and minimising the environmental impacts of new infrastructure
3. **Stronger:** Driving resilient economic growth. Providing fast and reliable transport connections; and enabling population and employment growth

The new *Strategic Transport Plan* sets out five priorities to improve regional connectivity:

- Aspirations for rail
- A future road network that is reliable, resilient and efficient for all
- Helping to move goods

- Responding to transport challenges in rural areas
- Maximising technology-related opportunities to improve connectivity

In terms of roads, Midlands Connect is seeking investment to improve the service to users of the SRN and MRN, make best use of technology and help to accelerate use of electric cars and alternatively fuelled goods vehicles, and to futureproof roads against the impacts of climate change and to protect the environment. This includes the Better Use of the M6 Toll study, with Transport for the West Midlands, about how drivers can be provided with better digital or in-vehicle journey information to enable them to take more informed decisions about which route to use.

Midlands Connect has undertaken studies on a number of important trade and logistics corridors that, if enhanced, could catalyse business growth, boost productivity and support the development of new housing and export markets.

Through these studies, Midlands Connect has identified eleven priority locations for investment during the third road period (2025-2030) and onwards where the SRN needs to 'work harder'. In most cases, specific solutions for these locations have not been identified, with multi-modal solutions expected to be considered. The priority locations identified on this route are:

- M6 Junction 15
- the Birmingham Motorway Box (M5, M6 and M42)

<sup>24</sup> Midlands Connect (March 2017) *Midlands Connect Strategy: Powering the Midlands Engine*. <https://www.midlandsconnect.uk/media/1224/midlands-connect-strategy-march-2017.pdf>

<sup>25</sup> Midlands Connect (April 2022) *Fairer, greener, stronger: a Strategic Transport Plan for the Midlands*. <https://www.midlandsconnect.uk/strategy>

## Interaction with the major road network and local roads

The major road network (MRN) is the middle tier of England's road network, comprising the busiest and most economically important local authority A-roads. It is key to supporting the economic vitality of England, particularly with its role, along with the SRN, of delivering 'first and last mile' connections and onward journeys. It acts as a connecting spine for the SRN, with one of the objectives in establishing the MRN being to support the SRN through improving journeys across both networks. The MRN represents the roads that our partners in local authorities and Sub-national Transport Bodies see as being strategically most important, along with the SRN.

The relationship between the SRN and MRN is complex. The two networks connect people with economically important locations across England, as well as providing resilience for each other. Interventions on one network can also significantly influence travel behaviours on the other. Most SRN journeys involve elements of both networks.

It is therefore important that decisions about the SRN, MRN and other local roads are made in a joined-up way to ensure that the networks are consistent, coherent and complementary. We recognise that the key to the success of the Road Investment Strategy is ensuring the impacts of any interventions are appropriately considered across all networks as well as at their junctions. Both networks play a key role in customers' journeys, and they expect a seamless transition between the two. We are continually seeking to identify collaborative solutions that meet our obligations under the National Highways Licence to improve network performance and provide integration benefits. In developing the route strategies, we aim to ensure the planning for the SRN, MRN and other local roads is complementary.

The London to Scotland West (South) route includes connections to several MRN routes. These provide important connectivity to economically significant destinations that are not otherwise served by the SRN.

The MRN connecting to this route is complex, especially in the urban areas around the Birmingham Box. The following paragraphs summarise sections of the MRN which interested parties have highlighted as being of particular significance.

To the South, the MRN connects the route to the towns and tourist attractions in and around Bicester, Banbury, Royal Leamington Spa, and Coventry, via roads such as the A41, A452, and A45. The A404 at High Wycombe connects the M40 to the M4, whilst the A40 at M40 Junction 9 offers a direct connection to Oxford.

In the Birmingham Box, the MRN includes the A45, which connects to Birmingham Airport, and the A38(M) and Quinton Expressway, which provide direct connections between Birmingham City Centre and the M6 and M5 respectively.

North of Birmingham, the MRN provides connections to the clusters of manufacturing and distribution sites around the M5 and M6, as well as to the towns of West Bromwich (via the A41), and Walsall and Stafford (both via the A34).

Part of the route runs through the West Midlands Mayoral Combined Authority (WMCA). As part of the Government's City Region Sustainable Transport Settlements (CRSTS) fund, WMCA has been allocated a share of the £5.7 billion for local transport improvements. Some of these schemes will interact with the SRN and we will work with WMCA to ensure these will interact with the SRN effectively.

## Freight and logistics

*The Future of Freight: a long-term plan* (DfT June 2022)<sup>26</sup> sets out priorities for the UK's freight industry. It recognises that in 2019 the sector contributed 10% of the UK non-financial business economy and £127 billion gross value added (GVA) through more than 200,000 enterprises, noting that, with imports and exports comprising 63% of gross domestic product (GDP) in 2019, we are reliant on the freight and logistics sector for our economic wellbeing.

In the UK, around 1.65 billion tonnes of freight are lifted by all modes each year. Of this, approximately 400 million tonnes are carried by road through the Midlands region. The Midlands has the greatest concentration of logistics activity in the UK, including a high density of national distribution centres known as the 'Golden Triangle'<sup>27,28</sup>. Located between Nottingham, Bedford and Birmingham it is the UK's primary distribution hub due to its relatively central location. Distribution capacity in the region is expanding rapidly and, in 2021, 13% of spending on new warehousing occurred in the West Midlands<sup>29</sup>.

The route connects to a wealth of freight assets that grant the Midlands Connect and England's Economic Heartland regions a strong multimodal freight capability, including:

- Heathrow and Birmingham international airports;
- Strategic Rail Freight Interchanges (SRFIs – distribution centres with intermodal terminals) at West Midlands Interchange (Staffordshire), and Hams Hall (Birmingham), with a further proposed near Bicester in Oxfordshire;
- A road-rail intermodal terminal at Birmingham;

- A strategic rail network, principally comprising of the West Coast and Midland Main Lines, that connects the South of England and the Midlands to the North;
- A significant amount of distribution centre capacity, including concentrations of warehousing and logistics in Birmingham and the Black Country

The geography of the route, going through the heart of England, means that traffic using the route can also access a wider range of freight destinations and facilities within a few hours. These include:

- international airports at Oxford and Bristol, as well as East Midlands Airport (one of the UK's largest airports for freight)
- SRFIs at Hinckley, East Midlands Gateway, and Daventry International Rail Freight Terminal (DIRFT) I and II
- Intermodal terminals in Staffordshire and the East Midlands
- East-west corridors including the A5, A34, A38, A46, A50/A500, and M54; and
- The M5 and M1 north-south corridors

Freight using the route currently has access to secure lorry parking, refuelling (including electric vehicle charging), overnight accommodation, food, and rest facilities at the motorway service areas located at:

- Beaconsfield, Oxford, Cherwell Valley, and Warwick (M40)
- Frankley (M5), and
- Hilton Park, Keele, and Stafford (M6)

Proposals for an additional motorway service area serving the M42 at Solihull were granted planning permission in March 2022.

<sup>26</sup> Department for Transport (June 2022) *Future of Freight: a long-term plan*. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1085917/future-of-freight-plan.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1085917/future-of-freight-plan.pdf)

<sup>27</sup> There is no formal definition of the 'golden triangle'. It is generally accepted to be an area bounded by Nottingham, Birmingham and Milton Keynes, served by the M1, M6 and M42 motorways.

<sup>28</sup> 29 Office for National Statistics (April 2022) *The rise of the UK warehouse and the "golden logistics triangle"*. <https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/articles/theriseoftheukwarehouseandthegoldenlogisticstriangle/2022-04-11>

The published *National Survey of Lorry Parking*<sup>30</sup> undertaken by the Department for Transport in 2017 showed that utilisation of motorway service area freight rest facilities in the West Midlands was 87%. Further investigation has found that the motorway service areas around Birmingham, which offer secure parking and additional facilities such as accommodation, are over capacity. More provision will be needed if freight journeys continue to increase as expected.

Despite these assets being available, delays and unreliability on the network may affect efficient connectivity to and from strategic UK destinations and international ports, as well as affecting connectivity between different modes of transport.

## Diversions routes

To operate a resilient road network, we need to be able to effectively divert traffic off the SRN in the event of unplanned incidents (such as collisions or emergency roadworks), or as part of planned closures (such as planned improvement schemes). The MRN, along with the rest of the local road network, supports the SRN as diversion routes during these events.

We have agreed diversion routes for emergency events with local authorities. Diversion routes for planned events are discussed and agreed with local authorities on a case-by-case basis. These routes are dependent upon the nature of the incident, and the suitability and availability of the surrounding network. In some cases, the diversion route may not be suitable for certain types of traffic, such as heavy goods vehicles (HGVs), or non-motorway traffic, such as cycles and tractors. In other cases, diversionary routes may not be available due to events on the local road network. We work closely with local authorities to ensure that suitable diversion routes are available.

## Network Rail and other network operators

The SRN plays an important role in the movement of passengers and freight across England, and it needs to be considered alongside the wider transport network. The rail network is also important in moving freight and people over longer distances and helping commuters travel into congested cities. Better integration between road and rail can help to transfer more journeys onto rail. This can help to relieve congestion on the SRN, as well as improve the environment by increasing the use of more sustainable transport modes.

At a strategic level we work closely with Network Rail and train operators to find opportunities to better integrate the two networks to benefit the movement of freight and people. This involves seeking opportunities to place rail stations in strategically important locations with easy access to the SRN.

The Network Rail Delivery Plan<sup>31</sup> presents a vision of “putting passengers and freight users first”. This recognises that Network Rail can improve the daily lives of people across the country by striving to constantly improve the quality of its service across the whole railway system. Network Rail delivers its vision through a regional structure committed to responding to the needs of local customers and interested parties, more quickly than if such decisions were to be made at a national level.

Several strategic rail stations are located near to the London to Scotland West (South) route. These include High Wycombe, Oxford, Banbury, Birmingham International, Warwick Parkway, Birmingham New Street, Wolverhampton, and Stoke-on-Trent.

<sup>30</sup> AECOM on behalf of the Department for Transport (2018) *National Survey of Lorry Parking*.  
<https://www.gov.uk/government/publications/national-survey-of-lorry-parking>

<sup>31</sup> Network Rail Our *Delivery Plan for 2019-2024* website:  
<https://www.networkrail.co.uk/who-we-are/publications-and-resources/our-delivery-plan-for-2019-2024/>

Once HS2 Phase One opens to passengers, traffic also will be able to access the HS2 station at Solihull by leaving the M42 at Junction 6 and travelling a short distance east on the SRN, using the A45. The M6 Junction 16 will also provide access to the HS2 Phase 2a station at Crewe.

The route is also a key contributor to access to the West Midlands Strategic Rail Freight Interchange located near Four Ashes and Gailey, in Staffordshire, which can be reached by leaving the route at M6 Junction 12 and travelling via the A449. Other Strategic Rail Freight Interchanges located close to the route are Lawley Street, in Birmingham City Centre, and Hams Hall near M6 Junction 4. A further Strategic Rail Freight Interchange is proposed near Oxford. If approved, this will be accessed from the M40 Junction 10.

We also work with the operators and promoters of urban rapid transit systems where there are opportunities for better integration. For example, through the creation of park and ride sites to remove traffic from the road network.

## Strategic connectivity

The SRN plays a key social and economic role in connecting England with the devolved authorities of the UK, particularly Wales and Scotland, but also, via ports, Northern Ireland. We work closely with Transport for Wales and Transport Scotland to ensure our key cross-border routes are joined up effectively with those in Wales and Scotland to ensure easy journeys for our customers. This strategic connectivity is reflected in the Government's commitment to strengthening transport connections across the UK, guided by Sir Peter Hendy's *Union connectivity review*<sup>32</sup> published in late 2021. The report recommends the creation of UKNET, a strategic transport network spanning the entire United Kingdom.

UKNET would be based on a series of principal transport corridors between key urban and economic centres, including international gateways. The findings of this report have been considered in our route strategies, particularly for our cross-border routes and roads connecting to important ports.

Improving transport connectivity between the four nations of the UK is a Government priority, as noted above. The London to Scotland West (South) route is proposed as part of a key West Coast corridor to be included within UKNET – the proposed strategic transport network for the whole of the UK. The route also provides strategic connections to Wales via the M54 and A5, which can be accessed from junctions 10A and 12 of the M6.

## International connectivity

One of the objectives of the SRN is to support the important economic activity involved in international passenger and freight movement via good connections to ports and airports. A key aspect of route strategies is ensuring that future investment continues to support these essential movements.

This London to Scotland West (South) route provides direct connectivity to Birmingham Airport. It also provides indirect connectivity to Heathrow Airport via the M25, and to Holyhead Port via the M54 and A5. Drivers using the route can also access the ports and airports in Liverpool and Manchester by continuing north up the M6, which is part of the London to Scotland West (North) route. East Midlands Airport (the UK's largest airport for freight) can be accessed via the northern section of the M42 and the A42.

<sup>32</sup> Hendy, P. (November 2021) *Union connectivity review: Final Report*. [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/1036027/union-connectivity-review-final-report.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1036027/union-connectivity-review-final-report.pdf)

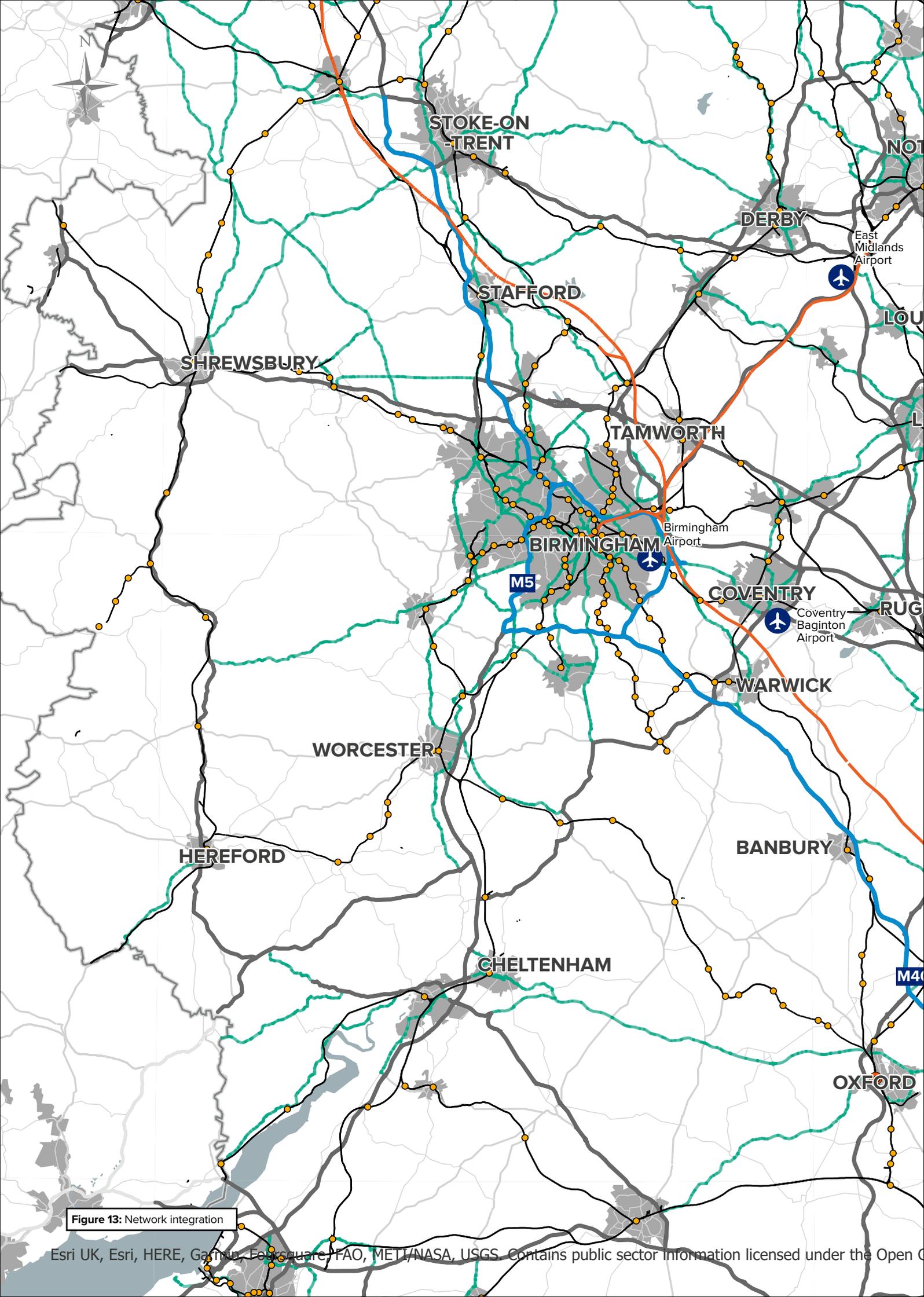
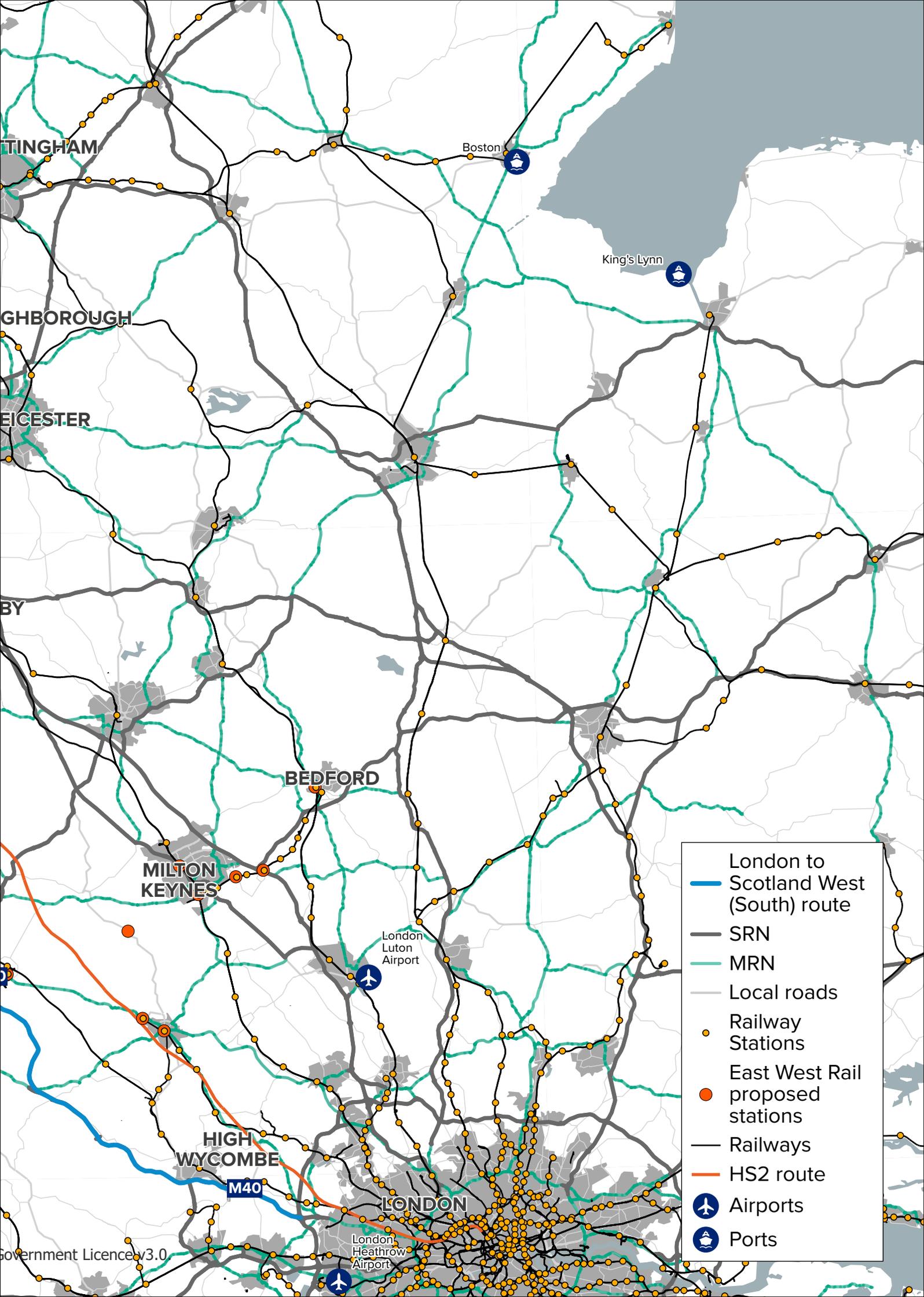


Figure 13: Network integration



- London to Scotland West (South) route
- SRN
- MRN
- Local roads
- Railway Stations
- East West Rail proposed stations
- Railways
- HS2 route
- Airports
- Ports

Congestion  
Use  
hard shoulder

60

60

60

60



Tiredness can kill  
Take a break

Challenges  
and issues  
on the route



# 05 Challenges and issues

We recognise that there are existing challenges and issues on the network and these are outlined against the Department for Transport's six strategic objectives as part of the route strategy evidence base.



## 1. Improving safety for all

The International Road Assessment Programme (iRAP) Star Ratings are based on road inspection data and provide a simple and objective measure of the level of safety which is 'built-in' to the road. The higher the star rating, the safer the road. iRAP Star Ratings are produced for each 100-metre section of road, based on detailed inspections of roadside features as well as traffic flow, speed, pedestrian and cyclist use, and crash data.

iRAP data helps us to predict future risk within a wider Safe System approach. Safe System thinking accepts that humans will make mistakes but considers what is within the scope of our influence to limit the injuries sustained. The iRAP approach to managing future risk complements the more traditional approach of analysing historical incident data provided by STATS19 as a means of predicting future collisions and casualties.

STATS19 data are the statistical data published by the Office for National Statistics about personal-injury road traffic collisions reported to the police. STATS19 remains the most detailed, complete, and reliable single source of information on road casualties covering the whole of Great Britain, in particular for monitoring trends over time.

For the purposes of National Highways Route Strategies, the total fatal and serious injuries are aggregated by the section of road on which they occurred, based on the National Traffic Information Service (NTIS) network.

The NTIS network used for displaying traffic data is the full extent of the roads for which National Highways are the highway authority. The NTIS network is modelled for each side of the carriageway, such that NTIS links are one-directional and split at junctions. The data used only includes main carriageways; slip roads, roundabouts and other types of road are not modelled in this dataset. The length of an NTIS link can vary greatly depending on what part of the network it represents. Use of the NTIS network provides a common geometry which can be used to compare the STATS19 data with network performance and other metric data.

A combination of star ratings and historic data can help us to prioritise route treatments. Where the density of incidents resulting in death or serious injury is high, and the star rating is low (poor), it indicates something can be done to prevent future collisions where people are killed or seriously injured.

The Road Safety Foundation (RSF) produces maps that show the statistical risk of fatal or serious injury crash occurring. The risk is calculated by comparing the frequency of road crashes that result in death and serious injury with how much traffic each road is carrying. For example, the risk on a road carrying 10,000 vehicles a day with 20 crashes is ten times the risk on a road that has the same number of crashes but which carries 100,000 vehicles.

Using the latest available iRAP data, the motorway sections of the London to Scotland West (South) route are classified as 3- and 4-star. (No data was available for M6 Junctions 13 to 15, as roadworks meant that it was not operating under normal conditions).

The exceptions to this are the A452 and A446, which are classified as 1-star and 2-star respectively. These roads will be under the control of HS2 Ltd during the third road period (2025-2030), as per the terms of the High Speed Rail (London to West Midlands) Act 2017. HS2 Ltd will continue to make alterations to the A45, A452, and A446, to support access to the new station, during this period.

STATS19 data show that there are concentrations of collisions and sections of the route where people were killed or seriously injured:

- M40 Junctions 2 to 5
- M40 Junctions 6 to 13
- M40 Junction 15 to the M40/M42 Interchange (M42 Junction 3A)
- M5 Junctions 2 to 1
- M6 Junctions 5 to 7
- M6 Junctions 12 to 13
- M6 Junctions 14 to 15

It should be noted that this data predates the completion of the M6 Junction 13 to 15 scheme, which opened in 2022.

Using the latest available data, the route is classified as low risk by the Road Safety Foundation Crash Risk Mapping, with the exception of the M42/M6 Interchange, which is classified as medium risk.

Improving safety and minimising collision rates is a key consideration for all our routes

#### Key challenges

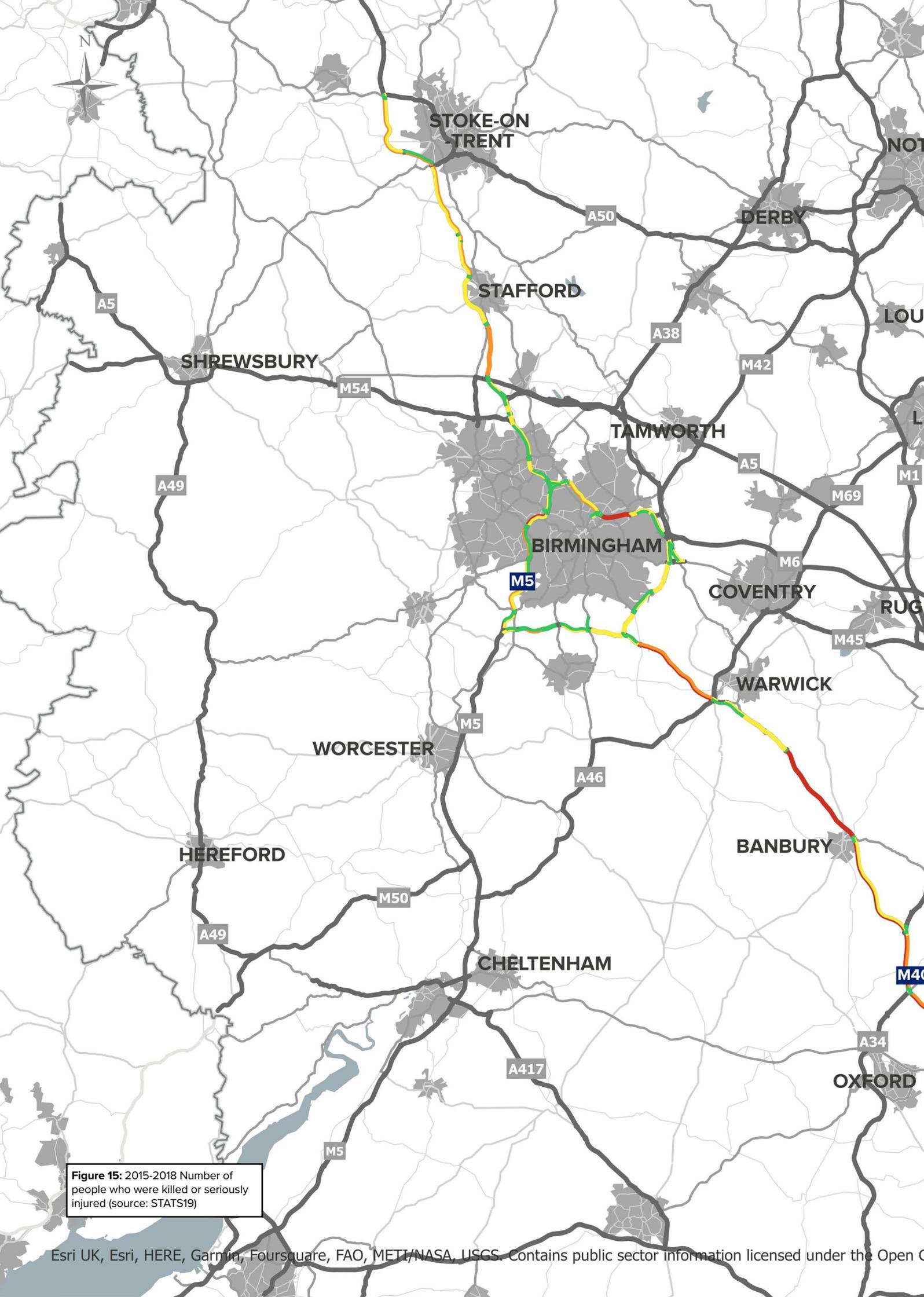
- Junctions and route sections on the M40, M42, M5, and M6 at sites where people have been killed or seriously injured in collisions
- The M42/M6 Interchange is classified as medium risk by the Road Safety Foundation



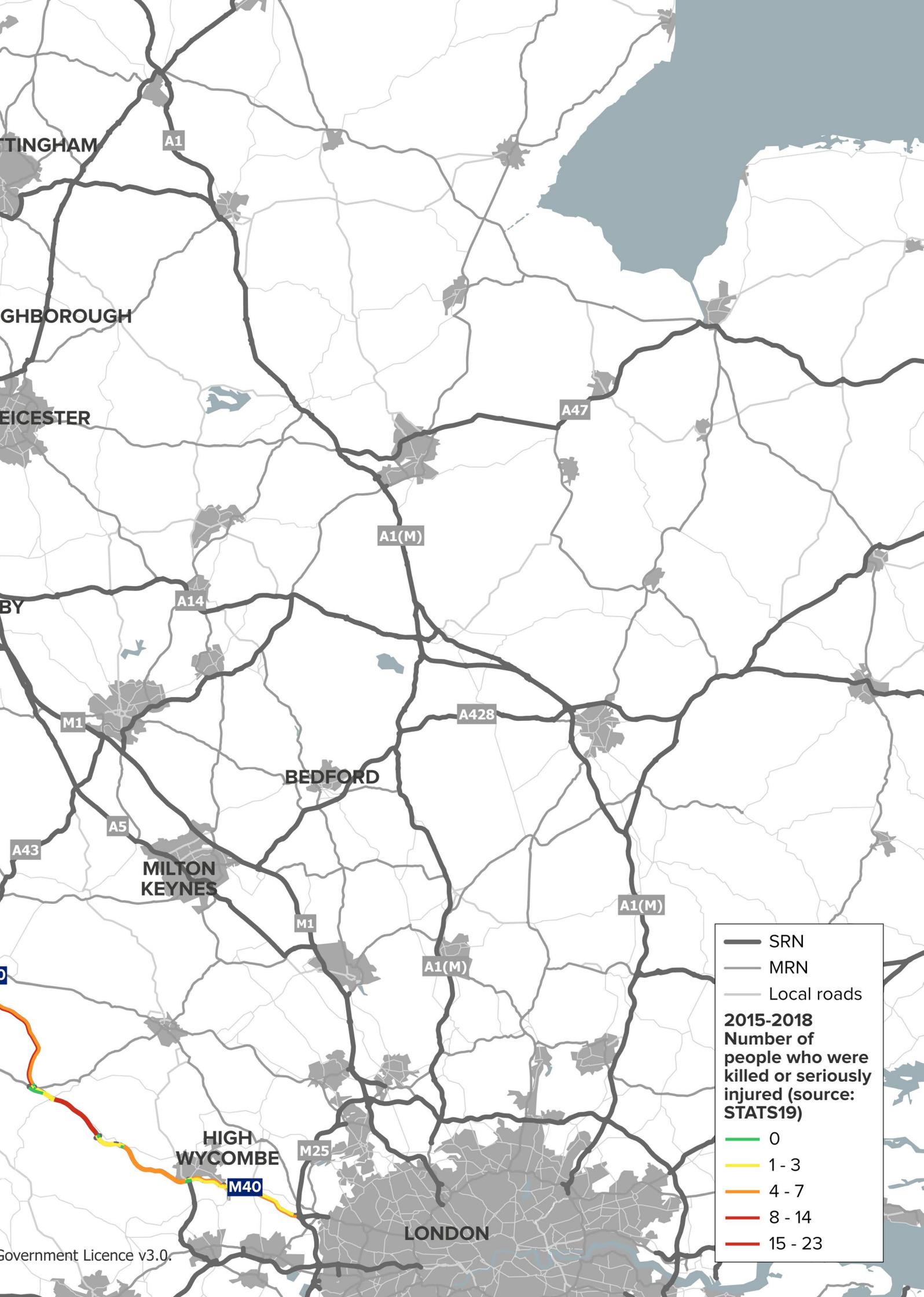


Figure 14: 2020 IRAP star rating





**Figure 15:** 2015-2018 Number of people who were killed or seriously injured (source: STATS19)



— SRN  
— MRN  
— Local roads

**2015-2018**  
Number of  
people who were  
killed or seriously  
injured (source:  
STATS19)

— 0  
— 1 - 3  
— 4 - 7  
— 8 - 14  
— 15 - 23



## 2. Network performance

Network performance is measured by average peak period delay, seasonal delay, and journey time reliability. Multiple sections of the London to Scotland West (South) route experience issues related to one or more of these types of delay.

Average peak period delays on the London to Scotland West (South) route range from 50 to over 120 seconds per vehicle per mile (pvpm) and are a particular issue for freight and commuter traffic using the route. Sections of the route which experience the greatest average peak period delay are:

- M42 between Junctions 4 and 6 has evening peak delay of 50 seconds pvpm
- M5 between Junction 3 and the M5/M6 interchange experiences morning and evening peak delay of over 120 seconds pvpm
- A446 approaching M6 Junction 4 experiences evening peak delay of 114 seconds pvpm
- M6 between Junctions 6 and 8 experiences evening peak delay of between 56 to 75 seconds pvpm

We want to improve journey times on route sections which currently experience high levels of delay and are expected to worsen in the future

- M6 between Junctions 7 and 10 experiences average morning peak delay of 61 seconds pvpm

National Highways has a suite of five regional traffic models (RTMs) covering England's strategic road network (SRN). The models allow us to identify future performance and delay on the network, assisting with the development of the route strategies. The RTM models use projected growth, expected trends and changes to the network (including National Highway's RIS2 schemes) to forecast the performance of the network in 2031.

Average peak period delay is measured in seconds per vehicle per mile and is the difference between observed average delay in the morning or afternoon peak period and the average delay during free flow conditions.

Seasonal delay refers to the difference between the average afternoon peak delay for Fridays in August 2019 (high demand in summer holidays) and the average delay during very low demand periods (in this case, Christmas day is used). This measure is designed to reflect the parts of the network that do not appear to have a problem on average over the year but have seasonal peaks.

Seasonal delay is of interest to tourist traffic, particularly people travelling to airports, or other destinations where arriving later than intended could have significant implications.

Reliability is the difference between the typical travel time, allowing for average peak period delays, and the observed travel time. This measures the amount of variation due to unexpected variations or unplanned events. Like delay, it is measured in seconds per vehicle mile. It is a concern for most drivers, but particularly affects just-in-time freight traffic and other strategic journeys.

On these parts of the route, delay is predominantly a result of the volume of traffic at peak periods. Based on future forecasts, the following parts of the route are also expected to experience average peak period delay by 2031:

- M40 north of the M25 is expected to experience delays of up to 25 seconds pvpm
- M42 east of Junction 2 and between Junctions 3 and 3A is expected to experience delays of up to 25 seconds pvpm
- M5 between Junction 3 and the M5/M6 Interchange is expected to experience delays of up to 154 seconds pvpm
- M6 between Junctions 4 and 6 is expected to experience delays of up to 25 seconds pvpm
- M6 northbound between Junctions 8 and 10A is expected to experience delays of up to 50 seconds pvpm
- M6 southbound between Junctions 10A and 7 is expected to experience delays of up to 154 seconds pvpm

The route serves a number of tourist centres or attractions, as well as two major airports. Traffic travelling to these destinations is particularly affected by seasonal delay, especially traffic travelling to airports, where arriving on time is important.

Parts of the route that experience the worst seasonal delays are:

- M40 between Junctions 7 and 9 experiences seasonal delay of 45 seconds pvpm
- M40 at Junction 9 experiences seasonal peak delay of 201 seconds pvpm
- M42 Junctions 4 to 5 experiences seasonal delay of 67 second pvpm
- A446 approaching M6 Junction 4 experiences seasonal peak delay of 61 seconds pvpm
- M5 Junctions 1 to 3 experience seasonal delay of as much as 92 seconds pvpm

- M5 and M6 at the M5/M6 interchange both experience seasonal delay of 100 seconds pvpm
- M6 at Stafford, Junctions 13 to 14, experiences seasonal delay of 138 seconds pvpm

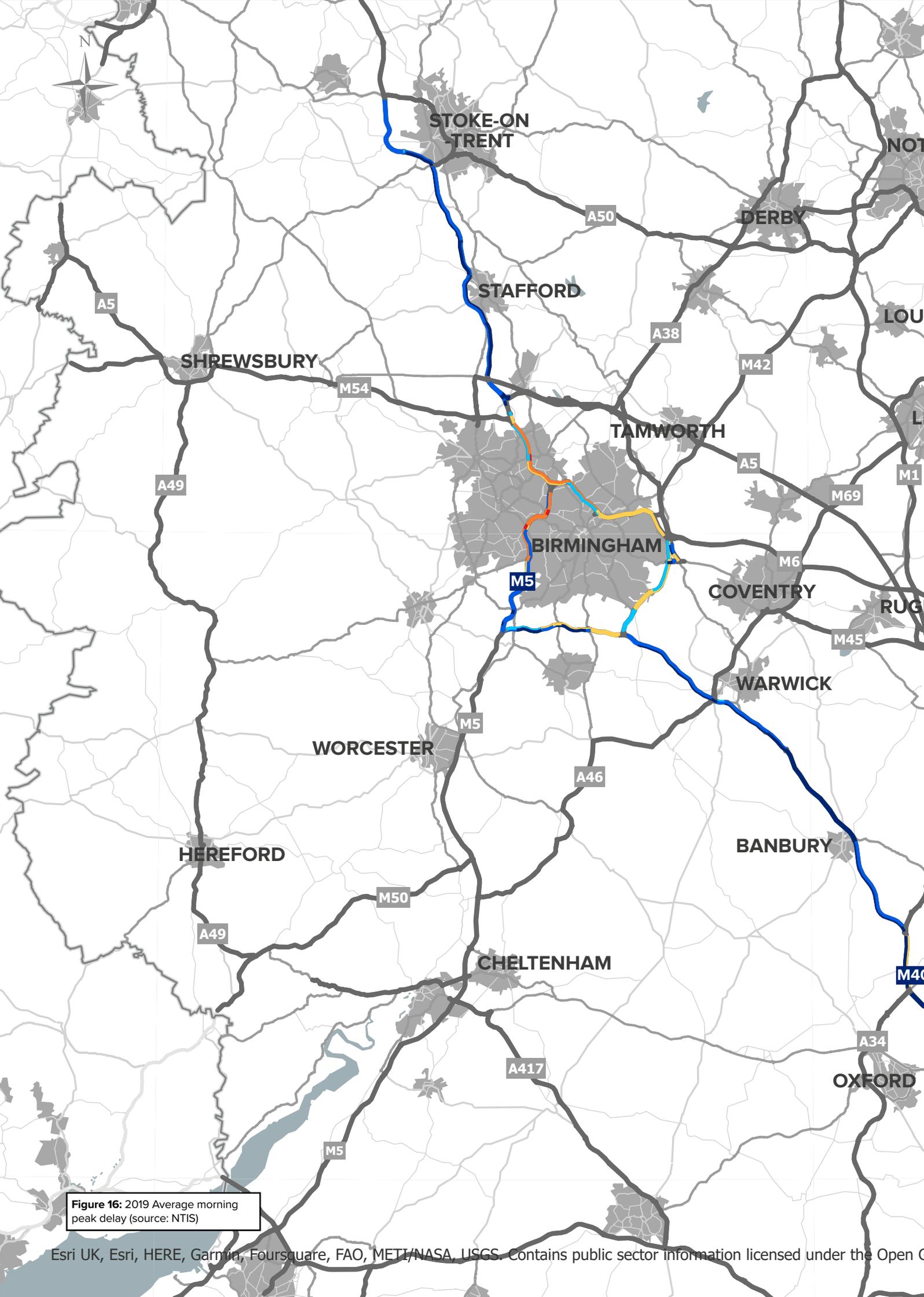
Parts of the London to Scotland West (South) route which have unreliable journey times and where drivers cannot be confident of how long their journeys will take include:

- M40 Junction 4 at Handy Cross was highlighted by interested parties as experiencing delays when there is an incident on the western arc of the M25
- M42 between Junctions 3a and 7a experiences variances in journey time of between 5 and 10 seconds pvpm
- reliability on the M5 around the Birmingham Box varies by 10 to 25 seconds pvpm
- reliability on the M5 on the approach to the M5/M6 interchange varies by 10 to 25 seconds pvpm
- M6 between Junctions 4A and 10 is heavily congested and experiences journey times varying by up to 50 seconds pvpm
- M6 at Stafford, Junctions 13 to 14, experiences variance in reliability of up to 10 seconds pvpm

Interested parties told us that traffic diverting off the M40 and M6 to avoid seasonal delay on the SRN also causes network performance issues on local roads such as the A40 in High Wycombe and the A454, A4148, and A34 in the Walsall area.

### Key challenges

- Seasonal delays on the M40
- Average peak period delays on the M42, M5, and M6 around the Birmingham Box
- Reliability at M40 Junction 4
- Reliability on the M42 and M5
- Reliability on the M6 around the Birmingham Box and near Stafford
- The impact of future development and traffic growth on delay and reliability along the route



**Figure 16:** 2019 Average morning peak delay (source: NTIS)

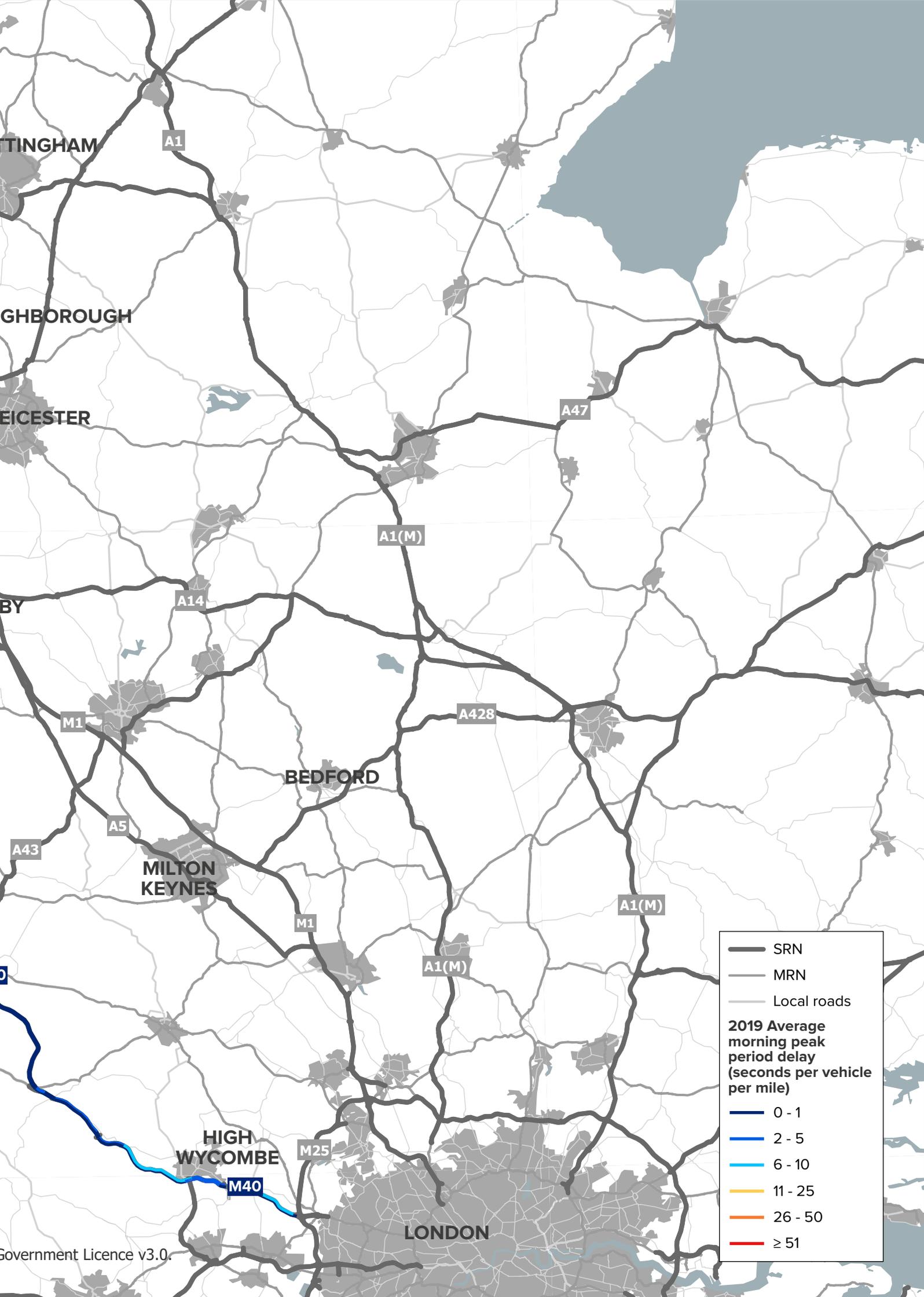
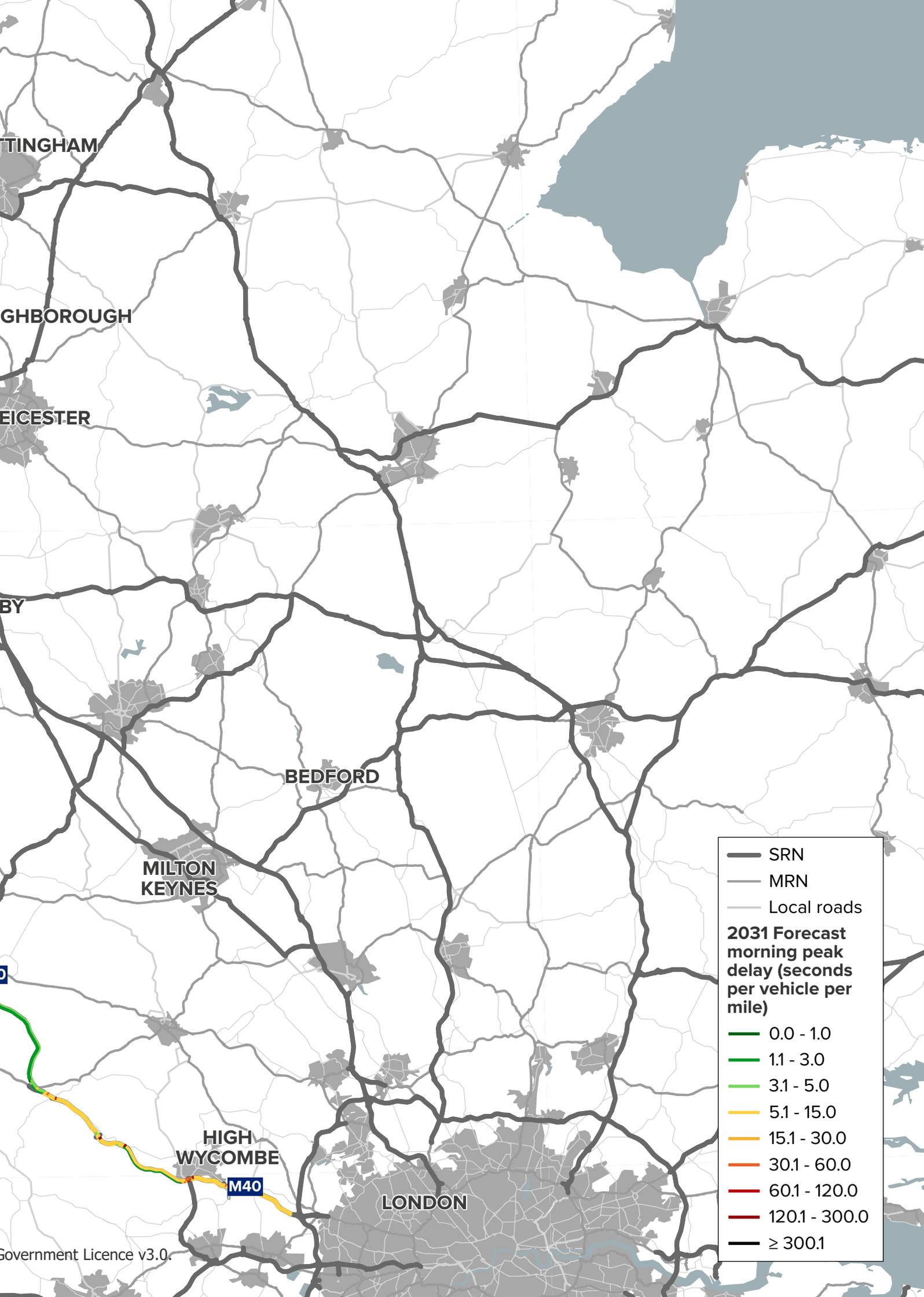




Figure 17: 2031 Forecast morning peak delay (source: RTM)



BIRMINGHAM

GHBOROUGH

LEICESTER

BY

BEDFORD

MILTON  
KEYNES

HIGH  
WYCOMBE

M40

LONDON

— SRN  
— MRN  
— Local roads

**2031 Forecast morning peak delay (seconds per vehicle per mile)**

- 0.0 - 1.0
- 1.1 - 3.0
- 3.1 - 5.0
- 5.1 - 15.0
- 15.1 - 30.0
- 30.1 - 60.0
- 60.1 - 120.0
- 120.1 - 300.0
- ≥ 300.1



### 3. Improved environmental outcomes

Climate change is affecting society as a whole, and the transport sector is no exception. As the government-owned company tasked with building and maintaining the strategic road network (SRN), we need to show both how we can help tackle the causes of climate change and how we are preparing for a changing climate. In 2021 we published our *Net zero highways plan*<sup>33</sup> to show how we will meet the target of net zero greenhouse gas emissions.

The latest climate projections from the Met Office have helped us to understand how the climate is changing, including that summers will on average be hotter and drier, while winters will be milder and wetter and critically, that extreme weather will become more common. We have also seen, from reports such as the *Climate Change Committee's*<sup>34</sup> third and most recent independent assessment of climate risk, that there are key risks from a changing climate for infrastructure, such as risks to bridges from flooding and erosion and risks to subterranean and surface infrastructure from subsidence.

Air quality describes how polluted the air we breathe is. Poor air quality can cause both short-term and long-term effects on the health of humans and other living beings. The amount of air pollution depends on the concentrations of different substances in the atmosphere, such as sulphur dioxide, oxides of nitrogen, and particulate matter. In the UK, the concentrations of these pollutants are regulated and regularly monitored. If a local authority identifies any locations within its boundaries where targets are not being achieved, it must declare an Air Quality Management Area (AQMA) and put together a plan to improve air quality in that area.

While noise is often an inevitable consequence of societal activities, it can have serious implications for human health,

Where possible we will seek to protect environmentally important locations and reduce air quality and noise impacts on communities served by the route

We are committed to net zero carbon construction by 2040 and net zero carbon travel by 2050. This will involve significant changes to the way we build and manage our network, including the London to Scotland West (South) route. We will need to consider better integration with other transport modes and how to support the transition to electric cars and zero carbon heavy goods vehicles.

quality of life, economic prosperity and the natural environment. Elevated levels of noise, particularly from traffic, can be associated with heart attacks, strokes and hearing impairment, as well as sleep disturbance and annoyance. While there's no legal limit to road noise, environmental noise regulations in the UK require regular noise mapping and the creation of action plans for Noise Important Areas (areas exposed to the highest levels of noise).

Severance is where transport infrastructure or motorised traffic passes through settlements and acts as a physical or psychological barrier, limiting people's ability or desire to move through that area. This can reduce accessibility to key services, and damage local social networks and community cohesion.

<sup>33</sup> National Highways (2021) *Net zero highways: our 2030 / 2040 / 2050 plan*.

<https://nationalhighways.co.uk/media/eispcjem/net-zero-highways-our-2030-2040-2050-plan.pdf>

<sup>34</sup> Climate Change Committee (June 2021) *Independent Assessment of Climate Risk*.

<https://www.theccc.org.uk/publication/independent-assessment-of-uk-climate-risk/>

The M40 is in a deep chalk cutting within the Aston Rowant Cutting Site of Special Scientific Interest (SSSI). This is on the north-western scarp of the Chiltern Hills and is located within the Chilterns Area of Outstanding Natural Beauty, making it one of the most environmentally sensitive locations on the route. The road is also near to the Blenheim Palace UNESCO World Heritage Site and adjacent to the Cotswolds National Landscape.

In the West Midlands, the A45 crosses the River Blythe SSSI, while the A452, A446, and M6 Junction 4 are close to the Coleshill and Bannerly Pool SSSI.

In terms of air quality, there are receptors within 100 metres of the strategic road network which may be more likely to experience adverse air quality impacts:

- M40 between Junctions 4 and 5
- M40 northbound between Junctions 11 and 12
- M5 between Junctions 3 and 2
- M6 between Junctions 6 and 7
- M6 between Junctions 10 and 10A
- M6 southbound between Junctions 13 and 14

A 60 miles per hour speed limit is in place for air quality on the M6 between Junctions 6 and 7, and on the M5 between Junctions 1 and 2.

There are receptors within 300 metres of the SRN which may be more sensitive to high noise levels:

- M40 Junctions 2 to 5
- M5 southbound Junction 4A to Junction 4
- M5 Junctions 3 to 1
- M5 northbound at the M5/M6 interchange
- M42 northbound from Junction 7A to M6 Junction 5
- M6 southbound from Junction 5 to 6
- M6 Junction 6 to Junction 10
- M6 southbound between Junction 10 and Junction 10A

- M6 southbound Junctions 13 to 14
- M6 southbound from Junction 15 to the motorway service area at Keele.

Through engagement with interested parties, it has been stated that severance (separation of people from facilities and services they use within their community) issues exist for pedestrians and cyclists, especially when attempting to cross at or near motorway junctions. Interested parties have also raised concerns that the M6, which forms the northern edge of the Birmingham Box, is used for a significant number of local trips. These trips could be made more sustainable by using alternative modes of transport such as public transport, walking and cycling.

In addition, the SRN can generate carbon emissions both from vehicles driving on the motorway and from materials and processes used during construction. Improved understanding of carbon contributions and accounting would help to work towards national carbon reduction targets.

### **Key challenges**

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- Areas of Outstanding Natural Beauty with environmental designations and cultural heritage
- A desire to minimise greenhouse gas emissions
- Resilience to future climate change
- Presence of SSSIs along the M40 and A45
- Presence of SSSIs close to the A452, A446, and M6 Junction 4
- Receptors within 100 metres of the M40, M5, and M6 which may be more likely to experience adverse air quality impacts
- Receptors within 300 metres of the M40, M5, and M6 which may be more sensitive to high noise levels
- Air quality impacts on M5 Junctions 2 to 1 and M6 Junctions 6 to 7



## 4. Growing the economy

The London to Scotland West (South) route provides vital connections between key Economic Opportunity Areas including:

- Urban centres such as London, Oxford, Birmingham, Stafford, and Stoke-on-Trent
- Aylesbury Vale and Black Country Enterprise Zones
- Housing (at M40 Junction 10 and between M6 Junctions 15-16)
- Industrial clusters (M6 north of Junction 9)
- Birmingham Airport
- The Potteries urban centres and Ceramics Enterprise Zone

Locations along the route identified for future development in Local Authority Local Plans include:

- 10,000 homes near Bicester,
- Arden Cross, a mixed-use development across more than 140 hectares with up to 3,000 homes and up to 6 million square feet of commercial development supporting up to 27,000 jobs near M42 Junction 6 and Solihull
- 20,000 new homes in Stoke-on-Trent.

The route provides access to a number of key manufacturing centres, including Jaguar Land Rover (Birmingham, Coventry, Gaydon, and Solihull), Cadbury (Birmingham), and Aston Martin (Gaydon). Just-in-time deliveries and journey time reliability are particularly important for manufacturing companies such as these.

The Midlands Connect *Strategic Transport Plan*<sup>35</sup> highlights the importance of the strategic road network (SRN) and the London to Scotland West (South) route to strategic freight traffic. Heavy goods vehicles (HGVs) make up 16-20% of total traffic flow along much of the route, particularly the M40 between Junctions 10 and 15 and the M42 and M6 in the Birmingham Box.

The strategic road network has a critical economic function in supporting national and cross-border connectivity and areas with high levels of deprivation

This increases to 45% on the M6 between Junctions 8 and 10A. The route has good connections to international gateways such as Birmingham Airport. Between 2011 and 2019, the West Midlands experienced the greatest growth in HGV traffic of any UK region, an increase of 15%<sup>36</sup>.

However, with anticipated traffic growth and capacity constraints, interested parties have concerns around the route's ability to maintain efficient access to key hubs such as airports, distribution centres and growth sites as well as serving areas on the levelling up agenda.

One of the key concerns for interested parties is maintaining access to growth sites and the potential Oxford Strategic Rail Freight Interchange (SRFI) at M40 Junction 10. Forecasting for Oxford SRFI demonstrates that future increase in traffic volumes before any additional developments may be sufficient for traffic volumes to exceed road capacity between M40 Junctions 9-10, by 2031. The proposed developments in close proximity to the SRN would add further pressure on traffic and exacerbate delays.

National Highways engages with developers and local planning authorities to ensure that development affecting the SRN is delivered in a sustainable way. This includes minimizing the vehicular impacts on the SRN through greater use of sustainable modes of travel such as walking, cycling, and public transport.

<sup>35</sup> Midlands Connect (April 2022) *Fairer, greener, stronger: a Strategic Transport Plan for the Midlands*. <https://www.midlandsconnect.uk/strategy>

<sup>36</sup> Office for National Statistics (April 2022) *The rise of the UK warehouse and the "golden logistics triangle"*. <https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/articles/theriseoftheukwarehouseandthegoldenlogisticstriangle/2022-04-11>

Office of National Statistics data shows that Birmingham has around 2,500 business premises associated with transport and storage, the 4th highest number in England<sup>37</sup>. The point of entry onto the SRN for vehicles travelling from these premises will be the M42, M5, or M6. There are concerns from interested parties about maintaining efficient access to freight distribution centres along the route, particularly the clusters that are located within the Birmingham Box. These clusters are located near M5 Junctions 2 to 1 and M6 Junctions 5 to 7. General traffic growth, without the addition of traffic associated with new developments, is likely to contribute to capacity constraints and delays along key freight corridors of the M40, M42, M5 and M6, inhibiting efficient freight movements.

In addition to connecting key employment centres, the route also serves areas of high deprivation that require increased economic growth, particularly around Birmingham and the Black Country<sup>38</sup>. The Birmingham Box falls into the top 15% of most deprived areas in the UK. Approximately 40% of the population within the corridor are economically active. However, there are locations within the Birmingham Box where the economically active population is as low as 20%.

The index of priority places for Levelling Up Fund places local authorities into categories 1, 2 or 3, depending on their identified level of need, with category 1 representing places deemed in most need of investment through this Fund<sup>39</sup>. The following sections of the route fall within areas which are ranked by government as category 2 in terms of need for levelling up:

- M40 from south of Junction 10 to the M40/M42 Interchange,
- M42 Junctions 3A to 7A
- M5 Junction 3 to M6 Junction 8

Parts of the route which run through areas ranked by government as being in greatest need of levelling up (category 1) are:

- M6 around the Birmingham Box
- M6 Junctions 15 to 16 near Stoke-on-Trent

The route is important in providing access to major tourist attractions including Birmingham City Centre, Birmingham Museum and Art Gallery, the National Exhibition Centre (NEC), Oxford City Centre, Blenheim Palace UNESCO World Heritage Site, The Royal Shakespeare Theatre in Stratford-Upon-Avon, and Warwick Castle. This access to tourist attractions, as well as the prevalence of major towns and cities, and international gateways such as Heathrow airport, mean that the route (particularly the M42 and M40) is also frequently used for leisure traffic, including chartered and scheduled coach travel.

### Key challenges

- Significant growth sites located in close proximity to the SRN along the route
- Proportion of heavy goods vehicles (including coaches) ranges from 16% to 45% along the route
- Traffic volumes on M40 Junctions 9 to 10 expected to exceed capacity by 2031 as a result of wider economic growth
- Levelling up category 1 areas surrounding the SRN in the Birmingham Box and Staffordshire
- Levelling up category 2 areas surrounding the M40 south of Junction 10 to the M40/M42 Interchange, M42 Junction 3A to 7A, and M5 Junction 3 to the M5/M6 Interchange (M6 Junction 8)
- Freight distribution clusters near M5 Junctions 2 to 1 and M6 Junctions 5 to 7
- Frequent leisure travel along the route, especially on the M42 and M40

<sup>37</sup> Office for National Statistics (April 2022) *The rise of the UK warehouse and the "golden logistics triangle"*. <https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/articles/theriseoftheukwarehouseandthegoldenlogisticstriangle/2022-04-11>

<sup>38</sup> Ministry of Housing, Communities & Local Government (September 2019) *English indices of deprivation 2019*. <https://www.gov.uk/government/statistics/english-indices-of-deprivation-2019>

<sup>39</sup> Department for Levelling Up, Housing and Communities (March 2022) *Levelling Up Fund Round 2: updates to the Index of Priority Places*. <https://www.gov.uk/government/publications/levelling-up-fund-round-2-updates-to-the-index-of-priority-places>



## 5. Managing and planning the SRN for the future

### Maintaining the strategic road network

We deliver a comprehensive programme of maintenance to keep our assets in the right condition to provide our customers with the right level of service; ensuring that the road network remains safe and fully open for use. We collect data on the condition of all of our assets so that our teams of specialist engineers can fully understand their current condition and identify the optimum time to intervene, maintaining the asset and replacing parts before they fail and impact customer journeys.

Our asset inspections to collect much needed condition data are undertaken through a number of methods from survey vehicles collecting road surface condition for the whole of the network every year right through to structures inspections, where we undertake over 23,000 inspections of individual structures every two years. The majority of our asset routine maintenance activities and the replacement of thousands of asset components as they near end of life are undertaken at night to minimise customer disruption, meaning that most of this work is never seen.

### Road surface

The measure for road surface condition has been updated for 2022/23 onwards. The condition is reported as one of our Key Performance Indicators and shows the condition of all available lanes of the main carriageway (excluding M40 Junctions 1 to 15, which is managed through a Design-Build-Finance-Operate (DBFO) contract) based on three elements of the road surface condition namely - the levels of surface rutting (caused by wheel tracks being formed in the surfacing), skid resistance (how slippery the road is) and longitudinal profile (how bumpy the road feels) with a target of 96.2% or more in good condition. At the time of publication, the road surface had a score of 96.7% in good condition, thereby meeting the national surfacing condition target.

This route consists of approximately 1,400 lane-kilometres of road surfacing. The surface condition across the route is considered to be sound, with 97% of pavement asset not requiring investigation for possible maintenance.

### Bridges and structures

There are 2,036 structures across the route, including bridges and large culverts. According to an analysis of current data, 91% of our structures are in very good or good condition. By carrying out inspections of each individual structure every two years, we identify any defects that may require maintenance, thereby helping to ensure that structural components are replaced before they fail.

Figure 18 shows how investment in this route has improved the average condition scores of structures, since 2006. The average condition score is derived from asset inspections on structural components, accounting for the relative importance and size of each component. If no maintenance or renewals were planned, the scores would be expected to decline from 100 (perfect) as the structures deteriorate over time. We have a rolling renewals programme to replace asset components identified in our inspection programme, improving the structure condition to ensure all structures remain in a safe condition and fully open for use.

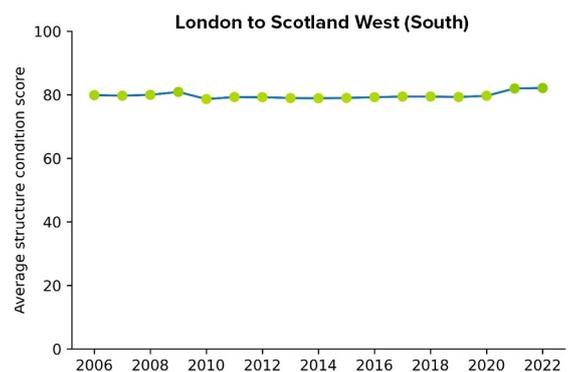


Figure 18: Average condition scores of structures, since 2006

We have identified significant structures renewals for RIS3, and these schemes affect 17 structures in this route.

### **Drainage**

Drainage assets are represented by both linear assets (for example underground pipes, channels, ditches, drains) and nonlinear assets (for example gullies and chambers). At national level, 90% of the drainage assets are in good structural condition and 87% are in good service condition.

### **Geotechnical features**

The geotechnical asset, comprising over 12,000 kilometres of earthworks embankments and cuttings carrying the road network is assessed through a programme of inspections and rated for its ability to provide the right level of safe functionality. The condition assessment of this asset is that 99.61% is in good condition to continue to function correctly. We use the inspection surveys to identify where any of our geotechnical features may require maintenance now or in the future, to ensure they are never at risk of failure.

### **Future developments**

We have been transforming our approach to maintenance through our Operational Excellence and Asset Management Transformation Programmes. Bringing our key asset maintenance decision making and planning activities back in-house so that our own staff are responsible for planning maintenance activities, along with improving the consistency of our end-to-end maintenance and asset replacement programmes will bring significant benefits. Our asset management transformation also includes the improved analysis to identify the investment required on the strategic road network during the third road period (2025-2030). The business case will provide evidence to support future maintenance investment, clearly articulating the costs and benefits of delivering an effective maintenance and asset replacement programme.

### **Operations**

We are establishing a nationally consistent approach to the management of our operational capability through our Operational Excellence change programme. This will deepen our understanding of how our interventions impact on the performance of the network and on the journeys of our customers. We are using the latest analytical software to process traffic data and gain insight into:

- How our operational services can improve safety and provide security to road users
- How the attendance of a traffic officer has an impact on incident durations
- How information provided by National Highways can benefit road users who plan their journeys beforehand and then while on their journeys

By better understanding our current operational performance, we can create a baseline from which we can identify opportunities for improvement.

### **Key challenges**

- Contributing toward the national target of 96.2% or more of carriageway being in good condition
- Maintaining the good condition of the strategic road network's geotechnical assets
- Ensuring that drainage assets are maintained so that their good structural and service conditions can be upheld



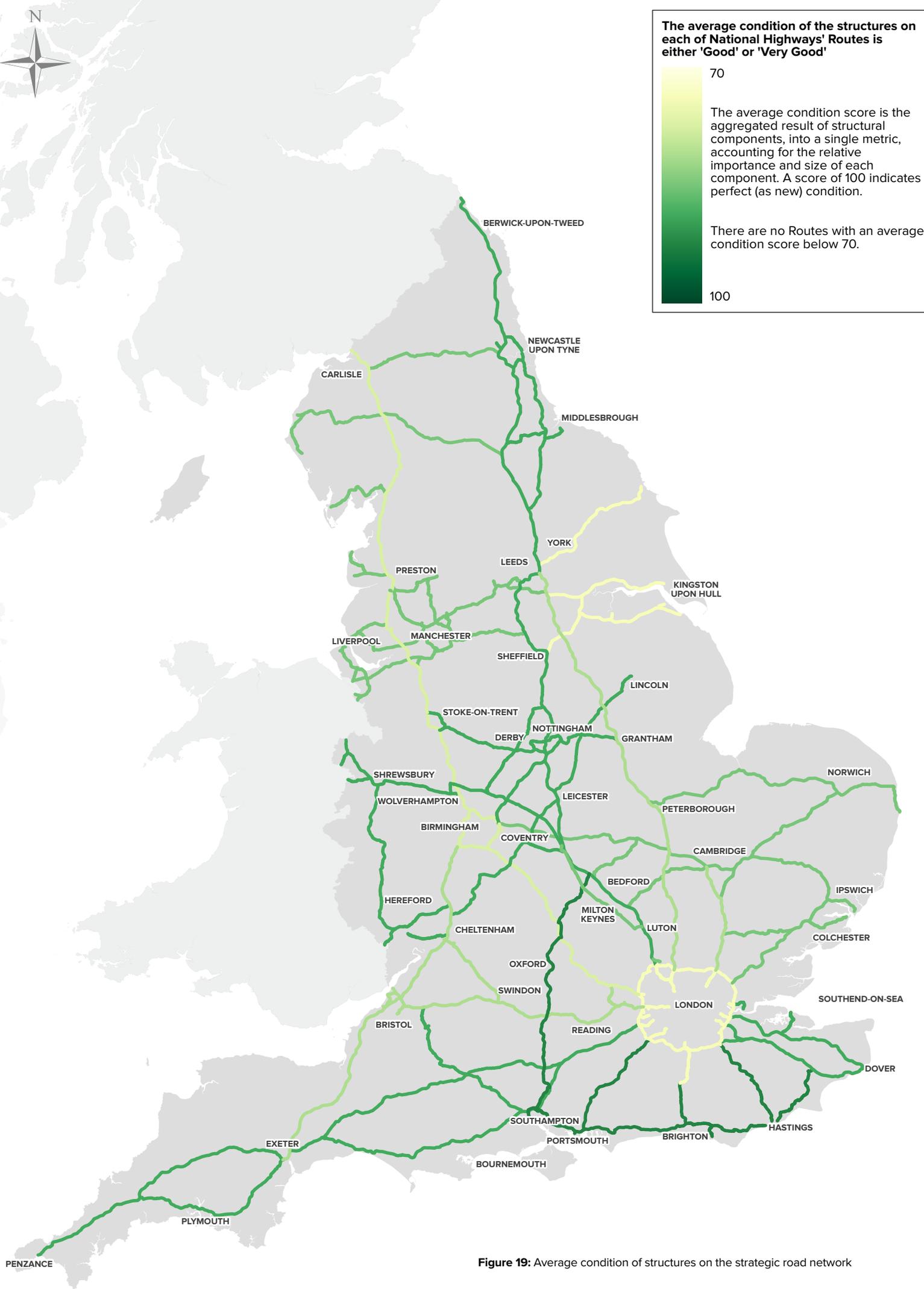
**The average condition of the structures on each of National Highways' Routes is either 'Good' or 'Very Good'**

70

The average condition score is the aggregated result of structural components, into a single metric, accounting for the relative importance and size of each component. A score of 100 indicates perfect (as new) condition.

There are no Routes with an average condition score below 70.

100



**Figure 19:** Average condition of structures on the strategic road network



## 6. A technology-enabled network

Facilities to improve journey quality and network efficiency on the strategic road network (SRN) are of key concern to our interested parties, road users and communities. High quality travel information before and during travel helps to:

- reduce day-to-day delays and improve reliability of the SRN
- minimize the adverse impacts of incidents
- improve quality of journey experience
- allow people to make more informed travel choices including about when and how to travel

The SRN either side of the M40 has good provision of technology. Both the M25 (south of the M40) and the M42 (north of the M40) have frequent Variable Messaging Signs (VMS), which can be used to provide information to drivers during their journeys. However, there is limited VMS and other technology provision on the M40. This is a significant gap, and an inconsistency for drivers making strategic journeys.

Technology provision on the M5 between Junction 4 and the M5/M6 interchange is also more limited than the adjacent sections of the M5 and M6.

At present, VMS provision on the major road network (MRN) approaching the SRN junctions is limited and inconsistent. Interested parties commented that providing information about conditions on the SRN to drivers before they reach the motorway could help drivers to take more efficient decisions regarding their routes and help to manage delay on the SRN.

The driving experience along this route suffers from a lack of technology including digital connectivity, and communication of driving conditions on the SRN.

We will support improved communications and facilities for all

These communications may include updates regarding conditions on local roads connecting to the SRN and communication of likely delays before drivers reach the end of a queue. Incorporation of new technology has the potential to improve safety along the route, in particular, by tackling poor driving behaviour or by changing how we react to incidents on the network.

Electric vehicle charging points are located at the various motorway service areas along the route. However, the move towards ending the sale of new petrol and diesel cars by 2030, and the transition to electric vehicles for freight transport, will require a greater number of charging points in future. Interested parties also noted the need for refuelling facilities for all alternative fuels on the SRN, responding to any future developments in vehicle fuelling technology.

The Government's 2022 electric vehicle infrastructure strategy<sup>40</sup> sets out a vision for 2030 where charging infrastructure will be removed as both a perceived and real barrier to the adoption of electric vehicles. The Strategy outlines the intention to accelerate the rollout of high-powered chargers on the SRN through the £950m rapid charging fund<sup>41</sup>, aimed at increasing provision of electric vehicle charging.

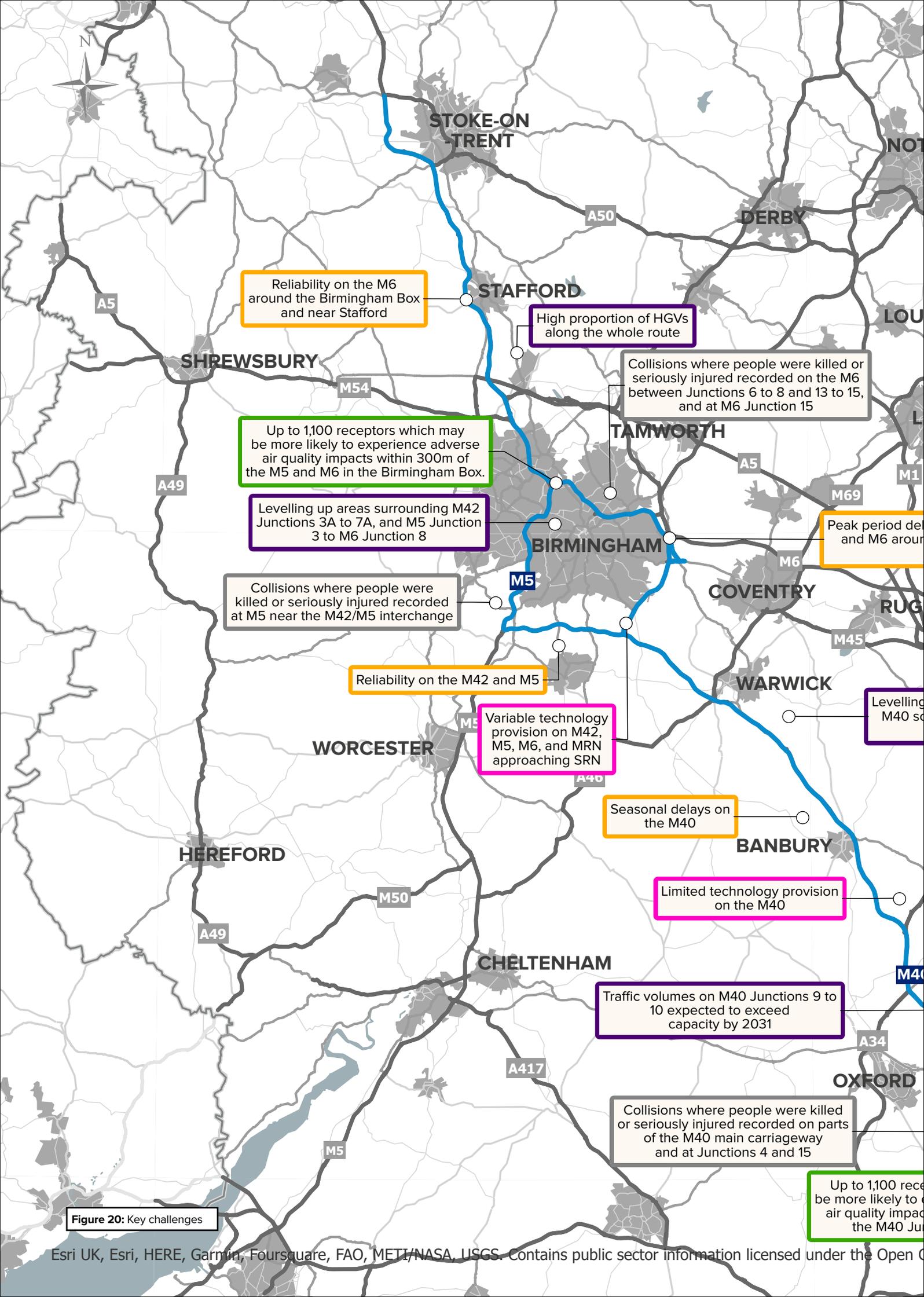
### Key challenges

- Limited technology provision on the M40
- Technology provision is variable on the M42, M5, and M6, and on the MRN approaching the SRN
- Limited facilities for electric charging for all vehicles (private car and van, coach, and freight) to support transition to ending the sale of new petrol and diesel cars by 2030

<sup>40</sup> Department for Transport *UK electric vehicle infrastructure strategy* website:

<https://www.gov.uk/government/publications/uk-electric-vehicle-infrastructure-strategy>

<sup>41</sup> Office for Zero Emission Vehicles *Rapid charging fund* website: <https://www.gov.uk/guidance/rapid-charging-fund>



Reliability on the M6 around the Birmingham Box and near Stafford

High proportion of HGVs along the whole route

Collisions where people were killed or seriously injured recorded on the M6 between Junctions 6 to 8 and 13 to 15, and at M6 Junction 15

Up to 1,100 receptors which may be more likely to experience adverse air quality impacts within 300m of the M5 and M6 in the Birmingham Box.

Levelling up areas surrounding M42 Junctions 3A to 7A, and M5 Junction 3 to M6 Junction 8

Peak period delays on the M6 and M40

Collisions where people were killed or seriously injured recorded at M5 near the M42/M5 interchange

Reliability on the M42 and M5

Variable technology provision on M42, M5, M6, and MRN approaching SRN

Levelling up areas surrounding M40

Seasonal delays on the M40

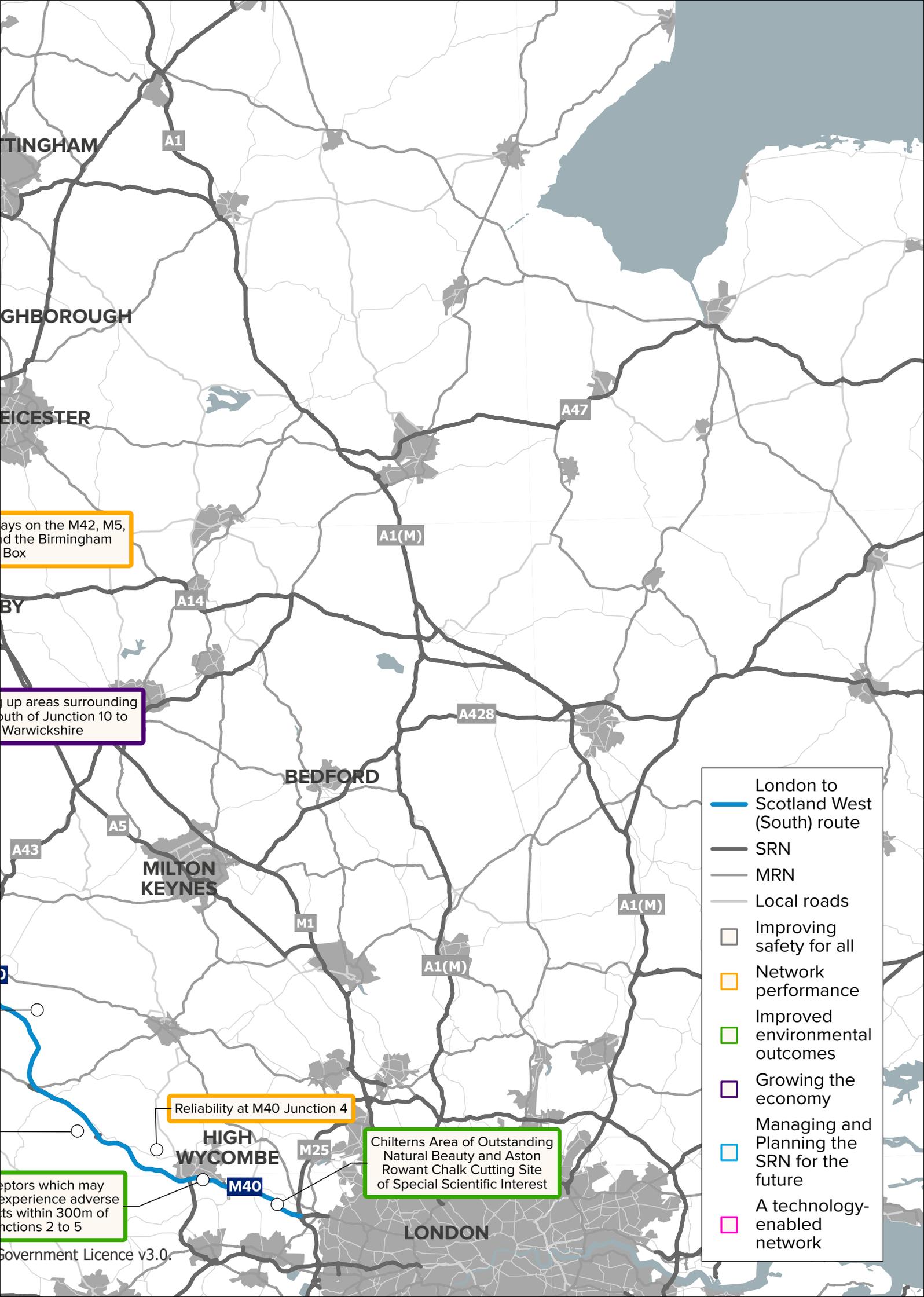
Limited technology provision on the M40

Traffic volumes on M40 Junctions 9 to 10 expected to exceed capacity by 2031

Collisions where people were killed or seriously injured recorded on parts of the M40 main carriageway and at Junctions 4 and 15

Up to 1,100 receptors which may be more likely to experience adverse air quality impacts within 300m of the M40

Figure 20: Key challenges



TINGHAM

GHBOROUGH

ICESTER

BY

up areas surrounding  
south of Junction 10 to  
Warwickshire

BEDFORD

MILTON  
KEYNES

HIGH  
WYCOMBE

LONDON



**Our  
ambition for  
the route**

# 06 Initial route objectives

We want to provide safer and more reliable journeys for all those who use or live alongside our network on the London to Scotland West (South) route, and help the region achieve its economic and housing growth ambitions. Based on our engagement and data analysis, we have defined six route objectives for the area.

We developed the route objectives based on:

- feedback from customers and neighbours outlined in Chapter 3
- opportunities to collaborate with other network operators, outlined in Chapter 4
- constraints and challenges, as highlighted in Chapter 5
- how best to contribute to the Department for Transport's (DfT's) six strategic objectives

Each route strategy includes a series of specific route-based objectives. These objectives, informed by extensive data analysis and engagement with customers and neighbours, set out our ambition for each route.

Although route objectives are route-specific, they should also be considered in the context of our commitments and ambitions for the whole network, as per our Licence agreement. This means that, while we may identify certain locations within a route for further consideration, we will seek to address these locations in line with our ongoing commitment to achieving our safety, environmental and technology obligations across the strategic road network.

It should be noted that there is overlap between the objectives, and we recognise they cannot be considered in isolation from each other. They should be considered alongside our asset plan.

The route objectives, their supporting narratives, and locations for further consideration will together inform the development of the Road investment strategy (RIS). They do not represent a commitment to road-based interventions but are intended to enable multimodal interventions to be explored as part of later study phases. It should be noted that the route objectives do not signify an assurance of investment in a particular route, nor do they remove the need to follow statutory processes.

As these are initial route objectives subject to wider feedback, we have not at this stage set out in detail how we will measure progress against them. Understanding how interventions and initiatives have addressed the challenges identified is a complex and long-term task and the approach to it will need to be devised alongside the wider performance specification for the third road period (2025-2030). We expect to set out our approach to this more clearly in the finalised route strategy overview reports to be published alongside our *Strategic business plan* and *Delivery plan* later in this second road period (2020-2025).

## Route objectives and DfT's strategic objectives

In Figure 21 we illustrate the six route objectives on our route map and, in Table 1, we show how they contribute to the Government's strategic objectives for our network as a whole.

**Table 1:** How the route objectives map to the DfT's strategic objectives

	Ref	Route objective
	A	<b>Improve safety for all:</b> provide safe journeys on the M40, M42, M5, and M6 to benefit road users, including walkers, cyclists, and horse riders crossing motorway junctions
	B	<b>Provision of a resilient and consistent network:</b> support reliable strategic and cross-border connectivity for the UK for goods and people between London, the Midlands, the North West, and Scotland, promoting the UK and regional economies
	C	<b>Support sustainable economic growth and development:</b> support sustainable economic growth and development, including local authority plan development, at key sites around the M40 (Oxford and Banbury), M42 (Solihull), M5 (Bromsgrove), M6 (Stoke-on-Trent), and along the wider corridor
	D	<b>Support connectivity with sustainable transport modes:</b> support effective local connectivity through improved integration with sustainable transport modes to minimise the impact of short distance trips on the M5 and M6 to benefit the environment and local communities
	E	<b>Be a better neighbour:</b> be a better neighbour by safeguarding the environment and reducing adverse air quality, noise, and severance impacts on local communities surrounding the route
	F	<b>Better informed drivers:</b> improve communications to better inform drivers and improve driver experience throughout the route, including on local roads approaching strategic road network junctions

DfT's strategic objectives for our route

Improving safety for all	Network performance	Improved environmental outcomes	Growing the economy	Managing and planning the SRN for the future	A technology-enabled network
✓	✓				
	✓		✓		✓
	✓		✓		
	✓	✓			
		✓			
	✓				✓

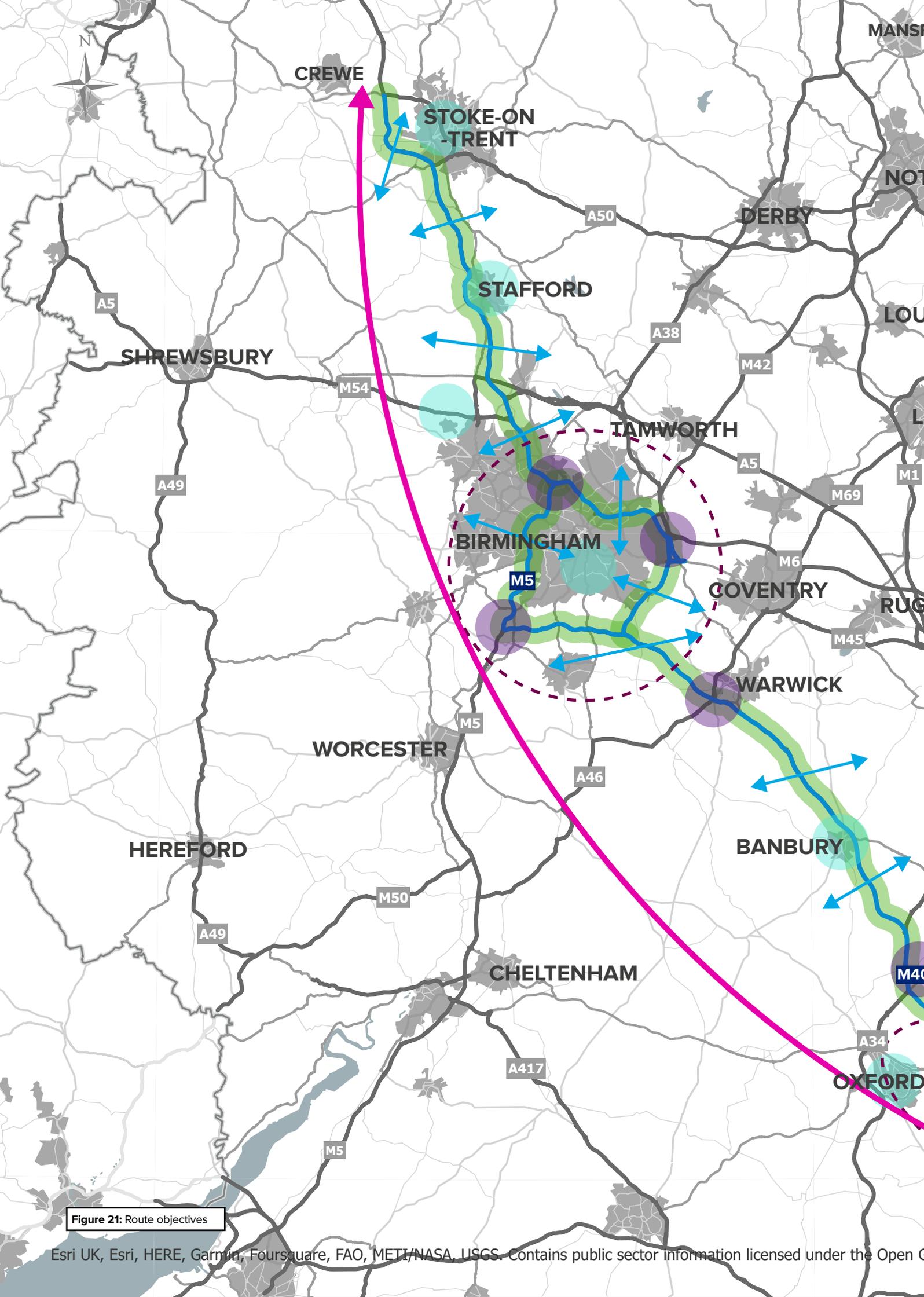
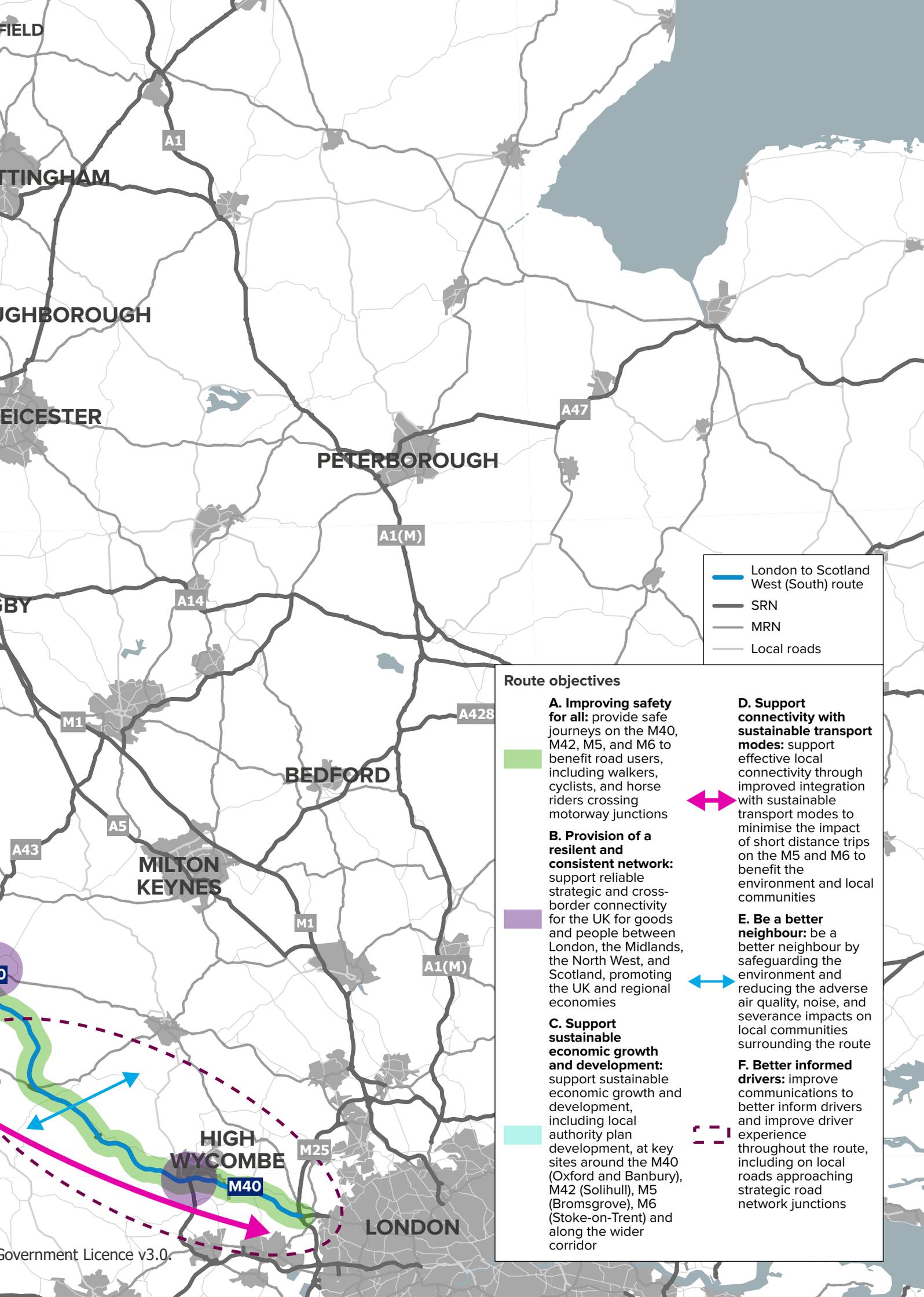


Figure 21: Route objectives



-  London to Scotland West (South) route
-  SRN
-  MRN
-  Local roads

**Route objectives**

-  **A. Improving safety for all:** provide safe journeys on the M40, M42, M5, and M6 to benefit road users, including walkers, cyclists, and horse riders crossing motorway junctions
-  **B. Provision of a resilient and consistent network:** support reliable strategic and cross-border connectivity for the UK for goods and people between London, the Midlands, the North West, and Scotland, promoting the UK and regional economies
-  **C. Support sustainable economic growth and development:** support sustainable economic growth and development, including local authority plan development, at key sites around the M40 (Oxford and Banbury), M42 (Solihull), M5 (Bromsgrove), M6 (Stoke-on-Trent) and along the wider corridor
-  **D. Support connectivity with sustainable transport modes:** support effective local connectivity through improved integration with sustainable transport modes to minimise the impact of short distance trips on the M5 and M6 to benefit the environment and local communities
-  **E. Be a better neighbour:** be a better neighbour by safeguarding the environment and reducing the adverse air quality, noise, and severance impacts on local communities surrounding the route
-  **F. Better informed drivers:** improve communications to better inform drivers and improve driver experience throughout the route, including on local roads approaching strategic road network junctions



## A. Improve safety for all

### Objective

Provide safe journeys on the M40, M42, M5, and M6 to benefit road users, including walkers, cyclists, and horse riders crossing motorway junctions.

### Context

The motorway junctions on this route provide important connectivity to the major road network and to east-west sections of the strategic road network such as M54 and A5. However, congestion has grown to a level that causes delays and queuing on the motorway slip roads and along non-motorway approaches to junctions. This has the potential to affect the real or perceived safety of the route.

Interested parties have observed that perceived lack of safe provision for walkers, cyclists and horse riders also present significant barriers for those who need to cross the motorway junctions to continue their journeys.

### Our network considerations

Interested parties, including the M40 Design-Build-Finance-Operate operator, have raised observations of areas where perceptions of safety are not good:

- M40 corridor – low sun causes visibility and safety concerns during spring and autumn

- M40 Junctions 14 to 15 near Royal Leamington Spa – due to queues extending back from the junctions and the amount of space available for lane changes (weaving lengths) on the main carriageway
- M42/M5 Interchange (M5 Junction 4A) – due to short weaving lengths and late lane changes caused by congestion
- M42/M6 Interchange (M42 Junction 7A) – due to short weaving lengths and late lane changes caused by congestion
- M5/M6 Interchange (M6 Junction 8, a.k.a. Ray Hall) – due to short weaving lengths and late lane changes caused by congestion
- M6 Junction 7 and Junction 9 – busy flows at the junction and limited footpath and cycle provision present safety concerns for walkers, cyclists, and horse riders on local roads and crossing junctions, including access to schools
- M6 Junction 15 (Hanchurch Interchange) – due to an unusual and more complicated junction layout

In addition, STATS19 data show that there are concentrations of collisions and sections of the route where people were killed or seriously injured:

- M40 Junctions 2 to 5
- M40 Junctions 6 to 13
- M40 Junction 15 to the M40/M42 Interchange (M42 Junction 3A)
- M5 Junctions 2 to 1
- M6 Junctions 5 to 7
- M6 Junctions 12 to 13
- M6 Junctions 14 to 15

### Outcomes

- Improved safety on identified links
- Improved safety at identified junctions and motorway interchanges
- Increased perception of safety for walkers, cyclists and horse riders crossing M6 Junction 7 and 9 circularities

### DfT's Strategic objectives

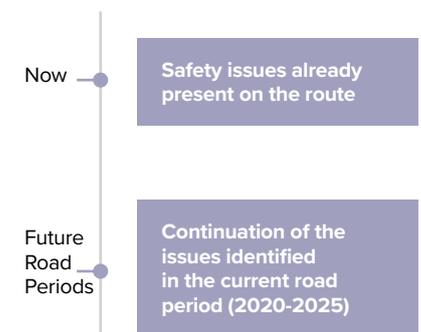


Improving safety for all



Network performance

### Timeframe based on the issues and constraints identified





## B. Provision of a resilient and consistent network

### Objective

Support reliable strategic and cross-border connectivity for the UK for goods and people between London, the Midlands, the North West, and Scotland, promoting the UK and regional economies.

### Context

The route is a key corridor for freight, connecting major economic centres in London, the Midlands, the North of England and Scotland. It provides a through-route for strategic freight and connections to international gateways including Heathrow and Birmingham airports.

Traffic continuing on the M6 north of this route can access Manchester Airport and the Port of Liverpool. The route also connects North West England to South West England including the Port of Bristol via the M5, and connects Southern England and Oxfordshire to the East Midlands via the M42 and A42.

The impact of simultaneous road works and road closures on both strategic traffic and communities living along diversion routes has been raised by interested parties, particularly around Oxfordshire and High Wycombe. This has a notable impact on heavy goods vehicle traffic, which often travels at night when roadworks are more likely to take place.

Reliability along the route is a key concern for hauliers, particularly those which operate just-in-time deliveries or need to make specific time slots at ports or airports. Reliability and consistency of experience is also an important factor for the high volume of leisure traffic which uses the route to access airports and tourist sites during holiday periods.

Freight rest facilities on the route are largely well-spaced, but are operating at 85% capacity, indicating that they will struggle to accommodate increased usage. Planning approval for a motorway service area to fill a gap in provision south of M42 Junction 6 was granted in 2022. Interested parties have highlighted that existing rest facilities will need to be upgraded as technology develops, to provide continued support for alternative fuel freight vehicles and provide a high-quality experience for drivers of heavy goods vehicles.

The route is also a key corridor for leisure traffic accessing international and UK tourist sites or travelling to visit family and friends. A reliable and consistent route is important for chartered and scheduled coach travel, for travellers needing to get to airports on time, and to enable people to have a stress-free start or end to their holidays.

### Our network considerations

The route carries a high volume of freight traffic. Heavy goods vehicles as a percentage of total traffic flow varies along the route from 16-20% on parts of the M40, to as high as 45% on the M6 north of Birmingham. This is above the strategic road network average of approximately 11%.

Reliability on the M5 and M6 sections of the Birmingham Box can vary by as much as 50 seconds per vehicle per mile, causing significant concerns for just-in-time deliveries, as well as leisure and business traffic for whom arriving on time is important.

Maintaining efficient access to the following gateways and destinations has been identified as particularly important by interested parties:

- Heathrow Airport
- Birmingham Airport
- The freight distribution centres in the Birmingham Box

## Outcomes

- Increased reliability and predictability of journey times for freight and leisure traffic
- Reduced delays at junctions on the M40 corridor and at junctions within the Birmingham Box, including motorway interchanges
- A better experience for heavy goods vehicle drivers including high-quality rest facilities
- A more resilient route which is better able to meet the needs of all users

## DfT's Strategic objectives



Network performance

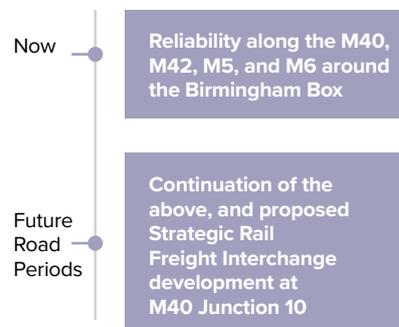


Growing the economy



A technology-enabled network

## Timeframe based on the issues and constraints identified





## C. Support sustainable economic growth and development

### Objective

Support sustainable economic growth and development, including local authority plan development, at key sites around the M40 (Oxford and Banbury), M42 (Solihull), M5 (Bromsgrove), M6 (Stoke-on-Trent) and along the wider corridor.

### Context

The London to Scotland West (South) route plays a key role in connecting major economic centres in London, the Midlands, the North of England and Scotland. This includes major employment centres e.g., Oxford, Solihull, Birmingham and Stoke, and the manufacturing and distribution centres in the Black Country.

Locations along the route identified for future development in Local Authority Local Plans include:

- 10,000 new homes near Bicester
- Arden Cross, a mixed-use development across more than 140 hectares with up to 3,000 new homes and up to 6 million square feet of commercial development supporting up to 27,000 jobs near M42 Junction 6 and Solihull
- 20,000 new homes in Stoke-on-Trent.

A high percentage of the population along the route is economically active. However, the M40 in Warwickshire and much of the M42, M5, and M6 in the West Midlands run through areas which are ranked by government as being in levelling up categories 1 or 2.

### Our network considerations

The following sections of the routes are expected to suffer from future increases in delays due to the potential impact of wider economic growth:

- M40 Junction 4 (High Wycombe)
- M40 Junctions 9 to 10 (Oxford)
- M40 Junctions 14 to 15 (Warwick)
- M5 between Junctions 1 to 3 (West Bromwich to Halesowen)
- M42 Junction 4 (Blythe Valley)
- M6 Junctions 14 to 16 (Stafford and Stoke-on-Trent, including the Ceramic Valley Enterprise Zone)

### Outcomes

- Delivery of sustainable development along the route
- Improved connectivity for developments around Oxford and Warwick
- Improved support for sustainable economic development in Oxfordshire, Buckinghamshire, and Staffordshire
- Reduced delays on the M5 in the Birmingham Box and at M42 Junction 4 for access to future Economic Opportunity Areas

### DfT's Strategic objectives

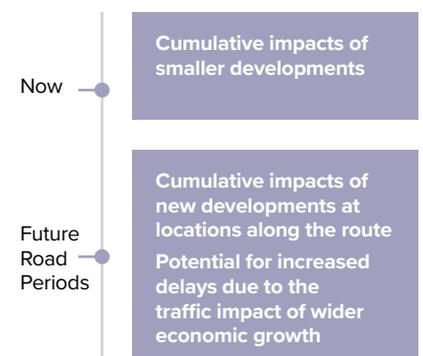


Network performance



Growing the economy

### Timeframe based on the issues and constraints identified





## D. Support connectivity with sustainable transport modes

### Objective

Support effective local connectivity through improved integration with sustainable transport modes to minimise the impact of short distance trips on the M5 and M6 to benefit the environment and local communities.

### Context

Interested parties have reported that the M5 and M6 within the West Midlands may be heavily used for short, local trips, such as daily commuting between the Black Country and Birmingham. Interested parties commented that a greater use of public transport for shorter journeys could benefit overall traffic flows on the M5 and M6.

The M6 Junctions 7 to 10 and the M5 Junction 4 to the M5/M6 interchange have been particularly identified by interested parties as having potential for local trips to be replaced with travel by other modes, such as bus or rail. These sections of motorway currently experience average morning and evening peak delay, which can be over 120 seconds per vehicle per mile at sections of this route, indicative of commuting traffic.

Public transport serving communities along the route is currently limited in some areas and can take longer than using the motorway, even accounting for peak period delay.

Similarly, local roads are often congested during peak periods and may not provide competitive journey times for commuters.

Almost the entirety of the route is on the motorway, meaning that it cannot be used for walking or cycling. However, the strategic road network (SRN) can be, and is, used by public transport such as coach or express bus. For example, the M40 is a coach commuting route from Oxford, Lewknor, and High Wycombe to London. The M6-M42-M40 is also used by coach services travelling between the North-west, the Midlands, and London.

Concerns have been raised by interested parties regarding inappropriate use of the major road network (MRN) by traffic diverting from the M40 onto local roads when the motorway is congested, particularly around Oxfordshire and High Wycombe. Similar concerns have also been reported about traffic diverting onto the A34 and A50/A500 to avoid delays on the M6 between Junctions 14 and 16.

### Our network considerations

Better collaboration with partners could assist in identifying the proportion of local and strategic traffic using the route and the potential for sustainable travel in the Birmingham Box, whilst improving the interaction and co-ordination of the SRN and MRN.

### Outcomes

- Improved multi-modal connectivity for local trips in the urban areas around the Birmingham Box and Staffordshire
- Improved connectivity and overall traffic flow between the SRN and the MRN and local road networks

### DfT's Strategic objectives

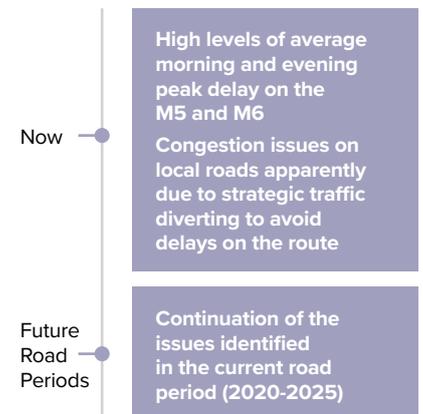


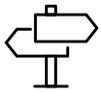
Network performance



Improved environmental outcomes

### Timeframe based on the issues and constraints identified





## E. Be a better neighbour

### Objective

Be a better neighbour by safeguarding the environment and reducing adverse air quality, noise, and severance impacts on local communities surrounding the route.

### Context

Several communities are severed by the M5 and M6 motorways, including North Birmingham (Aston, Erdington, Gravelly Hill), West Bromwich and west of Walsall. Active travel options to cross the strategic road network (SRN) are limited.

There are several sections of the M5 and M6 where receptors within 100m of the SRN may be more likely to experience adverse air quality impacts and parts of the M42, M5, and M6 where receptors within 300m of the SRN may be more likely to experience adverse noise impacts. These more urban sections of the route also fall within Air Quality Management Areas and Noise Important Areas. Birmingham City Council has recently introduced a Clean Air Zone to manage air quality issues within the city. Interested parties have raised concerns that this may affect use of the M5 and M6 around the Birmingham Box as an alternative route.

The M40 is a more rural route and has fewer sections which are affected by severance, air quality and noise issues. However, there are long stretches of this road where receptors within 100m and 300m of the SRN may be more likely to experience adverse air quality impacts and adverse noise impacts respectively. There are also Air Quality Management Areas and Noise Important Areas adjacent to the route near High Wycombe and near Bicester.

The M40 also runs through the Chilterns Area of Outstanding Natural Beauty and is also located close to Sites of Special Scientific Interest (SSSI) including the Aston Rowant Cutting, which is the only instance of an SSSI being wholly within the highway boundary, making it an environmentally sensitive route. In the West Midlands, the A45 crosses the River Blythe SSSI, while the A452, A446, and M6 Junction 4 are close to the Coleshill and Bannerly Pool SSSI.

### Our network considerations

Issues of community severance, particularly for walkers, cyclists and horse riders at the M5 and the M6 around the Birmingham Box and M6 Junctions 7 and 9 (particularly access to schools) have been raised by interested parties.

A speed limit of 60 miles per hour is currently in place on the M5 between Junctions 1 and 2, and the M6 between Junctions 6 and 7 to help improve air quality.

The following sections of the route are where receptors within 100m of the SRN may be more likely to experience adverse air quality impacts:

- M40 between Junctions 4 and 5
- M40 northbound between Junctions 11 and 12
- M5 between Junctions 3 and 2
- M6 between Junctions 6 and 7
- M6 between Junctions 10 and 10A
- M6 southbound between Junctions 13 and 14

The following sections of route are where receptors within 300m of the SRN may be more likely to experience adverse noise impacts:

- M40 Junctions 2 to 5
- M5 southbound Junction 4A to Junction 4
- M5 Junctions 3 to 1
- M5 northbound at the M5/M6 interchange
- M42 northbound from Junction 7A to M6 Junction 5
- M6 southbound from Junction 5 to 6
- M6 Junction 6 to Junction 10
- M6 southbound between Junction 10 and Junction 10A
- M6 southbound Junctions 13 to 14
- M6 southbound from Junction 15 to the Motorway Service Area at Keele

## Outcomes

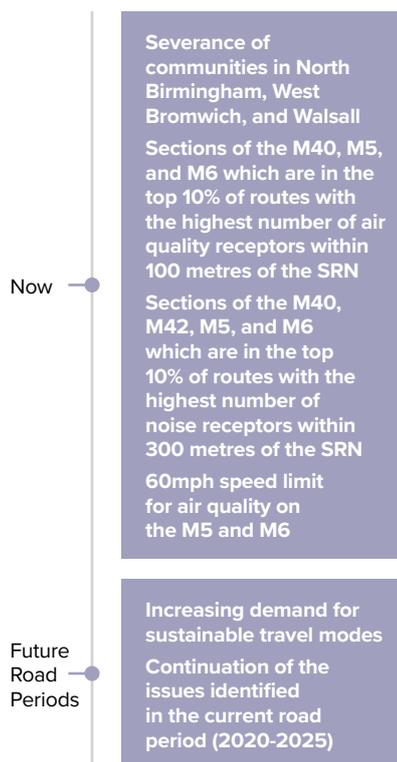
- Improved connectivity for communities which are severed by the SRN in the Birmingham Box
- Improved air quality in communities adjacent to the SRN
- Reduced noise impacts for communities adjacent to the SRN

## DfT's Strategic objectives



Improved environmental outcomes

## Timeframe based on the issues and constraints identified





## F. Better informed drivers

### Objective

Improve communications to better inform drivers and improve driver experience throughout the route, including on local roads approaching strategic road network junctions

### Context

Much of the M42 and M6 on the route have frequent Variable Message Sign provision, enabling us to give drivers information during their journeys. These parts of the route are also well-equipped with additional technology which provides us with information about conditions on the route and help us to make decisions to help traffic travel efficiently on the strategic road network (SRN).

However, the M5 and the M40 sections of this route currently have limited technology provision. There is also limited driver communication provision on the major road network approaching motorway junctions. Lack of information on the local road network about conditions on the SRN is a common concern amongst interested parties. When drivers are better-informed, they can make better decisions about their journeys.

### Our network considerations

The evidence shows that this route experiences poor journey time reliability and delay during holiday periods to the north of Banbury and Royal Leamington Spa, and frequent peak time delay throughout, even on parts of the M6 and M42 which are smart motorway. Many of the links and junctions on the network, such as M40/A404 at Handy Cross, M40 Junction 15 and the M5 and M6 in the Birmingham Box, are no longer able to cope with the volume of traffic at peak times.

In the Birmingham Box, there are alternative routes which can be quicker than joining a congested motorway, provided that drivers have the information to take that decision at the appropriate point in their journeys.

The northern parts of the M40 and M5, and the M6 north of Birmingham, carry a high proportion of heavy goods vehicles, for which early and reliable information about delays and diversions is critical to enable timely decisions about routing and support just-in-time delivery when required.

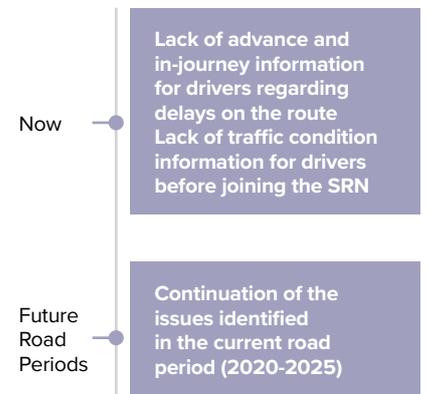
### Outcomes

- Improved driver experience throughout the route
- Drivers are better informed
- More efficient freight movements and improved journey times

### DfT's Strategic objectives

-  Network performance
-  A technology-enabled network

### Timeframe based on the issues and constraints identified



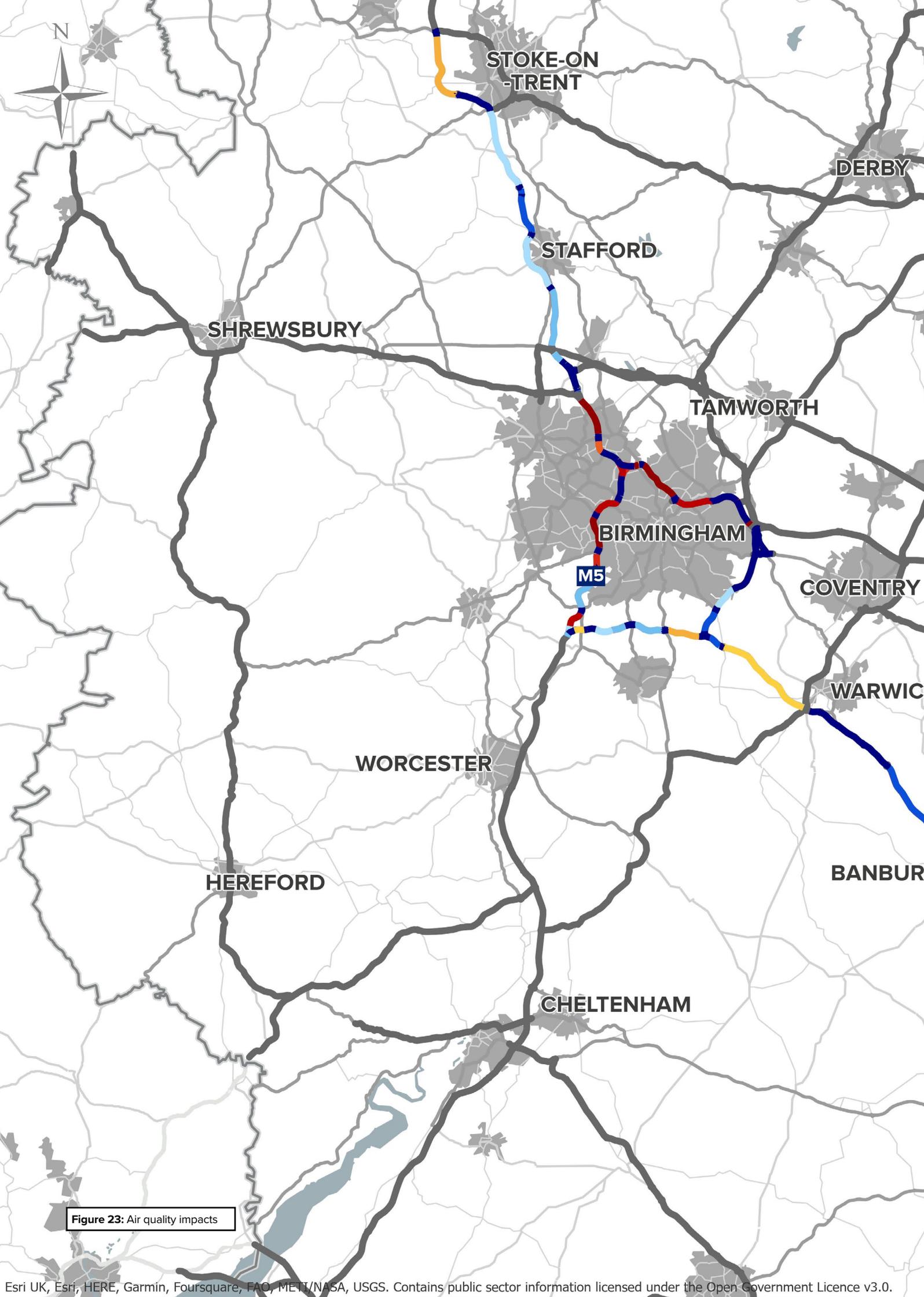
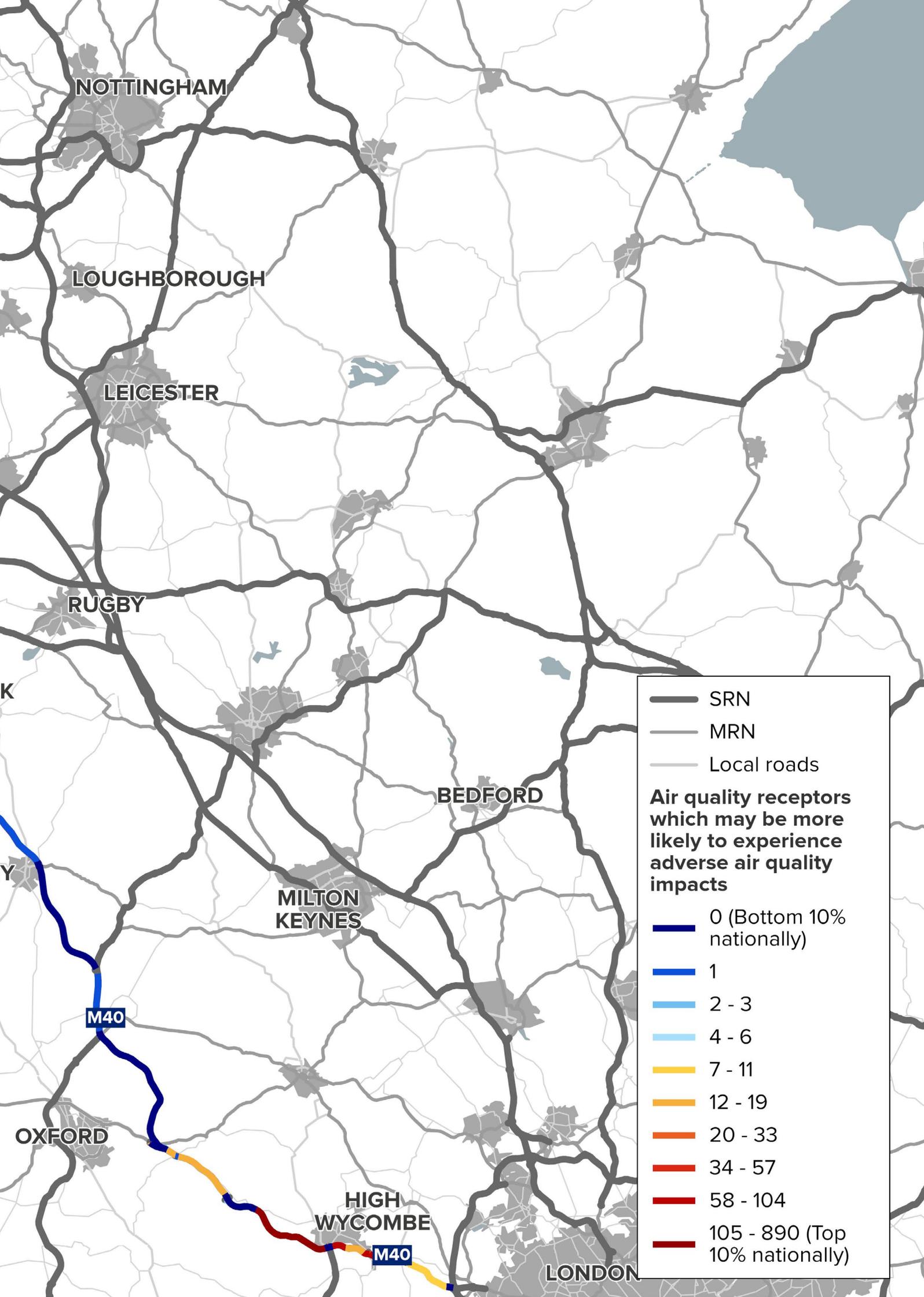


Figure 23: Air quality impacts



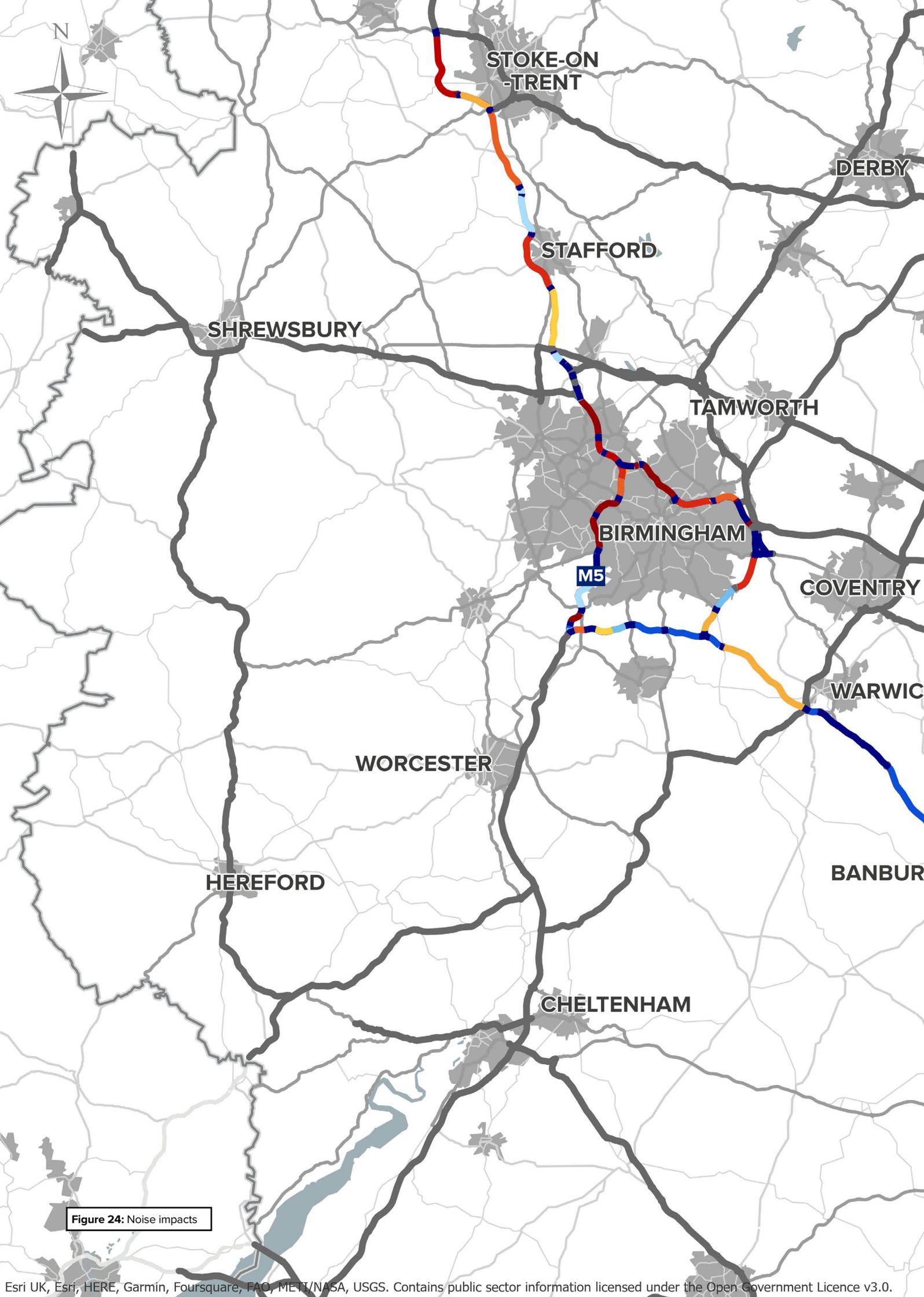
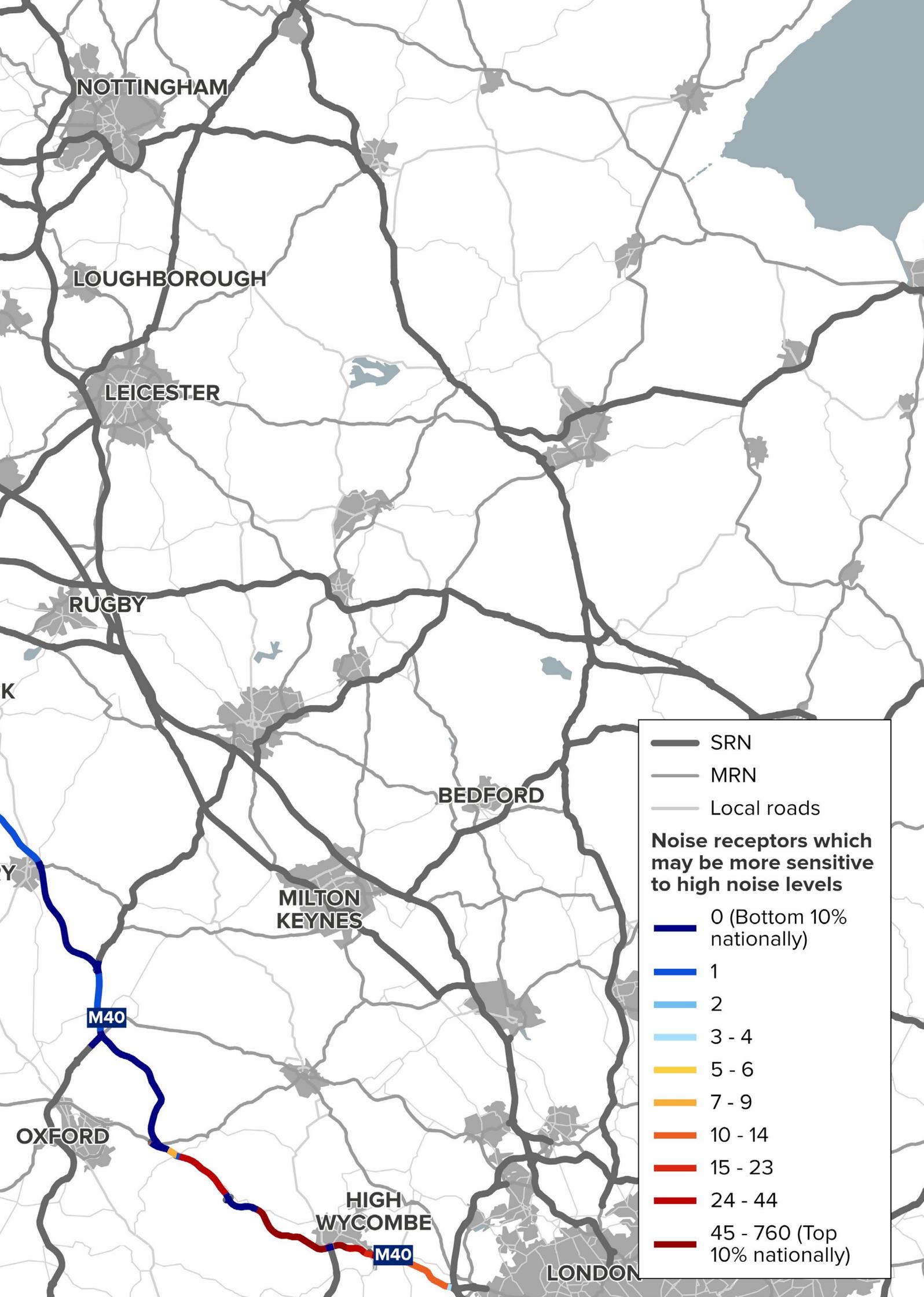


Figure 24: Noise impacts



NOTTINGHAM

LOUGHBOROUGH

LEICESTER

RUGBY

BEDFORD

MILTON  
KEYNES

OXFORD

HIGH  
WYCOMBE

LONDON

M40

M40

Table 2: Evidence used to inform objectives

Objective	Extent	Chapter 3 Views raised by our customers and neighbours	Chapter 4 Integration with our partners' strategies and priorities	Chapter 5 Challenges and issues identified	
A	<b>Improve safety for all:</b> provide safe journeys on the M40, M42, M5, and M6 to benefit road users, including walkers, cyclists, and horse riders crossing motorway junctions.	M40 Junctions 2 to 5, 6 to 13, and Junction 15 to the M40/M42 Interchange M42/M5 and M5/M6 Interchanges M5 Junctions 2 to 1 M6 Junctions 5 to 7, 12 to 13, and 14 to 15	Interested parties raised concerns about safety at the motorway interchanges. Interested parties also raised concerns about safety for walkers, cyclists and horse riders, particularly schoolchildren, crossing the motorway junctions at M6 junctions 7 and 9.	The M40 Design-Build-Finance-Operate operator raised concerns regarding low sun affecting visibility on M40 Junctions 9 to 10, and short weaving lengths between M40 Junctions 14 and 15.	The M40, M42, M5, and M6 junctions 7 to 10 have been given a 3-star rating by International Road Assessment Programme. There are concentrations of collisions where people have been killed or seriously injured on the M40, M5, and M6.
B	<b>Provision of a resilient and consistent network:</b> support reliable strategic and cross-border connectivity for the UK for goods and people between London, the Midlands, the North West, and Scotland, promoting the UK and regional economies.	M40 Junction 4 M42 Junctions M5 Junctions 3 to M5/M6 Interchange M6 Junctions 5 to 10 and 13 to 15	Interested parties raised delay and journey time reliability issues, particularly around the Birmingham Box (peak times) and on the M40 (during school holidays). Interested parties commented that better connectivity is needed between the strategic road network and major road network/ local road network to support better overall movement of traffic.	Midlands Connect and England's Economic Heartland have both raised concerns regarding existing levels of delay and the ability of the route to handle increased traffic in the future.	There are seasonal delays on the M40 and peak period delays on the M42, M5, and M6 around the Birmingham Box. Reliability is a concern at M40 Junction 4, on the M42 and M5, and on the M6 around the Birmingham Box and near Stafford. Future development and traffic growth will have an impact on delay and reliability along the route.
C	<b>Support sustainable economic growth and development:</b> support sustainable economic growth and development including local plan development, at key sites around the M40 (Oxford and Banbury), M42 (Solihull), M5 (Bromsgrove), M6 (Stoke-on-Trent) and along the wider corridor.	M40 Junctions 9 to M40/M42 Interchange. M42, M5, and M6 in the Birmingham Box. M6 through Staffordshire.	Interested parties considered that the strategic road network (SRN) could be used as a tool to support Levelling-Up. Interested parties were concerned regarding the ability of the route to accommodate and encourage economic development.	Midlands Connect and England's Economic Heartland are concerned with maintaining access to ports and airports and a reliable route for freight which can support future economic growth.	There are significant growth sites located near to the SRN along the route. The proportion of heavy goods vehicles (including coaches) travelling along the route ranges from 16% to 45%. Traffic volumes on M40 Junctions 9 to 10 expected to exceed capacity by 2031 due to wider economic growth. There are Levelling Up category 1 and 2 areas surrounding the SRN along the route. There is heavy use of the route for leisure travel.

Objective	Extent	Chapter 3 Views raised by our customers and neighbours	Chapter 4 Integration with our partners' strategies and priorities	Chapter 5 Challenges and issues identified
<p>D <b>Support connectivity with sustainable transport modes:</b> support effective local connectivity through improved integration with sustainable transport modes to minimise the impact of short distance trips on the M5 and M6 to benefit the environment and local communities.</p>	<p>M40 near High Wycombe and Oxford. M42, M5 and M6 in the Birmingham Box. M6 Junctions 14 to 16.</p>	<p>Interested parties commented that greater integration with public transport could support environmentally sustainable travel, improve safety, and reduce the impact of the strategic road network (SRN). Interested parties consider that there is a high likelihood that the SRN is heavily used for short distance trips which could be made by public transport instead. Interested parties are concerned regarding the major road network (MRN) being used by strategic traffic to avoid delay on the SRN.</p>	<p>Midlands Connect's Rail Hub proposals include improved connectivity for short journeys within the West Midlands area, particularly around the Birmingham Box. Midlands Connect's road priorities include improved integration between the MRN, public transport, and active travel.</p>	<p>There is average peak period delay on the M5 and M6 during the morning and afternoon peak periods.</p>
<p>E <b>Be a better neighbour:</b> be a better neighbour by safeguarding the environment and reducing the air quality, noise, and severance impacts on local communities surrounding the route.</p>	<p>M40 Junction 4 M42 M5 Junctions 2 to 1 M6 Junctions 6 to 7</p>	<p>Interested parties raised concerns regarding the air quality, noise, and severance impacts of the strategic road network (SRN) on communities along the route. Interested parties considered that it is important for the SRN to contribute to environmental targets</p>	<p>England's Economic Heartland and Midlands Connect priorities include decarbonisation and contributing to achieving 'net zero'.</p>	<p>The route passes by Areas of Outstanding Natural Beauty with environmental designations and cultural heritage. The need to reduce greenhouse gas emissions and ensure resilience to future climate change. The M40 Junctions 5 to 6 runs through the Aston Rowant Chalk Cutting Site of Special Scientific Interest. The A45 crosses the River Blythe Site of Special Scientific Interest (SSSI), while the A452, A446, and M6 Junction 4 are close to the Coleshill and Bannerly Pool SSSI. There are sections of the M40, M5, and M6 where receptors within 100m of the SRN may be more likely to experience adverse air quality impacts. There are sections of the M40, M42, M5, and M6 where receptors within 300m of the SRN may be more likely to experience adverse noise impacts. Air quality impacts on M5 Junctions 2 to 1 and M6 Junctions 6 to 7 have led to the imposition of a 60mph speed limit in these areas.</p>

Objective	Extent	Chapter 3 Views raised by our customers and neighbours	Chapter 4 Integration with our partners' strategies and priorities	Chapter 5 Challenges and issues identified
<p>F <b>Better informed drivers:</b> improve communications to better inform drivers and improve driver experience throughout the route, including on local roads approaching strategic road network junctions.</p>	<p>Whole route</p>	<p>Interested parties considered that on the strategic road network (SRN) should be communicated to drivers while they are still on the major road network (MRN) or local road network.</p> <p>They also considered that technology can be used to tackle poor driver behaviour, and that delay times need to be forecast to reflect what a driver will experience when they reach the back of a queue.</p>	<p>Midlands Connect's Better Use of the M6 Toll study is investigating how driving conditions on the M6 and M6 Toll can be better communicated to drivers.</p>	<p>There is limited technology provision on the M40.</p> <p>Technology provision is variable on the M42, M5, and M6, and on the MRN approaching the SRN.</p> <p>There are limited facilities for electric charging for all vehicles (private car or van, coach, and freight).</p>





**Unlocking  
regional  
potential**

# 07

## Locational areas for consideration and potential collaboration

We know the importance that investment in our network can make locally, regionally and nationally. It can make areas more attractive for inward investment, unlock new sites for employment and housing and facilitate regeneration. It can also ease congestion, improve our customers' journeys and support environmental improvements in urban and rural communities along our network.

In this chapter, we outline our proposed locational areas for further consideration, which will be explored in future road periods to achieve the London to Scotland West (South) route objectives and the Department for Transport's (DfT's) six strategic objectives. These do not represent a commitment as funding will be considered as part of the development of the third Road Investment Strategy (RIS) and other investment processes.

Furthermore, they do not represent a final list of our potential investment locations and will be refined in our final Route strategy overview report, published alongside our RIS3 *Strategic business plan* and *Delivery plan* for 2025-2030.

## Alignment with government objectives

Route strategies are aligned to the DfT's six strategic objectives and will also contribute to the RIS3 performance metrics set as part of the RIS-setting process.



### Improving safety for all

Safety is our top priority and we are committed in the second road period (2020-2025) to reducing the number of road users killed or seriously injured on the strategic road network (SRN), by 50% (from the 2005-2009 baseline) by the end of 2025, with a long-term vision of zero harm. This includes our contractors adopting a safe system approach to ensure roadworker safety. Our operational and strategic planning teams continue to work to prevent incidents from occurring and are focussed on reducing incident severity through a package of activities to promote safer roads, safer people, safer vehicles and coordinated collision response. We are also learning from other organisations and interested parties about what works best and collaborate with them to improve safety for all. Safety is embedded in our study programme to inform future investment priorities for RIS3 and beyond.



### Network performance

Our operational and strategic planning teams continue to explore what steps can be taken to make journeys more reliable and not subject to delay, as well as safer, while protecting and respecting the environment. This involves working with our partners such as Sub-national Transport Bodies and other operators such as Network Rail to consider interventions to improve network performance as we recognise the SRN does not stand alone from other transport infrastructure, in particular local roads, and users expect journeys to be seamless regardless of transport mode or ownership. Through our study programme we will identify appropriate types of intervention recognising the need for integration, environmental and digital consideration balanced against costs.



### Improved environmental outcomes

We are continuously working to ensure our roads work more harmoniously with the communities that live alongside them and the environments that surround them. We embed environmental considerations into all our activities, ranging from infrastructure design to scheme delivery and ensuring we meet our statutory obligations, and the way we manage and operate our network. In developing our intervention programmes, we will consider a broad range of interventions including technology enabled solutions and integration with other operators' networks as we understand the gravity of the climate situation and are committed to playing its part in reducing carbon emissions. Our carbon policy commitments are:

- As a net zero Britain will still travel by road in 2050, we will ensure a properly maintained, future-ready road network, that is fitted to support the transition to electric vehicles, is key to reducing emissions from transport
- This programmatic coordinated delivery approach will act as a catalyst for: production management, off-site construction, reducing network disruptions, unlocking economies of scale, and supporting delivery of Net Zero targets
- It will also help us understand how interventions should be delivered, either through grouping or as standalone projects
- We expect this approach will create opportunities for increased efficiencies, and enable us to deliver more within our funding. We also expect this approach to help us support the Government's long-term aims for the nation, such as contributing to net zero carbon, and social value



## Growing the economy

We recognise that the SRN is a significant economic asset for the UK and is essential for people to access jobs, and for businesses and logistics firms moving goods around the country. Our regional planning teams continue to work closely with local planning authorities to support sustainable growth and development aspirations, including integration with other modes. We also continue to work with businesses to understand their needs such as quality lorry parking facilities and ensuring reliable and resilient integration with ports, airports and rail terminals through which we access global markets. The SRN also has a role in achieving the Government's moral, social and economic programme of levelling up the United Kingdom. Our forward intervention programme will seek to support the growth agenda where possible and appropriate.



## Managing and planning the SRN for the future

We recognise that our network is complex and varied and requires careful stewardship to keep it in good condition. Our ongoing maintenance programme is essential to safety and keeping our roads open, while our renewals activity allows us to maintain, safeguard and modernise all our assets, and provide increased resilience in relation to extreme weather. Research and data help us to understand what our network needs over the short and long term and to inform our planning. We continue to be committed to delivering our work in a way that minimises disruption to our customers and maximises value to taxpayers.



## A technology-enabled network

In designing our intervention programmes, we will consider our Digital Roads vision for how we harness data, technology, and connectivity to improve the way the SRN work is designed, built, operated and used for the future. This will enable safer journeys, faster delivery and an enhanced customer experience for all, recognising the specific challenges of delivering technology and relevant information in more rural and remote parts of the network. The vision is structured around three themes: Design & Construction; Operations; Customers. The approach embeds digital, data and technology across the intervention programmes, providing the building blocks for a digital future for roads.

## Programmatic approach to investment

As part of our new route strategies process, we are developing a more programmatic approach to how we develop our investment plans. This will help us determine the complexity of potential investments and what high value interventions are more deliverable.

This programmatic coordinated delivery approach will act as a catalyst for; production management, off-site construction, reducing network disruptions, unlocking economies of scale and supporting delivery of Net Zero targets.

It will also help us understand how interventions should be delivered, either through grouping or as standalone projects.

We expect this approach will create opportunities for increased efficiency, enable us to deliver more within our funding and in collaboration with other investment programmes.

We also expect this approach to help us support the Government's long-term aims for the UK, such as contributing to net zero carbon.

Figure 25 shows how the route objectives defined in the route strategies, along with the associated cluster analysis of performance metrics, help to refine an initial set of locations for future investigation. Further iterations of sifting as information and analysis evolves will help to inform the Government's setting of RIS3 (2025-2030) and beyond. The input from route strategies early on in this process will ensure that all schemes which are ultimately taken forward align with the route objectives.

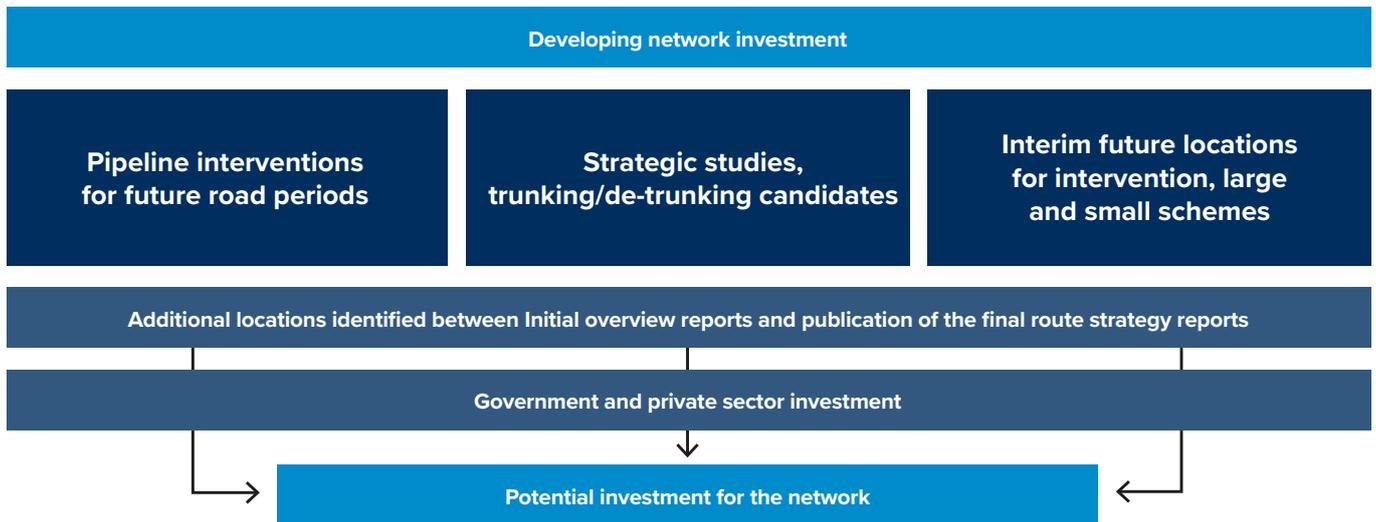


Figure 25: Process to identify potential investment on the network

## Types of investment and funding sources

There are a variety of funding streams which enable us to invest in our network and which form part of our investment planning. These are summarised in the following section, along with the current committed schemes associated with each funding source for the London to Scotland West (South) route. Key funding sources could include:

- RIS Funding – a funding stream administered by National Highways, set by the Government’s publication of the RIS::
  - RIS2 schemes are committed by DfT to be delivered as part of the *Road Investment Strategy*, as outlined in the following RIS2 table. The statement of funding confirmed that £24 billion will be provided during the second road period (2020-2025) to deliver this work, noting that some RIS2 commitments will continue into the third road period (2025-2030)
  - RIS4 (2030-2035) pipeline schemes, previously earmarked for RIS3 (2025-2030), will continue to be developed in line with our statutory processes and considered for inclusion within RIS4. These are potential future schemes originally identified by National Highways and set as part of RIS2 by DfT. These schemes are not currently committed for construction.
- Maintenance funding and asset renewal – within National Highways there is funding set aside for network maintenance and renewing ageing assets across the network. The budget for these is included in the RIS settlement
- Potential targeted funding streams that may be made available to National Highways during the third road period (2025-2030) as part of the wider RIS settlement, focused on making improvements that will make the biggest difference and deliver lasting benefits
- Other external sources of funding for delivering infrastructure enhancements on, or close to, the SRN including government, third parties, private sector developments, and inward investment

## RIS2

The following schemes are committed for the second road period (2020-2025) on the London to Scotland West (South) route:

Scheme number	Scheme	Description	Start of works	Open for traffic
Committed for the second road period (2020-2025)				
1	M42 Junction 6	<p>Upgrade of the M42 Junction 6 near Birmingham airport, allowing better movement of traffic on and off the A45, supporting access to the airport and preparing capacity for the new HS2 station. Once complete, motorists will benefit from smoother journeys. The upgrade will also support economic growth. The objectives of the scheme are to:</p> <ul style="list-style-type: none"> <li>ensure the safe and reliable operation of the road network</li> <li>increase the capacity at Junction 6, reducing congestion</li> <li>improve access to key businesses and locations such as Birmingham Airport and support economic growth in the area</li> <li>improve access for cyclists, walkers, horse riders and other vulnerable users of the network</li> </ul>	Started	2024-25
2	M6 Junction 10	<p>Improvements to M6 Junction 10. Congestion at this junction affects the local community and businesses, particularly during morning and evening peak times. Improvements will ease congestion and reduce journey times for the thousands of drivers who use it every day.</p> <p>As part of the improvement work we will:</p> <ul style="list-style-type: none"> <li>replace the two existing bridges with two new, four-lane bridges to increase capacity</li> <li>widen the existing junction slip roads</li> <li>improve the slip roads and approaches on the local road network</li> <li>widen the westbound A454 Black Country Route</li> </ul>	Started	2022-23
3	M54-M6 Link Road	<p>Providing an improved link between the M54 and the M6, as there is no direct motorway link from the M54 to the M6 north. Improving the link between the M54 and the M6 will:</p> <ul style="list-style-type: none"> <li>provide additional capacity and relieve traffic congestion on the A460, A449 and A5, providing more reliable journey times</li> <li>enhance facilities for local residents, walkers, cyclists and horse riders</li> <li>improve customer journeys from east to west and north to south, which will support local economic growth in Telford, Shrewsbury, Wolverhampton, Cannock and Tamworth by improving traffic flow</li> <li>keep the right traffic on the right roads by separating local traffic from long-distance and commuter traffic</li> </ul>	2022-23	Third road period (2025- 2030)

Scheme number	Scheme	Description	Start of works	Open for traffic
4	M40/M42 Interchange	Upgrading the M40/M42 Interchange, which includes an upgrade to all-lane running between Junction 3a to 4. This interchange is often congested at peak times, affecting both local journeys and long distance traffic between London and Scotland. This interchange upgrade will reduce congestion and delays, improving journey times for motorists. It will also support major new developments in Birmingham, Solihull, and the Black Country, boosting economic growth and job creation. During 2021, the Transport Select Committee undertook an inquiry into the roll out and safety of smart motorways, publishing their report in November 2021. In January 2022, the Department for Transport (DfT) announced that it had accepted all of the committee's recommendations, including the pausing the roll out of new all lane running schemes to allow the collection of further data and stakeholder feedback. The Department subsequently announced that plans for new smart motorways will be cancelled in recognition of the current lack of public confidence felt by some drivers and cost pressures due to inflation. Smart motorways earmarked for construction during the third Road Investment Strategy (2025-2030) and previously paused schemes will now not go ahead.	Cancelled	Cancelled
5	M42 Junctions 4 to 7	Upgrading the dynamic hard shoulder running to all lane running.	Cancelled <sup>42,43</sup>	Cancelled
6	M6 Junctions 4 to 5	Upgrading the dynamic hard shoulder running to all lane running.	Cancelled <sup>42,43</sup>	Cancelled
7	M6 Junctions 5 to 8	Upgrading the dynamic hard shoulder running to all lane running.	Cancelled <sup>42,43</sup>	Cancelled
8	M6 Junctions 8 to 10A	Upgrading the dynamic hard shoulder running to all lane running.	Cancelled <sup>42,43</sup>	Cancelled

42 On 12 January 2022, the Government's response to the Transport Select Committee's inquiry into the *rollout and safety of smart motorways* was published. Plans for new smart motorways have now been cancelled and previously paused smart motorways will now not go ahead

43 Transport Committee (January 2022) *Rollout and safety of smart motorways: Government Response to the Committee's Third Report*. <https://committees.parliament.uk/publications/8409/documents/85754/default/>

## RIS4 pipeline

The following uncommitted schemes are in the pipeline for the fourth road period (2030-2035) on the London to Scotland West (South) route.

Scheme number	Scheme	Description
1	A404/M40 Junction 4 High Wycombe	Free-flow links between the A404 and M40 and flare extensions.
2	M6 Junction 15 Potteries Southern Access	This scheme will improve journeys by addressing connectivity and reliability issues along the route

## Other Notable Schemes

Proposals are underway to enlarge and increase capacity of the roundabouts at M40 Junction 10, to improve safety, help reduce journey times, increase capacity, and reduce congestion. The scheme is being funded by Oxfordshire County Council, through its Housing and Growth deal, and will be delivered by National Highways. Construction is expected to start in 2022/23.

The routes for High Speed 2 (HS2) phases 1 and 2a run in close proximity to the M42 and M6, particularly on the approach to the planned stations at Solihull and Crewe. HS2 will be carrying out work to the SRN to accommodate the new rail line and support access to the stations, including:

- improvements to the A45, A452, and A446 to support better road access to the HS2 Interchange station at Solihull for passengers, and to link the railway line into the station

- changes to structures over the M42 between junctions 6 and 9 where the railway line will cross the motorway
- changes to M6 Junction 4A where the railway line will cross the motorway
- changes to the M6 near Stone and at Junction 15 as the railway line approaches the Crewe station

In addition to these permanent changes, temporary works will be required on the SRN to facilitate construction of the new HS2 line. These will include the creation of temporary accesses to construction and materials storage compounds.

## Strategic studies, trunking and de-trunking

National Highways undertakes Strategic Studies to analyse complex problems that may need to be addressed over multiple road periods. Strategic Studies can involve close working with key partners including Sub-national Transport Bodies and the DfT, the consideration of options for improvements, and can be used to help to decide on whether to fund any proposed improvements in the future.

As mayoral and combined authorities develop strategies and working arrangements for their transport and environmental activities in many of our urban centres, an important question emerges about how the SRN can play its part most effectively in those places. In the second road period (2020-2030), National Highways undertook a Strategic Study into the role of the urban SRN. This considered options such as improved collaboration on operations and changes in road ownership, balancing the desire to better integrate these roads with local planning and transport operations with their national strategic role. The outcomes of this study may have implications for the London to Scotland West (South) route, particularly where the M5 and M6 run through the urban areas of Birmingham and the Black Country.

National Highways was asked to explore changes to the SRN to ensure the network aligns with RIS2 strategic priorities reflected in the *Strategic Business Plan*<sup>44</sup>. This plan relates to improving connections between main urban centres, to international gateways, to peripheral regions (for levelling up) and strategic cross-border routes (to strengthen union connectivity). It included a commitment to explore potential asset ownership changes between ourselves and local highway authorities that could be implemented no earlier than the start of RIS3. The DfT has produced a shortlist of 18 trunking and two de-trunking candidates, identified following the draft RIS2 public consultation in 2018, for us to assess desirability and viability of asset transfer. De-trunking is the process of returning a National Highways road to the local Highway Authority control and vice versa for trunking. These candidates were put forward by a range of external stakeholders including local authorities, Local Enterprise Partnerships and Chambers of Commerce, then shortlisted by the DfT.

There is ongoing work to review the assessment evidence and recommendations, after which Government Ministers are expected to announce the candidates that will progress to the detailed development stage, which will be led by National Highways and incorporated in the forward study programme and wider RIS 3 process.

## Locations identified through route strategies for future investigation

National Highways undertakes route studies to investigate locations across the network. In addition, locations of interest have been raised by interested parties through the route strategy engagement process.

To supplement this, as part of the route strategies process outlined in this document, National Highways has used cluster analysis to identify further locations for future investigation and undertaken an exercise to align these locations to the route objectives for the London to Scotland West (South) route.

The cluster analysis allows decision-makers to easily identify which sections of roads should be prioritised for further investigation. The assessment is a two-part process. In the first part, for each route strategy, the objectives are defined geospatially. This allows us to identify over which sections of the SRN the objectives converge, therefore quickly identifying the links that helps us to achieve the maximum number of objectives. The second part of the assessment uses our understanding of the network from performance data to allow a further filter to remove links that are already performing well. This results in a filtered shortlist of SRN links or sections of roads that should be prioritised for further investigation. These have been grouped into areas of interest where they are in close proximity geographically. Should a location not be identified for further investigation as part of this initial process, this does not preclude it from being added to the list of areas of interest in the future.

The use of regional traffic models for the 2031 scenario has enabled the identification of locations for further investigation based on the forecast network operation in the future, to plan the future of the network beyond the current RIS3 cycle.

<sup>44</sup> Highways England (2020) Strategic business plan: 2020-2025: <http://nationalhighways.co.uk/strategic-business-plan/>

Typically, this has resulted in the extension of some areas of interest, as shown in the table of locations overleaf. In the final publication version of the route strategy reports, additional data from the regional traffic models will also be considered, to enable the identification of locations for further investigation in future roads periods.

There will be further development of any proposed mitigation at each location in line with National Highways' internal processes. In order to fund any proposed improvements National Highways will draw upon the funding streams as previously identified.

## Route strategies and regional traffic models

The route strategies have utilised the National Highways regional traffic models (RTMs) to identify future performance and delay on the network, which is the best data currently available.

Working with key stakeholders and interested parties, we have set out a number of potential candidate intervention locations which may require further development upon validation to check their alignment with the route strategy objectives.

New national traffic growth forecasts have now been released by the Department for Transport and as we carry out this exercise, we will consider how updated growth forecasts will impact on the identified areas for further investigation.

Alongside these more traditional road improvement schemes we will also need to support and encourage modal shift through transport integration and embrace emerging technologies to improve the performance of the network.

The impact on carbon and the environment will be central to all our thinking on which interventions are proposed to be taken forward.

## Identified locations for future investigation and collaboration

Our analysis has set out the potential constraints and opportunities across the network and, in parallel, we are developing a RIS programme that is resilient to changing priorities, the carbon and environment agenda.

We have a wide range of potential intervention types within our toolkit, such as both non-roads and road-based solutions, to help us achieve our objectives. These could include:

### Potential non-road interventions:

- Supporting wider network initiatives to improve the customer experience, such as provision and enhancements of facilities for the freight industry and electric vehicle charging
- Exploiting technology to improve safety and network operation, including roll out of connected corridors
- Delivering a portfolio of measures to encourage active travel
- Making environmental enhancements to minimise the impact of the SRN on surrounding communities
- Encourage modal integration and influencing demand for vehicles, particularly at interfaces with urban centres

### Potential roads interventions:

- In addition to Lower Thames Crossing, we will continue to progress those remaining schemes in RIS1 and RIS2<sup>45</sup> that will not be in construction at the end of RP2, as well as the RIS4 pipeline, in line with government aspirations
- The pipeline schemes announced in RIS2 is the most developed portfolio of potential and we propose a renewed focus to ensure schemes: are resilient with an acceptable Value for Money; consider the Carbon Management in Infrastructure standard; are affordable, with lower cost options being developed; are environmentally responsible; are deliverable; and, have strong stakeholder support and / or are a good strategic fit (e.g., ports, levelling up)

<sup>45</sup> Plans for new smart motorways have now been cancelled and previously paused smart motorways will now not go ahead

We will also develop a significant portfolio of smaller safety and congestion interventions that improve localised issues as well as route treatments that address comparably poor safety performance (International Road Assessment Programme 1-star and 2-star roads) along selected All Purpose Trunk Road corridors.

Table 3 and Figure 26 show the areas identified for further investigation, where interventions at these locations have the potential to help us achieve the majority of route objectives.

In line with National Highways’ internal processes we will draw upon a wide range of funding streams, further developing any proposed intervention to the issues identified, exploring:

- Collaboration and integration opportunities
- Synergies with existing planned schemes
- Opportunities with asset and maintenance priorities as set out in Chapter 5.5

As part of the ongoing evolution of the route strategies toward final publication we will further strengthen its role in being a strategic planning tool for interested parties who have a stake in the SRN and its future.

**Table 3:** Areas of interest for further investigation

Area location	Area of interest	Area issues	Now	Future road periods
<b>M40 London to Warwickshire (A and B)</b>				
Wooburn Moor to Stokenchurch	A	<p>The M40 is used for <b>strategic traffic</b> travelling to the towns and cities along the route or making longer journeys. Traffic <b>accessing Heathrow Airport</b> and the tourist destinations along the route increases during holiday periods.</p> <p><b>Safety concerns and collisions</b> where people have been killed or seriously injured have been recorded on this part of the M40. <b>Reliability, average peak period delays, and freight connectivity</b> are a concern, especially in the vicinity of the Handy Cross Junction. Knock-on impacts of delays on the M40 and <b>integration with public transport</b> are a concern for traffic using the local roads, including commuters. This part of the M40 has <b>noise, air quality, and severance</b> impacts on receptors at Wooburn Moor and Handy Cross. Environmental impacts are a particular concern where the M40 near Stokenchurch runs directly through the Aston Rowant Chalk Cutting Site of Special Scientific Interest. There is <b>limited information</b> for road users on this part of the route.</p>	✓	✓
Bicester to Warwick	B	<p>The M40 is used for strategic traffic travelling to the towns and cities along the route or making longer journeys. Traffic accessing Heathrow Airport and the tourist destinations along the route increases during holiday periods. <b>Safety concerns and collisions</b> where people have been killed or seriously injured have been recorded on this part of the M40, particularly near Bicester (Junctions 9 to 10) and Warwick (Junctions 14 to 15). <b>Seasonal delay</b> on the section of the M40 near Bicester and Cherwell Valley is among the worst experienced on the London to Scotland West (South) route. <b>Reliability</b> is a concern, particularly in the context of planned future <b>economic growth and development</b> at Bicester and the proposed Oxford Strategic Rail Freight Interchange. Communities along the route are ranked by Government as <b>levelling up</b> category 2 areas. There are a high number of noise and air quality receptors on the route between Nethercote and Gaydon. There is <b>limited information</b> for road users on this part of the route.</p>	✓	✓

Area location	Area of interest	Area issues	Now	Future road periods
<b>M5 Bromsgrove to Ray Hall (C and D)</b>				
Woodgate to Quinton	C	The M5 is used for traffic travelling around the West Midlands (particularly the Black Country) and to and from the South West. The M5/M42 Interchange near Bromsgrove provides east-west connections via the M42. <b>Reliability</b> and <b>average peak period delays</b> are a concern for traffic travelling to and from Quinton. <b>Freight connectivity</b> is important for strategic freight accessing distribution clusters further along the M5. The area includes category 2 <b>levelling up</b> communities. <b>Sustainable economic growth</b> is also important to this area. There are receptors within 100m and 300m of this section of the M5 which may be more likely to experience <b>adverse air quality impacts</b> and/or <b>adverse noise impacts</b> respectively. <b>Public transport connectivity</b> can be lengthy and unreliable, particularly for commuters. There is some capacity for <b>in-journey communication</b> with drivers on the route, but this is limited.	✓	✓
Quinton to Ray Hall	D	The M5 is used for traffic travelling around the West Midlands (particularly the Black Country) and to and from the South West. The M5/M6 Interchange at Ray Hall provides north-south and east-west connections via the M6. <b>Safety concerns and collisions</b> where someone has been killed or seriously injured have been recorded on this part of the M5. <b>Reliability, average peak period delays, and freight connectivity</b> are also important to this area, which includes dense clusters of logistics sites. Future economic <b>growth and development</b> is planned for the communities along the route, particularly in the Black Country, which is a category 2 <b>levelling up area</b> . This part of the M5 has <b>noise, air quality, and severance</b> impacts on receptors at Oldbury, West Bromwich, and Sandwell. Increases in traffic on this section are expected to result in increased noise and air quality impacts due to increased congestion. <b>Public transport</b> connections can be lengthy and unreliable, particularly for commuters. There is limited capacity for <b>in-journey communication</b> on this part of the route.	✓	✓
<b>M6 Water Orton to Stoke-on-Trent (E to G)</b>				
Water Orton to Ray Hall	E	This part of the M6 is used to access Birmingham, and travel through the West Midlands between Staffordshire and Warwickshire. It also provides access to the South West via the M5/M6 Interchange at Ray Hall. <b>Safety concerns and collisions</b> where people have been killed or seriously injured have been recorded on this part of the M6. <b>Reliability and average peak period delays</b> are important for traffic travelling through the Birmingham City Centre, as well as vehicles making longer journeys up the M6 or towards the M5, M42, and M69. The area includes category 1 <b>levelling up</b> communities. <b>Sustainable economic growth and levelling up</b> is particularly important for Castle Vale and the surrounding area. This part of the M6 has a high number of receptors within 100m and 300m which may be more likely to experience <b>adverse air quality impacts</b> and/or <b>adverse noise impacts</b> respectively, particularly at Castle Bromwich and Castle Vale. <b>Severance impacts and active travel connectivity</b> are a concern for these communities, and also for the communities of Erdington, Witton, and Great Barr. Junction-hopping is a concern, particularly at peak times, due to lengthy and unreliable <b>public transport connections</b> from Birmingham city centre to wider destinations. There is some capacity for <b>in-journey communication</b> with drivers on the route. There is no technology on the local roads approaching the M6.	✓	✓
Ray Hall to Essington	F	This part of the M6 is used for travel through the West Midlands between Staffordshire, Birmingham and the Black Country, and Warwickshire. It also provides access to the South West via the M5/M6 Interchange at Ray Hall, and to Staffordshire and Wales via connections to the M54 and A5. Maximising <b>reliability</b> and minimising <b>average peak period delays</b> are important for traffic travelling through the Birmingham Box and Staffordshire. <b>Freight connectivity</b> to the Ray Hall Interchange is important for heavy goods vehicle traffic accessing the distribution centres in the Black Country. <b>Levelling up</b> of the surrounding level 2 communities is also important to this area. There are a high number of receptors within 100m and 300m which may be more likely to experience <b>adverse air quality impacts</b> and/or <b>adverse noise impacts</b> respectively near the route, particularly in Essington. The M6 also <b>severs communities</b> living near the route and impacts upon <b>public transport</b> and active travel connectivity. There is some capacity for <b>in-journey communication</b> with drivers on the route. There is no technology on the local roads approaching M6 Junctions 9 and 10.	✓	✓



Figure 26: Areas of interest for further investigation



BIRMINGHAM

LEICESTER

LEICESTER

BY

BEDFORD

MILTON KEYNES

HIGH WYCOMBE

A 1

M40

LONDON

	London to Scotland West (South) route		B - Now and Future road periods
	SRN	<b>M5</b>	
	MRN		C - Now and Future road periods
	Local roads		D - Now and Future road periods
	Committed for second road period (2020-2025)		E - Now and Future road periods
	RIS4 Pipeline		F - Now and Future road periods
	<b>M40</b> A - Now and Future road periods		



**What  
happens  
next**

# 08 Next steps

Our route strategies allow informed decisions to be made about our network. They have informed our *Strategic Road Network (SRN) initial report*, which sets our vision and priorities for the third road period (2025–2030) and beyond (from 2030). They are a forward planning tool for National Highways and our interested parties in their decision making, helping identify locations on our network for further consideration to inform investment opportunities, as well as to support decisions in prioritising potential solutions to enable us to continue to operate and maintain our network.

## Alignment

They also align with the National Highways *Connecting the country: Our long-term strategic plan to 2050*<sup>1</sup> which sets out our 2050 vision for the SRN to be part of a seamlessly integrated transport system that meets our customers' needs by connecting the country safely and reliably, delivering economic prosperity, social value and a thriving environment. *Our long-term strategic plan to 2050* describes the short, medium and long-term steps to 2050 we believe are needed to make our vision a reality over successive road periods and has been informed by extensive horizon scanning, foresight analysis and engagement with key stakeholders across nine focus areas. The route objectives identified in the route strategies, which also respond to the needs of stakeholders, road users and communities, and the locations for further consideration to achieve these objectives are aligned with the 2050 vision.

## Informing the next stage of planning

The route objectives and locations for further consideration will be used to inform our study programmes and consider opportunities for developing integrated and collaborative solutions with our interested parties.

The extensive engagement we have undertaken ensures feedback from our customers and neighbours is used to inform investment decisions. They will help us consider the interaction of our SRN with other transport networks, including the major road network and local roads. We also expect interested parties will use our route strategies to inform their wider investment programmes, supporting collaborative decision making.

For both the Route strategy initial overview reports and *Our long-term strategic plan to 2050*, there will be an opportunity for stakeholders, road users and communities to provide their feedback. This will be alongside DfT's separate consultation on the *SRN initial report* published at the same time.

The 20 finalised Route strategy reports and *Our long-term strategic plan to 2050* will be published by 2025, the end of the current road period (2020-2025), informing the *Strategic business plan* and *Delivery plan*.

## Provide your feedback

To find out more about our route strategies and the development process, please visit our website: [nationalhighways.co.uk/our-roads/our-route-strategies/](https://nationalhighways.co.uk/our-roads/our-route-strategies/)

<sup>1</sup> National Highways (2022) *Connecting the country: Our long-term strategic plan to 2050*. <https://nationalhighways.co.uk/connectingthecountry>

# Glossary of terms

Term	Acronym	Description
Active users and active modes of transport		Active users and active modes of transport refers to walkers, cyclists and horse riders.
Air quality management area	AQMA	If a local authority identifies any locations within its boundaries where the Air Quality Objectives are not likely to be achieved, it must declare the area as an Air Quality Management Area (AQMA). The area may encompass just one or two streets, or it could be much bigger. The local authority is subsequently required to put together a plan to improve air quality in that area - a Local Air Quality Action Plan.
Area of Outstanding Natural Beauty	AONB	An area of outstanding natural beauty (AONB) is one of the classes of land protected by the Countryside and Rights of Way Act 2000 (CROW Act). It protects the land to conserve and enhance its natural beauty.
All Lane Running	ALR	All Lane Running (ALR) motorways apply controlled motorway technology, permanently converting the hard shoulder as a running lane, and feature emergency areas.
A-roads		Major roads intended to provide large-scale transport links between regional towns and cities.
Assets		National Highways assets include our infrastructure such as pavements, structures and tunnels.
At-Grade Junction		An at-grade junction is a junction where two or more roads converge, diverge, meet or cross at the same height, as opposed to an interchange, which uses bridges or tunnels to separate different roads.
Clean Air Zone	CAZ	A clean air zone (CAZ) defines an area where targeted action is taken to improve air quality, and resources are prioritised and co-ordinated to deliver improved health benefits and support economic growth.
Collisions		<p>The severity of a collision is based on the severity of the most severely injured casualty and is broken down into:</p> <ul style="list-style-type: none"> <li>• Slight collision: One in which at least one person is slightly injured but no person is killed or seriously injured</li> <li>• Serious collision: One in which at least one person is seriously injured but no person (other than a confirmed suicide) is killed</li> <li>• Fatal collision: A collision in which at least one person is killed</li> </ul>
Department for Transport	DfT	Department for Transport (DfT) plan and invest in transport infrastructure to keep the UK on the move. DfT work with agencies and partners to support the transport network that helps the UK's businesses and gets people and goods travelling around the country.
Design-Build-Finance-Operate arrangements	DBFO	With a design-build-finance-operate arrangement, the private party provides financing and design, then builds and operates the facility. The public partner provides funding while the project is being used or is active.

Term	Acronym	Description
Diversionsary Routes		National Highways agreed diversion routes represent the recommended routes for road users when a section of road has been closed.
Dynamic Hard Shoulder	DHS	Dynamic Hard Shoulder Running (DHS) motorways apply the controlled motorway technology and temporarily increase capacity by utilising the hard shoulder, and feature emergency areas. The hard shoulder is some of the time, but not always, used as a live running lane, with electronic signs to guide drivers when it is safe to use for live running.
Economic opportunity areas	EOAs	EOAs were developed to give us a more refined understanding of the types of priority economic growth opportunities that exist around the SRN and around the wider road and broader transport network. They are defined in terms of their common economic function and the spatial features of the location. These key growth areas are grouped by broad 'theme' (such as international gateways, multi-modal transport hubs, tourism destinations and housing locations) and their relative reliance on the SRN.
Freeport		Freeports are special areas within the UK's borders where different economic regulations apply. Freeports in England are centred around one or more air, rail, or seaport, but can extend up to 45 kilometres beyond the port(s)
Heavy Goods Vehicle	HGV	A heavy goods vehicle (HGV) is a large vehicle intended for the transportation of heavy loads.
Growth Boards		Growth Boards have been established by some counties as a joined-up way of managing local future growth and supporting economic recovery.
International connectivity		Transport connectivity of the United Kingdom with Europe and the rest of the world.
In-vehicle Technology		This can be in-car systems that typically take the form of a touchscreen or display that is mounted on the dashboard. It can be a collection of hardware and software, which can provide information, data and connectivity to infrastructure to support the customer experience. It can also be the data and technology capability to enable the operation of the car (this might be connected services, autonomous capability, parking sensors, cameras etc.). It can be any technology within a vehicle.
Levelling up		Levelling up is a moral, social and economic programme for the whole of government. It places emphasis on ensuring no community is left behind.
Local Road Network		England's road network consists of motorways, major 'A' roads, and local classified and unclassified roads. The vast majority of motorways and major 'A' roads for the strategic road network (SRN) and are managed by National Highways. All other roads are managed by local authorities and make up the local road network (LRN)
Major Road Network	MRN	The major road network (MRN) is the middle tier of England's road network, comprising the busiest and most economically important local authority A-roads.

# Glossary of terms

Term	Acronym	Description
National Highways Licence		The Licence sets out the Secretary of State's statutory directions and guidance to National Highways.
Noise Action Plans		Noise action plans provide a framework to manage environmental noise and its effects. They also aim to protect quiet areas in agglomerations (large urban areas) where the noise quality is good. Noise Action Plans provide a framework for the local management of the Important Areas.
Noise Important Areas	NIA	Noise Important Areas (NIAs) for roads and railways are based upon the strategic noise maps results and are produced in line with the requirements set out in the noise action plans.
Office of Rail and Road	ORR	The Office of Rail and Road (ORR) is the independent safety and economic regulator for Britain's railways and monitor of National Highways.
Park and ride		A park and ride offers parking with public transport connections that allows commuters and other people heading to city centres to leave their vehicles and transfer to bus, rail or car share for the remainder of the journey.
Platooning		Heavy Goods Vehicle (HGV) platooning is the use of technology to allow HGVs to travel safely in close proximity at speed with the driver of the lead vehicle controlling the speed, acceleration and braking of the whole 'platoon'.
Receptor (Air quality and Noise)		Location which is sensitive to noise/air quality issues.
Regional Traffic Model	RTM	National Highways has a suite of five regional traffic models (RTMs) covering England's SRN. The models allow us to identify future performance and delay on the network, assisting with the development of the route strategies.
Reliability		Reliability is the difference between the typical travel time, allowing for recurring delays, and the observed travel time. This measures the amount of variation due to unexpected variations or unplanned events. Like delay, it is measured in seconds per vehicle per mile. It is a concern for most drivers, but particularly affects just-in-time freight traffic and other strategic journeys.
Road investment strategy	RIS	A Road investment strategy (RIS) is a strategy that outlines a long-term programme for National Highways' motorways and major A-roads with the stable funding needed to plan ahead.
Road period		The defined period of time over which the government gives a funding commitment. The length of a road period will be specified at the beginning of the RIS development process. Road periods will be multi-year in order to provide the supply chain with increased certainty of investment and intent. Based on current practice within the other infrastructure sectors, it is expected that road periods will continue to be five years in length, though the actual length will be decided by the government of the day.
Route objectives		Objectives for each route, informed by engagement and analysis, to support the current and future needs of customers and neighbours.
Safe System approach		The Safe System is the current best practice safety culture in road safety, developed over many years and derived most notably from the Swedish Vision Zero and Dutch Sustainable Safety strategies. A best practice road safety culture approach based on the principles that humans make mistakes which could lead to serious injury or death for which it is a shared responsibility of the road user, road managers, vehicle manufacturers, etc. to take appropriate actions to ensure road collisions do not lead to serious or fatal injuries.
Seasonal delay		Seasonal delay refers to the difference between the average afternoon peak delay for Fridays in August 2019 (high demand in summer holidays) and the average delay during very low demand periods (in this case, Christmas day is used). This measure is designed to reflect the parts of the network that do not appear to have a problem on average over the year but have seasonal peaks. Seasonal delay is of interest to tourist traffic, particularly people travelling to airports, or other destinations where arriving later than intended could have significant implications.

Term	Acronym	Description
Severance		The separation of people from facilities and services they use within their community.
Sites of Special Scientific Interest	SSSIs	<p>A Site of Special Scientific Interest (SSSI) is the land notified as an SSSI under the Wildlife and Countryside Act (1981), as amended.</p> <p>SSSI are the finest sites for wildlife and natural features in England, supporting many characteristic, rare and endangered species, habitats and natural features.</p>
Smart motorway		<p>A smart motorway is a section of motorway that employs active traffic management (ATM) techniques to increase capacity through the use of technology including variable speed limits. There are three types of smart motorway:</p> <ol style="list-style-type: none"> <li>1. Controlled Motorway: variable speed limits with the hard shoulder operating as it would on a conventional motorway</li> <li>2. Dynamic Hard Shoulder (DHS) Running: Variable speed limits with the hard shoulder selectively opened as a running lane during periods where traffic levels are too high for only three lanes of running traffic. When activated, vehicles can use the hard shoulder as a running lane</li> <li>3. All Lane Running (ALR): variable speed limits with the hard shoulder removed and converted to a permanent running lane</li> </ol> <p>Smart motorways have a whole system of inter-related safety features, not present on conventional motorways, working together to help keep drivers and their passengers moving safely. The system includes:</p> <ul style="list-style-type: none"> <li>• variable speed limits to help keep traffic moving, reducing frustrating stop-start traffic and making journeys quicker</li> <li>• clearly signed and orange-coloured emergency areas set back from the road and with telephones linking directly to our control rooms</li> <li>• detection systems to monitor traffic for changes in flows</li> <li>• CCTV cameras that our operators are able to move and zoom to monitor and manage congestion and incidents, where notified. The system has the ability to see 100% of the carriageway</li> <li>• signs and signals to provide better information to drivers which can alert drivers to hazards ahead and display Red X signs to close lanes to other traffic when a stopped vehicle is identified</li> <li>• enforcement cameras to deter the minority who break speed limits and ignore Red X signs</li> <li>• radar stopped vehicle detection</li> </ul>
Spatial planning		Spatial planning decides how land should be used or protected. It also organises, designs and makes decisions on where new homes, roads and other infrastructure should be built. Spatial planning aims to make places attractive, safe and environmentally friendly. National Highways is a statutory consultee in the planning system and we encouraged others to seek early advice from us if their development proposal is likely to impact the strategic road network.
Special Areas of Conservation	SACs	A Special Area of Conservation (SAC) is the land designated under Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora.
STATS19		Data on road traffic casualties on the roads in Great Britain are collected via the STATS19 process. These statistics are collected by police forces, either through officers attending the scene of incidents, from members of the public reporting the incident in police stations after the incident, or more recently online and then validated and published annually by DfT. STATS19 road traffic collision and casualty data is published annually by DfT in the Autumn and provides details of the previous calendar year. These reports have used the data available at the time of analysis, 2015-2018.
Statutory consultee		Statutory consultees are those organisations and bodies, defined by statute, which local planning authorities are legally required to consult before reaching a decision on relevant planning applications.

# Glossary of terms

Term	Acronym	Description
Strategic Rail Freight Interchange		A large multi-purpose rail freight interchange and distribution centre linked into both the rail and road system.
Strategic Road Network	SRN	The strategic road network (SRN) covers more than 4,500 miles of motorways and major A-roads.
Strategic Traffic / Strategic journeys		Long distance traffic / journeys
Sub-national Transport Bodies	STBs	Sub-national Transport Bodies (STBs) have a key role in formulating transport strategy and identifying investment priorities at the sub-national level, including for highways. There are seven STBs in England, which are tasked with developing transport strategies and studies for their region. Through the development of their evidence bases with their constituent local authorities and Local Enterprise Partnerships, their work highlights multi-modal issues, need and opportunities, with investment priorities provided to the Secretary of State for Transport.
Transport-related social exclusion		Where limited access to transport or other issues with the transport system means that people cannot fully participate in society in the way they would like
Trunking / De-trunking		De-trunking is the process of returning a National Highways road to the local highway authority control and vice versa for trunking
UNESCO World Heritage Site		Inscription as a UNESCO World Heritage Site is an acknowledgement of the global significance of such places.
Union connectivity		Transport connectivity between the nations of the United Kingdom.
Variable Messaging Signs		The Traffic Signs Regulations and General Directions 2016 (TSRGD) define a variable message sign as a device "...capable of displaying, at different times, two or more aspects...". These aspects may take the form of a sign prescribed by the TSRGD, a legend in accordance with Schedule 16 to TSRGD, a non-prescribed temporary sign or a blank grey or blank black face. Thus, the expression "variable message sign" (VMS) encompasses all types of variable sign from simple flap-type signs to complex light-emitting panels.
Vulnerable Road User		Walkers, cyclists and horse riders



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