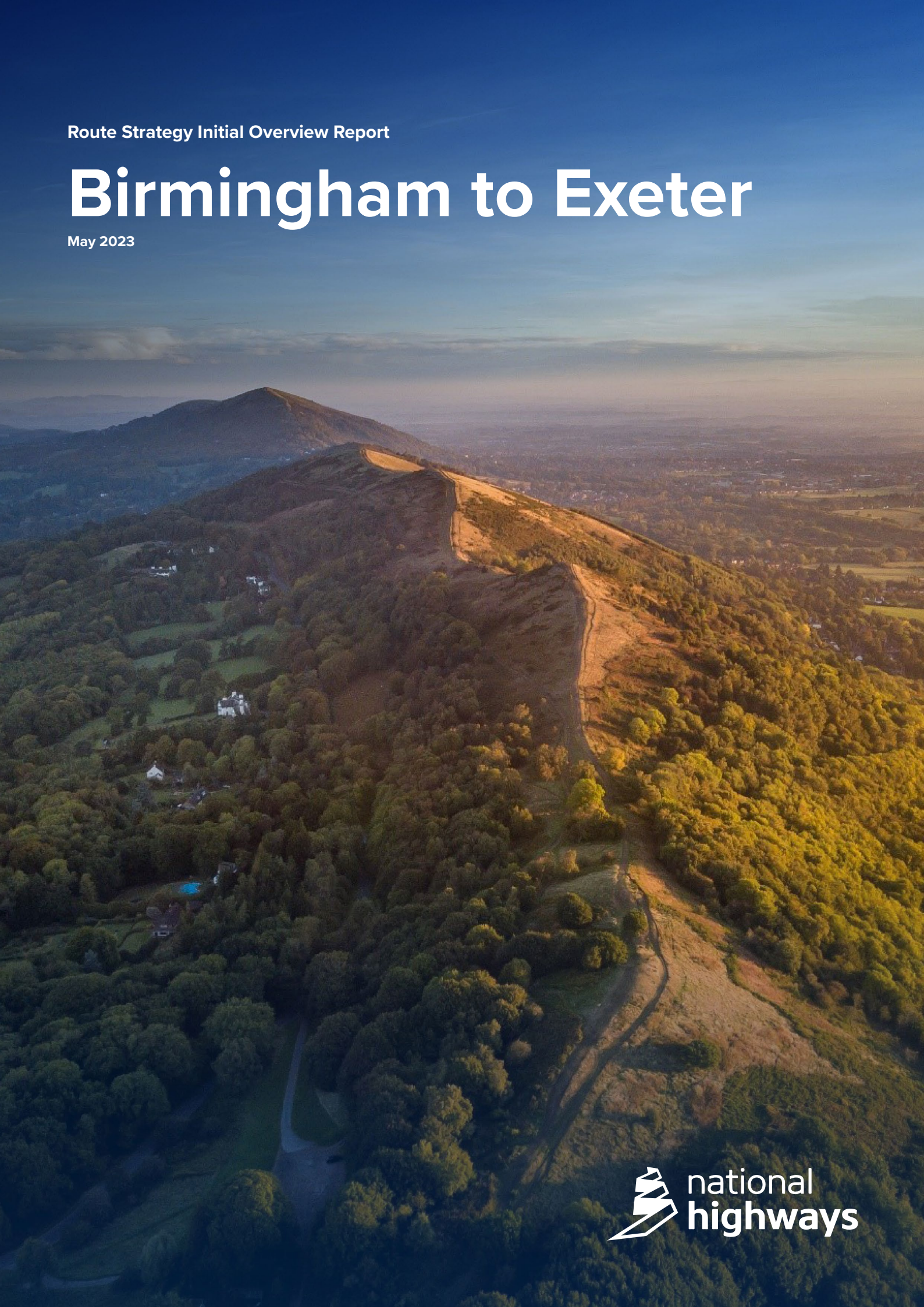


Route Strategy Initial Overview Report

Birmingham to Exeter

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. Our 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 Birmingham to Exeter 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 six Department for Transport (DfT) 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 DfT 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)*¹. 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 Birmingham to Exeter route is a key north-south link on the SRN, extending for approximately 150 miles. The route connects the West Midlands to the West of England and South West, and connects to numerous east-west routes into Wales, the East Midlands and the South East region.

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 for the Strategic Road Network*² document in December 2021.

Improving safety for all:

- The route generally experiences a low rate of collisions for the level of traffic using the route, but there are sections of the route where collisions have resulted in a higher number of people being killed or seriously injured
- Long slip road queues can also form at a number of junctions, which can extend onto the mainline under peak traffic demand

Network performance

- The northern section of the route is generally free-flowing and reliable, but delays and reliability issues typically increase around Bristol and the Somerset Levels, and as the route passes Exeter
- The southern section of the route experiences notable seasonal delay increases, with some sections experiencing delay of one to two minutes per vehicle per mile
- Route performance will be impacted by increases in traffic flow demands, population and housing growth

Improved environmental outcomes

- A changing climate presents key risks to infrastructure, with sections of the route currently considered to be at risk of flooding from surface water
- Maintaining and protecting areas of outstanding natural beauty, areas with environmental designations and cultural heritage
- At a number of locations along the route, receptors may be more likely to experience adverse air quality impacts or be more sensitive to high noise levels. Locations include sections of the M5 passing Wychbold, Droitwich, Gloucester, the North Fringe of Bristol and Avonmouth, and Exeter

¹ Highways England, *Delivery Plan 2020 – 2025*, <https://nationalhighways.co.uk/media/vh0byhfl/5-year-delivery-plan-2020-2025-final.pdf>

² DfT, 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

- The route currently makes limited provision for non-car travel modes. Parallel rail lines offer interchange opportunities for both passengers and freight, whilst there is a desire to improve bus facilities and service provision. There is also a need to deliver new and improved facilities for electric vehicle charging and alternative-fuel vehicles to help minimise greenhouse gas emissions
- Where the route runs adjacent to built-up areas or new development then the route should not act as a barrier to walkers and cyclists, and should enable public transport use

Growing the economy

- The route provides access to a number of regionally significant development sites including Garden Communities, Enterprise Zones and a Freeport. Significant emerging local plan proposals will further increase cumulative pressures on the route
- Realising the economic potential of planned development will in part rely on the provision of continued safe and reliable access from the route
- The route provides critical connectivity for the South West peninsula. Opportunities to support economic growth and levelling up may be impacted by seasonal increases in traffic, unreliable journey times and delay

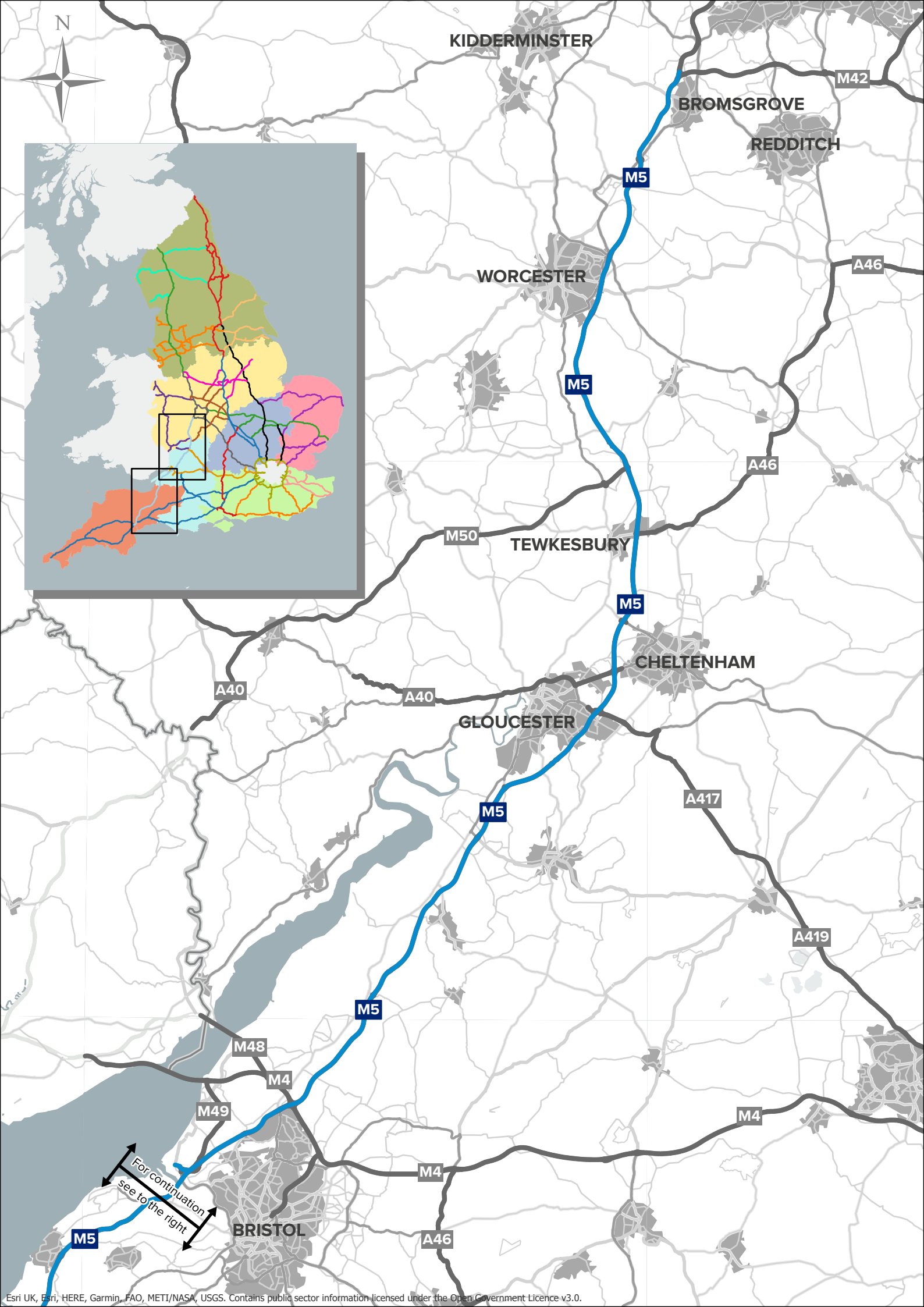
Managing and planning the SRN for the future

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

A technology-enabled network

- Communication with customers provides a key role in managing incidents and events, with potential opportunities to integrate new technologies
- Demand for increased quantity, capacity and speed of existing electric vehicle charging facilities
- Need to plan for increased use of new technology, including connected and autonomous vehicles and hydrogen fuelled vehicles





KIDDERMINSTER

BROMSGROVE

REDDITCH

WORCESTER

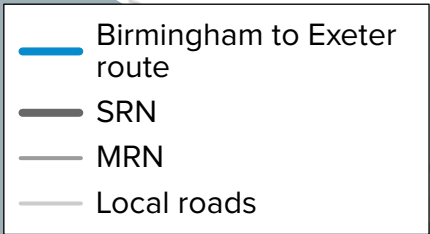
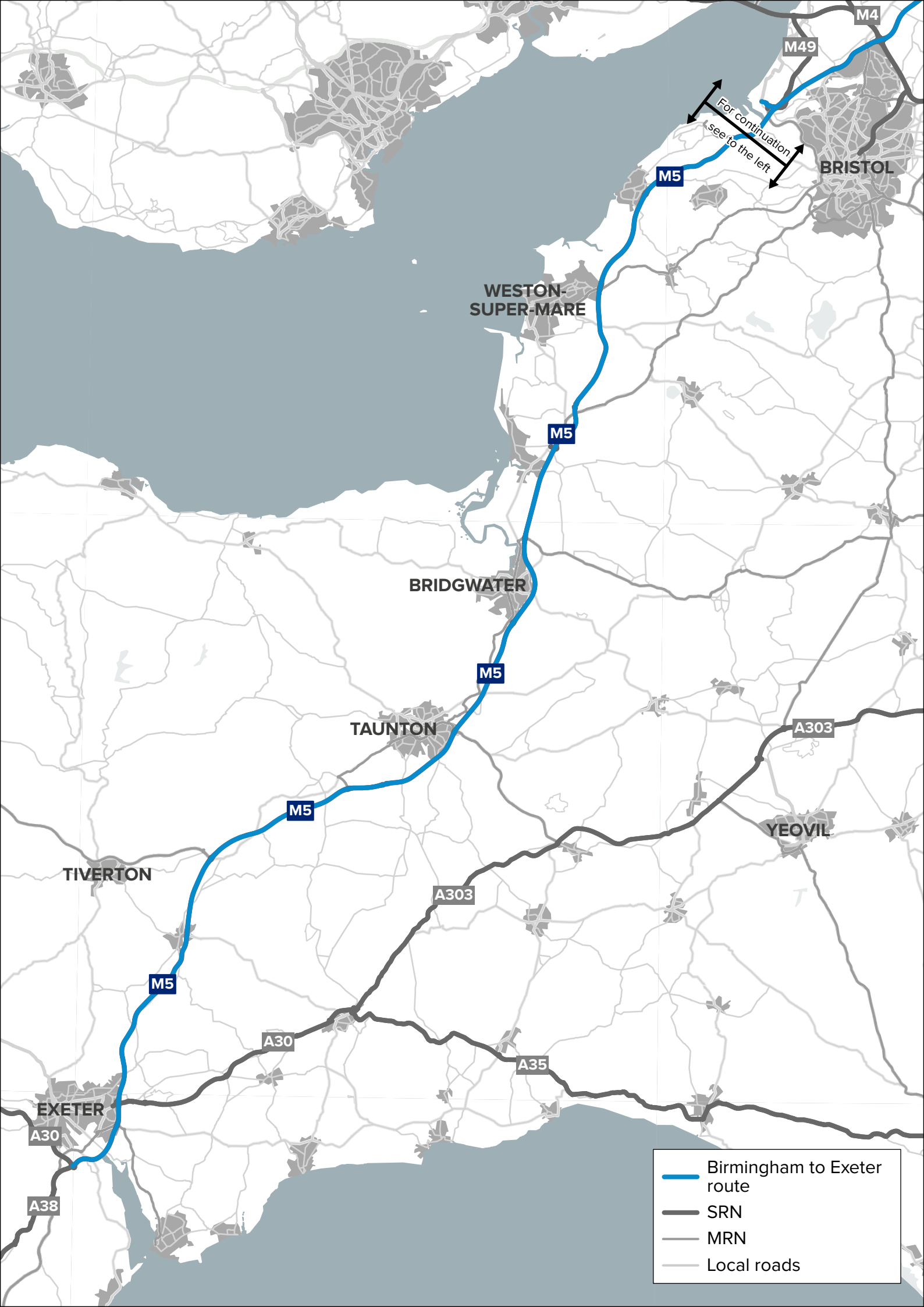
TEWKESBURY

CHELtenham

GLOUCESTER

BRISTOL

For continuation
see to the right



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					
		Improving safety for all	Network performance	Improved environmental outcomes	Growing the economy	Managing and planning the SRN for the future	A technology-enabled network
A	Maintain the strategic north–south function						
	Maintain the strategic function, safety and resilience of the M5 as the key north-south route between the Midlands, West of England and South West regions, supporting sustainable economic activity and communities through the safe and efficient movement of people and goods	✓	✓			✓	✓
B	Facilitate east–west connectivity						
	Facilitate safe and effective connections to adjoining east-west routes. Improved access to routes including the Severn Crossings, the A46 Trans Midlands Trade Corridor and Exeter Gateway (A30 and A38) will promote strategic and regional connectivity and support economic activity		✓		✓		
C	Support connections to international gateways						
	Support safe and effective connections to international gateways in the South West, West of England and neighbouring regions, including Bristol and Plymouth ports and Bristol and Exeter airports, to enable international trade and investment and the movement of people and freight		✓		✓		
D	Support regionally significant and sustainable economic development and housing delivery						
	Support delivery of regionally significant and sustainable economic development and housing, whilst maintaining the safe and effective operation of the network			✓	✓		

DfT's strategic objectives for our network

Ref.	Route objective	Improving safety for all	Network performance	Improved environmental outcomes	Growing the economy	Managing and planning the SRN for the future	A technology-enabled network
E	<p>Improve resilience to seasonal demands</p> <p>Improve resilience to seasonal traffic flow demands along the M5, particularly between Bristol and Exeter, to support trade, investment and tourism in the South West peninsula</p>		✓		✓		✓
F	<p>Support local connections and interchange</p> <p>Support effective local connections and integration with bus and rail, particularly for key urban areas along the route, and facilitate travel choice for people and goods to reduce route demand and support decarbonisation</p>		✓	✓			✓
G	<p>Be a better neighbour</p> <p>Be a better neighbour by safeguarding the environment, reducing severance, and reducing any significant noise and air quality impacts for local communities, particularly at Wychbold, Droitwich, Tewkesbury, Gloucester, the North Fringe of Bristol and Avonmouth, Cullompton and Exeter</p>	✓		✓			

Next steps

The 20 route strategy *Initial overview reports* will combine with other related evidence to inform the broader *SRN initial report*³ as part of the RIS process for the third road period. 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*, which will serve to inform the RIS and *Strategic business plan*.

We will finalise the *Route strategy 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*.

³ National Highways, 2023, *Strategic Road Network Initial Report*, <https://nationalhighways.co.uk/futureroads>



**Helping
the nation
to thrive**

01 Introduction

Our strategic road network (SRN) is the backbone of the country. Our 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*⁴ for the SRN until 2050, aligning with the Government's *Ten point plan for a green industrial revolution*⁵

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
- identify the locations for further consideration to inform our investment programmes and guide our vision

⁴ National Highways, 2023, *Connecting the country; Our long-term strategic plan to 2050*, <https://nationalhighways.co.uk/futureroads>

⁵ UK Government, *The Ten Point Plan for a Green Industrial Revolution Building back better, supporting green jobs, and accelerating our path to net zero, November 2020* https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936567/10_POINT_PLAN_BOOKLET.pdf

- 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*⁶ that sets out our vision and proposed priorities for the third road period (2025-2030) and beyond.

The final Route strategy overview 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 Birmingham to Exeter *Route strategy initial overview report*. 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.

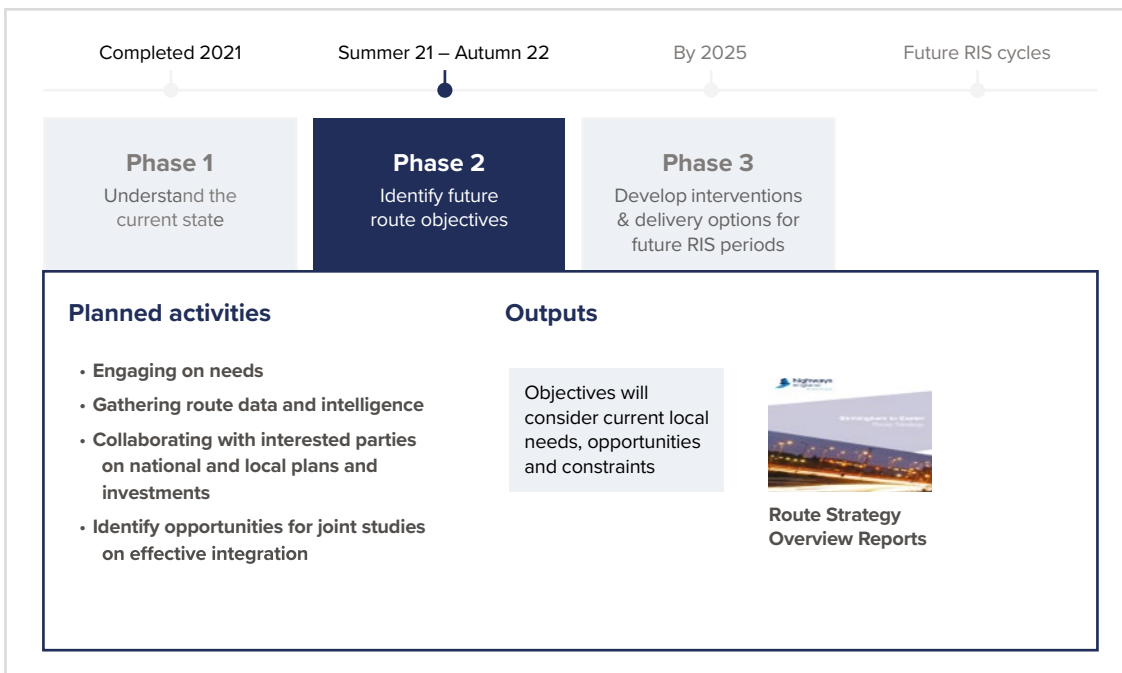


Figure 1: The route strategies delivery phases

6 National Highways, 2023, *Strategic Road Network 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.

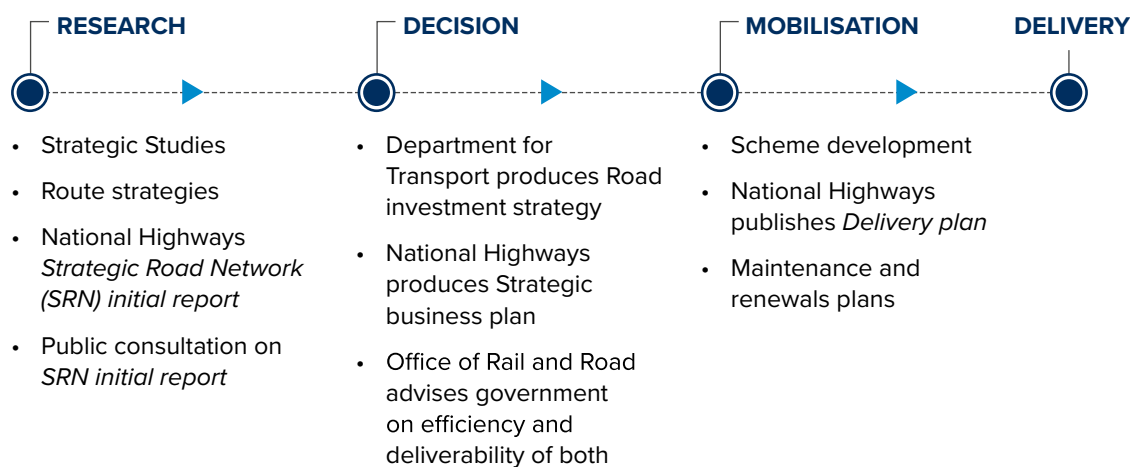


Figure 2: The RIS development cycle

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*⁷.

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, DfT, 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*⁸ 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.

⁷ 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>

⁸ Transport Focus, 2022, *Strategic Roads User Survey - 2021/22 Summary Report*, <https://www.transportfocus.org.uk/publication/strategic-roads-user-survey-2021-22-summary-report/>

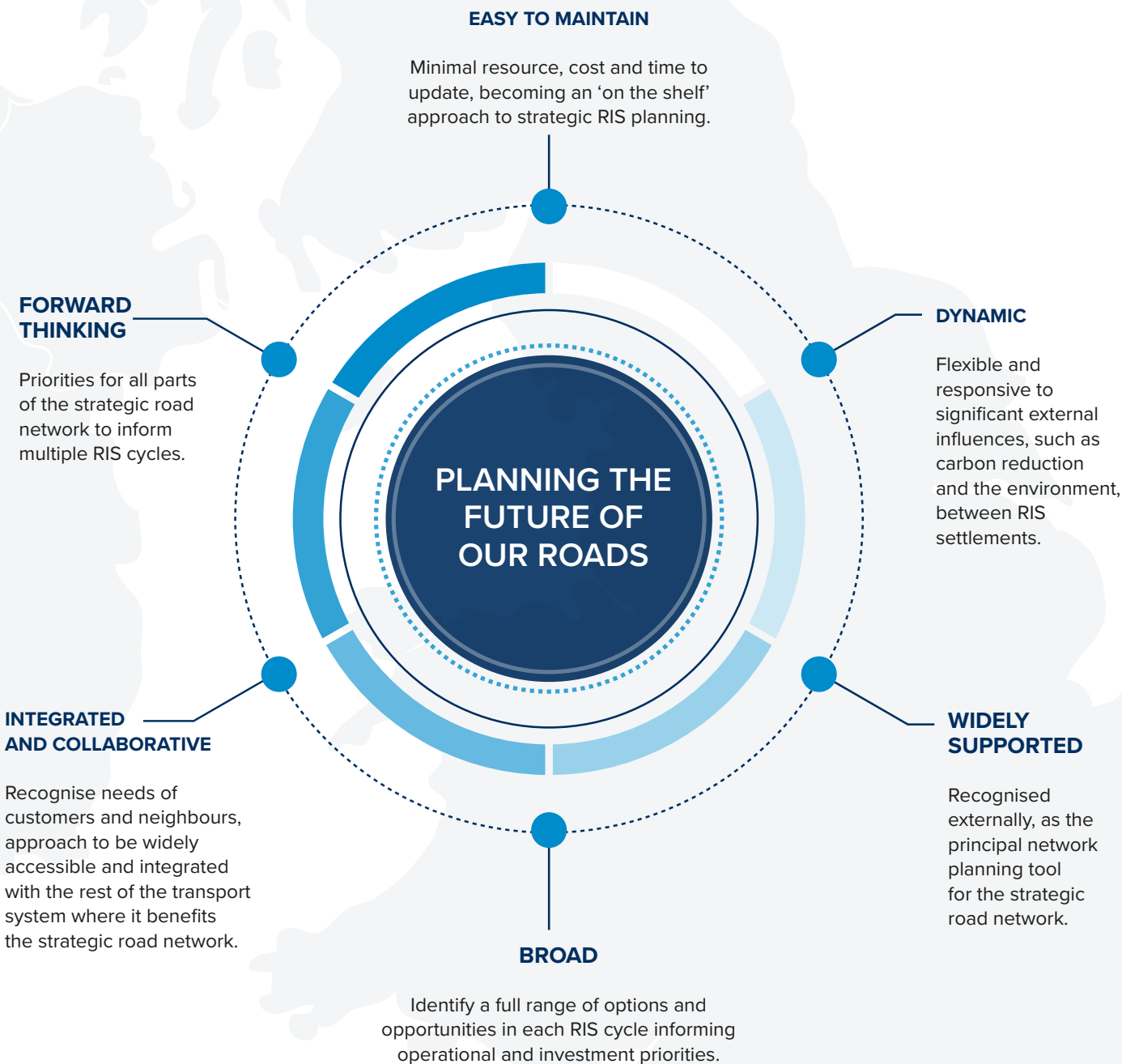


Figure 3: Our ambition for route strategies

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.

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.

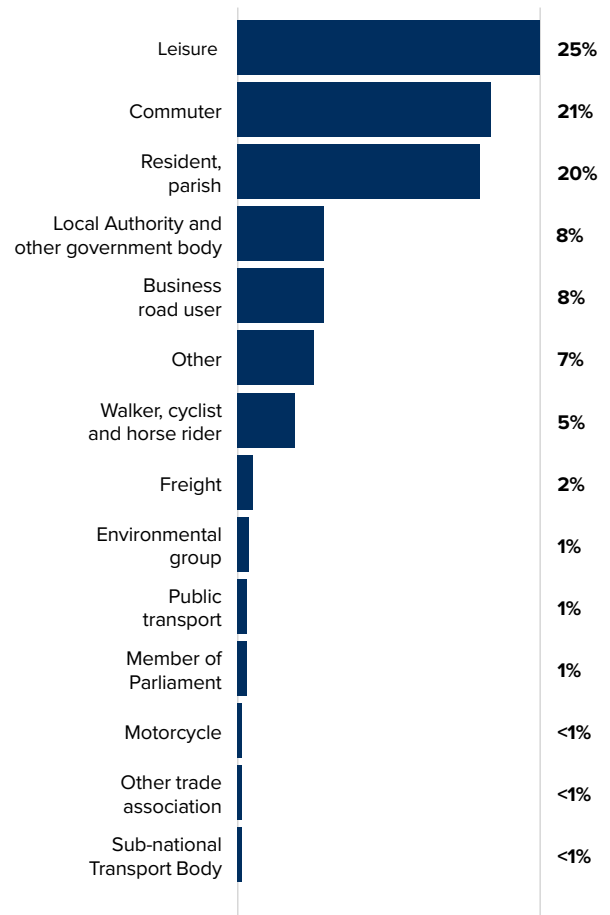


Figure 4: All responses to online tool by participant type

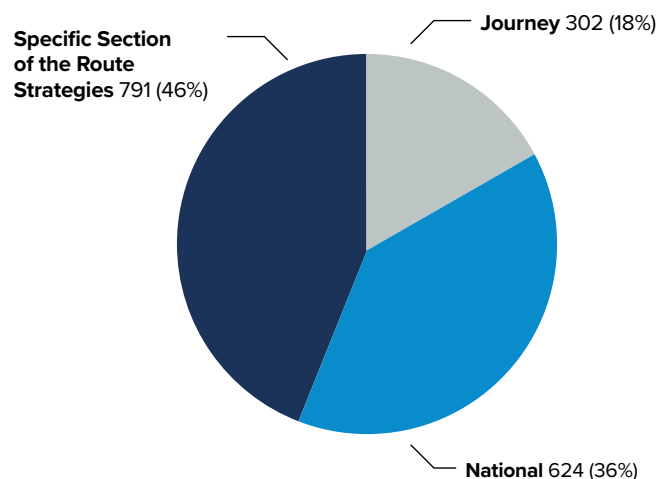


Figure 5: All response to online tool by type

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

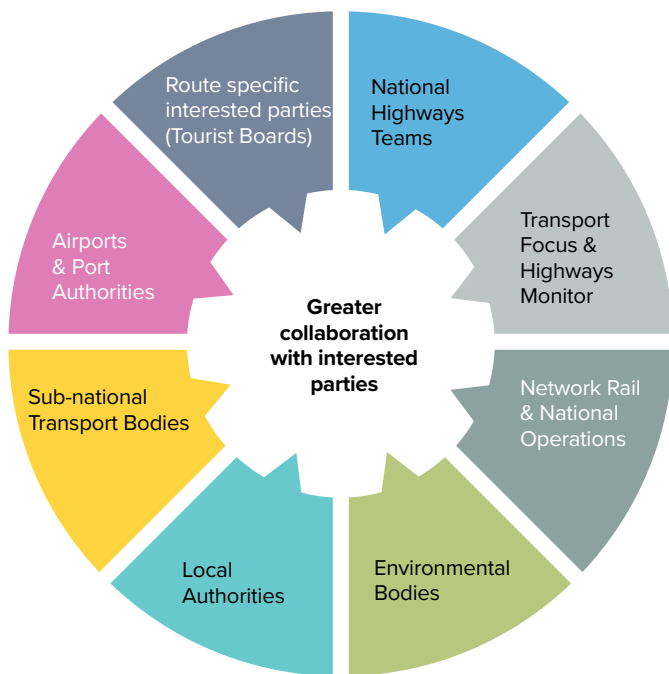


Figure 6: Interested parties involved in the route strategy engagement



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 that have been agreed between National Highways and DfT and were set out in the *RIS3 Planning ahead*⁹ document in December 2021. They cover safety, network performance, environment, economy, management and planning for the future and technology.

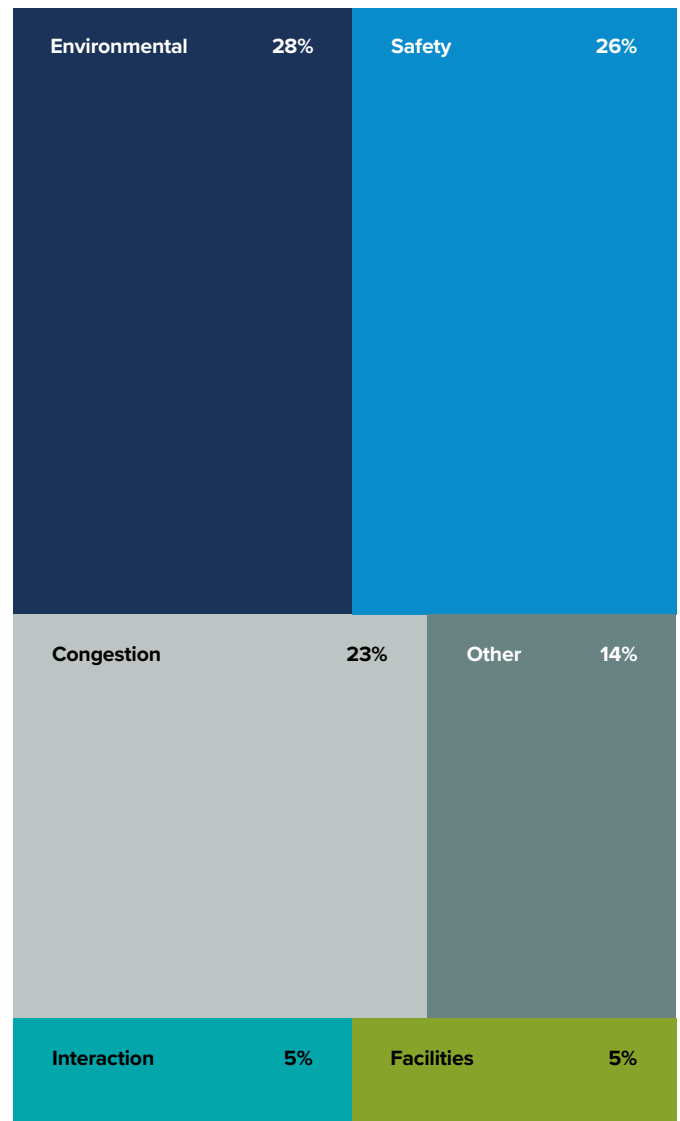


Figure 8: National themes from feedback through the online tool

⁹ 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

All our route strategies need to show how they contribute to the delivery of the six DfT 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*¹⁰
- 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

¹⁰ National Highways, *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 plan*¹¹. 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

¹¹ Department for Transport, 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

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/DE-TRUNKING:

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*. 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 visa 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 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 PLAN¹². 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.

¹² National Highways, *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, 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 more 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*¹³ 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.

¹³ Sir Peter Hendy CBE, 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

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)¹⁴ 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.

¹⁴ National Highways (2021) *Digital roads*. <https://nationalhighways.co.uk/our-work/digital-data-and-technology/digital-roads/>

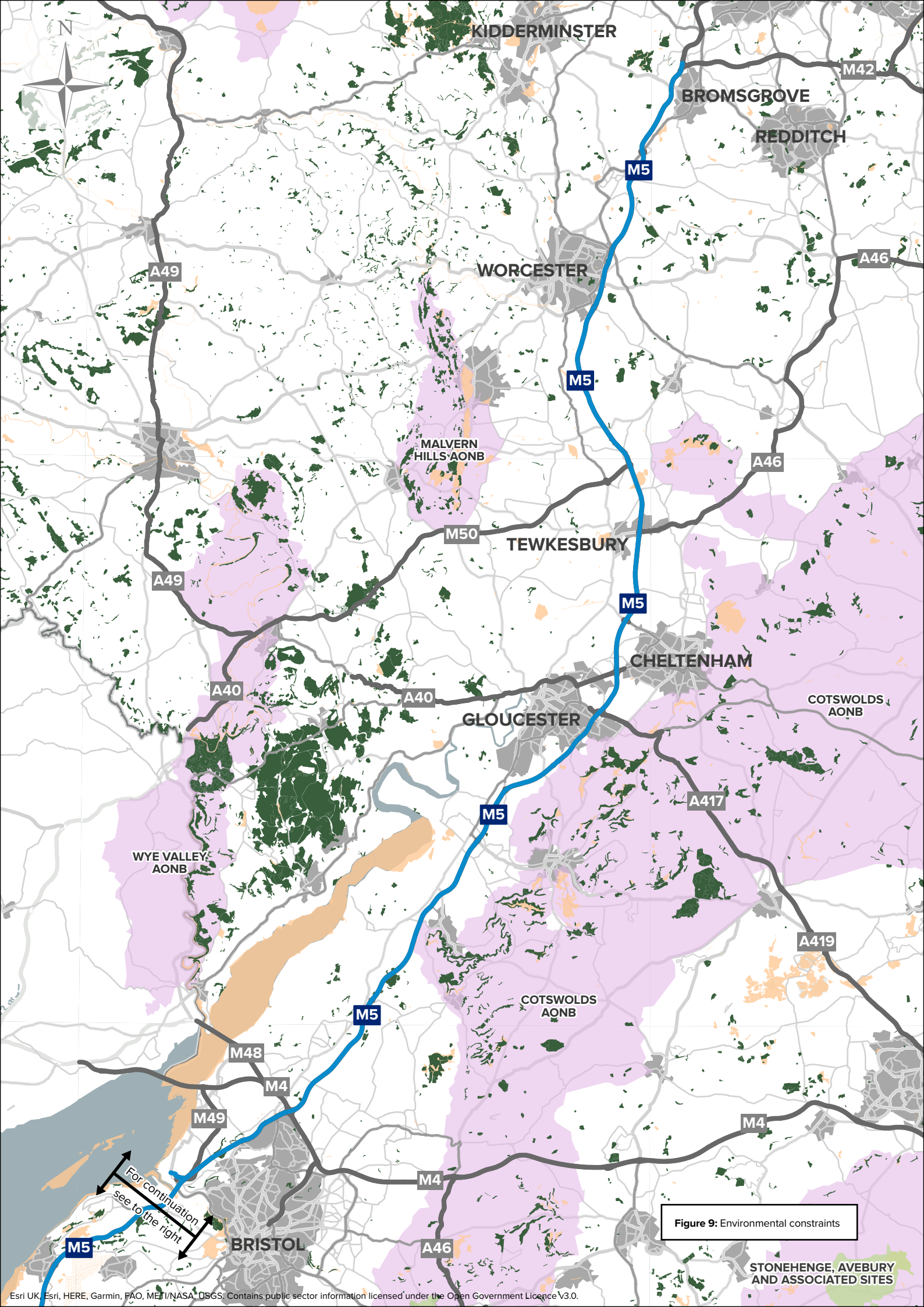
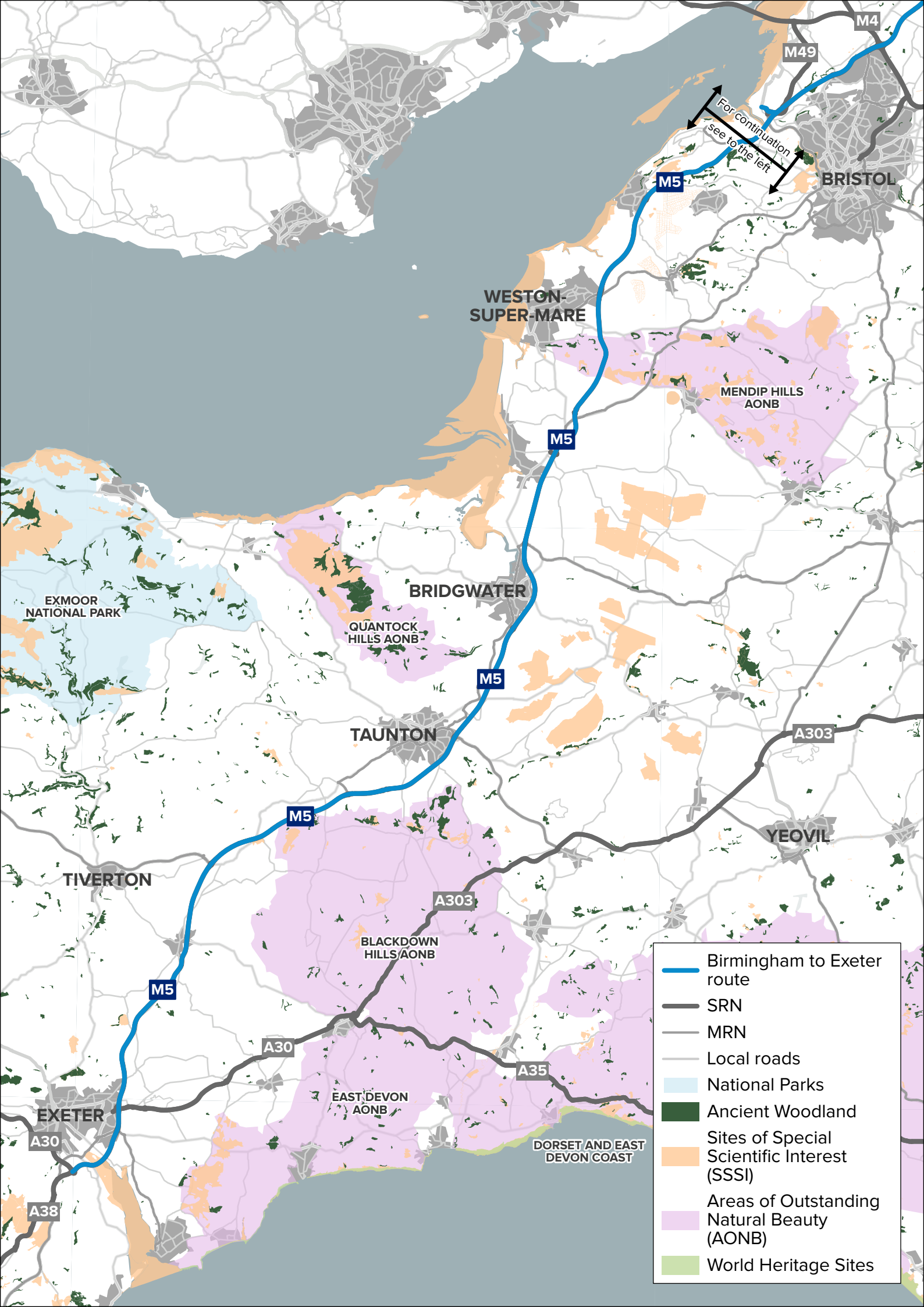


Figure 9: Environmental constraints

STONEHENGE, AVEBURY AND ASSOCIATED SITES



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

For continuation
see to the left

WESTON-SUPER-MARE

BRISTOL

MENDIP HILLS AONB

BRIDGWATER

EXMOOR NATIONAL PARK

QUANTOCK HILLS AONB

TAUNTON

YEOVIL

TIVERTON

BLACKDOWN HILLS AONB

EXETER

DORSET AND EAST DEVON COAST



**Our
network
connects
the country**

02 The route

The Birmingham to Exeter route is a key north-south link on the strategic route network (SRN), extending for approximately 150 miles. The route connects the West Midlands to the West and South West of England, whilst intersecting with a number of east-west routes into Wales, the East Midlands and the South East region. The route also provides a key link within the wider SRN providing for long distance journeys to the north of England, Scotland, Wales, London and the South coast.

The route comprises the M5 from its intersection with the M42 (Junction 4A) to the interchange with the A30 and A38 at Exeter (Junction 31). It is predominantly rural in nature, but passes a number of towns and cities, including Worcester, Tewkesbury, Cheltenham, Gloucester, Bristol, Weston-super-Mare, Bridgwater, Taunton and Exeter. The route therefore provides strategic connectivity to these settlements and access for residents and businesses alike.

At the mid-point of the route, it intersects with the M4 to the immediate north of Bristol, alongside a large area of commercial and residential development known as the North Fringe of Bristol. The interchange (Junction 15) is a key confluence for east-west journeys including journeys to and from Wales, whilst also catering for short-distance journeys around Bristol. At Junction 18 to the west, a spur from the M5 provides access to the Port of Bristol (Avonmouth) and wider Avonmouth Severnside industrial area. The neighbouring Junction 18A provides access between the M5 south and M49, and Junction 19 provides access to the Port of Bristol (Royal Portbury) to the west of the Avonmouth Bridge.

The route provides a consistent high-standard network of predominantly three-lane carriageway with hard shoulder. Sections of the route north of Worcester and to the north of Bristol close to the intersection with the M4 have been upgraded to smart motorway. The route provides ten motorway service areas, made up of a mix of online (accessed via dedicated slip roads) and offline facilities (accessed via a motorway junction). Three motorway service areas are located to the north of Bristol, and seven are located to the south.

The route includes a number of highway structures of vital importance to the continued performance of the route, notably the Avonmouth Bridge and Wynhol viaduct, along with the Exeter viaducts. The route also runs broadly parallel to the Birmingham to Bristol and Bristol to Exeter rail corridors, which serve many of the same principal destinations, and therefore offer interchange opportunities for multimodal travel.

The route is popular for access to the South West for tourism and leisure. It experiences increased demand during summer periods as holidaymakers travel to seaside towns and villages in Somerset, Devon and Cornwall. The route also provides access to the National Parks of Dartmoor and Exmoor, and Areas of Outstanding Natural Beauty (AONB) such as the Cotswolds, Malvern Hills, Mendip Hills, Quantock Hills, Blackdown Hills, and East Devon.

The route supports onward travel into South Wales via connections to the west, enabling connectivity for a cross-border economic area comprising the Greater Bristol area and South Wales, and supporting access to the Wye Valley AONB and the Brecon Beacons National Park in South Wales. In rural areas, the route is also critical for access to and from smaller communities, providing a vital link to services including healthcare and education in the main towns and cities.

Significant housing and economic development growth is planned in areas neighbouring the route, in part due to the access opportunities afforded by the route. There are a number of planned Garden Communities and significant housing development sites located alongside the M5, along with Enterprise Zones and Enterprise Areas designated to build on existing employment sectors including the nuclear industry, maritime and defence, cyber-security, advanced engineering and the aerospace industries. Economic growth will place additional pressures on the M5 route, and in part rely on the SRN for regional connectivity and access to international gateways including the Port of Bristol, and Bristol and Exeter Airports.

This route strategy is based on the road network as of the start of the second road period (2020-2025). During the first road period (2015-2020), the M5 was upgraded to smart motorway (All Lane Running) between Junctions 4A to Junction 6, and capacity improvements were delivered at Junctions 5, 6 and 7. Works to upgrade the central reservation barrier between Junctions 6 and 7 and repair lighting and road drainage are currently underway and will be completed in 2023.

It is expected that the existing M5 Junction 10 will be upgraded during the second road period to enable traffic to join or leave the motorway in both the northbound and southbound directions – the existing junction arrangement allows traffic to join the motorway in a northbound direction only, and leave the motorway in a southbound direction only. The improvement is being funded through the Government's Housing Infrastructure Fund.

National Highways is also progressing RIS2 scheme proposals to upgrade connecting east-west routes, in the form of the A417 The Missing Link scheme to the east of M5 Junction 11A, and the A358 Taunton to Southfields scheme which links to M5 Junction 25 at Taunton.

We recognise that some of the journeys on this route are part of longer trips and therefore need to be considered alongside strategies on other routes.



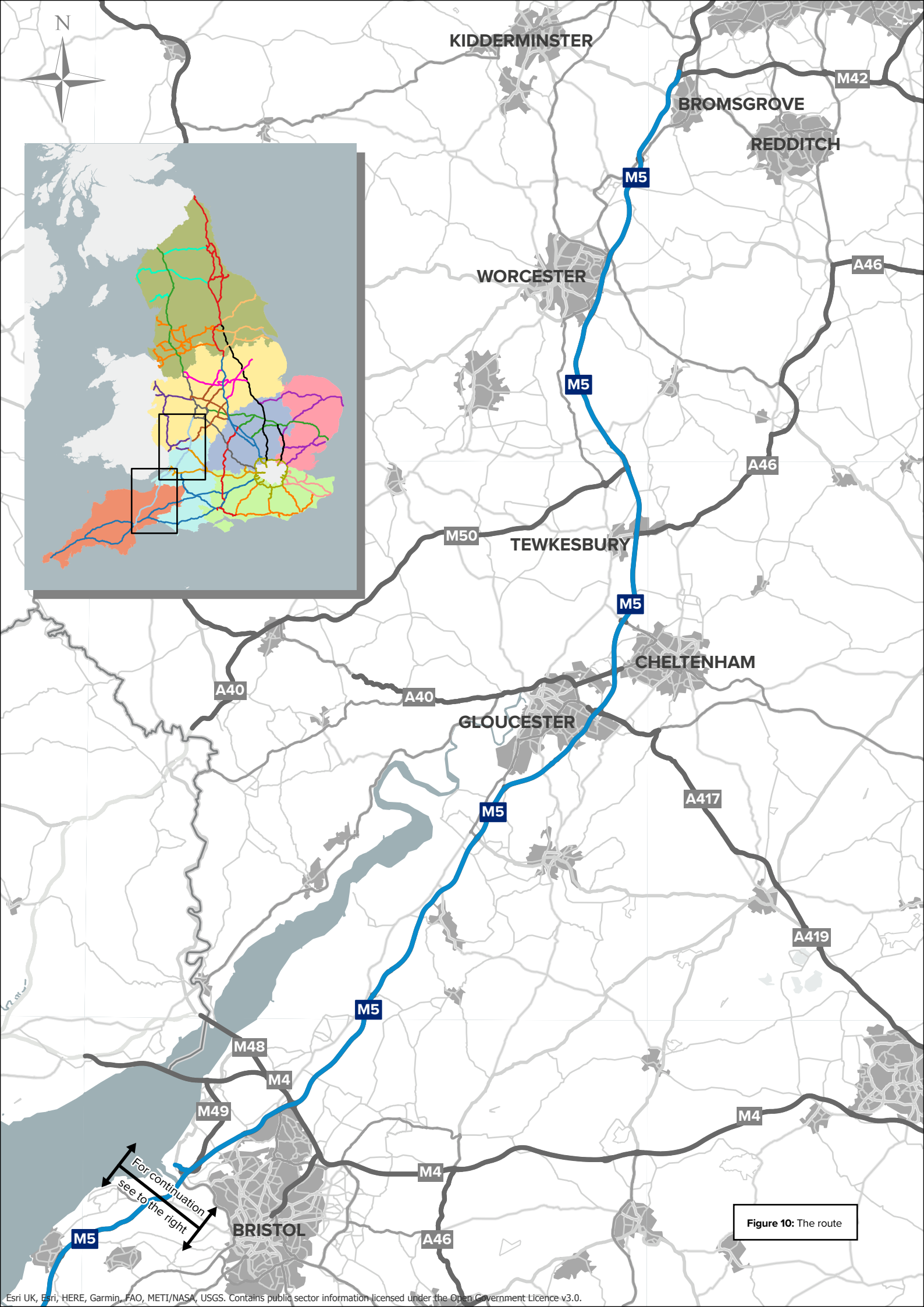
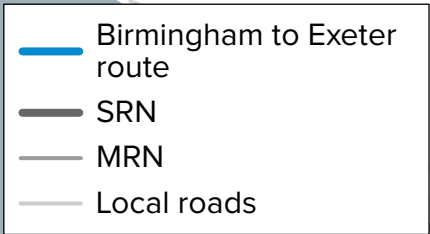
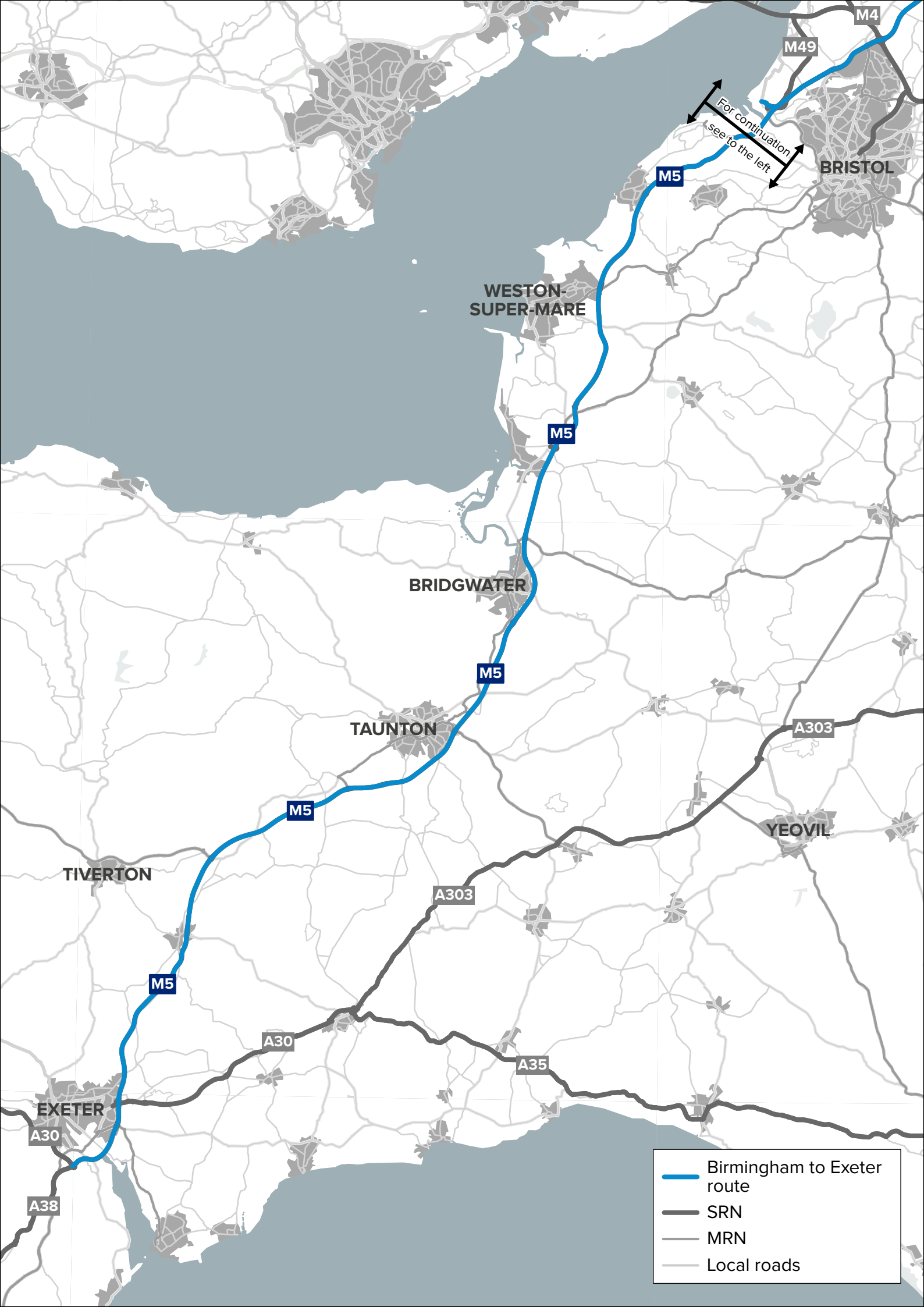


Figure 10: The route





**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 Birmingham to Exeter route

Early engagement with the Department for Transport (DfT), Office of Rail and Road, Transport Focus, and Network Rail, along with Midlands Connect, Western Gateway and Peninsula Transport (sub national transport bodies) shaped our engagement with customers and neighbours in the Birmingham to Exeter route 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 Birmingham to Exeter 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 SRN, in relation to the six DfT 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 strategic road network (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 Birmingham to Exeter 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*¹⁵ 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 Birmingham to Exeter route to inform our route objectives. The themes have been aligned with the DfT's six strategic objectives:

i) Improving safety for all

- Long slip road queues can occur and can at times extend on to the mainline carriageway leading to concerns over safety and performance. Identified locations include M5 Junction 9, Junction 10, Junction 11, Junction 12, Junction 14, Junction 21, Junction 22 and Junction 28
- Queuing interaction with the neighbouring A38 major road network near to Junctions 22 and 23 impacts on safety and economic growth. The local authorities are delivering capacity improvements at the A38 Dunball roundabout, and have submitted a business case to DfT for improvements at the A38 Edithmead roundabout
- Queuing interaction with east-west routes such as the A40 and A417 also occurs around Cheltenham and Gloucester, with the emergency services raising concern over long slip road queues and the potential for road traffic collisions around Gloucester and Tewkesbury
- 'Staycation' seasonal traffic flow impacts during the Covid-19 pandemic had a significant impact on emergency response times around Exeter due to congestion on the M5

ii) Network performance

- Shorter distance journeys and 'junction hopping' occur at a number of locations, increasing pressure on the SRN and impacting longer-distance journeys and freight movement. With significant development growth planned, tension between short-distance and long-distance demands in places such as Bristol, Gloucester, and Exeter will increase
- Congestion and journey time reliability are key concerns for the route, with a strong view that network resilience and journey time reliability need to be improved, particularly between Bristol and Exeter
- Seasonality issues will remain a challenge and the route needs to better accommodate increased seasonal demand, with the M5 anecdotally known as the 'holidaymakers motorway'
- Journey time reliability is impacting business planning and inward investment to the South West peninsula, where the M5 provides vital connectivity for access to employment and services including healthcare and education. Route performance will be vital for emerging manufacturing proposals at the Gravity Enterprise Zone at M5 Junction 23, given the potentially extensive supply chain and use of 'just-in-time' logistics
- Capacity constraints and congestion are felt to be particular issues between M5 Junction 21 and Bristol. With high travel demands between Bristol and Weston-super-Mare, and potential development growth around Nailsea and Backwell, there is concern that congestion will worsen between Junctions 20 and 21

¹⁵ Transport Focus, 2022, *Strategic roads user survey*, <https://www.transportfocus.org.uk/insight/strategic-roads-user-survey/>

iii) Improved environmental outcomes

- The effects of climate change need to be planned for so that the SRN is resilient to climate change events, such as flooding. Surface water after heavy rainfall can occur currently at Junction 30 and within the climbing lane between Junctions 19-20
- Noise and air quality issue were identified to occur at M5 Junction 28
- In a number of locations, motorway junctions are important crossing points linking current or planned communities. Identified locations included Junction 11 between Gloucester and Cheltenham and Junction 28 at Cullompton. Issues were also identified at Junction 9, where the motorway runs between areas of employment, education, and services. Network severance was identified as a particular issue for less able-bodied persons and those using wheelchairs, and equestrians
- Opportunities exist to reduce short-distance car journeys in urban areas through sustainable travel, improved local connections, and rail/road interchange
- Opportunities also exist to develop new parkway rail stations along the route and increase the volume of freight transferred to rail
- Coach services can fill a gap where rail provision is minimal or cannot be provided. Operators request an increase in the quality and prominence of bus interchange facilities and access to new development opportunities, helping to reduce environmental impacts
- The M5 around Gloucester was felt to offer great links to the wider transport network. There should be a new focus on the decarbonisation agenda, with the provision of strategic interchange hubs at M5 junctions being a long-term ambition of Gloucestershire's *Local Transport Plan*¹⁶

iv) Growing the economy

- There are significant growth plans for the route and within the West of England Combined Authority area, with the potential to increase congestion, and impact on route performance and safety
- Significant growth sites were identified at Tewkesbury Garden Community, the Golden Valley development in Cheltenham and proposed North West Cheltenham site, along with potential sites at Nailsea and south west Bristol and to the east of Weston-super-Mare
- There was concern that existing and future congestion and delay could constrain housing delivery and inhibit investment and levelling up opportunities. Access constraints and congestion, such as at Junction 9, Junction 14, Junction 19, Junction 22, Junction 23, Junction 28 and around Exeter also impact on businesses located nearby and are likely to restrict future growth potential without improvement
- Potential future local plan development and speculative growth around Charfield, Yate and Thornbury, along with UK Atomic Energy proposals at Oldbury could impact Junction 14, where long slip road queues occur
- In terms of international gateways, there was a feeling that the realisation of future growth at Bristol Airport will require connectivity improvements, particularly for sustainable travel modes, to minimise impacts on the MRN and SRN. There was also concern over the layout and capacity of M5 Junction 19 and impacts for the Port of Bristol and planned development growth south of Bristol
- Improving provision for freight, both in terms of appropriate routes and driver facilities, was seen to be a high priority
- Housing supply and demographics are increasing issues, with an ageing population and outward migration amongst younger age groups. The Hinckley Point C project and Gravity Enterprise Zone will help to create higher wage jobs in Sedgemoor, but both schemes will require reliable SRN access. In rural areas, the route provides important access to education and healthcare

¹⁶ Gloucestershire County Council, *Gloucestershire LTP (2020-2041)*, <https://www.gloucestershire.gov.uk/transport/gloucestershires-local-transport-plan-2020-2041/gloucestershire-ltp-2020-2041/>

v) Managing and planning the SRN for the future

- There was concern over route resilience associated with key structures such as the Wynhol and Exeter viaducts, given limited alternative route options
- Identified impact of diversions for local communities following motorway closure due to significant junction spacing between Junction 28 and 29
- Emergency services identified that electric vehicle breakdown incidents can cause significant disruption due to current arrangements for transporting damaged or broken down electric vehicles

vi) A technology-enabled network

- Available capacity and charging speeds at motorway service areas were seen as barriers for greater electric vehicle usage, with a consequential need to upgrade existing infrastructure
- Need for improved customer communications and signing of diversions to support customer confidence during periods of disruption
- Opportunities were identified to link and coordinate freight vehicle journeys through new technology (freight platooning)

Engagement quotes from customers and neighbours:



Figure 11: Quotes from customers and neighbours

Route satisfaction

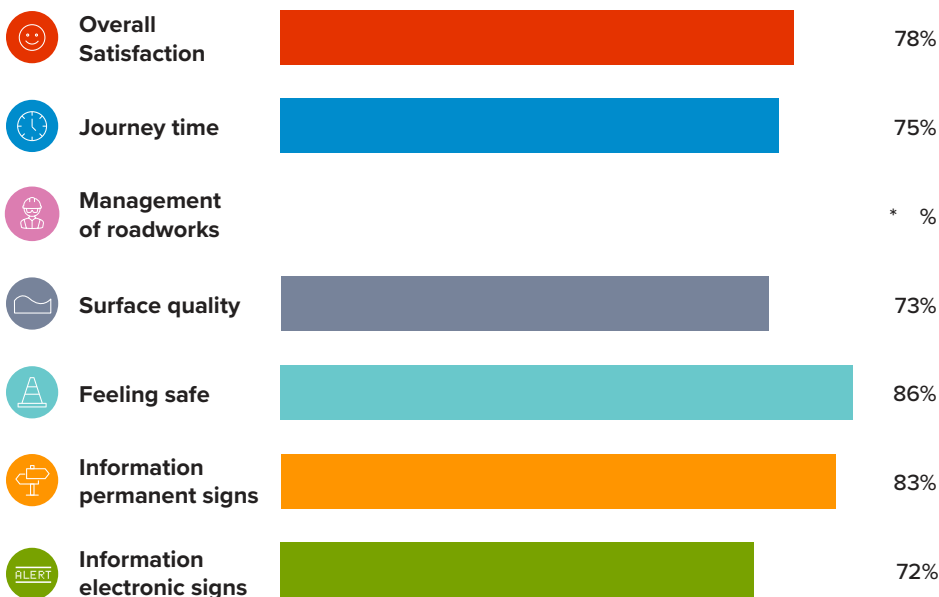
Satisfaction scores have been obtained from Transport Focus through their *Strategic Roads User Satisfaction Survey* from the last 12 months to May 2022. It covers the roads in this route but it should be noted that the satisfaction scores may not fully align with the extent of the roads in the route. Figure 12 below 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 website data hub¹⁷.

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



Individual road M5

Last 12 months** May 2022 (last 12 months)

* result hidden as less than 75 responses

** 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

¹⁷ Transport Focus, 2022, *Transport Focus Website*, <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.

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. We work closely with the Sub-national Transport Bodies on interdependencies and align our approaches where possible. The Sub-national Transport Bodies that cover the route are:

- Midlands Connect
- Western Gateway
- Peninsula Transport

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 2*¹⁸, and within our *Strategic business plan*¹⁹ and *Delivery plan*²⁰. 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*²¹, which sets out a 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.

¹⁸ Department for Transport, *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

¹⁹ Highways England, *Strategic Business Plan: 2020 - 2025*. <https://nationalhighways.co.uk/strategic-business-plan/>

²⁰ Highways England, *Delivery Plan: 2020 - 2025*. <https://nationalhighways.co.uk/delivery-plan/>

²¹ National Highways, 2021, *Vision for route strategies, planning for the future of our roads*. <https://nationalhighways.co.uk/media/w0vhd3un/vision-for-route-strategies.pdf>

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 fully as a statutory consultee in the planning system and the evidence collected through the route strategies will support this decision making.

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.

Midlands Connect published its first Transport Strategy in 2017, and since then it has researched, developed and progressed transport schemes designed to deliver social, economic and environmental benefits. The strategy was refreshed in 2022. The new '*Strategic Transport Plan for the Midlands*'²² 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 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.

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.

Midlands Connect has identified three strategic trade and logistics corridors and is developing holistic improvement plans to benefit all road users, facilitate economic growth, decarbonisation and reduced congestion. The A46 'Trans-Midlands Trade Corridor' is one of these routes. The A46 meets with the M5 at Junction 9 and acts as a regionally significant trade corridor, providing premises for a number of road-reliant industries. The route passes close to Birmingham and East Midlands Airport, with the ports of Bristol and Humber at either end.

²² Midlands Connect, *Strategic Transport Plan for the Midlands*, <https://www.midlandsconnect.uk/strategy/>

Western Gateway

The Western Gateway Sub-national Transport Body covers the area from Gloucestershire in the north of the South West region, to Dorset and Bournemouth, Christchurch and Poole in the south via the Bristol city region and Wiltshire.

Western Gateway's objective is to maximise the capacity and resilience of the strategic transport corridors, and targets delivery of 300,000 new homes and 190,000 new jobs over the next 20 years. To achieve the area's full potential, there is a need to improve connectivity for businesses, employees, and the leisure and tourism sector.

Western Gateway is developing a long-term *Strategic Transport Plan* for the area with the following key objectives:

- ensure effective access to labour markets
- greater integration of employment clusters
- enhance business connectivity to international markets
- improve north-south connectivity
- decarbonisation of the strategic transport network
- adoption of electrification and alternative fuels

Western Gateway also explicitly targets a shift in journeys from private car use to other modes.

The Western Gateway 2019 *Economic Connectivity Study*²³ identified the M5 Cross Country corridor as the highest performer of 15 corridors appraised for connectivity improvements. The study identified significant economic benefits associated with improvements on the corridor, with the aim of boosting productivity, addressing the 'productivity gap'; boosting employment, particularly in high tech sectors; and boosting housing delivery.

Western Gateway has identified four Strategic corridors for prioritised interventions, including the Midlands to South West 'Western Growth Corridor'. This nationally significant economic corridor, connecting the economies of the South West, Western Gateway and Midlands Engine aligns with the Birmingham to Exeter route. The corridor supports access to national and international markets and helps drive growth and economic performance for the country as a whole. The multimodal corridor plan focuses on strategic journeys along the M5, A38 and A46, and will feed into the Western Gateway long-term *Strategic Transport Plan*.

As part of developing its *Strategic Transport Plan*, in 2020 Western Gateway commissioned a *Review of Multi-modal Access to Ports and Airports*²⁴. The study discusses access constraints to Bristol Airport and potential transport options of relevance to the Birmingham to Exeter route, in the form of potential local authority-led improvements to M5 Junction 22 and the potential provision of a new Junction 21A to the south of the existing Junction 21.

Peninsula Transport and Western Gateway Sub-national Transport Bodies have also collaborated to prepare a joint *South West Freight Strategy*²⁵, looking to the challenges, opportunities and priorities for the region to 2050. The joint freight strategy highlights issues of variable journey times in the summer, leading to uncertainty within the freight sector. The strategy includes a range of potential interventions for road, rail, aviation and maritime modes. Potential interventions would include the promotion of and planning for alternative fuelled vehicles, encouraging the development of rail freight terminals, a review of lorry parking facilities in the South West, and support for SRN infrastructure improvements to improve journey time reliability.

²³ Western Gateway, 2019, *Economic Connectivity Study*, <https://westerngatewaystb.org.uk/strategy/economic-connectivity-study/>

²⁴ Western Gateway, 2020, *Review of Multi-modal Access to Ports and Airports*, <http://weston.ndm-server.co.uk/wp-content/uploads/2020/09/Port-Access-Study-Report-FINAL.pdf>

²⁵ Peninsula Transport and Western Gateway, July 2022, *South West Freight Strategy*, <https://westerngatewaystb.org.uk/wp-content/uploads/2022/07/Freight-Strategy-for-the-South-West-Full-Report.pdf> and <https://www.peninsulatransport.org.uk/wp-content/uploads/2022/07/Freight-Strategy-for-the-South-West-Full-Report.pdf>

Peninsula Transport

The Peninsula Transport Sub-national Transport Body area covers the South West peninsula from Somerset through Devon, Torbay and Plymouth to Cornwall. Peninsula Transport identifies that the area is particularly impacted by seasonal traffic demands for leisure and tourism travel on the SRN.

Peninsula Transport has published its ‘Vision’ to “transform transport across the peninsula to enable our society and economy to thrive and our unique and outstanding environment to flourish”²⁶. This is underpinned by five main goals:

- improving connections between people, business and places
- enhancing the resilience of the transport network
- delivering affordable zero-emissions transport for everyone
- improving the health and wellbeing of communities in the peninsula
- help the peninsula to be a great place to live and work

Peninsula Transport also explicitly targets a shift in journeys from private car use to other modes.

The SRN is particularly important to the Peninsula in connecting more remote far south west areas with the wider South West region and England as a whole.

Peninsula Transport’s recommendations for corridor enhancements include:

- consistent corridor standards for road and rail
- investment in technology and digital infrastructure, including electric vehicle charging
- investment in decarbonisation, including shift in modes of transport and electric vehicle infrastructure

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 (RIS) 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.

²⁶ Peninsula Transport, 2022, <https://www.peninsulatrtransport.org.uk/our-vision/>

Within the Birmingham to Exeter route area, the MRN network intersects with the SRN at a number of locations including:

- the A449, A38 and A44 in Worcestershire, providing onward connections to locations such as Kidderminster, Bromsgrove, and Evesham respectively
- the A38 and A40 in Gloucestershire, providing onward connection to Gloucester and running parallel to the M5 to Bristol
- the A38, A4162 and A370 in Bristol and North Somerset, providing for onward connection to Bristol Airport and the City of Bristol from areas to the south
- the A38, A39 and A358 in Somerset, providing access to Bridgwater and Taunton, Glastonbury, and Ilminster respectively
- the A361 and A376 in Devon, providing onward connection to Tiverton and Exmouth

Investment in the MRN is delivered through the Government's National Roads Fund. We are aware that local authority-led improvement proposals are currently under consideration for the A38 corridor between M5 Junctions 4 and 5, the A46 and M5 Junction 9, the A38 in North Somerset including Edithmead roundabout alongside M5 Junction 22, and for M5 Junction 28.

The Birmingham to Exeter route passes through an established Mayoral Combined Authority in the West of England and extends close to the West Midlands Mayoral Combined Authority. As part of the Government's City Region Sustainable Transport Settlements, both Combined Authorities have been allocated a share of a £5.7 billion fund for local transport improvements. The West of England Combined Authority improvement proposals include a Portway Sustainable Transport Corridor linking to the new Portway rail station, an M32 sustainable transport corridor and hub with potential park and ride provision, and a Thornbury to North Bristol Sustainable Transport Corridor via Junction 16 of the M5.

Freight and logistics

The *future of freight: A long-term plan* (DfT June 2022)²⁷ 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 GVA through more than 200,000 enterprises, noting that, with imports and exports comprising 63% of 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.

The route provides access to a key freight facility at the Port of Bristol, whilst also providing onward connectivity to Plymouth Port and the designated Plymouth Freeport site. The Port of Bristol handled 8 million tonnes of freight in 2019²⁸, with consent for a Deep Sea Container Terminal and established links to the car production industry in the Midlands. Plymouth Port (accessed via the A38) also handled 2.5 million tonnes of freight in 2019²⁸.

The share of traffic made up of heavy goods vehicles (HGVs) on the Birmingham to Exeter route is greatest between Worcester and Bristol, where approximately 15-20% of daily traffic is typically made up of HGVs. The busiest section of the route for HGV traffic occurs to the south of Junction 11A, where 23% of traffic on the northbound carriageway is typically made up of HGVs. To the south of Bristol, HGVs comprise 10-15% of daily traffic.

Freight demands along the route are likely to increase in the future with increasing logistics development around Avonmouth Severnside, increased port activity, a designated Freeport site at Plymouth, and emerging manufacturing proposals for the Gravity Enterprise Zone alongside Junction 23.

²⁷ Department for Transport, 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

²⁸ Department for Transport, 2022, *Port and domestic waterborne freight statistics*, <https://www.gov.uk/government/statistical-data-sets/port-and-domestic-waterborne-freight-statistics-port#port-level-statistics>

A successful and thriving freight and distribution industry relies on good quality freight facilities. There is generally little lorry parking provision on the Birmingham to Exeter route, with provision concentrated at motorway service areas. Whilst there is an existing rail freight interchange at the Port of Bristol (Avonmouth and Portbury), there is a general lack of road-rail interchange facilities for the route as a whole. Network Rail has recently led the development of strategic studies for various routes including the Bristol to Exeter corridor which identified requirements for improved rail freight capabilities along the corridor.²⁹

Increasing freight journeys will also increase demand for lorry parking and driver welfare facilities. Similar demands are likely to be generated by the coach industry. The *National Survey of Lorry Parking* undertaken by DfT in 2017³⁰ identified that utilisation of lorry parking facilities in the South West region was at a 'serious' level (72%). The following M5 motorway service areas were identified to have critical levels of lorry park utilisation – Sedgemoor (129% utilisation), Gordano (115%), Gloucester southbound (86%), and Taunton Deane (85%). The report also identified regionally high off-site parking - either in laybys or industrial and retail estates - on approach to the Port of Bristol. The report concluded that there was a practical need for a 25% increase in lorry parking spaces in the South West region.

National Highways is investing in improved roadside facilities, as part of continued government action to boost driver welfare and tackle the effect of a current driver shortage impacting the UK. Roadside service operators are currently being encouraged to apply for funding under the Users and Communities Fund to improve the standard of lorry parking and driver welfare facilities.

Diversiónary 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.

²⁹ Network Rail, <https://www.networkrail.co.uk/running-the-railway/long-term-planning/>

³⁰ Department for Transport, 2017, *National survey of lorry parking*, <https://www.gov.uk/government/publications/national-survey-of-lorry-parking>

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.

Network Rail's Delivery plan for 2019-2024³¹ presents a vision of "putting passengers and freight users first". This strategy 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.

Parkway stations are already established at Tiverton, Bristol and Worcester close to the M5 route, whilst a new Parkway station is under construction at Portway close to Junction 18 and alongside an existing bus-based park and ride site.

The development of interchange facilities elsewhere along the route could help to further integrate road and rail. Network Rail has recently led the development of strategic studies for routes including the Bristol to Birmingham³², and Bristol to Exeter rail corridors³³. The studies identify a number of recommendations for improved rail connectivity that would support sustainable economic and housing growth throughout the M5 corridor. These include:

- better urban and local connectivity through service improvements in the Exeter, Bristol, and Worcester areas
- better regional and long-distance connectivity along the length of the corridor including the major cities (Exeter, Bristol, Birmingham) as well as key growth hubs of Bridgwater, Weston-super-Mare, Gloucester, and Worcester
- opportunities for station and service improvements to encourage rail use at Worle, Yate, and Ashchurch for Tewkesbury, and potential new stations at Wellington and Cullompton
- additional capacity and improved capability for rail freight along the corridor, including national strategic flows from the Port of Bristol and South Wales, and potential growth sites including emerging manufacturing proposals for the Gravity Enterprise Zone at Junction 23

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.

³¹ Network Rail, *Our delivery plan for 2019 - 2024*,

<https://www.networkrail.co.uk/who-we-are/publications-and-resources/our-delivery-plan-for-2019-2024/>

³² Network Rail, February 2022, *Bristol to Birmingham rail corridor strategic study*, <https://sacuksprodnr.digital0001.blob.core.windows.net/regional-long-term-planning/Wales%20and%20Western/Bristol%20to%20Birmingham%20rail%20corridor%20strategic%20study.pdf>

³³ Network Rail, May 2022, *Bristol to Exeter rail corridor strategic study*, <https://sacuksprodnr.digital0001.blob.core.windows.net/regional-long-term-planning/Wales%20and%20Western/Bristol%20to%20Exeter%20rail%20corridor%20strategic%20study.pdf>

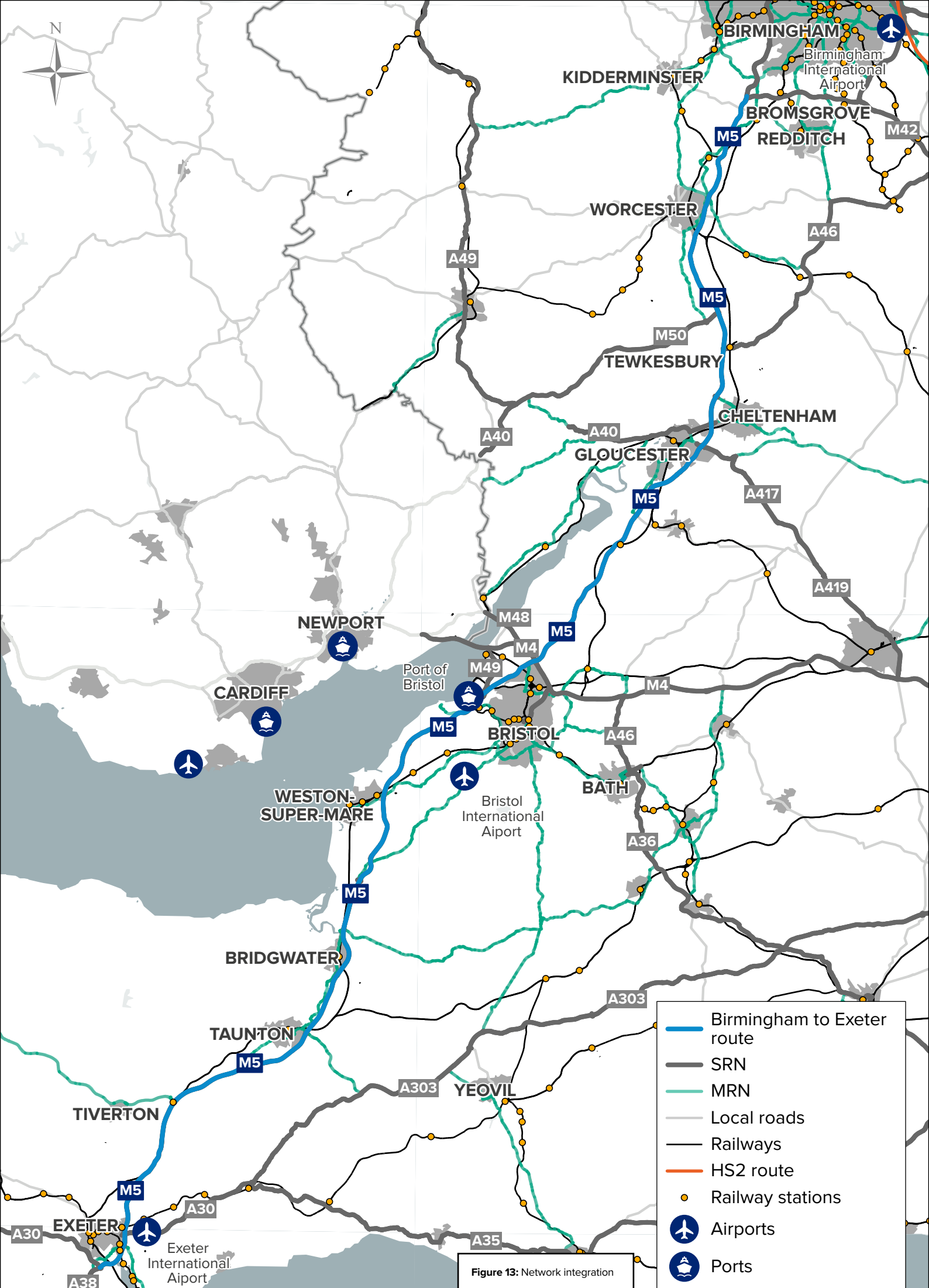


Figure 13: Network integration

- Birmingham to Exeter route
- SRN
- MRN
- Local roads
- Railways
- HS2 route
- Railway stations
- Airports
- Ports

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*³⁴ 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.

The M5 enables journeys to and from Mid and South Wales via the M50 and A40, along with the M4 and M48 via the Severn Crossings. The removal of tolls from the Severn crossings in 2018 led to an immediate increase in traffic crossing the Prince of Wales bridge. In combination, around 100,000 vehicles crossed the Severn each day on the M4 and M48 in 2019. We continue to review the long-term effects of this change, and the impacts of any increase in traffic on the resilience of the M5 and wider Bristol motorway network.

The Union Connectivity Review highlights that the South Wales - Greater Bristol area acts as a discrete cross-border economic area. Within this area, the M5 provides a vital link in connecting employers, employees, businesses, friends and families. The *Western Gateway partnership*³⁵ is a pan-regional economic partnership for South Wales and Western England. The partnership aims to improve public transport and better connect communities, reporting that 140,000 people cross the Severn each day. Alongside efforts to improve transport links, the partnership is also seeking to attract inward investment, deliver net zero carbon targets and capitalise on existing strengths in green energy production and digital innovation.

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 journeys.

The M5 provides access to the Port of Bristol and Sharpness Docks in Gloucester, and enables onward connectivity towards ports in the South West peninsula (Plymouth and Falmouth), and South Wales (Cardiff and Newport). Plymouth Port provides passenger ferries to France and Spain, carrying 425,000 passengers in 2019³⁶.

The M5 also provides important highway access to Bristol and Exeter Airports, as well as supporting onward travel to Birmingham and Newquay Airports. Bristol Airport served 9 million passengers in 2019 (with plans to increase to 12 million), whilst Exeter Airport served 1 million passengers³⁷.

³⁴ Sir Peter Hendy CBE, 2021, *Union Connectivity Review Final Report*, <https://www.gov.uk/government/publications/union-connectivity-review-final-report>

³⁵ Western Gateway partnership, <https://western-gateway.co.uk/>

³⁶ Department for Transport, 2022, *Sea passenger statistics*, <https://www.gov.uk/government/statistical-data-sets/sea-passenger-statistics-spas>

³⁷ Civil Aviation Authority, *Annual airport data 2019*, <https://www.caa.co.uk/data-and-analysis/uk-aviation-market/airports/uk-airport-data/uk-airport-data-2019/annual-2019/>



**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 six DfT 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 NTIS

(National Traffic Information Service) 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.

Road Safety Foundation (RSF) produce maps that show the statistical risk of fatal or serious injury crashes 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.

The latest available i-RAP Star Ratings data is presented in Figure 14 and shows that the majority of the 150-mile corridor is categorised as having a 3-star rating with some sections categorised as 4-star. No sections of the route are categorised as 2-star or 1-star.

Analysis of STATS19 data for the period 2015-2018 shows that there remain sections of the route where people have been killed or seriously injured. Figure 15 highlights the following sections of the route where collisions have resulted in a higher number of people being killed or seriously injured:

- M5 northbound carriageway between Junction 6 and 4A
- M5 northbound carriageway between Strensham motorway service area and Junction 7
- M5 southbound carriageway between Junction 8 and 9, and both carriageways between Junction 9 and 10
- M5 northbound carriageway between Junction 11 and 11A
- M5 northbound carriageway between Junction 14 and 15
- M5 southbound carriageway between Junction 24 and 25, and both carriageways between Junction 25 and the Taunton Deane motorway service area
- M5 both carriageways between Junction 28 and 29

Across the route as a whole, relatively few collisions have resulted in motorcycle users being killed or seriously injured. The highest occurrence is on the northbound carriageway between Junction 11A and Junction 11 where a total of three motorcycle users have been killed or seriously injured.

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

Whilst walkers, cyclists and horse riders are not permitted on motorways, interactions do occur at motorway junctions, and some unpermitted incursions to the mainline motorway occasionally happen. Reported collisions along the route involving walkers, cyclists and horse riders are low, but remain a concern for National Highways.

In addition to reported collisions, the route also experiences issues of long slip road queues which can extend onto the mainline during periods of peak traffic demand. Long slip road queues can increase the risk of collisions and contribute to delays.

The latest available Road Safety Foundation Crash Risk Map categorises the crash risk as 'green' for the entire M5 route. Similarly the crash density is categorised as 'green' for the entire route, indicating low rates of collisions for the level of traffic using the route.

Key challenges

- The route generally experiences a low rate of collisions for the level of traffic using the route, but there are sections of the route where collisions have resulted in a higher number of people being killed or seriously injured
- Long slip road queues can also form at a number of junctions, which can extend onto the mainline under peak traffic demand.

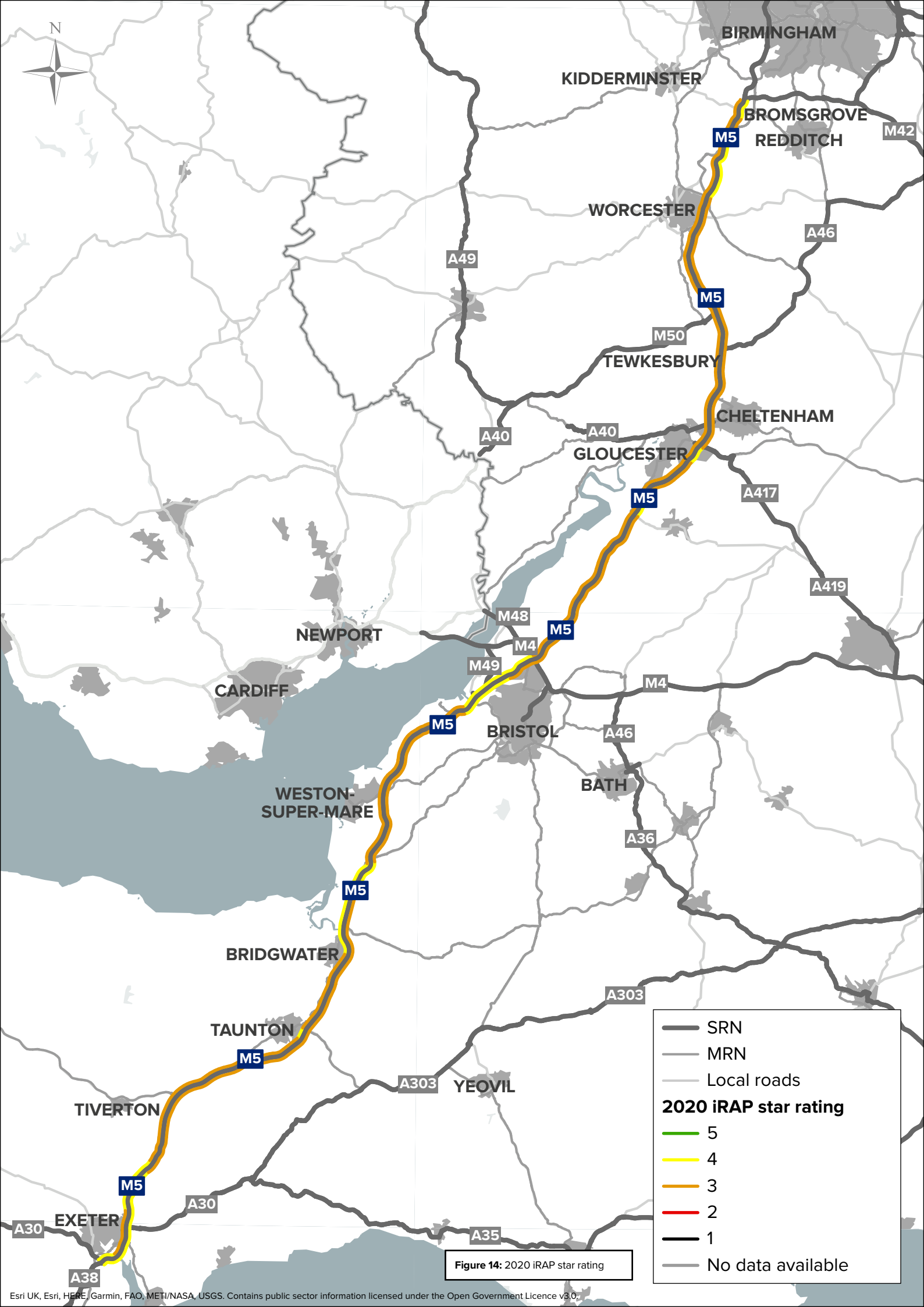


Figure 14: 2020 iRAP star rating

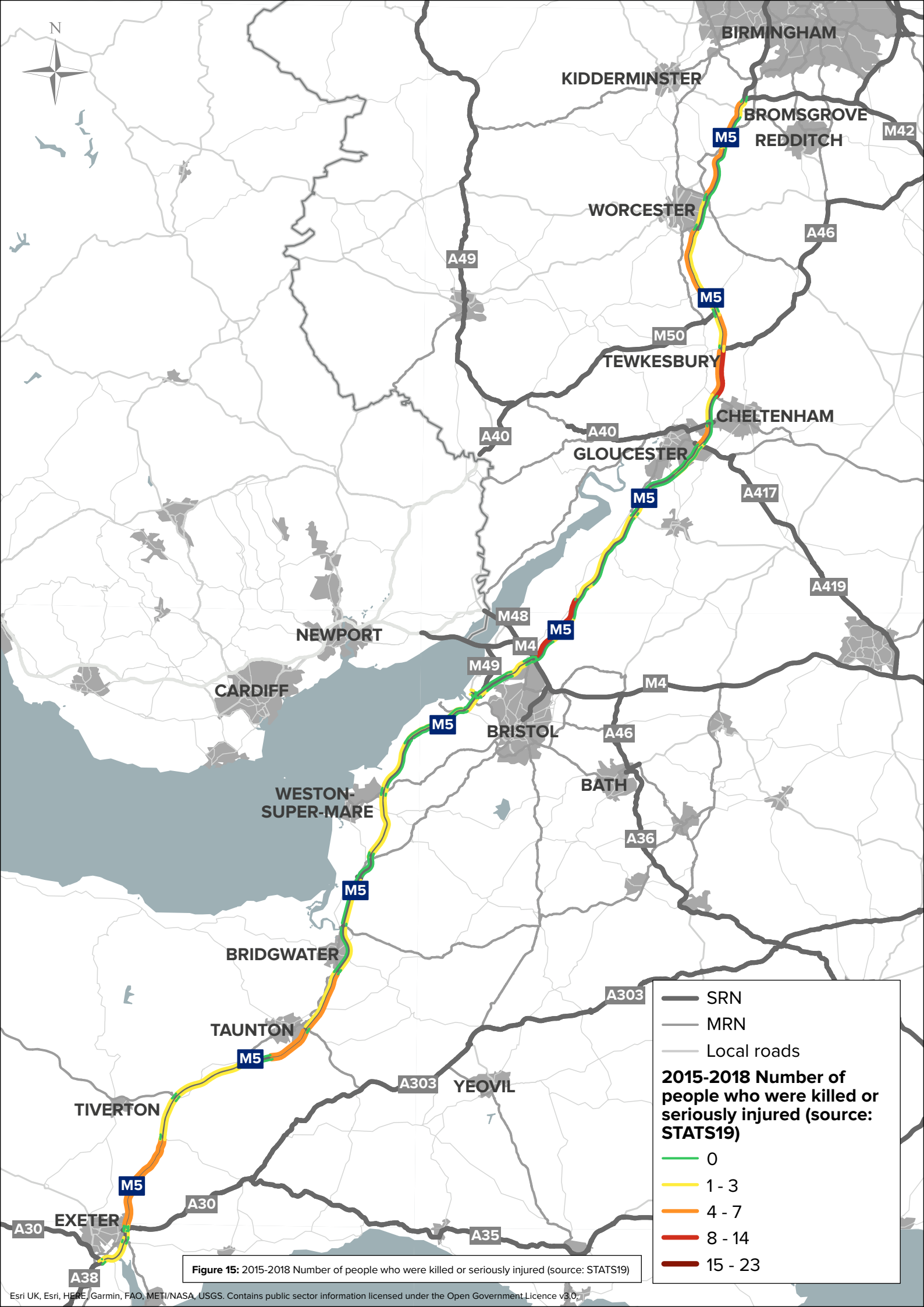


Figure 15: 2015-2018 Number of people who were killed or seriously injured (source: STATS19)

	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

The northern section of the route is generally free-flowing and reliable, whilst carrying higher levels of traffic. Typical daily traffic flows peak close to 60,000 vehicles in each direction on approach to Junction 4A. Between Worcester and Bristol, typical daily traffic is around 45,000 vehicles in each direction. As the route extends south beyond the M4 interchange and around the North Fringe of Bristol, average daily flows increase again towards 60,000 vehicles in each direction, but with increased delay and a reduction in journey time reliability. Flows gradually reduce as the route continues southwards, with around 30,000 vehicles using each carriageway on a daily basis past Exeter.

Network performance is measured by average peak period delay in the morning or afternoon, seasonal delay, and journey time reliability. Many sections of the Birmingham to Exeter route experience one or more of these types of delay.

During the morning peak period, average delays to the north of Junction 15 (Almondsbury interchange) are limited to no more than 5 seconds per vehicle per mile (pvpm). As shown in Figure 16, morning peak delays increase across the North Fringe of Bristol but travel times remain close to free-flow conditions for the length of the route. During the afternoon peak period, average delay is more extensive to the south of Junction 15, with noteworthy delays at the following locations:

Average peak period delay is measured in seconds per vehicle per mile and is the difference between 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.

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

- typical delays of around 20 seconds pvpm on the southbound carriageway between Junctions 15 and 20, with peak delays of 34 seconds pvpm through Junction 17 and 25 seconds pvpm through Junction 18
- delays of up to 17 seconds pvpm on the northbound carriageway between Junctions 18A and 15
- delays of 12 seconds pvpm on the northbound carriageway between Junctions 22 and 23
- delays on the southbound carriageway of 10 seconds pvpm through Junction 22 and 12 seconds pvpm through Junction 25
- delays of approximately 15-25 seconds pvpm on the southbound carriageway through Junctions 29 and 30, with peak delays of 26 seconds pvpm through Junction 30

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.

The southern section of the route experiences higher seasonal delay, with seasonal peak delay of between one and two minutes per vehicle per mile occurring at the following locations:

- northbound carriageway in the vicinity of Strensham motorway service area, north of Junction 8
- between Junctions 15 and 20, particularly in the southbound direction
- northbound carriageway through Junction 21
- northbound carriageway from Junction 26 to Junction 23
- southbound carriageway between Junctions 29 and 30

Route reliability is generally good, but unexpected variations in delay increase to the south of Bristol (between Junctions 15 and 20), with a peak of 8 seconds delay per vehicle per mile southbound through Junction 17. Unexpected delay also increases between Junctions 22 and 26, particularly in the northbound direction, peaking at 7 seconds per vehicle per mile through Junction 23. As with afternoon peak period delay, unexpected delay also occurs on the M5 southbound carriageway between Junctions 29 and 30.

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. The RTM models use projected growth, expected trends and changes to the network (including National Highways' RIS2 schemes) to forecast the performance of the network in 2031. The performance in the 2031 morning peak is shown in the RTM delay map presented in Figure 17.

Route performance is likely to decline with future increases in traffic flow demands, population and housing growth. Forecasts presented in Figure 17 suggest that the greatest morning peak delay will occur at the following locations:

- northbound and southbound between Junction 4A and Junction 9
- southbound between Junction 9 and Junction 11A
- northbound between Junction 13 and Junction 11A
- southbound between Junction 14 (Charfield) and Junction 15 (Almondsbury Interchange)
- northbound between Junction 21 (Weston-super-Mare) and Junction 17 (Cribbs Causeway)
- northbound between Junction 31 for the A30/A38 interchange and Junction 30

Key challenges

- The northern section of the route is generally free-flowing and reliable, but delays and reliability issues increase around Bristol and the Somerset Levels, and as the route passes Exeter
- The southern section of the route experiences seasonal delay increases, with some sections experiencing additional delay of one to two minutes per vehicle per mile
- Route performance is likely to be impacted by increases in traffic flow demands, population and housing growth

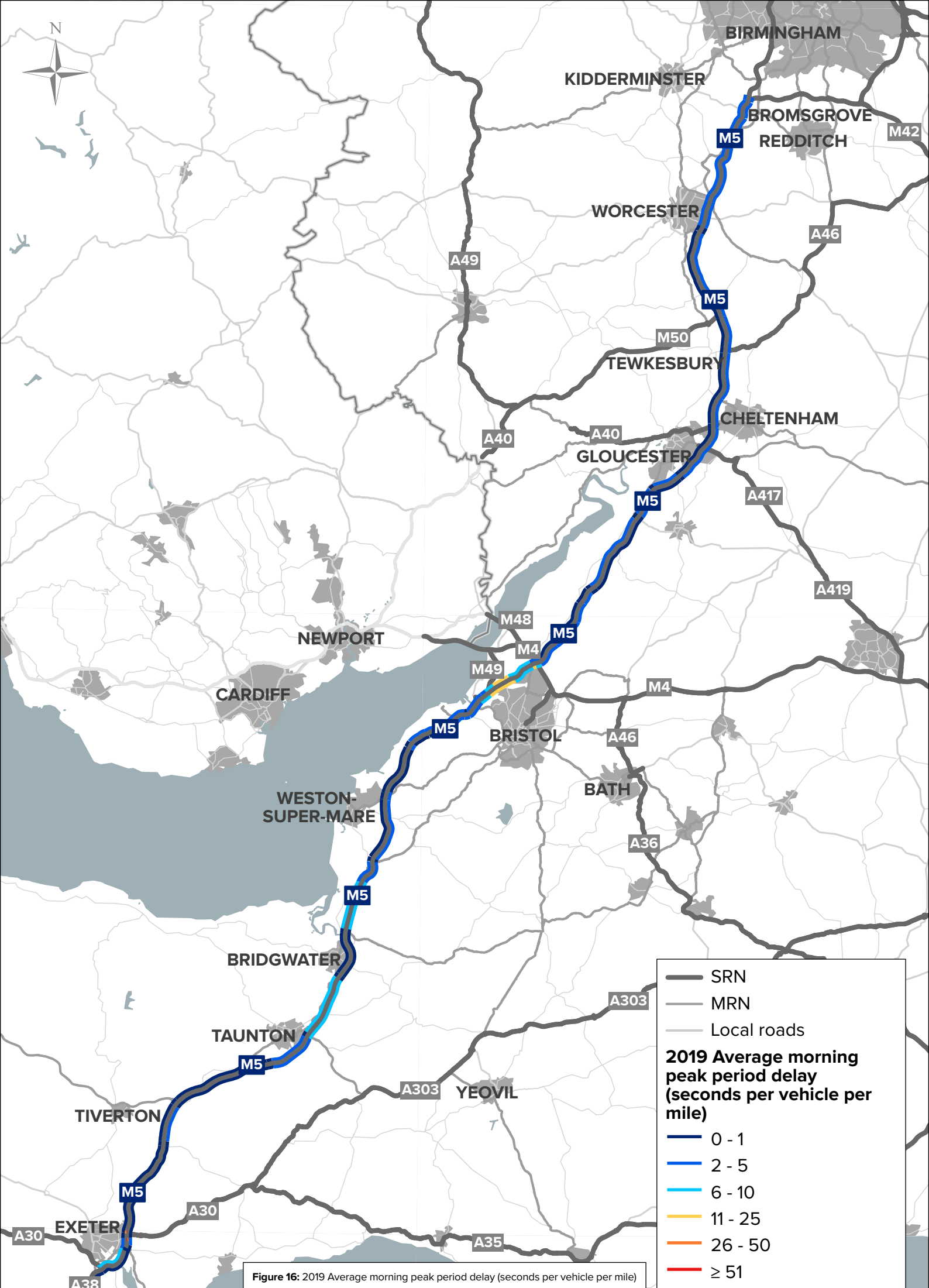


Figure 16: 2019 Average morning peak period delay (seconds per vehicle per mile)

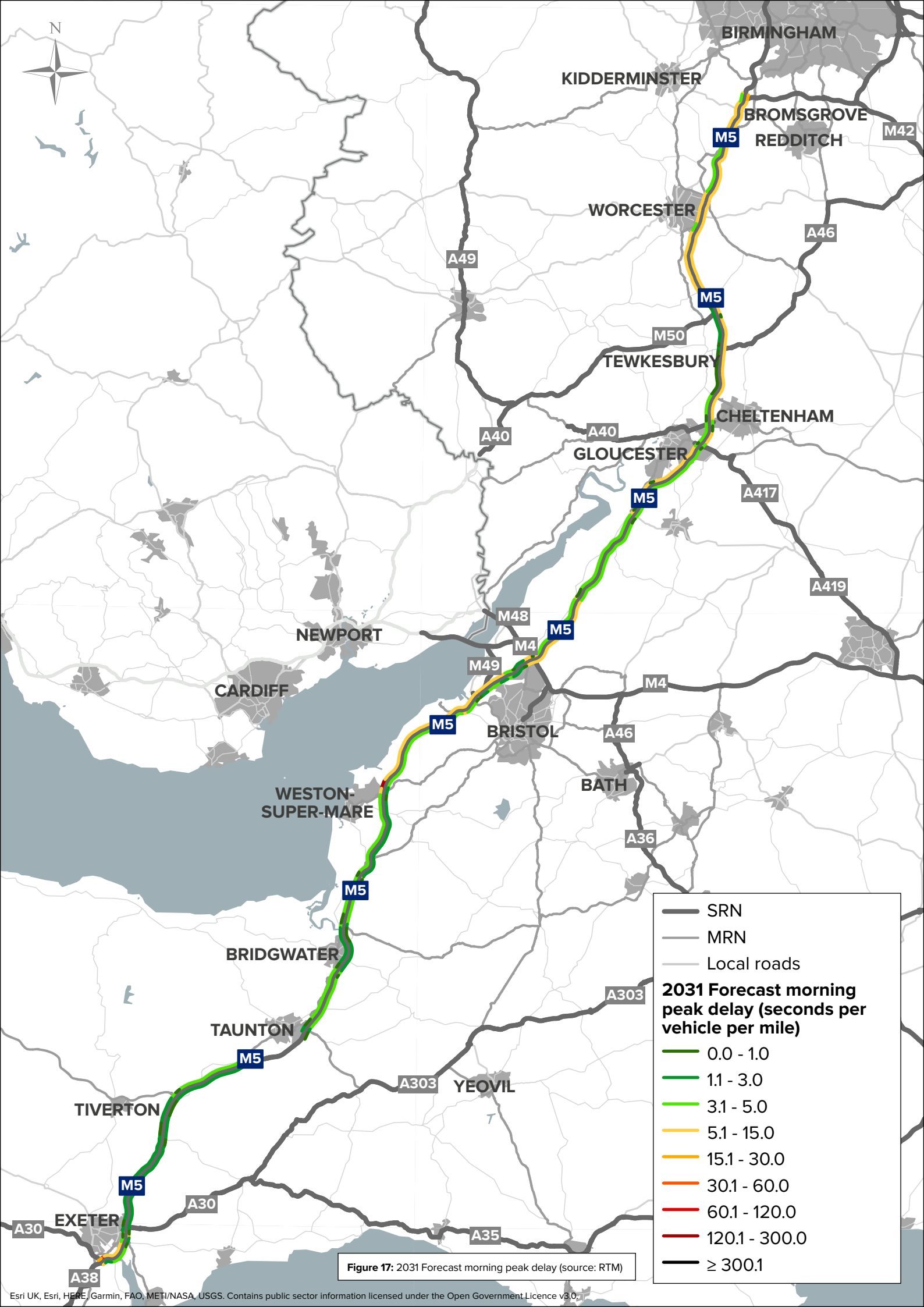


Figure 17: 2031 Forecast morning peak delay (source: RTM)



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 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*³⁸ 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 third and most recent Independent Assessment of UK Climate Risk³⁹, 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, quality of life, economic prosperity and the natural environment.

Sections of the M5 currently considered to be at risk of flooding from surface water include; locations in the vicinity of Junction 6, Junction 8 and Junction 12; locations to the north of Junction 15; locations between Junctions 18-20, 25-26, and around Junctions 28 and 30. Interested parties equally raised concerns regarding surface water at Junction 30 and between Junctions 19 and 20.

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 along the Birmingham to Exeter 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 (HGVs).

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.

³⁸ National Highways, *Net zero highways: our 2030 / 2040 / 2050 plan*
<https://nationalhighways.co.uk/media/eispcjem/net-zero-highways-our-2030-2040-2050-plan.pdf>

³⁹ Climate Change Committee, 2021, *Independent Assessment of Climate Risk*,
<https://www.theccc.org.uk/publication/independent-assessment-of-uk-climate-risk/>

National Highways has a responsibility to respect and protect environmental assets near to the route:

- the route passes through the Mendip Hills Area of Outstanding Natural Beauty (AONB) and runs alongside the Cotswolds and Blackdown Hills AONBs
- sections of the route also pass alongside areas of Ancient Woodland, whilst Sites of Special Scientific Interest (SSSI) exist at Gordano Valley, Kenn Church, Kenn Pier and Yew Tree Farm (close to Junction 20), Maiden Down (north of Junction 27), and at Killerton (between Junctions 28 and 29)
- the Severn Estuary and Exe Estuary are subject to a RAMSAR designation and Special Protection Area status, whilst various Special Area of Conservation designations exist close to the route, including the Avon Gorge Woodland.

In terms of air quality, there are receptors within 100 metres of the SRN which may be more likely to experience adverse air quality impacts at the following locations:

- northbound carriageway between Junctions 6 and 5
- northbound and southbound carriageways between Gloucester Services and Junction 11A
- southbound carriageway between Junctions 16 and 17
- northbound carriageway between Taunton Deane Services and Junction 25
- southbound carriageway between Junctions 27 and 28
- northbound carriageway between Junctions 29 and 28
- southbound carriageway between Junction 30 and 31

The route also passes through or borders Air Quality Management Areas (AQMAS) at Wychbold, Worcester, and Cullompton. A Clean Air Zone will also begin operating in the City of Bristol in 2022.

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

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

- southbound carriageway between Junctions 4A and 5
- northbound carriageway between Junctions 6 and 5
- northbound carriageway between Junctions 7 and 6
- northbound carriageway between Junction 12 and Gloucester Services
- southbound carriageway between Junctions 16 and 17
- northbound and southbound carriageways between Junction 18 and 19
- northbound carriageway between Junctions 24 and 23
- northbound carriageway between Junctions 29 and 28
- northbound and southbound carriageway between Junction 30 and 31

A number of designated Noise Important Areas (NIAs) also exist along the route, most extensively to the south of Junction 5 at Droitwich, to the south of Junction 11A at Gloucester, and to the south of Junction 25 at Taunton.

The Birmingham to Bristol, and Bristol to Exeter rail lines run parallel to much of the route. Subject to the provision of appropriate facilities, the parallel routes offer interchange opportunities for both passengers and freight. Public bus and coach services also use the M5 - for example the Stagecoach Falcon service operates regular journeys between Plymouth, Bristol Airport and Bristol city centre, and National Express operates a number of intercity services on the route. Stagecoach has highlighted a desire to increase the quality and prominence of bus interchange facilities and serve emerging new development.

Noting that the majority of journeys will continue to be made by motor vehicle in the future, there is also a need to deliver new and improved facilities for electric vehicle charging and alternative-fuel vehicles.

SevernNet is a social enterprise representing businesses, community and other stakeholders across the Royal Portbury Dock, Avonmouth, Severnside and Western Approach areas which sit alongside the M5 and M49 and form part of the South Wales – Greater Bristol cross-border economic area. The SevernNet Transport Charter provides the enterprise's vision for transport to connect business and community across the SevernNet area. The charter calls for new and improved public transport links to South Wales, North Somerset and South Gloucestershire, enhanced promotion of sustainable travel options, and seeks to break down existing barriers for active travel.

Emerging new development will also require new or improved facilities to encourage sustainable travel. The Tewkesbury and Cullompton Garden Communities are both located alongside an existing motorway junction (Junction 9 for Tewkesbury and Junction 28 for Cullompton) and will deliver significant new residential-led communities. In such locations, infrastructure should enable short distance journeys across the motorway and ensure the route does not act as a barrier to walkers and cyclists.

Similarly, facilities should enable public transport use, to maximise the share of journeys made by sustainable travel modes and minimise local journeys using the route than can be made by other modes.

Key challenges

- A changing climate presents key risks to infrastructure, with sections of the route currently considered to be at risk of flooding from surface water
- Maintaining and protecting areas of outstanding natural beauty, areas with environmental designations and cultural heritage
- At a number of locations along the route, receptors may be more likely to experience adverse air quality impacts or be more sensitive to high noise levels. Locations include sections of the M5 passing Wychbold, Droitwich, Gloucester, the North Fringe of Bristol and Avonmouth, and Exeter
- The route currently makes limited provision for non-car travel modes. Parallel rail lines offer interchange opportunities for both passengers and freight, whilst there is a desire to improve bus facilities and service provision. There is also a need to deliver new and improved facilities for electric vehicle charging and alternative-fuel vehicles to help minimise greenhouse gas emissions
- Where the route runs adjacent to built-up areas or new development then the route should not act as a barrier to walkers and cyclists, and should enable public transport use



4. Growing the economy

In order to understand the economic and housing growth aspirations of the area along the route we have considered key growth locations, such as those held in local plans and Freeports.

The route supports north–south travel between the Midlands, West of England and South West regions. It has a critical economic function in supporting regional growth and underpins connectivity for key economic sectors such as the automotive, aviation, defence and maritime industries. The route also links to key east-west routes into Wales, the Midlands and South East regions, providing a vital arterial route for the movement of people and goods around the country.

A number of connecting east-west routes provide access to local authority districts classed as category 1 for levelling up. Gloucester, the Forest of Dean, and many authority areas in Mid and South Wales are all classed as category 1. In addition, Worcester, Sedgemoor, Mendip, Torbay and Torridge are all category 1 districts and benefit from access via connecting routes.

The northern section of the route features significant planned economic and housing growth focussed on the major conurbations of Worcester, Cheltenham, Gloucester, and Bristol, with a Garden Town also planned at Tewkesbury. Near to the route, Avonmouth Severnside, Filton (near Junction 17), and Junction 21 (Weston-super-Mare) are all Enterprise Areas designated by the West of England Local Enterprise Partnership, whilst the Worcester Growth Corridor is an emerging employment development alongside the M5 between Junctions 6 and 7.

The planned Cyber Central development at Cheltenham will build on existing strengths and expertise to provide a new regionally significant campus for the cyber, digital and creative sectors, with committed improvements at M5 Junction 10 providing enhanced connectivity for planned residential development at North West Cheltenham.

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

The Avonmouth Severnside industrial area to the north of M5 Junction 18 represents a significant regional focus for industrial facilities, warehousing and logistics. The area is close to the interface of the M5 and M4 and will benefit from improved SRN access following opening of the new M49 Junction 1 expected in the second road period. Demand for new logistics facilities is increasing in the South West region, and significant new premises are planned in the Avonmouth Severnside area.

The neighbouring Port of Bristol forms an important international gateway directly served by the route. The Port has consent for a future Deep Sea Container Terminal and serves a key role in the import and export of motor vehicles. As a consequence, there is an established need for freight journeys between the port and areas of car production in the Midlands. Bristol Airport also has consent to expand annual passenger numbers to 12 million, with a catchment area extending across the South West region and into South Wales.

The southern section of the route provides access to Enterprise Zones at Gravity near Bridgwater, and the Exeter and East Devon Growth Point, whilst providing onward connectivity to the Oceansgate Enterprise Zone in Plymouth and Newquay Aerohub. The Nexus 25 development alongside Junction 25 also represents a significant future employment site.

Garden Communities providing significant new housing are also planned at Taunton, Cullompton and Exeter. The ongoing development of the Hinckley Point C nuclear power station is also Europe's largest construction site, and a major importer of labour and construction materials via the M5 (Junctions 23 and 24).

The designated Freeport site at Plymouth and the Spaceport site at Newquay will also add to the existing economic hubs of Devon and Cornwall, and further increase the importance of onward connections via the M5.

The route is particularly important in terms of onward connectivity to the South West peninsula, which experiences higher levels of deprivation and has higher levelling up needs compared to the wider South West region and neighbouring regions. Peninsula Transport views connectivity issues as a barrier to growth and prosperity, with a heavy reliance on the M5 to provide strategic access to the wider UK, and international markets.

The Peninsula Transport 2020 *Economic Connectivity Study*⁴⁰ outlines that the peninsula is host to a diverse range of businesses with key sectors including advanced manufacturing, photonics and electronics innovation, marine, aerospace and defence industries, agri-food, and tourism. Seasonal increases in traffic demands due to tourism lead to unpredictable journey times. Such unpredictability can impact the attractiveness of the South West peninsula for business expansion and relocation, and therefore limit the growth potential of the regional economy.

Across the route, a number of local authorities are currently reviewing their local plans and emerging proposals include potential strategic sites at Worcestershire Parkway and the Worcester South Urban Extension (both near to Junction 7) within the South Worcestershire Development Plan area, Javelin Park (alongside Junction 12) and Sharpness in the Stroud authority area, and Nailsea and Backwell (near to Junction 19) and Wolverhill (near to Junction 21) in the North Somerset authority area.

Significant residential growth is also planned in the Greater Bristol area. Whilst the West of England Mayor has currently paused preparation of the Spatial Development Strategy, the Combined Authority is continuing to work on priorities for housing, particularly the delivery of affordable housing.

Key challenges

- The route provides access to a number of regionally significant development sites including Garden Communities, Enterprise Zones and a Freeport. Significant emerging local plan proposals will further increase cumulative pressures on the route
- Realising the economic potential of planned development will in part rely on the provision of continued safe and efficient access from the route
- The route provides critical connectivity for the South West peninsula. Opportunities to support economic growth and levelling up may be impacted by seasonal increases in traffic, unreliable journey times and delay

⁴⁰ Peninsula Transport, 2020, *Economic Connectivity Study*, <https://www.peninsulatransport.org.uk/wp-content/uploads/2020/07/Peninsula-Transport-ECS-Summary-Report-Final-090720.pdf>



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 - 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 based on 3 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 1,350 lane-kilometres of road surfacing. The surface condition across the route is considered to be sound, with 99% of pavement asset not requiring investigation for possible maintenance.

Bridges and structures

There are 934 structures across the route, including bridges and large culverts. According to an analysis of current data, 93% 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 below 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.

We have identified significant structures renewals for RIS3, and these schemes affect 13 structures in this route.

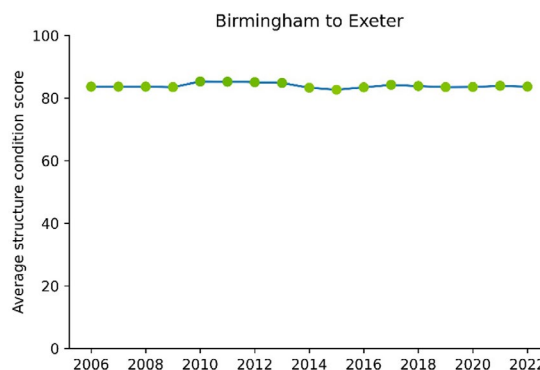


Figure 18: Average condition scores of structures, since 2006

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 next road period. 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 SRN'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'



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.



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



6. A technology-enabled network

Technology will have an increasing role to play in managing incidents and providing information to users of the route. Communication with road users is a vital component of route management for incidents, events (such as those to be held at the new Bristol Arena), festivals, sports events and agricultural shows, particularly where these coincide with daily or seasonal peak traffic periods.

High quality travel information before and during travel helps to:

- reduce day-to-day delays and improve reliability of the SRN
- minimise 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 route includes sections of smart motorway with associated variable message signage and vehicle detection near to Worcester and Bristol. Additional variable message signing is also provided around Bristol, and at other locations along the route.

High winds and incidents can lead to closure of the Severn crossings, with traffic then needing to divert to the alternative M50 and A40 routes. Incidents are relayed on variable message signs around Bristol and on approach to the Severn crossings.

The route will also need to enable increased electric vehicle use and cater for expected uptake of alternative fuel vehicles, along with connected and autonomous vehicles. The route is currently equipped with electric vehicle charging points at each of the ten existing motorway service areas, albeit facilities at the Strensham motorway service area are limited to the northbound carriageway only.

We will support improved communications and facilities for all

However, the quantity, capacity and speed of existing charging facilities will need to be upgraded to meet future demand and to suit HGVs and longer vehicles such as motorhomes or towing vehicles.

The Government's March 2022 *Electric Vehicle Infrastructure Strategy*⁴¹ 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*⁴².

Key challenges

- Communication with customers provides a key role in managing incidents and events, with potential opportunities to integrate new technologies
- Demand for increased quantity, capacity and speed of existing electric vehicle charging facilities
- Need to plan for increased use of new technology, including connected and autonomous vehicles and hydrogen fuelled vehicles

41 UK Government, March 2022, *UK electric vehicle infrastructure strategy*, <https://www.gov.uk/government/publications/uk-electric-vehicle-infrastructure-strategy>

42 UK Government, September 2021, *Rapid Charging Fund*, <https://www.gov.uk/guidance/rapid-charging-fund>

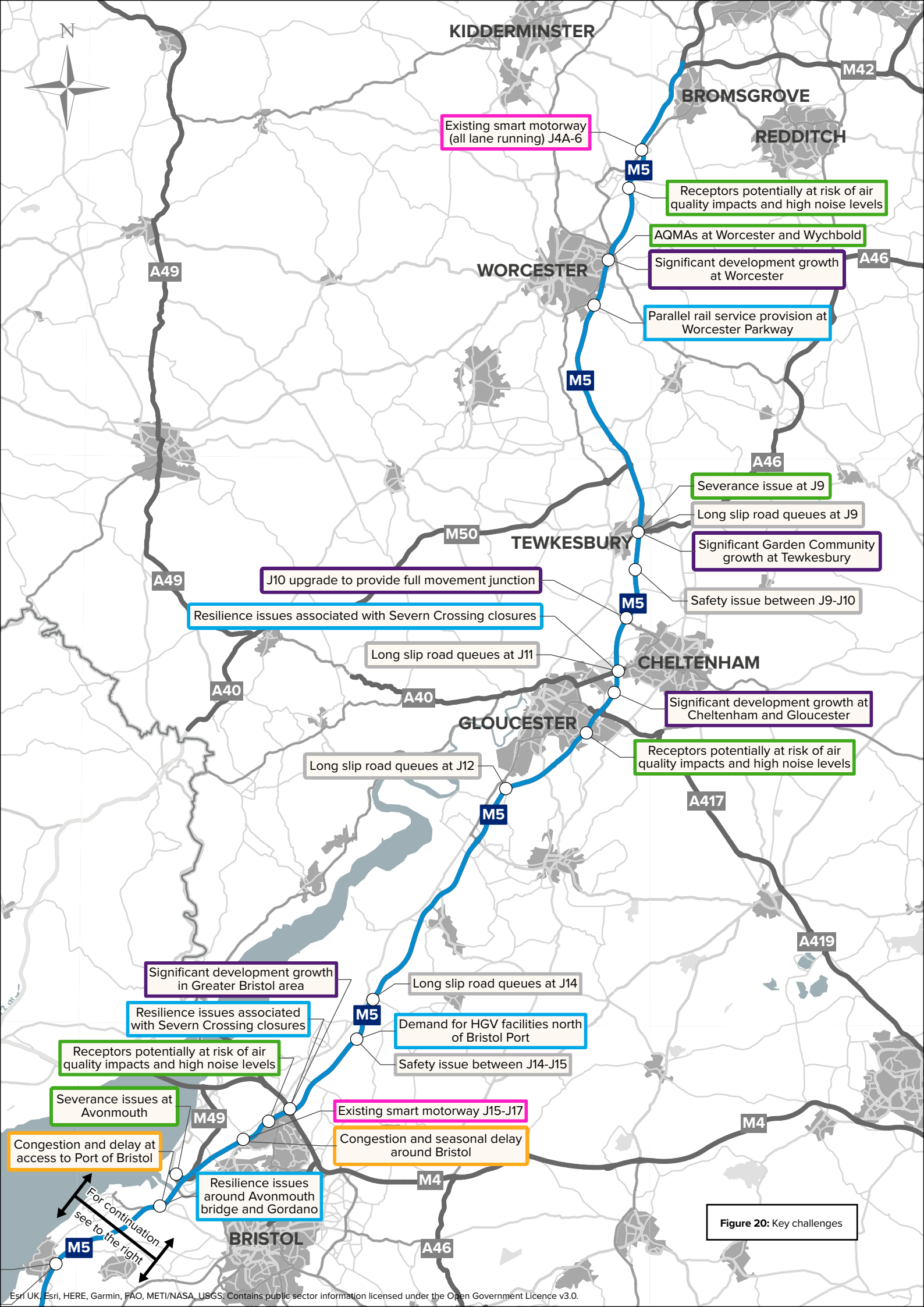
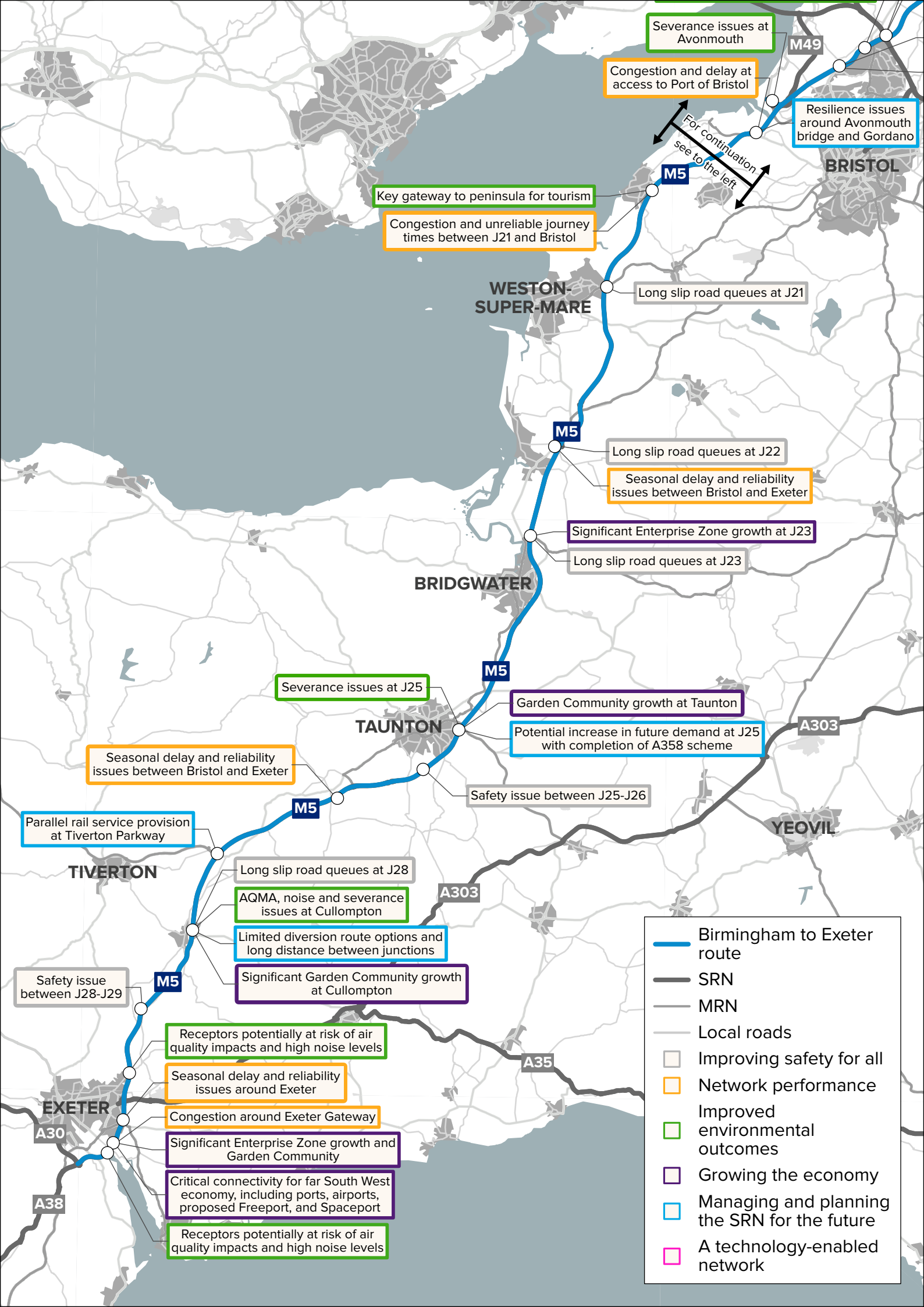


Figure 20: Key challenges



Legend

- Birmingham to Exeter route
- SRN
- MRN
- Local roads
- Improving safety for all
- Network performance
- Improved environmental outcomes
- Growing the economy
- Managing and planning the SRN for the future
- A technology-enabled network

Severance issues at Avonmouth

Congestion and delay at access to Port of Bristol

Resilience issues around Avonmouth bridge and Gordano

BRISTOL

Key gateway to peninsula for tourism

Congestion and unreliable journey times between J21 and Bristol

WESTON-SUPER-MARE

Long slip road queues at J21

Long slip road queues at J22

Seasonal delay and reliability issues between Bristol and Exeter

Significant Enterprise Zone growth at J23

Long slip road queues at J23

BRIDGWATER

Severance issues at J25

Garden Community growth at Taunton

Potential increase in future demand at J25 with completion of A358 scheme

Seasonal delay and reliability issues between Bristol and Exeter

Safety issue between J25-J26

Parallel rail service provision at Tiverton Parkway

TIVERTON

Long slip road queues at J28

AQMA, noise and severance issues at Cullompton

Limited diversion route options and long distance between junctions

Significant Garden Community growth at Cullompton

Safety issue between J28-J29

Receptors potentially at risk of air quality impacts and high noise levels

Seasonal delay and reliability issues around Exeter

Congestion around Exeter Gateway

Significant Enterprise Zone growth and Garden Community

Critical connectivity for far South West economy, including ports, airports, proposed Freeport, and Spaceport

Receptors potentially at risk of air quality impacts and high noise levels

EXETER

A38

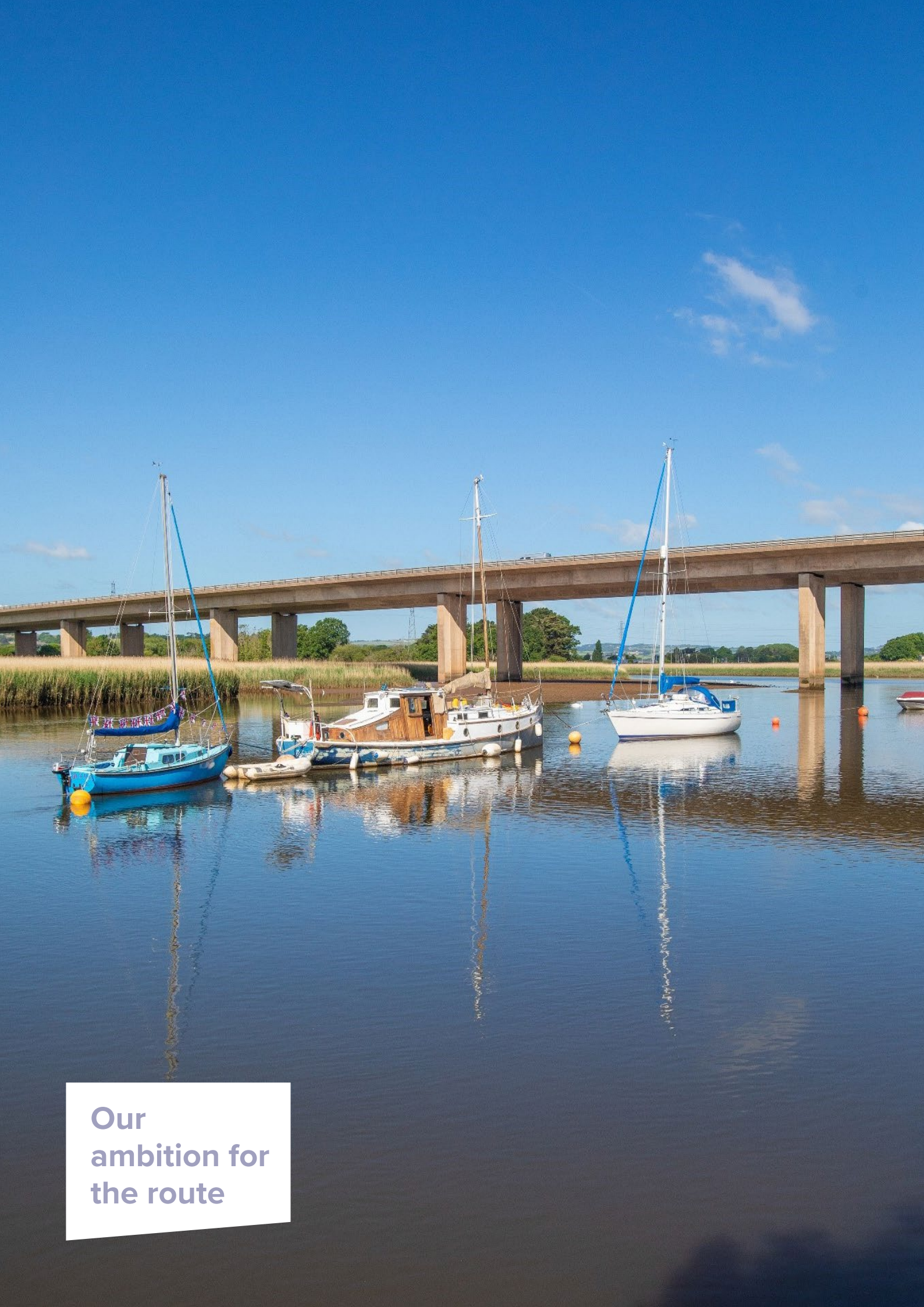
YEOVIL

A303

A35

Legend

- Birmingham to Exeter route
- SRN
- MRN
- Local roads
- Improving safety for all
- Network performance
- Improved environmental outcomes
- Growing the economy
- Managing and planning the SRN for the future
- A technology-enabled network



**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 Birmingham to Exeter route, and help the region achieve its economic and housing growth ambitions. Based on our engagement and data analysis, we have defined seven 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 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 SRN.

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. 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 road period.

Route objectives and DfT's strategic objectives

In Figure 21 we illustrate the seven 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 for the route

	Ref.	Route objective
	A	<p>Maintain the strategic north – south function</p> <p>Maintain the strategic function, safety and resilience of the M5 as the key north-south route between the Midlands, West of England and South West regions, supporting sustainable economic activity and communities through the safe and efficient movement of people and goods</p>
	B	<p>Facilitate east – west connectivity</p> <p>Facilitate safe and effective connections to adjoining east-west routes. Improved access to routes including the Severn Crossings, the A46 Trans Midlands Trade Corridor and Exeter Gateway (A30 and A38) will promote strategic and regional connectivity and support economic activity</p>
	C	<p>Support connections to international gateways</p> <p>Support safe and effective connections to international gateways in the South West, West of England and neighbouring regions, including Bristol and Plymouth ports and Bristol and Exeter airports, to enable international trade and investment and the movement of people and freight</p>
	D	<p>Support regionally significant and sustainable economic development and housing delivery</p> <p>Support delivery of regionally significant and sustainable economic development and housing, whilst maintaining the safe and effective operation of the network</p>
	E	<p>Improve resilience to seasonal demands</p> <p>Improve resilience to seasonal traffic flow demands along the M5, particularly between Bristol and Exeter, to support trade, investment and tourism in the South West peninsula</p>
	F	<p>Support local connections and interchange</p> <p>Support effective local connections and integration with bus and rail, particularly for key urban areas along the route, and facilitate travel choice for people and goods to reduce route demand and support decarbonisation</p>
	G	<p>Be a better neighbour</p> <p>Be a better neighbour by safeguarding the environment, reducing severance, and reducing any significant noise and air quality impacts for local communities, particularly at Wychbold, Droitwich, Tewkesbury, Gloucester, the North Fringe of Bristol and Avonmouth, Cullompton and Exeter</p>

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
✓	✓			✓	✓
	✓		✓		
	✓		✓		
		✓	✓		
	✓		✓		✓
	✓	✓			✓
✓		✓			

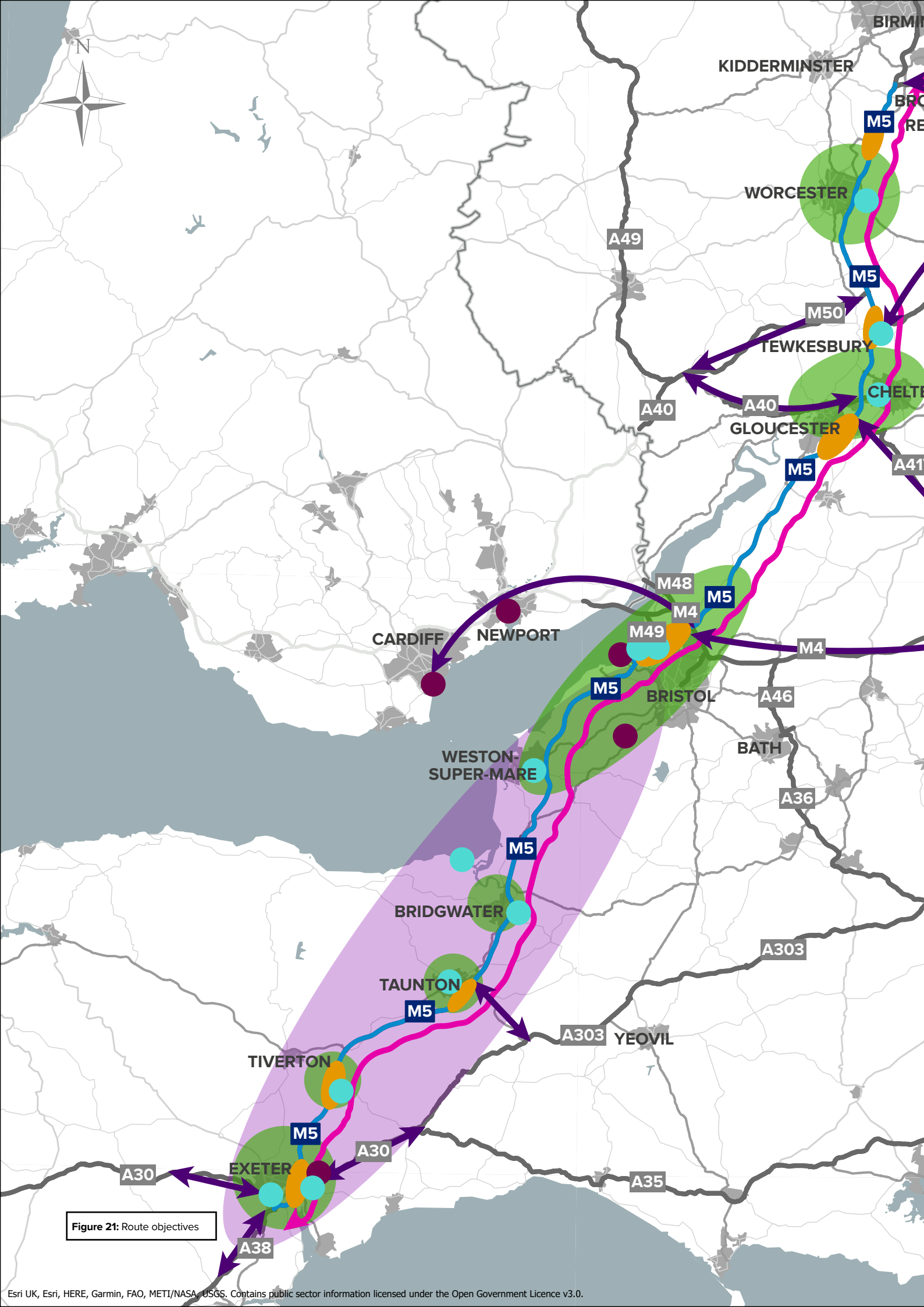
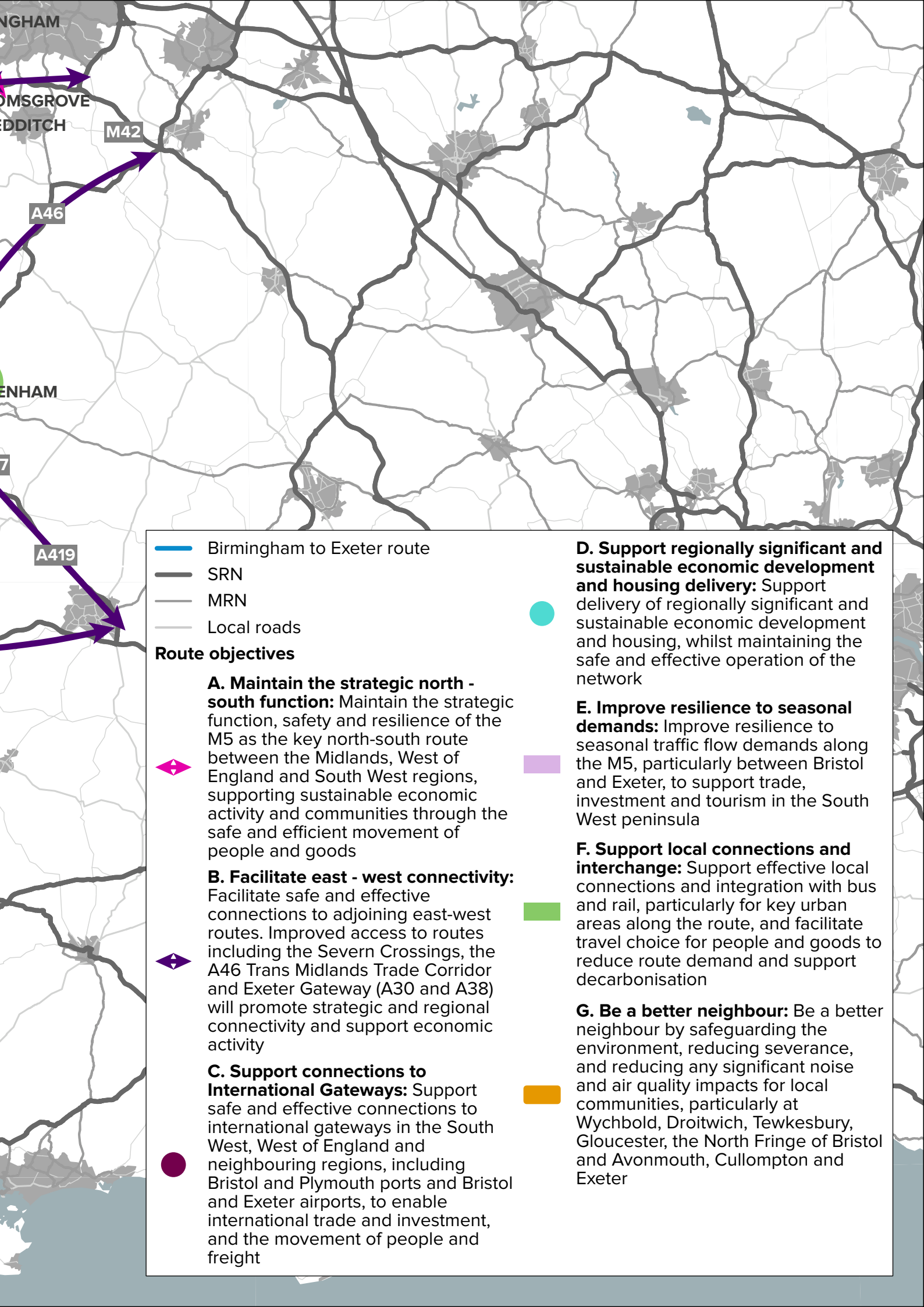






Figure 21: Route objectives



 Birmingham to Exeter route
 SRN
 MRN
 Local roads

Route objectives

- 

A. Maintain the strategic north - south function: Maintain the strategic function, safety and resilience of the M5 as the key north-south route between the Midlands, West of England and South West regions, supporting sustainable economic activity and communities through the safe and efficient movement of people and goods
- 

B. Facilitate east - west connectivity: Facilitate safe and effective connections to adjoining east-west routes. Improved access to routes including the Severn Crossings, the A46 Trans Midlands Trade Corridor and Exeter Gateway (A30 and A38) will promote strategic and regional connectivity and support economic activity
- 

C. Support connections to International Gateways: Support safe and effective connections to international gateways in the South West, West of England and neighbouring regions, including Bristol and Plymouth ports and Bristol and Exeter airports, to enable international trade and investment, and the movement of people and freight

- 

D. Support regionally significant and sustainable economic development and housing delivery: Support delivery of regionally significant and sustainable economic development and housing, whilst maintaining the safe and effective operation of the network
- 

E. Improve resilience to seasonal demands: Improve resilience to seasonal traffic flow demands along the M5, particularly between Bristol and Exeter, to support trade, investment and tourism in the South West peninsula
- 

F. Support local connections and interchange: Support effective local connections and integration with bus and rail, particularly for key urban areas along the route, and facilitate travel choice for people and goods to reduce route demand and support decarbonisation
- 

G. Be a better neighbour: Be a better neighbour by safeguarding the environment, reducing severance, and reducing any significant noise and air quality impacts for local communities, particularly at Wychbold, Droitwich, Tewkesbury, Gloucester, the North Fringe of Bristol and Avonmouth, Cullompton and Exeter



A. Maintain the strategic north – south function

Objective

Maintain the strategic function, safety and resilience of the M5 as the key north-south route between the Midlands, West of England and South West regions, supporting sustainable economic activity and communities through the safe and efficient movement of people and goods.

Context

The route provides a vital north-south link for regional trade, commuting and leisure journeys both within the Midlands and West of England, and for onward travel to the North of England and the far South West peninsula. The route links major conurbations and concentrations of manufacturing, logistics and automotive industries in the Midlands with areas of advanced engineering, research and development in the South West region. In rural areas, the route also provides an important link to services including healthcare and education.

Long slip road queues which can extend onto the mainline have been identified at a number of junctions along the route. This represents a safety issue and can lead to delay for strategic journeys.

Freight demands on the route are likely to grow, with additional heavy goods vehicle (HGV) journeys generated by the Plymouth Freeport, growth at the Port of Bristol, Enterprise Zones and logistics development around Avonmouth Severnside. This will also increase demand for the limited existing lorry parking and driver welfare facilities along the route. There is also a need to plan for increased electric vehicle charging and use of new technology, including connected and autonomous vehicles and hydrogen fuelled vehicles.

Climate change will have an increasing impact on the operation and maintenance of the route, with increasing risks to bridges from flooding and erosion and risks to subterranean and surface infrastructure from subsidence. The effects of a changing climate could lead to additional delay and disruption for the travelling public and freight.

The route includes a number of highway structures of vital importance to the continued performance and resilience of the route, notably the Avonmouth bridge and Wynhol viaduct, and the Exeter viaducts. Diversion due to incidents can result in significant congestion and environmental impacts for affected communities, along with negative impacts for business. It is therefore necessary to plan for the effects of climate change to ensure continued resilience of the route.

Our network considerations

- Whilst the route generally experiences a low rate of collisions for the level of traffic using the route, there are sections of the route where collisions have resulted in a higher number of people being killed or seriously injured. These include to the north and south of Worcester, between Junctions 8 and 10, between Junctions 11 and 11A, north of Almondsbury Interchange (Junction 15), between Bridgwater and Taunton Deane motorway service area, and between Junctions 28 and 29
- Sections of the route experience peak period delays and reliability issues, particularly during the afternoon period around the North Fringe of Bristol, the Somerset Levels and Exeter. Incidents and seasonal traffic increases place further stress on heavily used sections. Route performance is likely to decline in the future with increases in traffic demand, population and housing growth. Forecasts suggest the greatest morning peak delays will occur between Weston-super-Mare and Bristol, and near to Exeter
- A number of sections of the route are at risk of flooding from surface water, including locations in the vicinity of Junction 6, Junction 8 and Junction 12, locations to the north of Junction 15, locations between Junctions 18-20, locations between Junction 25-26, and around Junctions 28 and 30
- Limited lorry parking provision is concentrated at existing motorway service areas, with previously identified issues of over-utilisation at a number of sites, and high off-site parking on approach to the Port of Bristol

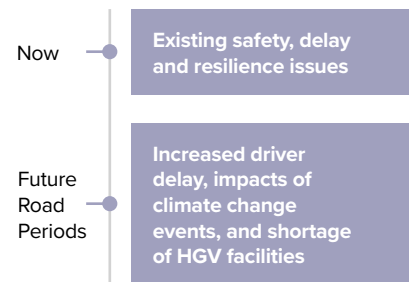
Outcomes

- Reduction in the number of road users killed or seriously injured
- Reduced delay
- Improved resilience to a changing climate and increases in traffic demand
- Increased HGV parking, driver welfare facilities
- Increased electric vehicle charging, and uptake of new technology

DfT's Strategic objectives

-  Improving safety for all
-  Network performance
-  Managing and planning the SRN for the future
-  A technology-enabled network

Timeframe based on the issues and constraints identified



B. Facilitate east – west connectivity



Objective

Facilitate safe and effective connections to adjoining east-west routes. Improved access to routes including the Severn Crossings, the A46 Trans Midlands Trade Corridor and Exeter Gateway (A30 and A38) will promote strategic and regional connectivity and support economic

Context

Connecting east-west routes provide vital links into Wales and link neighbouring regions of England. Safe and effective access between the M5 and east-west routes is key to regional connectivity and the promotion of economic growth.

At the northern extent of the route, the intersection with the M42 provides access to the Birmingham motorway network and onward connectivity to the Midlands manufacturing and automotive sectors, along with the so-called 'golden triangle' of logistics.

Around the mid-point of the route, the South Wales – Greater Bristol area acts as a discrete cross-border economic area, with the M5 providing a vital link in connecting employers, employees, businesses, friends and families. The role of the area and the importance of transport connectivity is recognised in both the *Union Connectivity Review*⁴³ and the work of the Western Gateway economic partnership.

At the southern extent of the route, the intersection with the A30 and A38 at Exeter facilitates onward travel to the South West peninsula and onward connection to the A380 for travel into Torbay.

Elsewhere, the route provides a number of connections to east-west routes whether via the SRN or MRN.

Our network considerations

- Junction 9 provides access to the A46 trade corridor, with onward connectivity to Birmingham and East Midlands Airports and the Humber ports. Interested parties highlighted long slip road queues, impacting on neighbouring businesses and potential growth. A higher number of road users have also been killed or seriously injured between Junctions 9 and 10
- The removal of the Severn tolls resulted in an increase in traffic crossing the Prince of Wales Bridge, with potential traffic flow impacts for the M5 north of Bristol. The route currently experiences delay issues across the Bristol North Fringe and at the interchange with the M4 (Almondsbury Interchange)
- Interested parties identified existing congestion and queuing at the intersections of the M5 with adjoining east-west routes (A40 and A417) around Cheltenham and Gloucester.
- The A40 and M50 provide important routes into Mid and South Wales, and key alternatives to the Severn Crossings during periods of disruption
- RIS2 proposals for the A417 The Missing Link and A358 Taunton to Southfields would increase use of M5 Junction 11A and Junction 25
- Interested parties and road users highlighted queuing and safety concerns at intersections with the A38 MRN route in Somerset. Capacity constraints at the A38 Edithmead and Dunball junctions cause queuing interaction with the M5, and impact delivery of planned development
- The convergence of the M5, A30, and A38 routes east of Exeter provides access to Exeter Airport and regionally significant development, with interested parties highlighting the importance of the area known as the Exeter Gateway for connectivity and economic growth. Peak period delay and seasonal delay occur on this section, whilst collisions where people have been killed or seriously injured have also occurred on this section
- Route connections provide access to a number of local authority districts classed as category 1 for levelling up, including Worcester, Gloucester, Sedgemoor, Torbay and Torridge

⁴³ Sir Peter Hendy CBE, 2021, *Union Connectivity Review Final Report*, <https://www.gov.uk/Government/publications/union-connectivity-review-final-report>

Outcomes

- Reduced delay and improved safety at key confluences such as Almondsbury Interchange and the M5 east of the Severn Crossings, the Exeter Gateway, and where the M5 intersects with wider east-west routes
- Enhanced regional connectivity supporting economic activity and achievement of key national policies

DfT's Strategic objectives

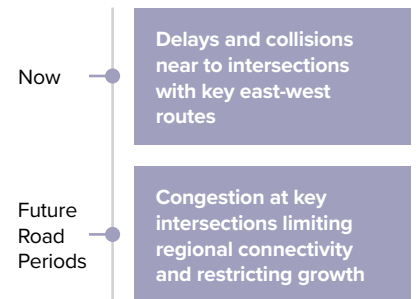


Network performance



Growing the economy

Timeframe based on the issues and constraints identified



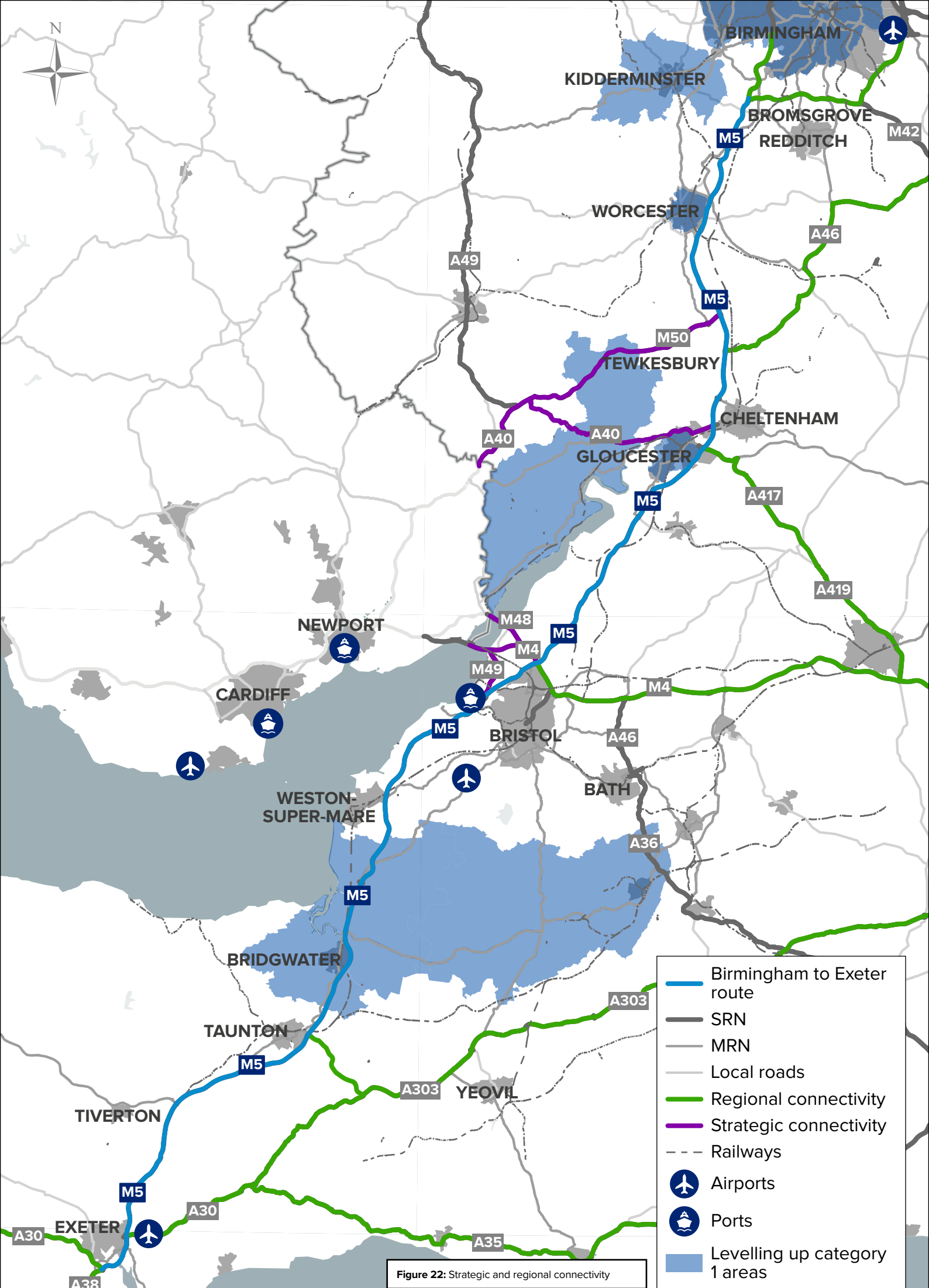


Figure 22: Strategic and regional connectivity

- Birmingham to Exeter route
- SRN
- MRN
- Local roads
- Regional connectivity
- Strategic connectivity
- - - Railways
- Airports
- Ports
- Levelling up category 1 areas



C. Support connections to international gateways

Objective

Support safe and effective connections to international gateways in the South West, West of England and neighbouring regions, including Bristol and Plymouth ports and Bristol and Exeter airports, to enable international trade and investment and the movement of people and freight.

Context

The Government aims to make the United Kingdom a more attractive place to trade, invest and visit, improving our global competitiveness. The provision of safe and effective SRN access to international gateways is important for overseas trade, freight, leisure and tourism.

The route provides the principal means of highway access to international gateways at the Port of Bristol, Bristol Airport and Exeter Airport. Only the Port of Bristol has an active rail connection, and other gateways are reliant on highway access.

The route also supports access to Plymouth Port (via onward connection to the A38) and international gateways in South Wales via the Severn crossings. Interested parties also highlighted the importance of the route for freight access to Heathrow and the south coast ports from the South West region.

Sharpness Docks in Gloucester are also served from the route, whilst the recently upgraded Newquay Airport and Spaceport and designated Plymouth Freeport are all accessed via onward connection to the A30 or A38. Birmingham Airport is also located around 20 miles from the northern end of the route.

Our network considerations

- Interested parties highlighted concern over existing access constraints for the Portbury dock at Junction 19. Significant industrial and logistics development is also taking place in the Avonmouth Severnside area, increasing freight demands via Junction 18 ahead of opening of the new M49 Junction 1
- Access to Bristol Airport is taken from Junctions 21 and 22. Interested parties highlighted that both junctions experience long slip road queues at peak times and would experience increased demand due to housing growth in the local area. The route section between Bristol and Junction 21 also experiences some of the greatest afternoon peak delay
- Exeter Airport is accessed via Junction 29 and the A30. Peak period delay and reliability issues both occur on the M5 between Junctions 29 and 30, whilst seasonal delays can also lead to journey time uncertainty. A higher number of road users have also been killed or seriously injured between Junctions 28 and 29
- Route performance is likely to decline in the future, with morning period delay forecast on approach to junctions for the Port of Bristol and Bristol Airport, and between Junction 30 and Junction 31 near to Exeter Airport
- Network Rail has recommended additional capacity and improved capability for rail freight serving the Port of Bristol
- There is demand for increased heavy goods vehicle (HGV) layover and driver welfare facilities, particularly in the M5 corridor north of the Port of Bristol. Interested parties also highlighted opportunities to promote the uptake of alternative HGV fuel sources around international gateways

Outcomes

- Reduction in the number of road users killed or seriously injured on approach to international gateways
- Reduction in delay and journey time uncertainty on approach to international gateways
- Increased lorry parking and driver welfare facilities serving international gateways
- Increased freight volumes by rail and improved facilities for road-rail freight interchange
- Increased uptake of alternative fuel sources around international gateways

DfT's Strategic objectives

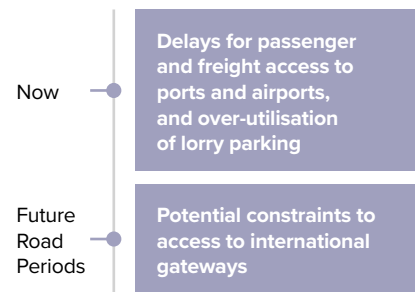


Network performance



Growing the economy

Timeframe based on the issues and constraints identified





D. Support regionally significant and sustainable economic development and housing delivery

Objective

Support delivery of regionally significant and sustainable economic development and housing, whilst maintaining the safe and effective operation of the network.

Context

The route links sub-regional growth hubs including Enterprise Zones at Gravity (Bridgwater), Exeter and East Devon, and Oceansgate (Plymouth), and Garden Communities at Tewkesbury, Taunton, Cullompton, and Exeter. Enterprise Areas designated by the West of England Local Enterprise Partnership are also located at Avonmouth Severnside, Filton, and Junction 21. The route also provides access to the Hinckley Point C nuclear power station, a Nationally Significant Infrastructure Project for which construction will continue into the third road period.

A number of planned strategic employment sites are also served by the route including the Worcester Growth Corridor, the Golden Valley development and Cyber Central in Cheltenham, and Nexus 25 alongside Junction 25. The route will also provide regional connectivity for the Plymouth Freeport site, which represents a significant economic opportunity for Devon and Cornwall.

Local authorities along the route are also planning significant expansion of towns and cities. Major committed housing sites include the Cribbs Patchway New Neighbourhood near to Junctions 16 and 17 and the Weston Villages close to Junction 21, whilst significant housing growth is planned across the wider South West region, including the North West Cheltenham site with associated infrastructure upgrade at M5 Junction 10.

The realisation of the economic potential of each site, and their contribution to the levelling up agenda will in part rely on safe and effective access from the SRN alongside the wider transport system. Connectivity improvements can facilitate new housing and employment delivery and support inward investment and the retention of working age people. Investment in network improvements at M5 Junction 10 and M49 Junction 1 are intended to improve connectivity and remove barriers to growth.

It will also be important to embed low carbon travel into development proposals, encouraging sustainable travel, reducing SRN impacts and improving environmental outcomes.

Our network considerations

- Interested parties raised concern that congestion at locations including Junctions 9, 23 and 28 could constrain housing delivery and inhibit investment and levelling up opportunities
- Delays through the North Fringe of Bristol, North Somerset, and around Exeter have the potential to constrain delivery of regionally significant development
- Route performance is likely to decline with future increases in traffic demand, population and housing growth. Forecasts suggest the greatest morning peak delays will occur between Weston-super-Mare and Bristol, and near to Exeter
- Strategic corridor studies for the rail network have recommended improved connectivity for major cities and key growth hubs of Bridgwater, Weston-super-Mare, Gloucester, and Worcester. Potential improvements and new stations could support major development near to Worle, Yate, Tewkesbury, and Cullompton, with potential rail freight provision to the Gravity Enterprise Zone

Outcomes

- Provision of safe and effective access to strategic development sites
- Contribution to levelling up agenda and regional growth through connectivity improvements
- Delivery of sustainable development to limit car-based travel and promote public transport use

DfT's Strategic objectives

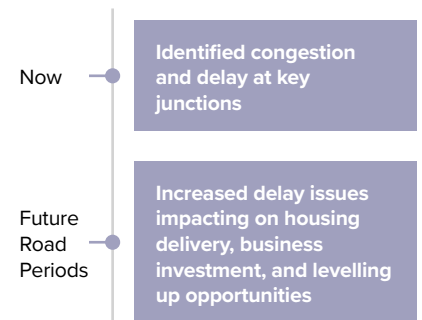


Improved environmental outcomes



Growing the economy

Timeframe based on the issues and constraints identified



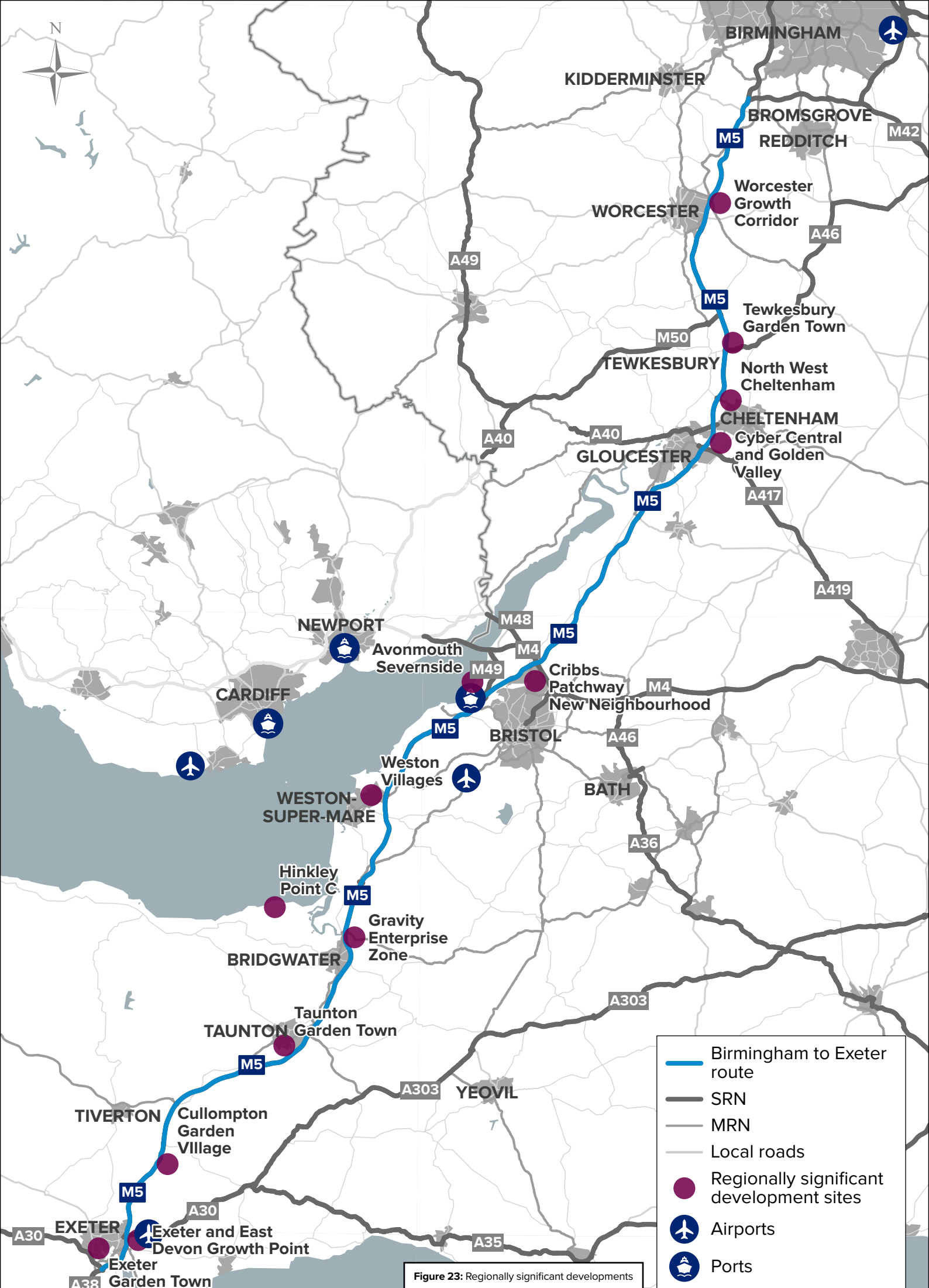


Figure 23: Regionally significant developments



E. Improve resilience to seasonal demands

Objective

Improve resilience to seasonal traffic flow demands along the M5, particularly between Bristol and Exeter, to support trade, investment and tourism in the South West peninsula.

Context

The route is heavily used for leisure and tourism journeys to the South West region, providing access to major tourist attractions, National Parks, Areas of Outstanding Natural Beauty, and the popular South West peninsula.

The M5 provides a crucial artery for trade and investment between the South West peninsula and the rest of the UK. The peninsula is geographically remote and reliant on resilient road access. Existing route facilities for interchange with bus, coach and rail are limited.

Seasonal increases in traffic demand place key sections of the route under strain, leading to additional delay and unreliable journey times, particularly between Bristol and Exeter.

The peninsula faces challenges of net outward migration amongst younger age groups, an ageing population and housing supply shortages. Scheme such as the Hinckley Point C Nationally Significant Infrastructure Project (NSIP) and Gravity Enterprise Zone will help to create higher wage jobs, but unreliable journey times can impact inward investment and workforce mobility

Enabling more resilient and reliable journeys via the M5 – and particularly to the south of Junction 15 - is therefore critical to the economy and resident population of the South West peninsula.

Supporting opportunities for increased sustainable travel could also help to reduce congestion and improve reliability for the SRN, whilst effective communication is important to allow people to make informed travel choices about how and when they travel.

Our network considerations

- Recent growth in the domestic leisure market has compounded pre-existing seasonality issues and journey time uncertainty. Seasonal peak delay of between one and two minutes per vehicle per mile occurs at various locations along the route, including across the North Fringe of Bristol, through Junction 21 and the Somerset Levels, and around Exeter
- Interested parties highlighted that journey time uncertainty impacts business planning and investment confidence, with route performance being vital for logistics development and emerging manufacturing proposals for the Gravity Enterprise Zone at Junction 23
- Seasonal delay and forecast increases in peak period delay may constrain planned commercial growth, and impact on the retention of working age people. The impact of longer and less reliable journeys could be to undermine levelling up efforts and reinforce social inequalities in the South West peninsula

Outcomes

- Reduction in seasonal delay
- More reliable journeys between the South West peninsula and wider UK regions
- Improved integration with public transport for travel to, from and within the South West peninsula
- Improved integration with digital applications, ensuring customers feel safe and in control of their journeys

DfT's Strategic objectives



Network performance

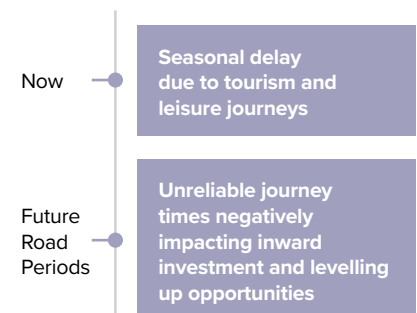


Growing the economy



A technology-enabled network

Timeframe based on the issues and constraints identified



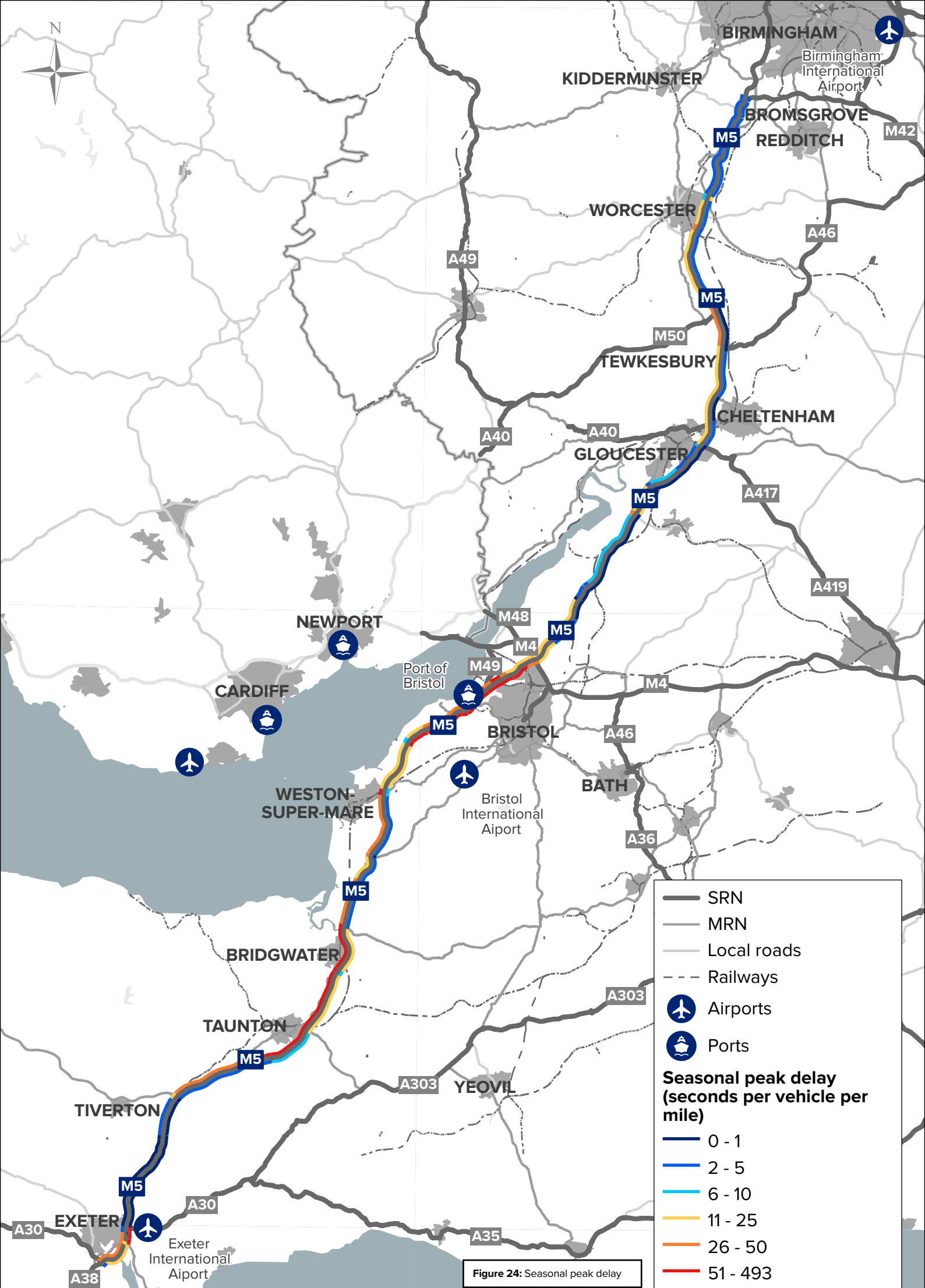


Figure 24: Seasonal peak delay

F. Support local connections and interchange



Objective

Support effective local connections and integration with bus and rail, particularly for key urban areas along the route, and facilitate travel choice for people and goods to reduce route demand and support decarbonisation.

Context

Sections of the route near to larger urban areas are utilised for significant volumes of short-distance journeys, with interested parties identifying issues of 'junction hopping' in locations such as Gloucester and Bristol. The M5 around Bristol in particular serves a dual purpose in catering for significant short-distance journeys alongside longer-distance travel and freight. Engagement has highlighted the importance of the M5 and the Avonmouth Bridge for journeys into Bristol from Portishead, Weston-super-Mare, and neighbouring communities. Such shorter-distance journeys for commuting, business and leisure compete with strategic demands over one of the busiest sections of the route.

As urban areas such as Worcester, Cheltenham, Gloucester, Taunton, Cullompton and Exeter, expand towards and beyond the M5, demand for shorter distance journeys across and along the SRN is likely to increase. Opportunities for walking and cycling, and interchange between travel modes will also increase, and appropriate facilities will be required to facilitate sustainable travel.

We have consulted with Network Rail and Stagecoach in the preparation of this route strategy and have considered their own investment plans when developing the route strategy. The route is currently used by a limited number of bus and coach operators. The Stagecoach Falcon service operates between Plymouth and Bristol, but interchange facilities are limited. National Express also operate intercity services along the route.

Parallel rail service provision exists between Birmingham and Bristol, and from Bristol to Exeter. Parkway stations are provided at Worcester (close to Junction 7), Bristol (south of Junction 16), and Tiverton (alongside Junction 27), whilst a new parkway station is under construction at Portway near to Junction 18. Smaller stations are provided at Worle, Avonmouth and Ashchurch for Tewkesbury but offer limited interchange opportunities.

There are existing rail freight flows between Bristol, South Wales, and the Midlands using this corridor. Strong growth in rail freight is predicted including development of new terminal facilities. Through joint planning there is an opportunity for rail to take a larger share of existing and future freight journeys.

Our network considerations

- Existing facilities for interchange with bus, coach and rail are limited, and the corridor does not currently offer comprehensive multimodal travel opportunities
- Opportunities exist to improve local connections for active travel and interchange to bus and rail at key growth areas and SRN junctions, including Cheltenham, Gloucester, Avonmouth, Weston-super-Mare and Cullompton
- Interested parties highlighted opportunities for new or reopened passenger rail stations near to the M5 such as Wellington and Cullompton, and new rail freight interchanges
- Network Rail-led work has identified a potential role for an intermodal rail freight facility in the Greater Bristol area and an upgraded parkway station for Weston-super-Mare (Worle)

Outcomes

- Improved local connections and facilities catering for shorter-distance journeys
- Reduced short-distance SRN journeys and transfer of longer distance freight demands
- Reduced delay around expanding urban areas

DfT's Strategic objectives



Network performance

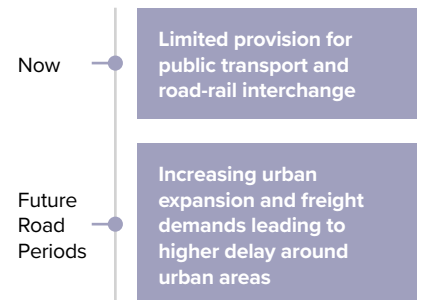


Improved environmental outcomes



Technology-enabled network

Timeframe based on the issues and constraints identified



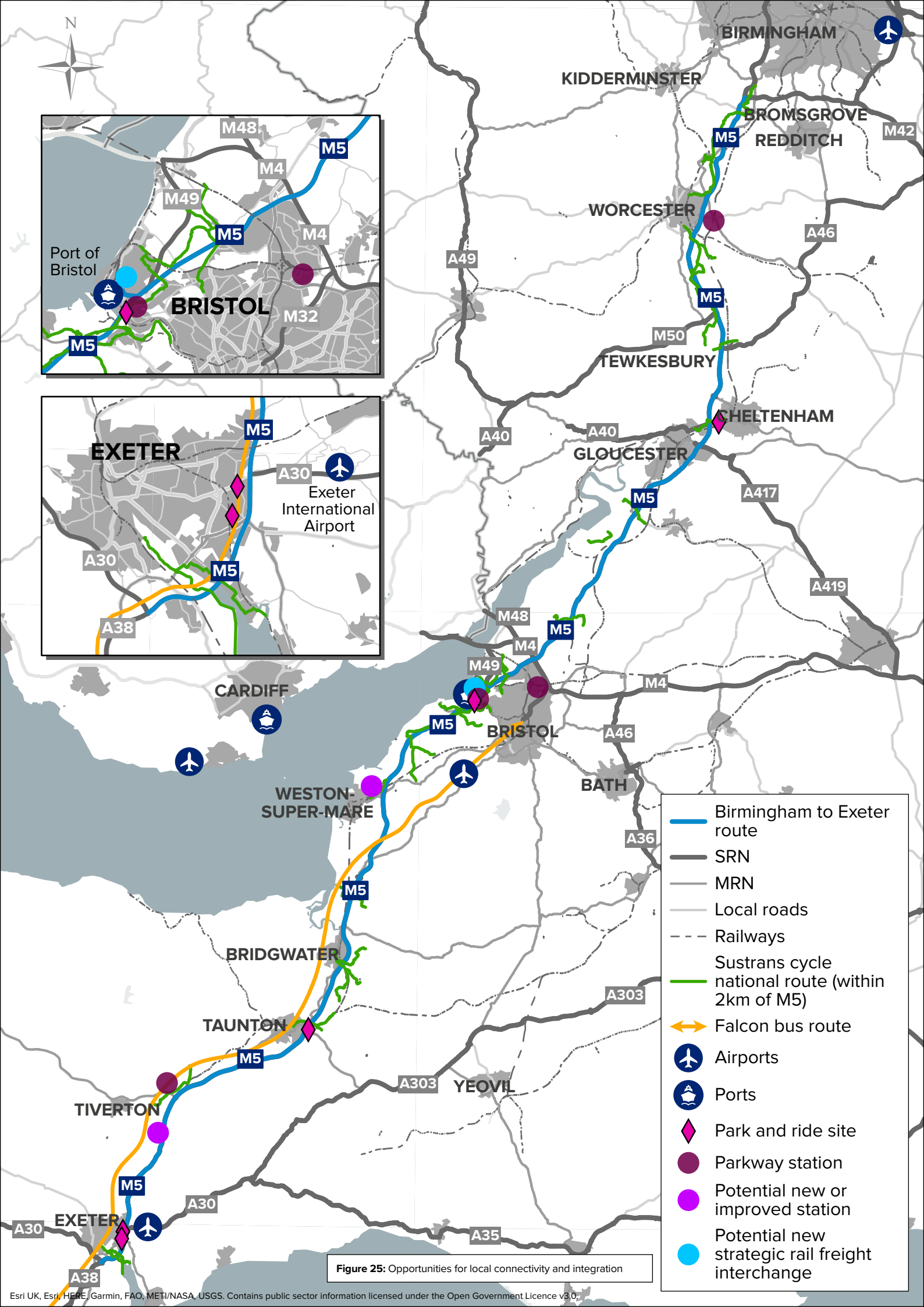


Figure 25: Opportunities for local connectivity and integration



M5(N) The MIDLANDS Gloucester

M5(S) The S. WEST Bristol (W) & +



G. Be a better neighbour

Objective

Be a better neighbour by safeguarding the environment, reducing severance, and reducing any significant noise and air quality impacts for local communities, particularly at Wychbold, Droitwich, Tewkesbury, Gloucester, the North Fringe of Bristol and Avonmouth, Cullompton and Exeter.

Context

Traffic using the route can have environmental impacts for nearby communities and sensitive environments. The road can also have a physical impact in terms of severing movement from one side of the route to the other.

We recognise that vehicle emissions and noise from vehicles on our roads can affect the health and wellbeing of people living nearby. Whilst the transition to new and alternative fuel vehicles is expected to contribute to improved air quality in the longer term, National Highways has an important responsibility to respect the wellbeing of everyone who lives or works near the route.

The route should also respect and protect against impacts to nearby environmental assets and designations. The route passes through AONBs in the form of the Mendip Hills and the Cotswolds and Blackdown Hills, whilst sections of the route also pass Ancient Woodland, designated SSSIs and Special Areas of Conservation. The route also crosses designated RAMSAR and Special Protection Areas in the form of the Severn Estuary and Exe Estuary. A number of designated NIAs exist along the route, whilst the route also passes through or borders AQMAs at Wychbold, Worcester, and Cullompton.

Where the route passes urban areas, then it can also lead to issues of severance for neighbouring communities. Severance issues can particularly impact less able-bodied persons and horse riders. Where severance is an issue then the route infrastructure can reduce the attractiveness of walking and cycling and reinforce car travel demands.

Planned development growth in proximity to the SRN is a key feature of the route, with key sites such as Garden Communities at Cullompton and Tewkesbury, and general expansion towards the route in locations such as Bridgwater and Cheltenham. Such development will increase demand for local trips across the route and may add to existing severance issues.

Our network considerations

- Many sections of the route have nearby receptors which may be more likely to experience adverse air quality impacts, or may be more receptive to high noise levels. Both are relevant considerations for sections of the M5 passing Wychbold, Droitwich, Gloucester, the North Fringe of Bristol and Avonmouth, and Exeter
- Interested parties identified severance issues where the motorway bisects journeys at Tewkesbury, Gloucester and Cheltenham, Avonmouth, Taunton and Cullompton
- Interested parties also identified concerns regarding air quality and noise impacts around Junction 28 at Cullompton
- Forecast increases in traffic delay around urban areas such as Gloucester and the North Fringe of Bristol may increase noise and air quality impacts on nearby receptors. Logistics growth around Avonmouth Severnside will also increase freight traffic demands and has the potential to contribute to air quality and noise impacts

Outcomes

- Reduced number of receptors likely to experience adverse air quality impacts
- Reduced number of receptors which may be more sensitive to high noise levels
- Improved quality of life for communities located close to the SRN
- Reduced severance caused by route infrastructure

DfT's Strategic objectives



Improving safety for all



Improved environmental outcomes

Timeframe based on the issues and constraints identified

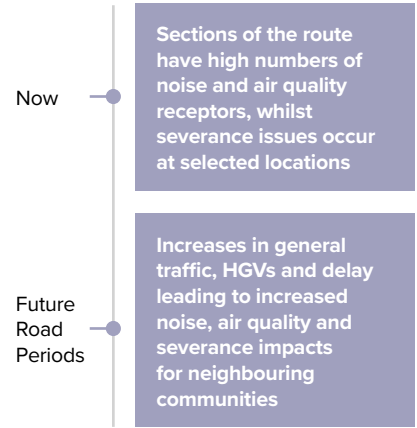


Table 2: Evidence used to inform objectives

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
<p>A Maintain the strategic north – south function</p> <p>Maintain the strategic function, safety and resilience of the M5 as the key north-south route between the Midlands, West of England and South West regions, supporting sustainable economic activity and communities through the safe and efficient movement of people and goods</p>	M5 route as a whole	<p>Network resilience and journey time reliability need to be improved, particularly between Bristol and Exeter.</p> <p>Tension between dual purposes of route around major urban areas such as Bristol, Exeter, Gloucester and Cheltenham, whereby short and long-distance journeys compete for capacity.</p> <p>Long slip road queues occur at a number of junctions, with consequential safety concerns. Concern over capacity constraints, delays and journey time reliability at key locations such as between M5 Junction 21 and Bristol.</p> <p>Concern over route resilience associated with future maintenance and renewal of key structures such as the Wynhol and Exeter viaducts.</p> <p>Issues of surface water flooding between Junctions 19-20 and at Junction 30.</p>	<p>Midlands Connect <i>Strategic Transport Plan</i> priorities to improve regional connectivity include the delivery of a future road network that is reliable, resilient and efficient for all. The strategy seeks to futureproof roads against the impacts of climate change.</p> <p>Western Gateway seek to maximise the capacity and resilience of strategic transport corridors including the M5. A key objective of the Western Gateway's emerging Strategic Transport Plan will be to improve north-south connectivity, having identified significant economic benefits associated with improvements on the M5 corridor.</p> <p>One of the five goals of Peninsula Transport's emerging Vision is to enhance the resilience of the transport network. The South West Freight Strategy also supports SRN improvements where suitable to improve journey time reliability.</p>	<p>Critical economic function in supporting regional growth and underpinning connectivity for key economic sectors.</p> <p>Sections of the route have experienced collisions resulting in a higher number of people being killed or seriously injured.</p> <p>Sections of the route experience peak period delay and reliability issues, particularly around Bristol and the Somerset Levels.</p> <p>Route performance is likely to decline in the future with the greatest morning peak delays forecast between Weston-super-Mare and Bristol, and near to Exeter.</p> <p>Sections of the route are currently considered to be at risk of flooding from surface water.</p> <p>Increasing demand for electric vehicle charging and use of new technology, including connected and autonomous vehicles and hydrogen fuelled vehicles.</p>
<p>B Facilitate east – west connectivity</p> <p>Facilitate safe and effective connections to adjoining east-west routes. Improved access to routes including the Severn Crossings, the A46 Trans Midlands Trade Corridor and Exeter Gateway (A30 and A38) will promote strategic and regional connectivity and support economic activity</p>	M5 Junction 9, Junction 11A, Junction 15, Junction 25, and Junctions 29-31 (Exeter Gateway)	<p>Access constraints, queuing and delay at Junction 9 (for the A46) and the Exeter Gateway (for the A30 and A38) impacting on local businesses and likely to restrict future growth potential.</p> <p>Concern over queuing interaction with connecting east-west routes (A40 and A417) around Cheltenham and Gloucester.</p> <p>Identified queuing interaction with the A38 Edithmead and Dunball junctions near to Junctions 22 and 23 impacting the delivery of planned development.</p>	<p>Midlands Connect identify the A46 'Trans-Midlands Trade Corridor' as a strategic trade and logistics corridor.</p> <p>An objective of Western Gateway's emerging Strategic Transport Plan is to ensure effective access to labour markets. The role of the South Wales - Greater Bristol economic area is recognised in the Union Connectivity Review with the M5 enabling significant journeys to and from South Wales via the Severn Crossings.</p> <p>One of the five goals of Peninsula Transport's emerging Vision is to improve connections between people, businesses and places. Peninsula Transport recognise the importance of the SRN in connecting more remote far south west areas with the wider South West region and England.</p>	<p>The route provides an important role in connecting regions and cross-border travel into Wales via connecting east-west routes.</p> <p>A number of connecting routes provide access to local authority districts classed as category 1 for levelling up, including Worcester, Gloucester, Sedgemoor, Torbay and Torridge, along with many authority areas in Mid and South Wales.</p> <p>Removal of the Severn tolls led to an immediate increase in use of the Severn crossings with potential impacts for connecting M5 junctions. Peak period delay along the route currently peaks between Junctions 15 and 20.</p> <p>The convergence of the M5, A30, and A38 routes also experiences peak period delay and reliability issues as well as seasonal delay increases.</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>C Support connections to international gateways</p> <p>Support safe and effective connections to international gateways in the South West, West of England and neighbouring regions, including Bristol and Plymouth ports and Bristol and Exeter airports, to enable international trade and investment and the movement of people and freight</p>	<p>M5 Junctions 18 and 19 for the Port of Bristol, Junctions 21 and 22 for Bristol Airport, along with Junction 29 and the Exeter Gateway for access to Exeter Airport.</p>	<p>Concern over layout and capacity at M5 Junction 19 and impacts this could have on planned growth at the Port of Bristol (Avonmouth). Queuing interaction identified at A38 Edithmead roundabout and M5 J22. Concern that connectivity improvements will be required in order to achieve future growth at Bristol Airport, particularly for non-car modes in order to mitigate against potential impacts on the MRN and SRN.</p>	<p>Midlands Connect Strategic Transport Plan priorities to improve regional connectivity include help for the movement of goods. Studies for strategic trade and logistics corridors such as the A46 also seek to support the development of new export markets via international gateways.</p> <p>An objective of Western Gateway's emerging Strategic Transport Plan is to enhance business connectivity to international markets, with a port and airport access study prepared to consider measures to improve access to international gateways.</p> <p>The joint Western Gateway and Peninsula Transport South West Freight Strategy outlines potential measures to improve provision for freight, including the development of rail freight terminals, a review of lorry parking facilities in the South West, and support for SRN infrastructure improvements to improve journey time reliability.</p> <p>Network Rail-led strategic studies have recommended additional capacity and improved capability for rail freight, including national strategic flows from the Port of Bristol.</p>	<p>Port of Bristol directly served from Junctions 18 and 19, with consent for a future Deep Sea Container Terminal and established freight links to the Midlands.</p> <p>Bristol Airport has consent to expand annual passenger numbers to 12 million, with a catchment area extending across the South West region and into South Wales. Indirect access to the Airport from Junctions 21 and 22.</p> <p>Onward access to Plymouth Freeport site via A38 with associated HGV access demands.</p> <p>Sections of delay impact on immediate access junctions for the Port of Bristol, Bristol Airport, and Exeter Airport. Higher numbers of road users have also been killed or seriously injured to the north of Junction 29 for Exeter Airport.</p> <p>Limited existing lorry parking and evidence of excess demand particularly on approach to the Port of Bristol.</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>D Support regionally significant and sustainable economic development and housing delivery</p> <p>Support delivery of regionally significant and sustainable economic development and housing, whilst maintaining the safe and effective operation of the network</p>	<p>Where the route provides access to regionally significant development including M5 Junction 7, Junction 9, Junctions 10 and 11, across the North Fringe of Bristol, Junction 21, Junction 23, Junction 25, Junction 28 and the Exeter Gateway</p>	<p>Significant growth plans for the route with the potential to increase delay and impact on route performance and safety.</p> <p>Notable growth sites highlighted at Tewkesbury, Cheltenham, and Cullompton, along with potential future local plan growth in North Somerset and the West of England Combined Authority area.</p> <p>Concern that existing and future congestion and delay could constrain housing delivery and inhibit investment and levelling up opportunities.</p>	<p>Midlands Connect identified challenges include for transport to help the region's economy recover from Covid-19 and, beyond this, support the jobs, housing development and regeneration essential to regional prosperity.</p> <p>Western Gateway target delivery of 300,000 new homes and 190,000 new jobs over the next 20 years, and identify a need for supporting connectivity improvements. Objectives of the emerging Strategic Transport Plan include ensuring effective access to labour markets and greater integration of employment clusters.</p> <p>Network Rail have noted the need for improved urban and local connectivity through service improvements in key growth hubs of Bridgwater, Weston-super-Mare, Gloucester, and Worcester.</p>	<p>Route provides access to a number of Enterprise Zones, Garden Communities, Enterprise Areas, and other sites of regional significance.</p> <p>Long slip road queues at locations such as M5 Junctions 9 and 28 could impact delivery of planned Garden Communities and other regionally significant local plan development.</p> <p>Regional traffic model forecasts highlight morning peak delays associated with future increases in traffic flow demands, population and housing growth.</p> <p>Significant Garden Community development at Tewkesbury, Taunton, Cullompton and Exeter could impact on existing sections of the route where people have been killed or seriously injured.</p>
<p>E Improve resilience to seasonal demands</p> <p>Improve resilience to seasonal traffic flow demands along the M5, particularly between Bristol and Exeter, to support trade, investment and tourism in the South West peninsula</p>	<p>M5 route as a whole but particularly between Bristol and Exeter where seasonal delays are greatest.</p>	<p>Seasonality issues will remain a challenge beyond the Covid-19 pandemic. The route needs to better accommodate increased demand during seasonal periods, with journey time reliability issues highlighted between Bristol and Exeter.</p> <p>Journey time reliability impacting business planning and investment, and the retention of working age people in the South West peninsula, where the M5 provides vital connectivity for access to employment and wider services including healthcare and education.</p> <p>Route performance will be vital for emerging manufacturing proposals at the Gravity Enterprise Zone at M5 Junction 23.</p>	<p>Midlands Connect Strategic Transport Plan priorities to improve regional connectivity include a future road network that is reliable, resilient and efficient for all.</p> <p>Western Gateway seek to improve connectivity for the leisure and tourism sector, in order to achieve the area's full potential.</p> <p>Peninsula Transport identify that the area is particularly impacted by seasonal traffic demands and seek to enhance the resilience of the transport network. Connectivity issues are seen as a barrier to growth and prosperity, with a heavy reliance on the M5 to provide strategic access to the wider UK, and international markets.</p>	<p>Route provides critical connectivity to South West peninsula, which has higher levels of deprivation and levelling up needs compared to the wider South West region and neighbouring regions.</p> <p>Southern sections of the route experience higher seasonal delay due to increased travel demands. Additional delay of 1-2 minutes per vehicle per mile occur around Bristol and Exeter and between Taunton and Bridgwater.</p> <p>Projected increases in travel demands and continued congestion may constrain planned commercial growth and levelling up opportunities in the peninsula.</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 Support local connections and interchange</p> <p>Support effective local connections and integration with bus and rail, particularly for key urban areas along the route, and facilitate travel choice for people and goods to reduce route demand and support decarbonisation</p>	<p>Where the route passes major urban areas such as Worcester, Cheltenham, Gloucester, Bristol, and Exeter, and more widely where opportunities exist to transfer journeys to other modes.</p>	<p>Opportunities exist to reduce short-distance car journeys in urban areas through enhanced provision for non-car modes. Such shorter distance journeys currently compete with longer distance travel demands and freight.</p> <p>Opportunities for strategic interchange hubs and new parkway-style rail stations were highlighted, along with a desire to increase the volume of freight transferred to rail.</p>	<p>Midlands Connect identified challenges for strategic transport investment include integrating transport networks, and decarbonising transport. Strategic Transport Plan priorities include aspirations for rail.</p> <p>Western Gateway's emerging Strategic Transport Plan seeks to decarbonise the strategic transport network and targets a shift in journeys from private car use to other modes. The West of England Combined Authority City Region Sustainable Transport Settlement features measures to enhance travel choice, including a new Portway rail station close to M5 Junction 18.</p> <p>Peninsula Transport target a shift in journeys from private car use to other modes and has a goal to deliver affordable zero-emissions transport.</p> <p>Network Rail-led strategic studies have recommended better urban and local connectivity, opportunities for station and service improvements to attract road users, and new stations such as Cullompton and Wellington.</p>	<p>Expansion of urban areas on the route increasing demand for short-distance trips on the SRN.</p> <p>Limited existing interchange facilities on the route, but opportunities for improved active travel facilities and modal interchange to bus/ rail at key growth areas and SRN junctions, including Gloucester, Cheltenham, Cullompton and Avonmouth.</p> <p>Parallel rail lines offer interchange opportunities for both passengers and freight, with potential station and service improvements in proximity to the route.</p> <p>Operators keen to increase quality and prominence of bus interchange facilities and serve emerging new development opportunities.</p>
<p>G Be a better neighbour</p> <p>Be a better neighbour by safeguarding the environment, reducing severance, and reducing any significant noise and air quality impacts for local communities, particularly at Wychbold, Droitwich, Tewkesbury, Gloucester, the North Fringe of Bristol and Avonmouth, Cullompton and Exeter</p>	<p>M5 north of Worcester, Junctions 9 to 12, the North Fringe of Bristol, Junction 28 and Junctions 29 to 31 (Exeter).</p>	<p>Noise and air quality issues identified to occur at M5 Junction 28.</p> <p>The route can have severance effects on local communities and where urban areas are expanding towards the route. Identified locations where the route has a severance effect were Junction 9 at Tewkesbury, Junction 11 between Gloucester and Cheltenham, the Avonmouth spur, Junction 25 at Taunton, and Junction 28 at Cullompton.</p> <p>Severance issues likely to increase with Garden Community development alongside Junctions 9 and 28.</p>	<p>Midlands Connect identified challenges for strategic transport investment include enhancing quality of life and minimising the environmental impacts of new infrastructure.</p> <p>Peninsula Transport goals include improving the health and wellbeing of communities in the peninsula, and helping the peninsula to be a great place to live and work.</p>	<p>The route passes a number of environmental designations including Areas of Outstanding Natural Beauty, Ancient Woodland, Sites of Special Scientific Interest, and RAMSAR sites.</p> <p>Various locations along the route may be more likely to experience adverse air quality impacts, or be more sensitive to high noise levels.</p> <p>The route passes through or borders AQMAs at Wychbold, Worcester and Cullompton, whilst concentrations of Noise Important Areas exist at various locations along the route.</p> <p>New development and urban expansion will increase the need for new facilities to encourage sustainable travel and prevent severance.</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 this chapter, we outline our proposed locational areas for further consideration, which will be explored in future road periods to achieve the Birmingham to Exeter route objectives and the Department for Transport's (DfT) 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 focused on reducing incident severity through a package of activities promoting 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 are collaborating 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 including Network Rail, to consider interventions to improve network performance. 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 managing and operating the network to infrastructure design, scheme delivery and ensuring we meet our wider statutory obligations. In developing our 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 our 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 we can support a properly maintained, future-ready road network that is fitted to support the transition to electric vehicles, and 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 efficiency, 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 values

Growing the economy

We recognise that the strategic road network (SRN) is a significant economic asset for the UK and is essential for people to access jobs, and for businesses to move goods around the country. Our regional planning teams continue to work closely with local planning authorities to support sustainable growth and development aspirations, including by trying to improve integration between transport 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 to 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 is designed, built, operated and used for the future. This will enable safer journeys, faster delivery and an enhanced customer experience for all. The vision is structured around three themes: Design & Construction, Operations, and 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 26 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.

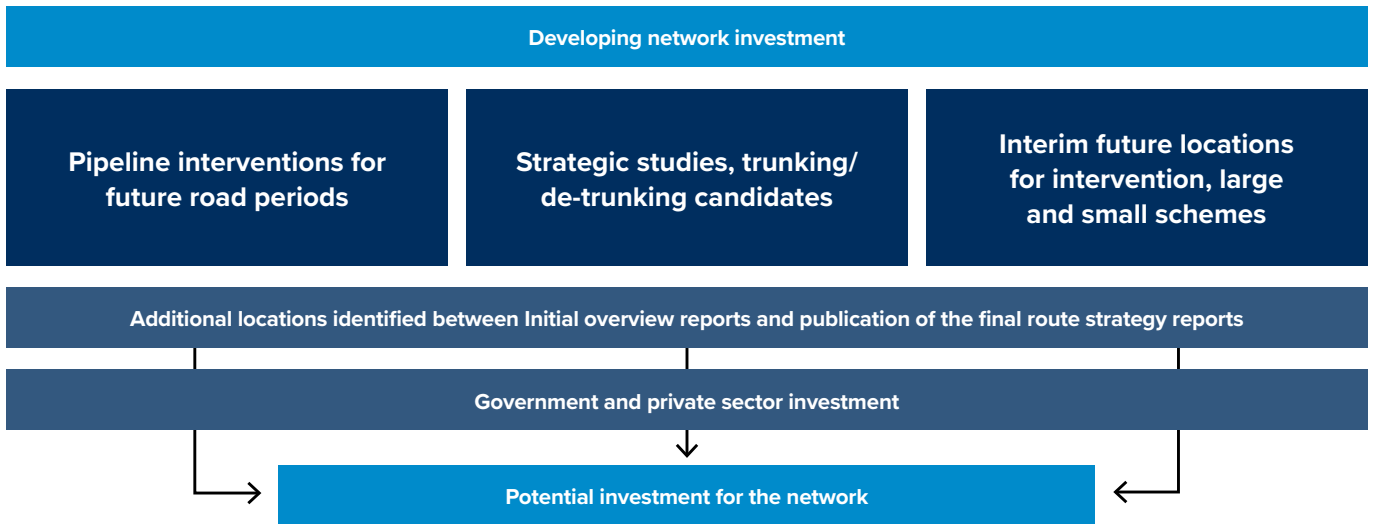


Figure 26: Process to identify potential investment for the network

Types of investment and funding sources

There are a variety of funding streams that enable us to invest in our network and that form part of our investment planning. These streams are summarised in the following section, along with the current committed schemes associated with each funding source for the Birmingham to Exeter route. Potential funding sources 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
 - 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 may be made available to National Highways during the third road period 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 delivering infrastructure enhancements on, or close to, the SRN including central government, third parties, private sector developments, and inward investment

RIS2

The following schemes are committed for the second road period (2020-2025) on or connecting to the Birmingham to Exeter route:

Scheme number	Scheme	Description	Start of works	Open for traffic
Committed for the second road period (2020-2025)				
1	A417 The Missing Link	New dual carriageway connecting the existing A417 Brockworth bypass with the existing A417 dual carriageway south of Cowley.	2023-24 Q2 ⁴⁴	Third road period (2025-2030)
2	M4 Junctions 19 to 20 and M5 Junctions 16 to 17	Upgrade dynamic hard shoulder running to all lane running	Cancelled ⁴⁵	
3	A358 Taunton to Southfields	Upgrade of the A358 between Southfields Roundabout on the A303 and the M5 Junction 25 at Taunton to a high quality dual carriageway.	2024-25 Q4	Third road period (2025-2030)

RIS4 pipeline

The following uncommitted scheme on the Birmingham to Exeter route is in the pipeline for consideration for inclusion in the fourth road period (2030-2035):

Scheme number	Scheme	Description
1	Severn Resilience Package	Developing a package of possible improvements to sections of the M4, M5 and M32 on the eastern side of the Severn Crossings near Bristol. This project is currently on hold pending review of the traffic flow impacts of removal of the Severn tolls.

Other notable schemes

Improvements to M5 Junction 10 will enable traffic to join or leave the motorway both southbound and northbound, with a new connecting link road from Junction 10 to west Cheltenham. Currently the junction only enables traffic to join the northbound carriageway of the motorway, and to exit the southbound carriageway. The improvements are being funded by the Housing Infrastructure Fund, and are expected to be delivered during the second road period (2020-2025).

Improvements to the Dunball roundabout near to M5 Junction 23 are proposed to reduce the extent of queues which currently extend back towards the motorway junction, and facilitate the delivery of new homes and employment sites in the Bridgwater area. This scheme is to be delivered via funding from the Levelling Up Fund, Sedgemoor District Council, and developer contributions, and is expected to be open for traffic before the end of the second road period.

⁴⁴ Date revised due to planning constraints and stakeholder input

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

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 often involve close working with key partners, including Sub-national Transport Bodies and DfT, and can be used to help to decide on whether to fund any proposed improvements in the future. There are no strategic studies on the Birmingham to Exeter route.

National Highways were asked to explore changes to the SRN to ensure the network aligns with RIS2 strategic priorities reflected in the National Highways Strategic business plan⁴⁶. 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 local highway authority control, and visa 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 DfT. There is ongoing work to review the assessment evidence and recommendations. By autumn 2022, government ministers are expected to announce which candidates 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.

Locations identified through route strategies for future investigation

National Highways undertakes route studies to investigate problems at identified 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 Birmingham to Exeter 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 help 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 helped identify 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. 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 overview 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.

Further development of any proposed mitigation at each location will follow National Highways' internal processes. In order to fund any proposed improvements, National Highways will draw on the funding streams as previously identified.

⁴⁶ Highways England, *Strategic Business Plan: 2020 - 2025*, <https://nationalhighways.co.uk/strategic-business-plan/>

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, and responsive to the environmental agenda.

We have a wide range of potential intervention types within our toolkit, including both non-road 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 RIS2⁴⁷ 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 interventions 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 with other government strategies e.g. ports, levelling up

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.

⁴⁷ Plans for new smart motorways have now been cancelled and previously paused smart motorways will now not go ahead.

Table 3 and Figure 27 show the areas identified for further investigation, where interventions 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
M5 Junction 7 to Junction 9 - Worcester South to Tewkesbury	A	A relatively high number of road users have been killed or seriously injured in collisions between Tewkesbury and Worcester. This section caters for some of the highest volumes of freight journeys along the route. Whilst not as great as on southern sections of the route, seasonal delays also occur. Morning peak delay is forecast to increase in both directions on this section in the future. There is a risk of flooding from surface water around Junction 8, whilst severance issues have been identified at Junction 9 along with long slip road queues .	✓	✓
M5 Junction 9 to Junction 11A - Tewkesbury, Cheltenham and Gloucester	B	A relatively high number of road users have been killed or seriously injured in collisions on this section. Severance issues occur at Junction 9 and Junction 11 where the motorway runs between Cheltenham and Gloucester. Long slip road queues currently form at junctions within this section, where the M5 provides access to connecting east-west routes. Significant development growth is planned at Tewkesbury Garden Village south of Junction 9 and around Junctions 10 and 11, leading to forecasts of increased morning peak delay in the future.	✓	✓
M5 Junction 11A to Junction 12 - Gloucester	C	HGV usage on the route peaks on the northbound carriageway on approach to Junction 11A. Parts of this section also contain receptors more likely to experience adverse air quality impacts or which may be more sensitive to high noise levels. A risk of flooding from surface water has also been identified at Junction 12.		✓
M5 Junction 14 to Junction 15 – Charfield to Almondsbury	D	Long slip road queues have been identified to occur at Junction 14. A relatively high number of road users have been killed or seriously injured in collisions on the northbound carriageway between Junctions 15 and 14. Additional morning peak delay is forecast on the southbound approach to Junction 15 with future growth in the Greater Bristol area. Closure of the Severn crossings can also impact resilience . There is also high demand for freight parking and welfare facilities north of the Port of Bristol, with associated supply issues.	✓	✓

Area location	Area of interest	Area issues	Now	Future road periods
M5 Junction 15 to Junction 18 - Almondsbury to Avonmouth via Bristol	E	The section experiences peak period delay, seasonal delay and journey time reliability issues, whilst providing important freight access to the Port of Bristol and Avonmouth Severnside area. Significant development growth is planned around the North Fringe of Bristol, with expansion of the Port and Avonmouth Severnside area, and residential growth at Cribbs Patchway. Future increases in delay are therefore forecast to occur on this section. Parts of this section also contain receptors more likely to experience adverse air quality impacts or which may be more sensitive to high noise levels. Severance is also identified as an issue around the Avonmouth spur and wider Avonmouth Severnside area.	✓	✓
M5 Junction 18 to Junction 21 - Avonmouth to Weston-super-Mare	F	The section experiences peak period delay, seasonal delay and journey time reliability issues. Long slip road queues have also been identified to occur at Junction 21. Increased northbound delay is forecast to occur in the future. Concern over route resilience has been identified at Avonmouth Bridge/Gordano, whilst there is a risk of surface water flooding between Junctions 18 and 20. Junction 19 provides important freight access to an expanding international gateway at the Port of Bristol (Portbury). The section between Junctions 18 and 19 also contains receptors which may be more sensitive to high noise levels.	✓	✓
M5 Junction 21 to Junction 23 - Weston-super-Mare to Bridgwater	G	This section experiences seasonal delay on the northbound carriageway, whilst long slip road queues have been identified to occur at Junctions 21, 22 and 23. Freight demands are likely to increase with development growth at the Gravity Enterprise Zone alongside Junction 23. This section also provides important access to an expanding international gateway at Bristol Airport.	✓	✓
M5 Junction 23 to Junction 26 - Bridgwater to Wellington	H	A relatively high number of road users have been killed or seriously injured in collisions on this section. The section also experiences seasonal delay particularly on the northbound carriageway, impacting journey time reliability . This section supports access to the Hinkley Point Nationally Significant Infrastructure Project and would also link to the A358 Taunton to Southfields RIS2 scheme. Severance has also been identified as an issue at Junction 25. To the south of Junction 25, the northbound carriageway neighbours receptors more likely to experience adverse air quality impacts.	✓	✓
M5 Junction 27 to Junction 29 - Tiverton to Exeter	I	A relatively high number of road users have been killed or seriously injured in collisions between Junctions 28 and 29. Long slip road queues have been identified at Junction 28, where future Garden Community development will increase travel demands. Severance has also been identified as an issue at Junction 28. With long distances between junctions, and limited diversion route options, resilience can be an issue in the event of an incident. The section contains receptors more likely to experience adverse air quality impacts or which may be more sensitive to high noise levels. An Air Quality Management Area extends across the M5 at Junction 28, where risks of surface water flooding have also been identified.	✓	✓
M5 Junction 29 to Junction 31 - Exeter	J	The section experiences peak period delay, seasonal delay and journey time reliability issues, with morning peak delay forecast to increase in the future. The section is a critical connector for the South West economy, linking to international gateways , a future Freeport, tourist destinations and Enterprise Zones via the A38 and A30. A risk of surface water flooding has been identified around Junction 30, whilst the section between Junction 30 and 31 contains receptors more likely to experience adverse air quality impacts or which may be more sensitive to high noise levels. The Exeter viaducts also present a resilience concern given limited alternative routes.	✓	✓

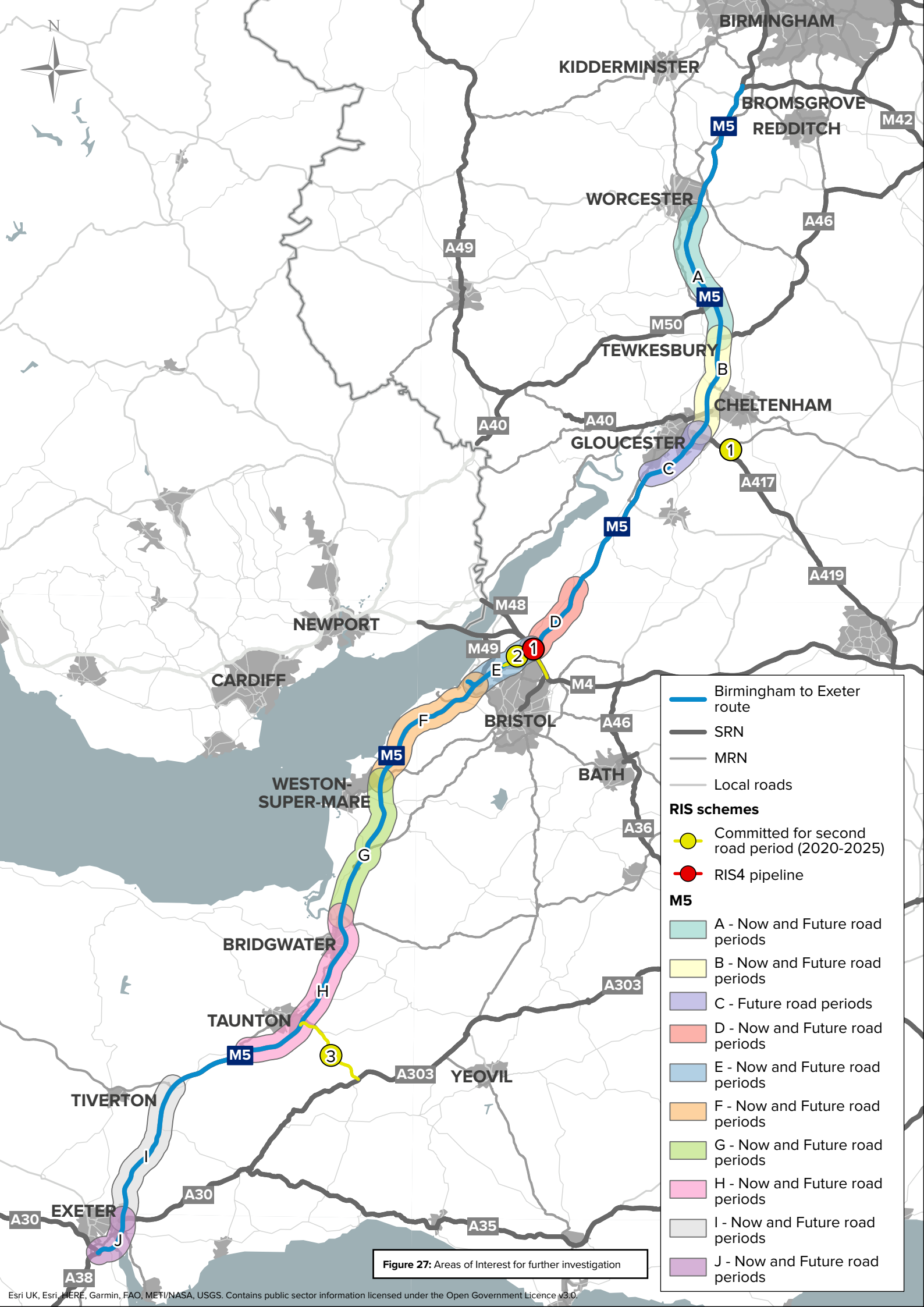


Figure 27: Areas of Interest for further investigation





**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 National Highways *Connecting the country: Our long-term strategic plan to 2050*⁴⁸, 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 9 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 RIS period, 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/

⁴⁸ National Highways (2022) *Connecting the country: Our long-term strategic plan to 2050*. <https://nationalhighways.co.uk/delivery-plan/>

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.
Average peak period delay		Average peak period delay is measured in seconds per vehicle per mile and is the difference between average delay in the morning or afternoon and the average delay during free flow conditions.
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> <p>Slight collision: One in which at least one person is slightly injured but no person is killed or seriously injured</p> <p>Serious collision: One in which at least one person is seriously injured but no person (other than a confirmed suicide) is killed</p> <p>Fatal collision: A collision in which at least one person is killed</p>

Term	Acronym	Description
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.
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 45km 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.

Glossary of terms

Term	Acronym	Description
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.
National Traffic Information Service	NTIS	The National Traffic Information Service (NTIS) is provided by National Highways. The Traffic England website provides a range of services to help you avoid delays and plan your journeys but NTIS also makes data available to subscribers for research purposes or for developers to include it in their own applications.
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 300m has been used as the parameter for noise receptors as it's an appropriate length to differentiate between SRN and local roads. 100m has been used for air quality as the distance by which pollutants travel in high concentrations that may have an impact on health.
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

Term	Acronym	Description
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 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.
Severance		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.
Sites of Special Scientific Interest	SSSIs	A Site of Special Scientific Interest (SSSI) is the land notified as an SSSI under the Wildlife and Countryside Act (1981), as amended. SSSI are the finest sites for wildlife and natural features in England, supporting many characteristic, rare and endangered species, habitats and natural features.

Glossary of terms

Term	Acronym	Description
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"> 1. Controlled Motorway: variable speed limits with the hard shoulder operating as it would on a conventional motorway. 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. 3. All Lane Running (ALR): variable speed limits with the hard shoulder removed and converted to a permanent running lane. <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"> • Variable speed limits to help keep traffic moving, reducing frustrating stop-start traffic and making journeys quicker. • Clearly signed and orange-coloured emergency areas set back from the road and with telephones linking directly to our control rooms. • Detection systems to monitor traffic for changes in flows. • 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. • 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. • Enforcement cameras to deter the minority who break speed limits and ignore Red X signs. • Radar stopped vehicle detection.
Spatial planning		<p>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.</p>
Special Areas of Conservation	SACs	<p>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.</p>
STATS19		<p>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.</p>
Statutory consultee		<p>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.</p>
Strategic Rail Freight Interchange		<p>A large multi-purpose rail freight interchange and distribution centre linked into both the rail and road system.</p>
Strategic Road Network	SRN	<p>The strategic road network (SRN) covers more than 4,500 miles of motorways and major A-roads.</p>

Term	Acronym	Description
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 7 STBs in England, who 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 visa 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 Direction 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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