national highways

Strategic Road Network
Initial Report

2025 - 2030

M62 by Scammonden Reservoir

Contents

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Foreword

Nick Harris

Chief Executive
National Highways

As an organisation, our purpose remains unchanged: to connect the country.

Our strategic road network (SRN), England's 4,500 miles of motorways and major A-roads, is one of the country's most important assets.

These vital roads enable the safe, delay free movement of people and goods to keep daily lives and businesses running as we all expect, creating jobs and supporting economic growth across the whole of the UK. They also bind together the regions and nations of the UK, and serve the Channel Tunnel, major ports and airports, facilitating international trade and travel.

Since Roads Reform in 2015, we have received our funding from government through five year investment cycles or road periods. Government recently published an evaluation of this approach and the findings were overwhelmingly positive: the reforms have improved how our roads are managed, benefiting road users and delivering better value for money for the taxpayer.

For us, the five year funding cycles are invaluable: they allow us to plan and grow our capability to deliver; they provide stability and certainty to our supply chain; and, perhaps most importantly, they enable us to really focus on how we can drive better outcomes for our customers.

In this report, we look ahead to 2025-30, which will be the third road period and, without doubt, a pivotal time for roads.

The country has ambitions of growth; nationally in terms of international competitiveness and government's vision for Global Britain, and locally as part of *Levelling Up the United Kingdom*.

While proactively supporting this growth, we will need to show declining carbon emissions as outlined in *Net zero highways: Our 2030 / 2040 / 2050 plan*. Ever higher levels of social and environmental responsibility will, quite rightly, be required of us. This means we will need to find new, and innovative, ways to continue connecting the country.

Even under conservative forecasts, demand for our roads is still set to increase. As a century of road travel dominated by the internal combustion engine is drawing to an end, the way people travel will change at pace.

We know that road users will expect ever higher standards of safety, journey choice and journey experience, sustainably delivered. And there will be increasing expectations about how goods move around the country, with more deliveries, expected quicker than ever before, direct to doorsteps.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Foreword

We will need to focus on making the most of our network and continue to make improvements for our customers

This is no small task. Most of our motorways were built in the 1960s and 1970s and now require renewal to keep them in the condition our customers demand. While this is not a new need, it is increasingly important.

Our major A-roads, many of which can be traced back to Roman origins, have developed in a piecemeal way. We will need to improve these roads to remove bottlenecks and increase consistency, making the most of our network.

Technology will play an increasingly important role. The UK has set out an ambitious vision to become a science and technology superpower through research, development and innovation. In line with this ambition and our *Digital Roads* strategy, we will continue transforming our roads through the power of digital technologies.

Data capture and use, connected and autonomous vehicles and personalised information are just some areas where technology offers the prospect of making our customers' journeys even safer, more reliable, and more sustainable.

Not everything will change. Our three corporate imperatives, safety, customer and delivery, will continue to underpin everything we do. Investing in our network will continue to support making the United Kingdom a more attractive place to trade, invest and visit, improving our global competitiveness.

We know there is much more to do as we push towards achieving zero harm on our roads. We will keep our focus on meeting the needs of our customers, whether road users or others affected by our roads. We will make sure that their feelings and experiences shape the things we do. And we will continue delivering on our commitments, operational, social and environmental, while generating further efficiencies for the taxpayer.

Planning for the third road period is a delicate balancing act, and one which requires consultation and input.

We have intentionally focused this *Strategic Road Network Initial Report* on the services we can provide to users of our network, those who benefit from it and those affected by it.

We have set out how our proposed investments could achieve the required outcomes and bring the best possible benefits for the country.

This report forms part of a broader suite of strategic planning documents. Importantly, this report is the culmination of our initial research phase. It grounds us in the needs of the present, and is clear about the requirements of the near future. It sets out the steps required to meet what customers and the country will need from our roads into the second half of this century, as set out in *Connecting the country: Our long-term strategic plan*.

Government will now consult widely on this document, to inform the development of its draft *Road Investment Strategy* (RIS) for the third road period.

I urge you to read this important document and then to engage with government's consultation to help shape the SRN of the future.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Purpose of this *Initial Report*

We are currently delivering the second *Road Investment Strategy* (RIS2) we agreed with government for the second road period (2020-2025). We are also planning for the third road period (2025-2030).

This *Initial Report* completes the first stage of the process, as set out in our Licence, summarising:

- our performance so far over the second road period
- extensive research into the priorities of customers, communities and stakeholders, as well as local, regional and national requirements
- the condition of our network
- proposals for investment, including how we would deliver these and possible outcomes

It has also crucially been guided by our 20 *Route Strategy Initial Overview Reports*, along with *Connecting the country: Our long-term strategic plan*. To access these documents online, including this *Initial Report*, please go to www.nationalhighways.co.uk and click on the publications tab.

Government will now consult on this report, to inform the its draft Road Investment Strategy (RIS) for the third road period.

► **For more details on the strategic planning process and the next steps, please see page 160.**

The proposals in this report are intended to advise Government on the needs of the Strategic Road Network, but are not decisions or committments for delivery. Government will use this report to inform decisions on the outcomes, priorities and funding available for the road period. It will set this out in its Road Investment Strategy. We will then publish our Delivery plan setting out our final commitments, how we will deliver them, and provide confidence our plans are affordable and provide value for money for the taxpayer.

Footbridge over the M621

Introduction

M6 in Cumbria

Introduction Overview of our third road period proposals Understanding our network Working towards our long-term vision Planning for the third road period Delivering in the third road period Summary and next steps

national highways

Introducing our network and our role

The Strategic Road Network (SRN)

Running the length and breadth of England, our SRN forms part of the country's critical national infrastructure, necessary for the country to function and upon which daily life depends.

Our network is the second largest infrastructure asset by value that the UK government owns. At 31 March 2022, the assets we hold were valued at £144.2 billion.

Our role as network custodians

Our investment supports economic growth and prosperity across the country, both directly through the contracts we let, and indirectly through the role it plays connecting businesses to their customers and suppliers. It enables people to access jobs and education, as well as connecting the UK as a trading economy with high quality domestic and international links.

To further support the benefits from our investment, we are transforming, to offer more than road improvement and management: we want to be leaders in our field, working with government, customers, communities and stakeholders to make road transport safer, more reliable and ready for the future. In 2021, we changed our name from Highways England to National Highways, in part to reflect the fundamental role we play in setting road standards in England and for the UK.

We deliver benefits for all our customers. We also aim to leave a positive legacy for communities and the environment as we strive to cut carbon emissions and improve our wider environmental outcomes.

Our three corporate imperatives guide all our activity and remain our core focus:

Delivery: Making a positive impact on the country and the economy. We will always aim to work in an efficient and effective way, making best use of taxpayer money and minimising disruption.

Safety: Our top priority. This means safety for everyone who uses or works on our roads, for all our people and for the communities alongside our network.

Customer Service: Helping our customers have the journeys they need and want. We listen to the people who rely on, or are impacted by, our roads. We make sure that our customers' views and experiences shape the things we do.

- Motorway
- All purpose
- Toll roads

Map of Great Britain, outlining the SRN

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

The Strategic Road Network is a critical service that everyone depends on

With a third of motor vehicle miles and two-thirds of HGV miles being made on the Strategic Road Network (SRN), our roads play a vital part in everybody's daily lives. Cars are the usual method to travel to work for 68% of commuters in England and, in rural areas, 72% of road vehicle miles are by cars and taxis. In these rural areas, where access to public transport is more limited, the SRN can be a lifeline. Our network links all of England's major towns and cities, connecting people to families, communities, leisure activities, work, education and other services. In this way, our roads enable people and places to prosper.

Even those of us who don't use our motorways and major A-roads directly are dependent on them and the goods they move. Our network forms a crucial part of the infrastructure which connects goods to depots, businesses and customers across the country, the wider nation and the rest of the world. With freight and logistics traffic now comfortably above pre-pandemic level (105%), this dependence will only grow. 91% of businesses in England are located within 9 miles of the SRN. In total, over £409.7 billion of gross value added (GVA), used as an indicator of the health of a national economy, is generated by the sectors that rely on our network.

This is projected to grow by 41% by 2050, to reach £578 bn, with employment in these sectors projected to grow by 5.5% to 8 million people. Our own investment supports up to 64,000 jobs in the construction industry in Road Period 2.

The SRN operates within, and provides resilience for, a wider integrated transport network. It supports local roads and connects other modes of public transport and travel, such as air, maritime and rail. In England, 4 of the 5 busiest airports are directly served by the SRN, and 7 of the 10 key ports in England have SRN links.

Our customers tell us that they want predictable, issue-free journeys on safe roads which are free from delay. Our role will remain to meet these and the changing needs of our customers, communities and everybody impacted by the SRN.

The Strategic Road Network is a critical service that everyone depends on, and with the plans we have set out, we will continue to provide a vital service that all of the UK can rely on.

A12 near Copdock

Introduction

Overview of our third road period proposals

Understanding our network

Working towards our long-term vision

Planning for the third road period

Delivering in the third road period

Summary and next steps

national highways

At a glance

4 of the 5 busiest airports in England are directly served by the SRN.

By 2050, the industries reliant on our growth are expected to grow by **41%**, taking into consideration forecast growth in people, housing, e-commerce and expectations for the same-day or next-day delivery.

By the end of 2020-21, our **28** RIS1 growth and housing fund schemes facilitated the delivery of **45,000** homes, **44,000** jobs and **1.7 million m²** of commercial floor space.

For the second road period 2020-2025, we expect that for every **£1** invested in our major projects, we will generate **£2** of societal benefit.

From 2015 to 2021, we invested over **£85 million** towards the creation of 160 new and upgraded cycle ways and footpaths across England, providing safe, attractive and accessible facilities.

In 2021-22, we invested **£26.3m** in 76 cycling, walking and horse riding schemes.

In **2019** roads carried over **300 million tonnes** of goods to and from UK ports.[1]

Sectors that rely on our network generate over **£409.7 billion** of GVA.

Over two-thirds of lorry miles in England are driven on the SRN.

Our road workers spend over **39 million** hours every year maintaining, renewing and improving our network.

121 billion tonne miles of domestic freight was moved in 2019, 79% of which was moved by road.

Road freight contributed **£13.6** billion to the UK economy in 2019.

The SRN accounts for **2.4%** of the nation's roads by length, but almost one third of all vehicle miles were driven on the SRN in 2020.

Almost **nine out of ten passenger** miles are travelled on roads.

79% of households have access to a car or van.

Between 2022-2025, we will invest **£20m** in improving existing lorry parking facilities.

Cars are the usual method of travel to work for **68%** of commuters in England.

In rural areas **72%** of road vehicle miles are by cars and taxis.

In 2021-22, we improved resilience at **44** locations vulnerable to flooding and delivered **4** water quality initiatives, improving over **9.5** miles of waterbody.

We also started monitoring our own corporate carbon emissions. Data for 2021-22 shows that we reduced emissions by **68%** against the 2017-18 baseline, towards our target of a **75%** reduction by 2024-25.

☐ Connecting business ☐ Connecting people ☐ Connecting for a wider integrated transport network

Introduction | **Overview of our third road period proposals** | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Overview of our third road period proposals

M5 near junction 20

Introduction | **Overview of our third road period proposals** | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Our third road period proposals

Grounded in evidence

We have worked to understand the potential needs of and challenges facing every part of our network. This has included working more closely and collaboratively with key stakeholders and partners. Never before have we had this much detailed insight, granular data or clarity so early in the planning process.

Guided by insight

We have conducted extensive research to understand the priorities of customers, communities and stakeholders at local, regional and national levels. This includes gathering our own insights as well as learning from other organisations, including Transport Focus.

Focused on meeting our long-term vision

Rather than basing our plans around predictions of the future, we have taken a 'decide and provide' strategic approach. We have determined our preferred long-term vision and then identified the steps needed to make this future a reality. The vision we have set out is challenging and aspirational.

We believe it is also achievable, subject to the level of funding available. We know that the future is not certain and, in crafting our vision, we have examined alternate futures and the range of uncertainties ahead, including around demand for road travel. We will need to continually evaluate the trends and our progress to ensure we remain on the right path.

Thinking in this way has enabled us to go beyond our traditional remit, planning as part of a wider transport system and as part of the solution to national and global challenges.

Importantly, our proposals for the third road period are targeted at helping us achieve every aspect of this new vision. These range from an even greater emphasis on safety, to ensuring our network can support future connected roads and autonomous vehicles.

Taking a sustainable approach to road investment

The *Climate Change Act 2008* requires the UK government to achieve net zero greenhouse gas emissions by 2050. Progress is driven by five year carbon budgets. The sixth budget, covering the years 2033-2037, has been highlighted as setting the world's most ambitious targets, seeking emission reductions of 78% by 2035 compared to 1990.

To play our part, we propose applying a global standard for managing infrastructure carbon, called PAS 2080, to RIS funding and investment decisions. This standard looks at the whole value chain, aiming to reduce carbon and minimise costs through more intelligent design, construction and use. Applying PAS 2080 to our investment decisions requires using the hierarchy of: building nothing; building less; building cleverly; and building efficiently. At a high level, this means:

Our investments should first and foremost, make the most of our network, by:

- keeping our network in good order so our roads can continue providing the same service as before
- offering increased choices to enable customers to travel differently

It is only after these steps that we improve our network, working cleverly and efficiently to improve safety and performance, by:

- increasing capacity through technology
- providing more physical space at junctions
- providing more physical space on the main carriageway

Introduction | **Overview of our third road period proposals** | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

How our plans support growth

We know that our Strategic Road Network (SRN) is unique in its ability to support growth in the UK. Industries dependent on our roads contribute over £400bn in GVA to the economy. The freight industry, which relies heavily on the SRN, contributed £13.6 billion to the UK economy in 2019. We also know that the SRN best supports growth and prosperity for the country and economy when it runs reliably, safely and smoothly.

We have planned our Strategic Road Network (SRN) Initial Report around five areas which are key for supporting growth and will ensure the reliable, safe and smooth running of our roads. They are informed by what our customers and stakeholders have told us are a priority, as well as our own evidence from route strategies and research.

The choices we make for RIS3 will deliver immediate benefits for our customers today and will pave the way for improvements for our customers of the future.

To drive growth, productivity, and prosperity we believe there is a need for balanced investment across a range of areas. These proposals are set out in our chapters and summarised here.

Improving safety for all

Above all, our roads must be safe. This is a top priority for us, our customers and industry. By making our roads safer and more accessible, we will enable even more people to benefit from our SRN, connecting them to families, work, education and other opportunities.

For RIS3, we want to focus on reducing the risk on our 1-star and 2-star roads, rated by the International road Assessment Programme (iRAP), lifting the rating to 3-star or better where possible. We will also continue

our work to influence positive driver behaviour and vehicle standards through driver education programmes, reaching as many of our customers and communities as possible. We will increase professional driver training with operators with a focus on maintaining the roadworthiness of HGVs and vans.

We are committed to improving our understanding of the experiences of disabled people who use our roads and how we can improve our infrastructure and services to meet their needs. By doing this, we will be able to offer a more inclusive, accessible experience to all of our road users. We will continue to invest in initiatives to protect our vulnerable users such as walkers, cyclists and horse riders. For example, by installing barriers to separate non-motorised users from our network, and providing signed and well-lit dedicated crossing points and lanes.

Our proposal – Creating a step change in road safety

Reducing the risk on our 1-star and 2-star iRAP rated roads, lifting the rating to 3* or better where possible, and play a stronger role in influencing user behaviour and vehicle standards.

Introduction | **Overview of our third road period proposals** | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Providing a smooth-running, high-speed road network

Simply having road connections in place is not enough for the over 90 billion vehicle miles travelled on our roads per annum. To support growth and prosperity for people and businesses across the UK, we must also keep our roads running reliably. Research from Transport Focus shows us that this is a top priority for our customers, particularly for those in the freight industry, who depend on being able to reliably plan their journey in advance.

By keeping the existing network running reliably and in good repair, we can support the growth of our economy, and get our customers, safely and smoothly, to the people and places they need to be. Our operations, maintenance and renewal activities are what makes this happen. From traffic officers and control centre workers, to the teams that inspect our network, keep our roads, drains and signage free from litter and obstruction, and carry out renewals and repairs; they all have a part to play in ensuring our road network remains smooth-running.

We know that temporary restrictions such as lane closures or weight limits can have an economic cost and can be hugely disruptive to our customers and communities. The unplanned closure of Clifton bridge in Nottingham following the discovery of corrosion led to high levels of congestion in that evening peak, with journeys taking three times longer than usual. Although this was quickly addressed, situations like this demonstrate the importance of keeping our existing roads running smoothly. Unplanned closures and delays also have a hugely negative impact on freight and logistic businesses, including lost working time and missed shipment slots. Our renewals programme proposed in RIS3 is designed to address these and provide our users with the reliability they need to be able to plan their journeys in advance.

Our proposals - Making the most of our network

By operating increasingly connected roads, undertaking increasing proactive maintenance, making our technology more resilient and investing in vital renewals to deliver safer, more reliable journeys.

Tackling congestion for faster and more reliable journeys

In our first full Road Period (2015-2020) our completed enhancements schemes created £4 in benefit to the economy and society for every £1 spent. We believe that our enhancement schemes are valuable programmes that improve safety, tackle congestion and support socioeconomic growth and development across the country. Our research tells us that our customers still believe in the need for these schemes to address existing issues. Our customers are also showing a growing preference for smaller schemes that bring local, tangible benefits. In RIS3, we want to address these needs and work towards our long-term vision by maintaining a focus on finishing delivery of schemes already committed, while planning for more smaller schemes as part of a balanced future portfolio.

Introduction

Overview of our third road period proposals

Understanding our network

Working towards our long-term vision

Planning for the third road period

Delivering in the third road period

Summary and next steps

national **highways**

Our major enhancement schemes can bring very significant benefits to the local and national economy. For example, the existing Dartford Crossing was originally designed for 135,000 vehicles a day but is now regularly used by over 150,000, meaning that at peak evening time, 19 out of 20 northbound journeys are delayed. Our plans to build a new Lower Thames Crossing will not only alleviate existing congestion with all the associated negative impacts this has, but will also open significant growth opportunities for local businesses and communities.

We can also deliver significant benefits by upgrading and improving our existing network. For example, the recently completed A1 Scotswood to North Brunton scheme will reduce congestion and improve reliability, and provide wider economic benefits for business users and freight through the improvement of links between locations of economic importance in the region, such as Team Valley Employment Zone, Intu Metrocentre and Newcastle Airport.

Smaller schemes can be flexible in delivery, have shorter development times and can quickly tackle issues that impact communities, enabling them to unlock local investment. For example, our work on the Roger Millward Way roundabout in Hull city centre (as part of designated funds), delivered a £4.5 million improvement scheme to reduce congestion and improve journey times at one of England's busiest junctions, as well repairing the existing drainage.

Our schemes can deliver wider benefits beyond improving the road network. Our programme currently supports up to 64,000 jobs, and our major schemes look to maximise the use of local resources and employment during construction work. We work with local and regional schools, colleges, academies, universities and community groups; growing the industry by encouraging the engineers of the future to choose a career in construction.

Our Proposal - Taking a targeted approach to enhancing our network

Continuing to invest in our network, following the fundamental principles of PAS 2080 and only building when the problem cannot be fixed by other approaches. Meeting network needs by completing committed schemes, investing in Lower Thames Crossing, and delivering more, smaller value, £2 million - £25 million schemes where funding allows.

Improving the journey experience and making better local connections

The SRN does not exist in isolation from other parts of the transport network and most journeys do not start or end on our network. Our ambition is to improve our customers' end to end journeys, not just the part of their journey which takes place on the SRN. We can do this by working collaboratively with Sub-national Transport Bodies (STBs), local authorities and other transport providers, and aligning our investment to local transport plans as far as possible. This can make our investment go further and continue to contribute to growth and prosperity in our regions, towns and cities. For example, in 2019, we contributed to the creation of a new transport interchange in Cornwall, bringing together journeys by road, rail, bike and foot. This included introducing a signalised junction, providing safer crossings and improving local footway links to train and bus stations. This work helped to ease congestion and supported local journeys, no matter the transport mode.

Introduction | **Overview of our third road period proposals** | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Over Road Period 3 we want to improve the journey experience for road users. We want to provide more accurate and useful data about the network to help people make decisions about their journeys. Research from Transport Focus highlights the particular importance of data and information for commercial users who need to be able to plan journeys in advance with confidence. Improving information on road closures or restrictions helps commercial users to be sure of alternative routes and factor delays into their plans, reducing disruption and negative economic impact. In developing RIS3 we also want to work with Government to explore how we can support improved provision of freight facilities across the SRN.

More broadly, investment in the SRN can play an important role in unlocking housing and commercial developments - anywhere between small housing developments up to major multi-billion pound inward international investment. As a statutory planning consultee, we provide recommendations to inform planning for over 150,000 new homes per year. By engaging earlier and more proactively with proposed developments, we can help these to be delivered more quickly and ensure they meet wider government objectives and priorities.

Our proposal - Evolve our customer and community services.

By improving the data and information we provide to our customers. Taking a broader approach to supporting end to end journeys, including improved facilities for freight and non-motorised users. Supporting growth and development alongside the SRN and addressing legacy impacts on our network, including air quality and noise.

Driving sustainable growth

Transport remains the highest carbon-emitting sector, accounting for 27% of the UKs carbon emissions. We see road investment not only as part of a net zero economy, but as a critical factor in creating it. We are ready to play our full part in supporting carbon and environmental targets.

Our RIS3 approach has been influenced by our commitment to reducing carbon emissions across all our activities. We will take a sustainable approach to adding new capacity to our network as summarised on page 73.

Introduction

Overview of our third road period proposals

Understanding our network

Working towards our long-term vision

Planning for the third road period

Delivering in the third road period

Summary and next steps

national highways

Unique to us is the significant buying power that we have and our ability to use this to drive positive change and innovation around net zero carbon materials and approaches. We have already committed to a 40-50% reduction in carbon from construction and maintenance over RIS3 and will work closely with our supply chain and wider industry to achieve this. We will share our learnings with other projects and sectors, so everyone can benefit. Our flagship Lower Thames Crossing scheme is being developed as a Pathfinder scheme that will explore carbon neutral construction.

We also believe strongly in the importance of supporting the wider decarbonisation of travel by enabling the increasing use of low emission and electric vehicles. We are working with the Government to support the delivery of rapid charging points across the network. In addition, we need to further ensure our network, including structures, drainage, earthworks or the land which runs alongside our roads, can cope with future severe weather as a result of climate change.

Our proposal – drive decarbonisation and environment sustainability

Achieve net zero corporate emissions, and reduce maintenance and construction emissions between 40 and 50%. Facilitate low-carbon travel and demonstrate wider environmental leadership, including around biodiversity and climate resilience. Invest in low carbon technology to drive a step change in manufacturing.

Delivering efficiently, effectively and rapidly

Since the creation of our organisation as part of Roads Reform in 2015, we have also grown in capacity and capability as an organisation. We have adopted a more commercially-driven culture of efficiency, high performance and continuous improvement, recognised by the recent evaluation of roads reform. In delivering RIS3 we will continue to support wider government ambitions for our sector, our supply chain, and infrastructure delivery, as well as continuing to provide confidence in our investment of public funds.

We will continue to invest in our workforce to ensure it is highly capable and can provide the new skills we need – from an increased focus on digital to growing environmental consciousness. We are investing in early talent programmes to develop our future leaders and are focused on attracting talent from a wide variety of backgrounds.

Our supply chain is critical to us achieving our objectives and imperatives. We will build upon the success of our existing frameworks and routes to market by continuing with those that work effectively whilst also addressing opportunities for improvement. We will continue to look for opportunities to simplify and speed up our planning and development processes, applying the lessons from our trials on the A66 Northern Trans-Pennine upgrade, to enable quicker delivery and realisation of benefits for future public investment projects.

We will advocate and embrace how we can employ new technologies such as digitally enabled design, modular construction, and automated plant and connected construction sites. Using these to transform the delivery of our major enhancements schemes and renewals programme. Use of these technologies will provide greater safety to our users and workers, reduce our carbon outputs and environmental impacts, and increase our design and onsite productivity. We will continue to share knowledge, insights and capability with our supply chain, helping to grow skills and capability which will be vital in supporting ambitions for RIS3 and the SRN.

Introduction | **Overview of our third road period proposals** | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Our third road period proposals

Our proposals

We have developed five targeted proposals to help us deliver and balance the broad range of objectives specified by government, while also ensuring we make progress towards our long-term strategy. We also set out how we will evolve and change as an organisation to meet our changing demands and deliver our ambitions.

1. Improving safety for all

Reducing the risk on our 1-star and 2-star iRAP rated roads, lifting the rating to 3* or better where possible, and play a stronger role in influencing user behaviour and vehicle standards.

2. Making the most of our network

By operating increasingly connected roads, undertaking increasing proactive maintenance, making our technology more resilient and investing in vital renewals to deliver safer, more reliable journeys.

3. Evolve our customer and community services.

By improving the data and information we provide to our customers. Taking a broader approach to supporting end to end journeys, including improved facilities for freight and non-motorised users. Supporting growth and development alongside the SRN and addressing legacy impacts on our network, including air quality and noise.

4. Taking a targeted approach to enhancing our network

Continuing to invest in our network, following the fundamental principles of PAS 2080 and only building when the problem cannot be fixed by other approaches. Meeting network needs by completing schemes committed as part of the RIS process, investing in Lower Thames Crossing, and delivering more, smaller value, £2 million - £25 million schemes where funding allows.

5. Drive decarbonisation and environment sustainability

Achieve net zero corporate emissions, and reduce maintenance and construction emissions between 40 and 50%. Facilitate low-carbon travel and demonstrate wider environmental leadership, including around biodiversity and climate resilience. Invest in low carbon technology to drive a step change in manufacturing.

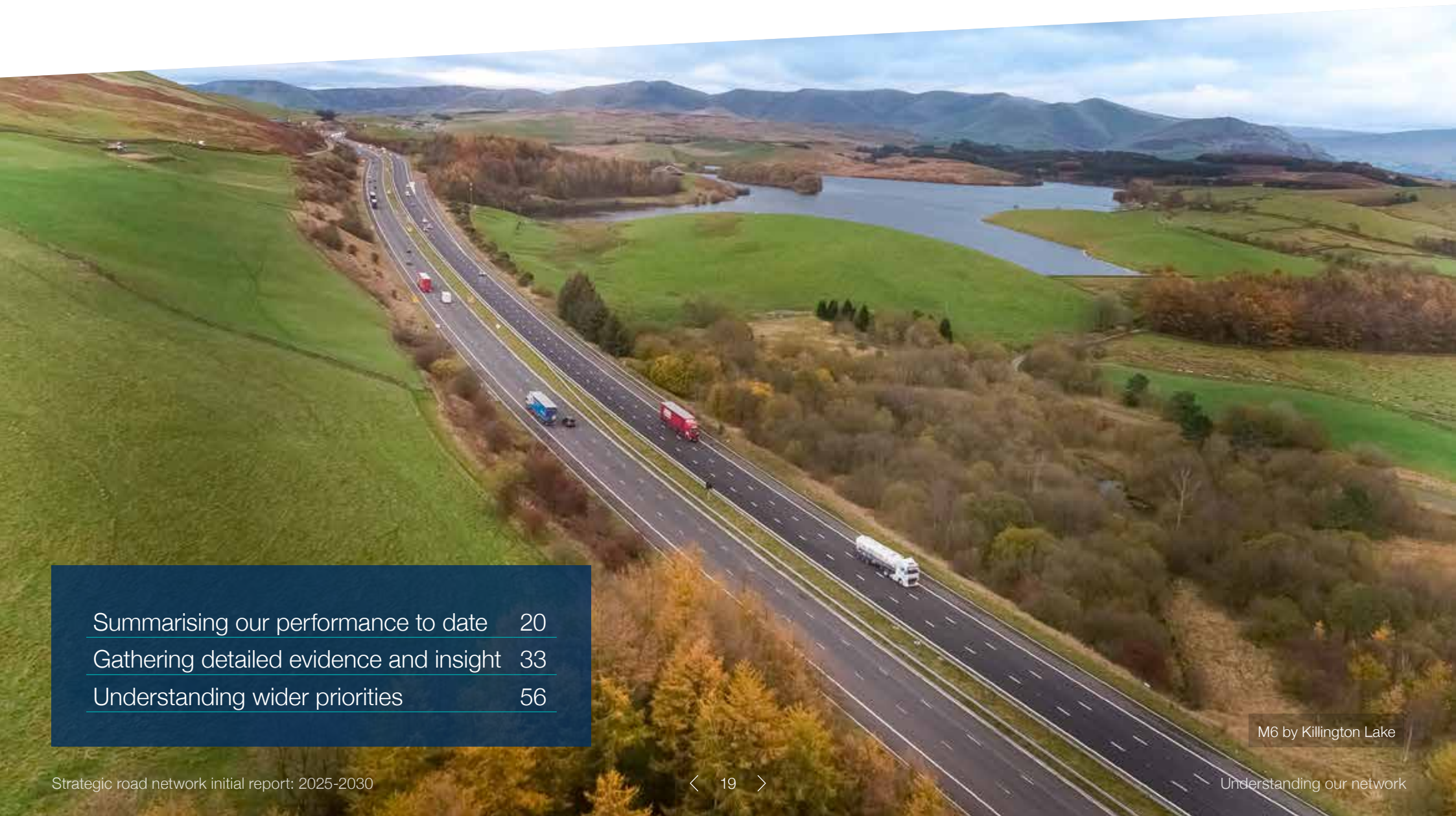national highways

Defining our future

Our 2050 vision

In *Connecting the country: Our long-term strategic plan*, published alongside this report, we set out our 2050 vision that: "the SRN is 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".

A Realised regional ambitions

B Fully integrated with other modes, roads and hubs

C A net zero carbon network

D Healthy and vibrant communities

E A thriving natural environment

F A zero harm network

G Sustainable community development

H An elevated end-to-end customer experience

I Connected network, informed customers

J Unimpeded freight access to domestic and world markets

K An operationally resilient network

Our vision for the SRN

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Understanding our network

M6 by Killington Lake

Introduction

Overview of our third
road period proposals

**Understanding
our network**

Working towards
our long-term vision

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

Summarising our performance to date

Introduction

- We are currently delivering the RIS we agreed with government for the second
  road period (2020-2025), which includes working to meet stretching key
  performance indicators (KPIs).

- In the following pages we discuss our performance in the second road period to
  date, both against these KPIs as well as across wider areas. We have grouped our
  performance update into five core areas: safety; network and asset management;
  customers and communities; environment; and delivery.

- We have used this evidence to help us understand the problems, challenges
  and opportunities we are likely to face in the third road period and to inform our
  planning.

► **For an overview of how we will measure our performance in the**

Safety

Safety is our first imperative and the most important consideration for our customers and stakeholders. Working towards a long-term zero harm ambition, we want everyone who travels on our network or works with us to get home safe and well.

Number of people killed or seriously injured on our roads

When considering road safety, we have a KPI to reduce the number of people killed or seriously injured on the SRN to 50% of the 2005-2009 baseline by the end of 2025. In 2020 (the most recent year with assured data), when compared with 2019, the number of people killed or seriously injured on our network reduced by 32%. If we compare our performance against the 2005-2009 baseline average, we see a 54% reduction in 2020. We recognise that this has been impacted by reduction in travel from the national lockdowns and other travel habits associated with the pandemic, and it will take longer to understand the longer term trends

We have worked hard to reduce the potential for harm on our roads by collaborating and investing across the six pillars of road safety. This is based on the best practice Safe Systems approach and supported by our *Home Safe and Well: Our approach to health, safety and wellbeing*. We continued to seek to learn more about the fluctuations in traffic volumes (due to the pandemic and its ongoing effect) to understand the impact they have on our network.

We continued to deliver safety schemes, based on the specific needs of each region and targeted safety research. We know that road user safety must remain a key area of focus in the third road period.

► **To find out more about the six pillars approach, please see **

A moveable barrier on the M20

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Safety

Assessing the safety of our roads

We conduct surveys to benchmark SRN safety performance according to the International Road Assessment Programme (iRAP) assessment. We have recently met our commitment to publish our iRAP baseline and 2025 forecast. iRAP is an international standard that assesses 52 road features to produce an objective safety score between 1-star (low) and 5-star (high). We are now forming a strategy to use iRAP and supporting data to inform our thinking on managing future risk.

The 2020 iRAP survey identified that 19% of our network by length was rated as 1-star or 2-star, with 52% of these being single carriageway roads, 46% dual carriageways. It showed that when accidents do occur on these roads, 40% of them lead to people being killed or seriously injured; further work is needed to improve these parts of our network.

Smart motorway inquiry and actions

It is now over three years since the Transport Secretary published the *Smart Motorway Safety: Evidence Stocktake and Action Plan* in March 2020. Smart motorways remain one of the most scrutinised parts of our network.

During 2021, the Transport Select Committee undertook an inquiry into the roll out and safety of smart motorways, publishing their report and a series of recommendations in November 2021.

In January 2022, the Department for Transport (DfT) announced that it had accepted all of the committee's recommendations, including the pausing the roll out of new all lane running schemes to allow the collection of further data and stakeholder feedback.

The Department subsequently announced that plans for new smart motorways will be cancelled in recognition of the current lack of public confidence felt by some drivers and cost pressures due to inflation. Smart motorways earmarked for construction during the third Road Investment Strategy (2025-2030) and previously paused schemes will now not go ahead.

We have continued to make further improvements across our smart motorway network, delivering the actions in government's action plan. For example, we have installed over 330 additional signs on our smart motorways and by the end of September 2022 we had installed over 700 extra signs so drivers will almost always be able to see a sign informing them of the distance to the next place to stop in an emergency, giving them additional confidence when using the roads.

We also installed stopped vehicle detection technology on over 100 miles of all lane running smart motorway, and we had completed the roll out on more than 200 miles (in total) by the end of September 2022.

While it remains too early to quantify the effect of these actions, we will continue monitoring and evaluating the safety of our network over the coming years. The Office of Rail & Road (ORR), will continue to provide oversight and scrutiny to ensure we deliver on our committed actions and to evaluate our effectiveness.

In its response to the Transport Select Committee's report into smart motorways the Government committed £390m over the duration of the second Road Investment Strategy to roll out an emergency area retrofit programme. This would see over 150 additional emergency areas being added to ALRs in operation and construction. we will continue working with DfT to consider the case for retrofitting to the remainder of all lane running smart motorways. This will be part of the development of RIS3, based on the evidence of safety benefits we are gathering and assessing.

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Safety

Our people's health, safety and wellbeing

We need to look after all of our people. This includes those physically working on our roads as well as those who are managing our network. Between 2021 and 2022 the lost time incident frequency rate for our people has slightly increased. The accident frequency rate remains unchanged.

Through the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR), we have seen a slight decrease in the lost time incident rate of our supply chain. Conversely, the overall supply chain RIDDOR accident frequency rate has increased.

We have continued to take steps to look after the health, safety and wellbeing of everyone who works with us. We have worked with our supply chain on many initiatives, including the roll out of the Highways Passport which ensures that everyone has the right training, experience and qualifications to work on our sites.

To ensure our people's safety, just as to ensure road users' safety, greater focus will be required over the coming years and road periods. Our current *Home Safe and Well* approach takes us to the end of the second road period and we are currently updating our approach for the third road period building on the progress we have made to date.

Implications for the third road period

- The Department announced that plans for new smart motorways will be cancelled. Existing smart motorways will continue to benefit from the existing £900 million investment in safety improvements committed to as part of RIS2 and continued driver education to boost public confidence.

- Helping road users feel safer and making progress towards our long-term zero harm ambition will require significant, sustained and innovative approaches across our organisation, supply chain, road users and the industry.

- We must remain flexible to emerging safety priorities, in particular from our Road to zero harm public consultation starting in 2023. Key areas of focus will include tackling the roads that fall below the iRAP 3-star standard and continuing to run safety communication campaigns.

- Continued focus on, and investment in, the health, safety and wellbeing of all our people, regardless of where they work, will still be needed.

▶ **For our safety priorities for the third road period, please see pages 89 to 96**

Construction workers

Network and asset management

Our network is made up of many different parts, such as road surfaces, bridges and drainage. We refer to these as 'assets' and manage them through a combination of operations, maintenance and renewals activities. We have dedicated £10.8 billion of investment into these areas for the second road period, representing 40% of total funding. This investment will be focused on keeping our network open, clearing incidents quickly and managing our network as it ages so it remains in good condition. We work across the whole asset lifecycle, understanding that decisions we make may affect the future service for customers. While we have made progress, we know that we are still facing increasing challenges. Our view is that there is a the need for a growing renewals programme, if we are to maintain current performance of the network, responding to our ageing assets which are becoming more complex to manage and in response to historical deferred works. We also know that we are becoming increasingly dependent on technology, with these shorter life assets becoming ever more central to how we manage our network.

Delay free and reliable journeys

Customers want delay free and reliable journeys. We know from Transport Focus that road users consider better management of roadworks and incidents as one of their top priorities. We have worked to improve our operational and maintenance activities to keep our network open and available.

In 2021-22, we cleared 87.1% of motorway incidents within one hour, exceeding our 86% KPI. Average delay across the year was 8.8 seconds per vehicle per mile. Although this is lower than the 9.5 seconds at the end of the first road period, it has increased from 2020-21 as we saw traffic levels start to return to normal.

In 2021-22, we also launched A-roadwork network impact KPI, replacing the previous network availability metric. It is designed to more accurately assess the impact that our roadworks have on traffic. It provides an indicator of traffic management restrictions by length and duration and calculates a weighted average. In 2021-22, we achieved a score of 42.5 million weighted lane metre days, meeting our in-year target of not exceeding 43 million.

Road surfaces

We know from Transport Focus that safer design and upkeep of roads is important to road users, with quality of road surfaces being the highest priority for improvement. In 2021-22, we reported 95.3% of our road surfaces, upon inspection, did not require further investigation for possible maintenance, above our 95% KPI and 0.1% higher than in 2020-21.

To help achieve this, we have invested in our road surfaces, including starting our biggest ever concrete roads renewals programme in 2020. The first part of this programme will see us invest £400 million by 2025 to extend the lifespan of some concrete roads and fully reconstruct others. Fundamentally, our view is that this programme will need to accelerate over the following years and across the third road period to help us manage risk.

Network and asset management

Well maintained and resilient network

There is currently a clear ask and expectation from stakeholders that we place more focus on asset management. We have continued to increase our maturity in this area and, in May 2022, published *Our Approach to Asset Management.*

Overall, our maintenance and renewals programmes have continued to deliver benefits throughout the country. We have targeted work where our asset information and condition data told us the need was greatest. For example, in 2021-22 we delivered all our committed major life-extension renewals, and most of our cyclical renewals.

It is important to note that we still face wider and increasing challenges in keeping our network in good condition. To manage these, our view is that we will require a growing programme of work over the rest of the second road period, as well as across the third road period, in particular around renewals.

► **For details of the condition of our assets and the challenges we will face in the third road period, please see pages 43 to 55.**

Digital, data and technology

As set out in our *Digital Roads* strategy, launched in September 2021, technology is set to fundamentally change how we design, build, operate and use our roads. We are currently at the start of this journey.

The resilience of our ever developing infrastructure, especially digital infrastructure, has been a key area of increased focus. We know there is more we need to do and we are currently updating our *Digital, data and technology* strategy to further detail our aims around improving operational technology, resilience and cyber security.

Implications for the third road period

- We need to continue keeping road users safe through active traffic and incident management. This includes using and improving the technology at our disposal to monitor our network and respond to issues as they occur.

- It is vital that we continue managing our assets so our network remains safe, open and performs well, and mature our asset management capability. Importantly, we believe more will need to be done to manage our ageing network, including continuing and extending the concrete roads renewals programme.

- We will need to increase our focus on our digital infrastructure as it becomes more and more central to how we operate and maintain our connected network. We will need to ensure that we can use the greener solutions offered by technology without compromising safety or operational integrity.

► **For operations, maintenance and renewals proposals, please see pages 97 to 110**

Introduction

Overview of our third
road period proposals

**Understanding
our network**

Working towards
our long-term vision

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
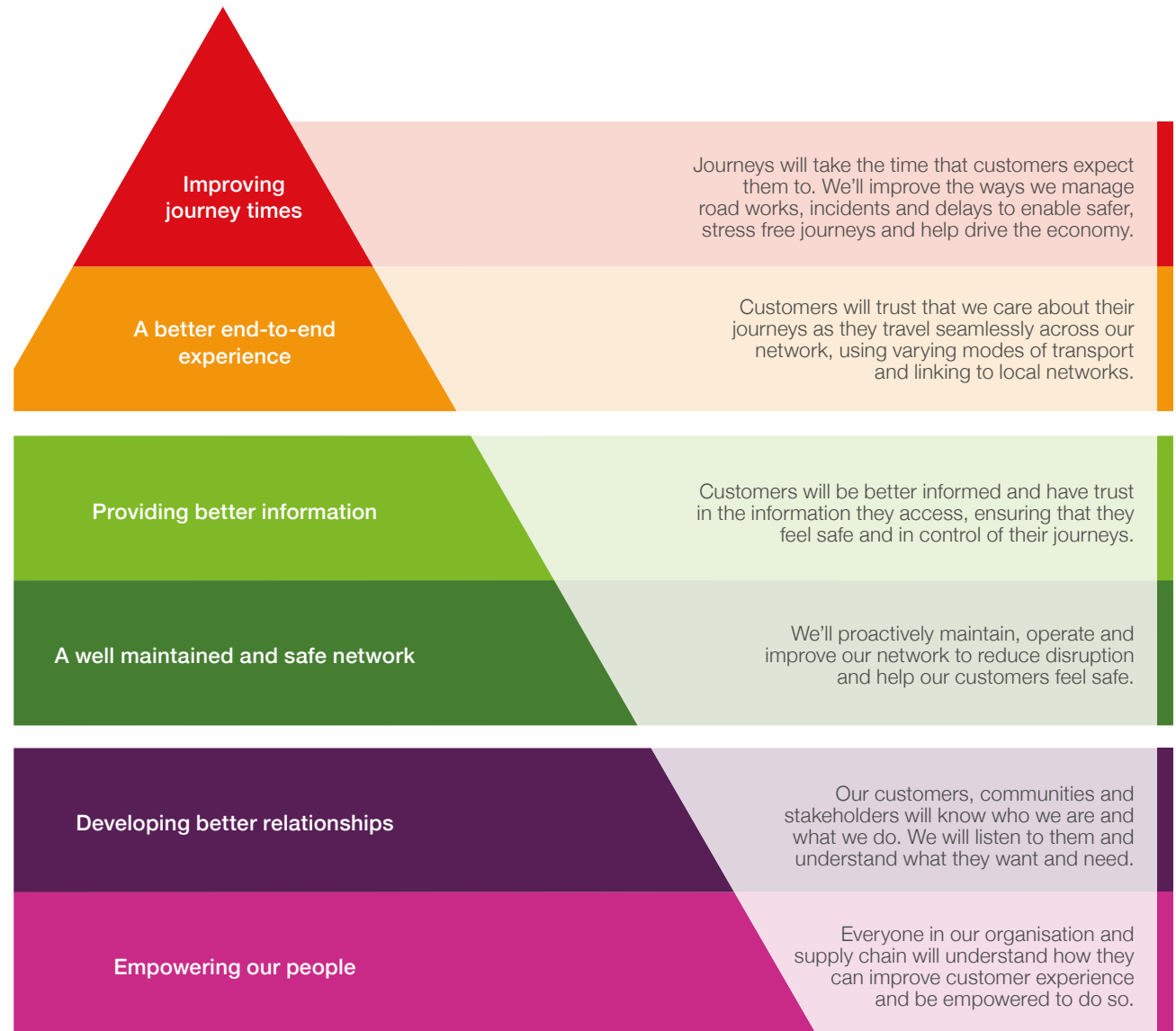highways

Customers and communities

Meeting the needs of all users and supporting those affected by our network are key priorities. In the second road period, more than ever before, we have listened, reflected and responded to our customers and stakeholders. Our *Customer service strategy*, published in May 2021, set out our vision for improving customer experience, underpinned by detailed planning.

Customer satisfaction

Customer satisfaction is really important to us, and is a key measurement of our performance. Covid-19 made face-to-face interviews impossible, the *Strategic Roads User Survey* did not take place in 2020-21. While Transport Focus, in partnership with us, DfT and ORR, developed and relaunched *Strategic Roads User Surveys* as an online survey, there was not enough historic data to set a KPI for 2021-22 or 2022-23. For transparency, the online survey results have still been published on Transport Focus' website.

ORR has used a range of other quantitative and qualitative sources that provide information and data measures to assess our performance in this area. ORR concluded that user satisfaction remains 'relatively high', that we have delivered a significant majority of our customer service plan commitments and that we are working to meet a broader range of user needs.

► **For details of customer insight, please see pages 58 to 68.**

Improving journey times — Journeys will take the time that customers expect them to. We'll improve the ways we manage road works, incidents and delays to enable safer, stress free journeys and help drive the economy.

A better end-to-end experience — Customers will trust that we care about their journeys as they travel seamlessly across our network, using varying modes of transport and linking to local networks.

Providing better information — Customers will be better informed and have trust in the information they access, ensuring that they feel safe and in control of their journeys.

A well maintained and safe network — We'll proactively maintain, operate and improve our network to reduce disruption and help our customers feel safe.

Developing better relationships — Our customers, communities and stakeholders will know who we are and what we do. We will listen to them and understand what they want and need.

Empowering our people — Everyone in our organisation and supply chain will understand how they can improve customer experience and be empowered to do so.

Introduction

Overview of our third
road period proposals

**Understanding
our network**

Working towards
our long-term vision

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

Customer and communities

Information provision

Transport Focus' research shows that journey time is the number one determinant of overall customer satisfaction. However the research also shows that it is important for road users, particularly the freight and logistics sectors, to be provided with accurate information about any road closures. Our roadworks information timeliness and accuracy KPI commits us to improve the accuracy of roadwork closure information at least seven days in advance, with a target of at least 90% accuracy by the end of the second road period. In 2021-22, we accurately notified 68.1% of roadworks involving an overnight closure within seven days, an improvement on 2020-21 (54.5%).

More broadly, we have worked to gather insight from customers to understand what they need and want. We are, for example, using our digital real-time customer feedback collection tool, Every Customer Has an Opinion, to improve the information we share with our customers. This includes the format in which we share it and customers' experiences when contacting us directly.

This closer, more collaborative way of working is setting a precedent for how we want to engage and work to build an even more integrated and customer focussed organisation. We will continue evolving our approach through our focus on digital for customers, as part of our *Digital Roads* strategy.

Journey experience, including travel choice

We have worked to provide customers with travel options to improve their journey experience, primarily to minimise disruption during the construction of our road schemes and significant operations and maintenance activities. This has included running trials to: reduce unnecessary journeys; reroute journeys to less congested roads; retime journeys to avoid peak demand; and remode journeys, promoting alternative ways to travel. We want to continue this work in order to support better end to end journeys for our customers. Our customers are also expecting more from us about supporting journey choice across different modes, including active travel options such as walking and cycling. In the second road period, we have already completed 83 projects for walkers, cyclists and horse riders, and this will remain a focus into the third road period as we work to promote low carbon and active journey options.

A cyclist using a
cycle lane by the M5

Customer and communities

Evolving requirements

The transition to electric vehicles is the biggest change to our roads in decades. We are already supporting growing numbers of electric and technology-enabled vehicles on our network. Our customers increasingly need confidence that they can access charging to support longer distance travel.

We have started on the journey to supporting charging infrastructure, and there is more to do.

We have also worked more extensively with sub-national transport bodies (STBs) than ever before, going beyond the scope of our route strategies. Our focus has been on integrated planning and developing joint priorities to support transport users, regional economies and the environment.

Freight

Freight traffic has risen significantly in recent years, driven by the shift to online shopping. Beyond accurate information provision, we know that we can do more to support the freight and logistics sector, which relies on our network. We are already exploring options and identifying gaps, for example around the quality and provision of freight facilities.

We have also worked collaboratively to understand the potential benefits modal shift could offer freight as well as to the wider road and rail networks. For example, we worked with Network Rail on how we could integrate the Solent to Midlands freight route. Our joint publication, *Solent to the Midlands multimodal freight strategy* (June 2021), identified where freight could be moved from road to rail and outlined the significant benefits.

Designated funds

We have used our designated funds to deliver small, localised schemes, beyond our routine operations, making a difference to local communities. In 2021-22, we invested £123 million, against a revised post *Spending review* of £150 million. We have listened to stakeholders on how these funds could be improved and we are building this into our approach for the third road period.

Implications for the third road period

- Improving the information we provide customers will remain a focus area, such as providing more real-time traffic information.

- Our network will need to respond to the forecast growth in freight as well as the evolving and expanding requirement for electric vehicles on the network.

- We must work more closely with other transport modes to build a more integrated approach to low emission and active travel.

- We should examine which outputs currently delivered through designated funds might be carried out more effectively as part of business as usual.

▶ **For details of our proposed areas of focus, please see pages 115 to 117.**

Environment

We want our roads to work harmoniously with the communities that live alongside them and the built, natural and historic environments that surround them.

Carbon emissions

One of the biggest challenges facing us, and the world, is to reduce carbon emissions. For Britain to be a net zero greenhouse gas economy by 2050, our roads have to be net zero too. Transport is the highest emitting sector, accountable for 27% of the UK's carbon emissions, with 91% of these emissions coming from road vehicles. Embodied carbon in road construction and maintenance further add to the problem.

In July 2021, we published our *Net zero highways plan* which sets out how we will take immediate and sustained action to cut carbon. We have committed to achieving net zero carbon emissions from our own corporate operations by 2030, for maintenance and construction by 2040 and for net zero carbon travel on our network by 2050.

We are already making progress against this plan. For example, 2021-22 was the first year we have monitored our own corporate carbon emissions. Data for 2021-22 shows that we reduced emissions by 58% against the 2017-18 baseline, towards our target of a 75% reduction by 2024-25. We are just beginning on this journey; significant and sustained action will be essential.
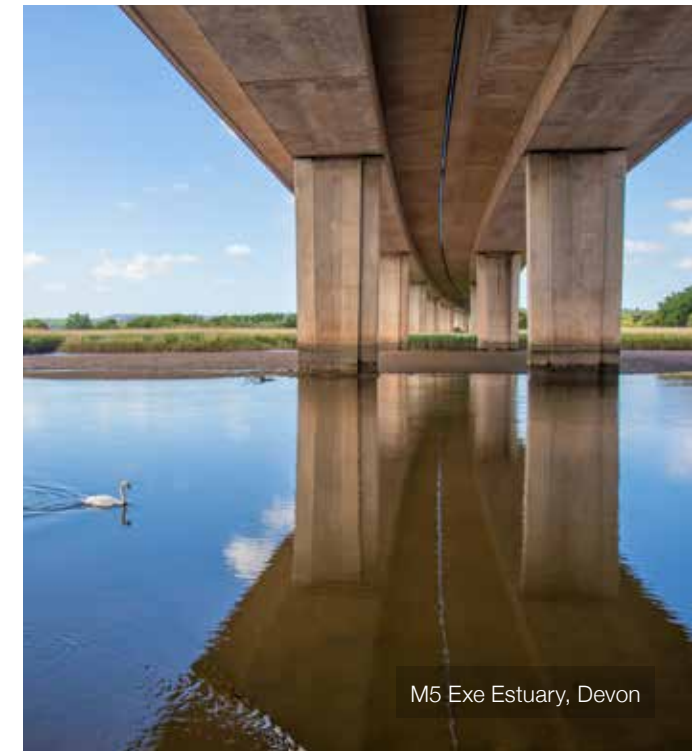
The natural environment

Reducing carbon emissions is only one part of our wider efforts to improve our impact. One of our environmental KPIs is to achieve no net loss of biodiversity across all our activities by the end of the second road period. In 2021-22, we invested nearly £10 million in biodiversity projects, including delivering 10 grassland schemes. One example of this was a joint project with the Environment Agency at Billingham Beck, which supported local biodiversity as well as reducing the flood risk to nearby residential and commercial properties.

We consider impact on the environment during the planning and design stages for all new schemes with many designed to increase levels of on-site biodiversity where possible. Delays to some schemes has meant that some of our anticipated biodiversity gains will not be realised during this road period. This has made it more challenging for us to meet our no net loss biodiversity KPI.

We are working on a plan to address how we can meet this target. ORR has challenged us on our latest biodiversity delivery programme to ensure that it is accurate, deliverable and will achieve our KPI. We know that biodiversity will remain a focus into the third road period and beyond.

This will particularly be the case as we work towards delivering biodiversity net gain, an approach to development which means that habitats for wildlife must be left in a measurably better state than they were in before.

M5 Exe Estuary, Devon

Introduction

Overview of our third
road period proposals

**Understanding
our network**

Working towards
our long-term vision

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

Environment

People in nature where natural
landscapes function as natural
flood measures in Yorkshire

Local communities

We want to do all we can to look after the wellbeing of everyone who uses our roads and lives or works near them. In 2021-22 we reduced noise for 1,067 households using barriers, low noise surfacing and in-home noise insulation. This has helped us reach a cumulative total of 3,178 quieter households in the first two years of the second road period, 43% of the five year KPI of 7,500 properties. We have also made good progress bringing identified sections of the SRN within air quality limits.

We have started to run pilots and trials to test new ways of working, such as using nature-based solutions to adapt our network to climate change, reducing impacts on road users and local communities. For example, we have implemented a natural flood management pilot study, developed with the Canal & River Trust, to understand whether natural flood management measures can be used for managing flood risk on the SRN. After successful pilots, we would look to expand the use of such measures across our network in future road periods.

Implications for the third road period

- We must balance network requirements with meeting challenging commitments for biodiversity, carbon emissions, air quality and noise pollution.

- We must consider how to remove carbon emissions across everything we do. This includes applying a global standard for managing infrastructure carbon, called PAS 2080, to RIS funding and investment decisions. It will be equally vital to consider how we manage future traffic growth, particularly through better integration with other transport modes, networks and bodies.

- Biodiversity will remain a focus into the third road period as we support government to achieve their long-term targets, as set out in *A Green Future: Our 25 Year Plan to Improve the Environment*. We will need to meet the *Environment Act* 2021 requirement to achieve a 10% net gain from nationally significant infrastructure projects, and take action towards meeting our commitment to deliver biodiversity net gain across all our activities.

▶ **For our proposed areas of focus for the environment, please see pages 122 to 130.**

Delivery

The *Autumn Budget and Spending Review 2021: A Stronger Economy for the British People* identified the areas that government believed will make the greatest contributions to national economic recovery. It showed that government supported continued investment in strategic roads. £24.1 billion was allocated across the second road period.

Enhancements schemes

We recognise the importance of making sure our enhancements schemes are consistent with our carbon reduction commitments.

We are striving for net zero construction by 2040 and have already demonstrated in this road period that we are taking a lead in reduced carbon construction. This has ranged from increasing materials recycling on our projects to agreeing lower carbon, warm mix asphalt can be used on all schemes without a departure from standard.

Feedback from our customers tells us that they value our enhancements schemes, which improve safety, tackle congestion and support socio-economic growth and development across the country. Over the second road period, we will sustain up to 64,000 jobs in the construction industry and add £27 billion to the country's economy. Our currently planned £10.5 billion improvements programme will be the largest contributor to these benefits.

In 2021-22, we spent £1.8 billion on enhancements schemes, improving journey times and relieving congestion. We started work on four schemes, including the A1 Birtley to Coal House and the A303 Sparkford to Ilchester. We opened seven schemes for traffic, including A19 Downhill Lane and A47 Guyhirn Junction, which opened six and three months ahead of schedule respectively. We also completed the £130 million A19 Testos junction upgrade in July 2021, which has seen a measurable social and economic impact in the north-east.

In total, as at the end of March 2022, of the 69 schemes announced in RIS2:

- ten have been completed
- twenty-three are currently under construction
- twenty-five are in the development phase (including 23 at various stages of the planning process)
- eleven have been paused following the Transport Select Committee's recommendations
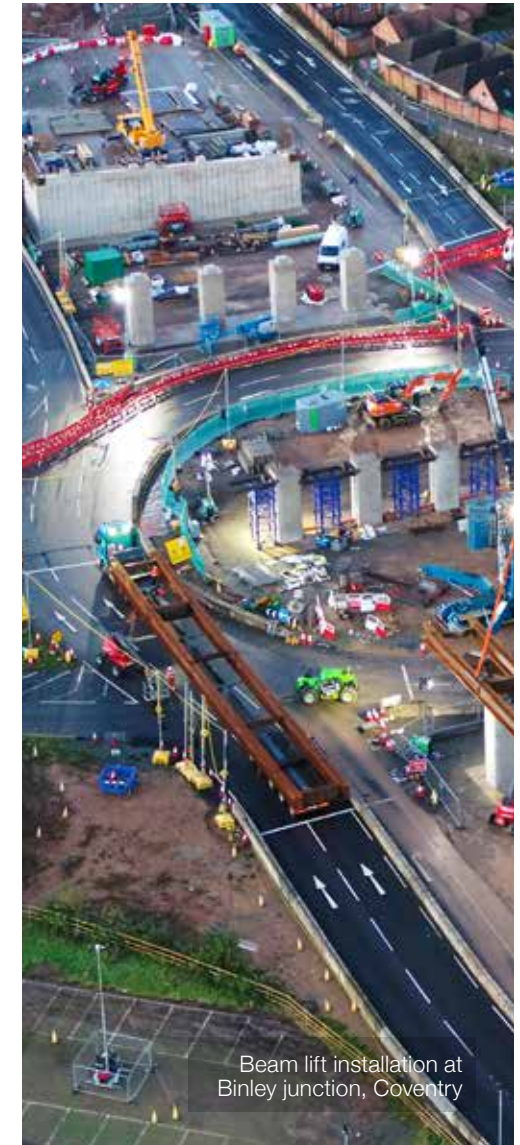
Beam lift installation at Binley junction, Coventry

Delivery

Delivery challenges

We have always built with public consent and, quite rightly, public scrutiny of plans. This underpinning evidence remains key to ensure that needs and impacts to stakeholders and customers is appropriately considered in any solution proposed.

As we strive to respond and provide our evidence in a way that is even more transparent, there have been delays in the planning process. Extended decision timescales have meant, for example, that the start of works dates for five schemes due in 2021-22 have been delayed. Three (M54 to M6 link road, M25 Junction 10 and M25 Junction 28) have now received decisions in the first quarter of 2022-23. We believe it remains right to take forward government's programme of work and we will continue working with the planning inspectorate, including how to deliver schemes more quickly and affordably.

Progress to date

One of the key objectives of the RIS is to realise efficiencies through coordinated investment and long-term commitment. Our original funding for the second road period included an efficiency KPI of £2.2 billion. Delivery delays led to a reduced funding requirement, and consequently our efficiency KPI was reduced to £2.1 billion. In 2021–22, we achieved efficiency savings of £259 million, taking our cumulative efficiencies total to £502 million, exceeding our milestone target of £471 million.

Implications for the third road period

- There is still a significant number of schemes, committed in RIS1 and RIS2 that we agreed with government, which we will continue to consider in our decision making for RIS3. We know that bottlenecks and varying standards of roads currently affect journeys, with inconsistent investment prior to RIS1 leading to piecemeal development of our network and with traffic volumes set to grow, we need to tackle these problem areas.

- We propose applying a global standard for managing infrastructure carbon, called PAS 2080, to our capital portfolio planning, starting from the premise of only building where there are no alternative approaches.

- It is important to note that improving our network does not necessarily mean adding new roads; we must investigate all non-physical methods.

► **For details of our proposed areas of focus for improvements and delivery, please see and .**

Gathering detailed evidence and insight on our network

Introduction

- We analyse every route and every asset which forms part of our network. We use this evidence and insight to directly inform our investment priorities and government's RIS.

- We prepare and publish route strategies, a vital set of research documents developed in consultation with customers and stakeholders. They help us develop and maintain a detailed evidence base on the state and performance of our network, identify current issues and understand potential future challenges.

- Our route strategies also help us identify options and priorities in the development of our network as well as its integration with the wider transport system.

- These route strategies are supported by detailed evidence on our assets, ranging from our road surfaces, structures and drainage to the landscapes surrounding our roads.

- The asset insight we gather directly informs our understanding of the SRN and the investment we propose for the third road period.

► **For the full list of our route strategies, please see Appendix 1.**

Introduction

Overview of our third
road period proposals

**Understanding
our network**

Working towards
our long-term vision

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

Route strategies: evidence and strategic objectives

Route Strategies are a vital set of research documents which directly inform our investment priorities and government's RIS. Their analysis and planning enables us to make appropriate strategic choices, some of which we can potentially start to address in the upcoming third road period; others may be used to inform future road periods.

In developing this suite of strategies, we have built a robust evidence base. This has been informed by an engagement programme and data collection exercise that was broader and more in-depth than ever before. We have worked to understand the current and future needs of our customers and neighbours as well as plans at local, regional and national levels. This has been achieved with participation ranging from road users and communities to STBs, Transport Focus and MPs. These scheme-specific references will inform discussion with Government about the needs of the network, but should not be taken as funding or delivery commitments for roads investment period.

Guided by DfT's six strategic objectives we have categorised these needs into route based objectives. These objectives will help us prioritise the most important issues for each route and later aid the development of scheme options and proposals for the third road period and beyond. The output from our route strategies will also identify routes for further investigation.

► **More detail on the DfT strategic objectives can be found on page 57.**

Our approach
Our route strategies have drawn from a variety of sources, including:

- data from the day-to-day running of our network, including consideration of future traffic growth from our modelling
- 1,700 contributions from our customers and neighbours via an online tool which identified the key needs of routes
- engagement with stakeholders, such as STBs, through a variety of means including workshops

We have used this insight to define a strategy for each route and identify locations for further investigation. These are summarised in our *Route Strategy Initial Overview Reports*, covering all our key routes, published alongside this *Initial Report*.

Critically, the evidence and data that supports these route strategies will be updated throughout the road period, helping us understand changing and emerging needs.

► **For the full list of our route strategies, please see Appendix 1.**

We used:

2
National workshops

19
Regional workshops

4
MP roundtables

Approximately

100
Workshop engagement hours

To help us create:

20
Route strategies

17
Routes covered

134
Route objectives

Route strategies: evidence and strategic objectives

MP roundtable insights

In September and November 2021, we supported the Roads Minister and DfT with a series of MP roundtables to understand the perspectives of MPs. We found MP priorities were similar to those of regional groups, revolving around local improvements rather than large-scale improvements. These included requirements for:

- small safety programmes and more, smaller safety improvements, such as focusing on the access to the SRN near villages and right-hand turns from A-roads

- a consistent network, including completing corridors on A-roads with gaps in dual carriageways

- providing connectivity, improving connections for logistic hubs, supporting connections to unlock new housing and improving connections between the SRN and local roads

As we consider our investment priorities for RIS3, we will continue engaging with this group to understand how these priorities may evolve at a more localised level.

Congestion on the A64

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Route strategies: evidence and strategic objectives

Emerging national requirements

From our evidence gathering, we have identified key themes at a national level from our stakeholders, which are notably consistent with the broad findings from our other forms of research. We have summarised these themes below, grouping them against the relevant DfT strategic objective:

Growing the economy

- Improve provision for HGV parking, freight facilities and services along A-roads.
- Improve journey time reliability to support the freight industry's planning.
- Improve information for drivers, including the accuracy of road closure forecasts.
- Secure early supplier involvement to ensure the transportation market can support and influence how projects are delivered.
- Better collaboration between road and rail, to work together to improve freight opportunities.
- Improve crossing junctions for public transport across the SRN.

Improving safety for all

- Collate more evidence on causes of collisions to inform interventions.
- Further increase safety, in particular on smart motorways.
- Improve traffic management and communication to road users to reduce congestion and improve safety, including on diversions.
- Provide more education in recovering electric vehicles from motorway lanes.
- Increase vigilance of cleaning emergency areas required to assist breakdown services.

Network performance

- Further integrate the SRN with local roads to improve journey times.
- Work more closely with local authorities to develop integrated solutions.
- Improve connectivity to ports and airports, as well as to the wider transport network.
- Improve network reliability.
- Increase support for alternative travel options to car journeys.
- Engage earlier with communities on interventions being considered.
- Increased modelling on what the future SRN could look like.

A technology-enabled network

- Have greater focus on technology to improve network efficiency.
- Improve data and information available to customers on the network and to help plan journeys.
- Support the roll out of electric vehicle charging points and have greater consideration of the associated range anxiety.

Route strategies: evidence and strategic objectives

Managing and planning the SRN of the future

- Invest more in all purpose trunk roads.
- Improve trunk roads rather than create new roads.
- Reduce major capital spend on motorways, focusing funding on managing maintenance.
- Improve use of multifunctional assets across all government agencies.

Improved environmental outcomes

- Give the environment greater consideration in planning and delivery of interventions. For example, stakeholders noted that concrete barriers along the motorway are a barrier for wildlife connectivity.
- Reduce the impact of air and noise pollution on communities and habitats.
- Improve connection of communities where our roads pass through them.
- Greater planning for electric vehicle charging and future technology.
- Move towards biodiversity gain.
- Increased consideration of ancient woodland inventory when planning for interventions.
- Greater support for other modes of transport.
- Greater consideration for how large vehicles can be supported in the decarbonisation transition.

Congestion on the A66

Route strategies: evidence and strategic objectives

Emerging region-specific needs

Our route strategies highlighted region-specific priorities These scheme-specific references will inform discussion with Government about the needs of the network, but should not be taken as funding or delivery commitments for roads investment periods. Key examples include:

	The North	South-East and East
Growing the economy	▪ Greater provision for alternative HGV parking and freight facilities on the A66, A590 and the A69, M62 between Manchester and Leeds, the A628/A616, as well as the M60 around Manchester and M58 past Skelmersdale.	▪ Greater provision for alternative HGV parking and freight facilities (M2, M20, A47, A11, A120 and A14 corridors).
Improving Safety	▪ Address severance and road safety where the SRN passes through urban areas such as the A5036 in Liverpool, the M60 and M67 in Greater Manchester, M62 in West Yorkshire and M621 in Leeds. ▪ Improve consistency of the route layout.	▪ Safety improvements, consistency of route standards and junction types (A47, A11, A21, A27).

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Route strategies: evidence and strategic objectives

	The North	South-East and East
Network Performance	- Improved connectivity for rural communities and seasonal traffic including the A66, A590, A64 and A1(M). - Improved connectivity to ports including the Port of Liverpool (A5036), Humber ports (M180), Port of Tyne (A19), Teesport (A19, A174, A66), Port of Workington (A595), Port of Barrow (A590). - Improved resilience of our network around safety, congestion and flooding, including Trans-Pennine roads: M62, A628 and A616. - Greater integration with alternative modes of transport across the region. - Improved communication with local Highway Authorities regarding information signage provision and real-time information and network management. - Greater preparation for future-proofing of our network as a result of changes in travel behaviour.	- Improved connectivity to the international gateways (major ports access M2, M20 Dover, A34 Southampton, A47, A120, A14/A12 Felixstowe) (airports M11 Stansted, M25 Heathrow, M23 Gatwick, Norwich). - Capacity and development pressures with increased congestion, inhibiting housing and employment growth (south coast: A27 and A259, A3 Guildford, M25, North Kent, A34, A4, and A11 corridors). - Congestion, delay and journey unreliability issues on some A-roads and for east-west corridors in particular (M25 south-west quadrant, A27, A34, A11, A47, A120 and A14 corridors). - Future-proofing in response to changes in travel behaviour and regionally significant strategic infrastructure initiatives (proposals for A27, A3, A47 and A11). - Local community issues and impacts due to SRN interaction with urban centres (A27 Chichester, Worthing, A21, A12 and wider coastal access). - Greater collaboration with local authorities in developing integrated solutions, (Solent area and west, East Sussex, Suffolk and Surrey).
Improving the environment	- Ensure our network responds to net zero carbon and environmental ambitions across the region. - Consideration of future technology requirements including electric vehicle charging across the region.	- Reduction in carbon emissions with multimodal approach and more decarbonised transport system (Sussex on the south coast, Surrey, and A34 Corridor). - Protection of areas with environmental sensitivity and designations (Multiple south east Areas of Outstanding Natural Beauty (AONB), South Downs National Park, Suffolk coast and Heath, Thetford Forest (A11), the Broads (A47), Dedham Vale, A12). - Consideration of future technology planning (electric vehicle charging, A47, A11).

Route strategies: evidence and strategic objectives

	South-West	The Midlands
Growing the economy	▪ Reduced impact of tourist and holiday season traffic and increased traffic demands on wider economy and communities (M3 and M27, M5 south of Bristol, A303, A30 West Cornwall, wider south-west Peninsula).	▪ Improved network performance for increased development, economic growth and inward investment (including M1, A5). ▪ Sustainable travel approach to accommodate expected significant increases in travel demand to employment, housing and retail developments (including A49).
Improving Safety	▪ Reduced impact from inconsistent standard of A-roads on safety, reliability, environment, communities, flooding (high number and long single carriageway sections: A30, A31, A35, A36, A38, A303 throughout the south-west).	▪ Safety improvements for smart motorways (including M1, M42). ▪ Junction improvements (M1 Junction 28) ▪ Suitable diversionary routes required (including A40, M42).
Network Performance	▪ Improved journey time reliability particularly in peak times and during holiday season (Junction of M4/M25, M3 and M27, A303 Stonehenge, access to ports such as Bristol Airport and Port of Southampton, A38 south-east Cornwall). ▪ Greater consideration of modal shift and integration with alternative modes of transport and connectivity (M3/M27 Southampton, M4 Reading, M5 Gloucester, M4/M5 Bristol, Exeter, A419 Swindon). ▪ Improved north-south links between M4 (Midlands) and the south coast. ▪ Completion of second strategic route to south-west (A303) and opportunities for alternative routes to improve resilience in peaks/incidents. ▪ Improved resilience of our network at key intersections (M4/M5 Bristol, M5/A30 Exeter, M3/A34, M4/A34).	▪ Improved connectivity to support regional growth and benefit economic performance (including A46, A50). ▪ Improved integrated, multimodal planning of roads, public transport, sustainable modes and freight (including M1, A1 corridors). ▪ Greater preparation for future-proofing our network as a result of changes in travel behaviour (including A5, A40, A49). ▪ Improved integrated traffic management and communication to improve capacity and congestion (including M1, A1).

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Route strategies: evidence and strategic objectives

	South-West	The Midlands
Improving the environment	▪ Reduced impact of traffic on air quality, noise pollution and severance (A35 Chideock and villages in Devon and Dorset, A38 Tideford, A30 west Cornwall, A36 Salisbury, M3 J9-J14, M32, A417 and A404 at High Wycombe). ▪ Consideration of future technology planning including electric vehicle charging, decarbonisation (common feedback in relation to the whole network, with more focus on older A-roads, for example A31/A35).	▪ Reduction in carbon emissions with new vehicle technology and multimodal approach (including M1/A1 corridors).
Facilities	▪ Greater provision needed for alternative HGV parking, appropriate routes and freight facilities (A417, generally the A-roads in south-west region). ▪ Improved service and rest area facilities on A-roads.	▪ Greater provision needed for additional HGV parking and freight facilities (including A50, A1). ▪ Greater provision of facilities for alternative fuel vehicles on all routes, particularly non-motorway roads.

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Route strategies: evidence and strategic objectives
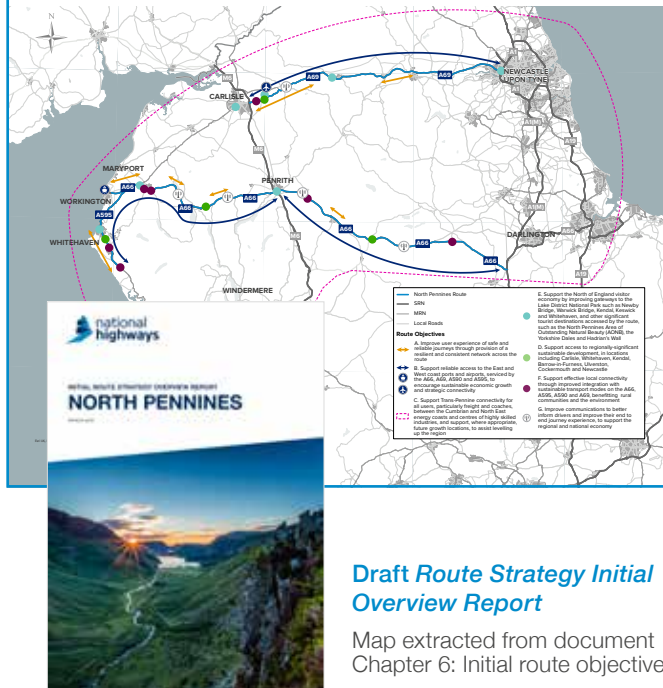
Using our route strategies

Across each route, we categorise the needs of our customers, neighbours and stakeholders into route based objectives. These are guided by DfT's six strategic objectives. The route objectives also help us prioritise the most important issues in the third road period and beyond. Our plans and specific interventions will vary depending on the specific needs of each route. They will cover more than just major enhancements schemes, both road and non-road interventions, including:

- collaboration and integration opportunities
- modal integration opportunities
- synergies with existing planned schemes
- a range of improvements, where appropriate
- opportunities with asset and maintenance priorities
- sustainable local plan growth infrastructure requirements

Example
North Pennines

Route objective

Supporting access to regionally significant, sustainable development in locations including Carlisle, Whitehaven, Kendal, Barrow-in-Furness, Ulverston, Cockermouth and Newcastle.

Draft *Route Strategy Initial Overview Report*

Map extracted from document Chapter 6: Initial route objectives

Example
London to Leeds

Route objective

Supporting the freight industry and the efficient movement of goods: improve the reliability of freight journeys along the A1, A1(M) and M11, alongside improved driver parking and welfare facilities to support both the regional and national economy.

Draft *Initial route strategy overview report*

Map extracted from document Chapter 6: Initial route objectives

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

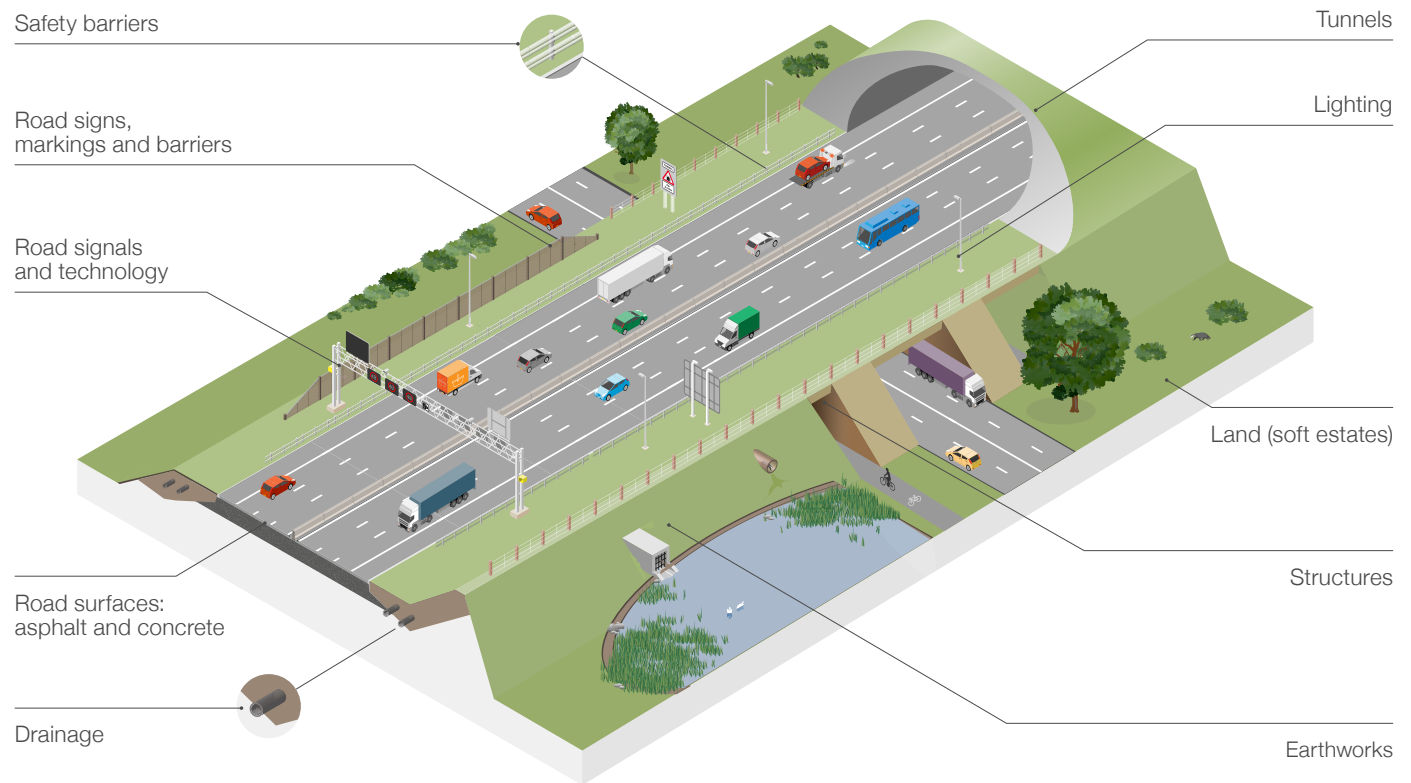national highways

Our assets: challenges and condition

Our network is the second largest infrastructure asset by value that the UK government owns. Having a robust understanding of every single part of our network is vital. Alongside our route strategies, information about asset condition and challenges sets the foundation for planning into the third road period and beyond.

Our approach

Our Approach to Asset Management, supported by our standards, sets out how we develop and maintain detailed evidence on the state and performance of our network. This helps us identify current issues, understand potential challenges and agree future interventions.

We have specific processes which we follow for each type of asset, including visual and physical site and location inspections. For our complex assets, we have targeted reports and management plans. Information from inspections and plans is managed by regional teams, and reviewed by experts to agree: strategic need; technical asset need; affordability; deliverability; and local need and expectation.

The different parts of our network

Safety barriers

Road signs, markings and barriers

Road signals and technology

Road surfaces: asphalt and concrete

Drainage

Tunnels

Lighting

Land (soft estates)

Structures

Earthworks

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Our assets: challenges and condition

High-level challenges facing our assets

We have a clear understanding of the key challenges facing our assets in the third road period, summarised in the following paragraphs. We need to respond to these to protect the reliability of our roads, helping our network provide the expected level of performance for the people and businesses that rely on it.

Ageing network

Our network is ageing. Most of our motorways were built in the 1960s and 1970s, and 72% of our structures will be over 45 years old by 2025. Without suitable intervention, the different parts of our network will not be able to safely and reliably provide the function for which they are intended. And, with ageing assets, the stakes rise year on year. Many of our older structures are bridges, meaning their closure would cause significant impact on network availability and customer experience; the renewal and maintenance costs on these structures are also high.

Historic underinvestment

Before 2015, investment in the SRN was made on an annual basis, as opposed to multi-year investments. This led to a focus on meeting short-term needs, maintaining the function of our network and addressing safety issues. This approach was further exacerbated during 2010-2015, a period of austerity where investment in assets was low.

The impact of a series of short-term fixes has now resulted in the need for bigger and more complex interventions in order to maintain our networks availability and safety.

Climate change

We need to increase the ability of our network to respond to projected changes in climate. Our network is predicted to be exposed to an increase in severe weather, such as intense rainfall, high winds and extreme temperatures, which it was mostly never designed to withstand. Without intervention, we may start to see reduction in the ability of our network to cope with such weather, impacting performance and potential risk to safety. We have identified those priorities that we need to address over the next five years, which includes the impact of flooding on our roads, the risks of slope embankment failures and the impacts of extreme temperatures on our road surfaces and bridges.

Introduction

Overview of our third
road period proposals

**Understanding
our network**

Working towards
our long-term vision

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

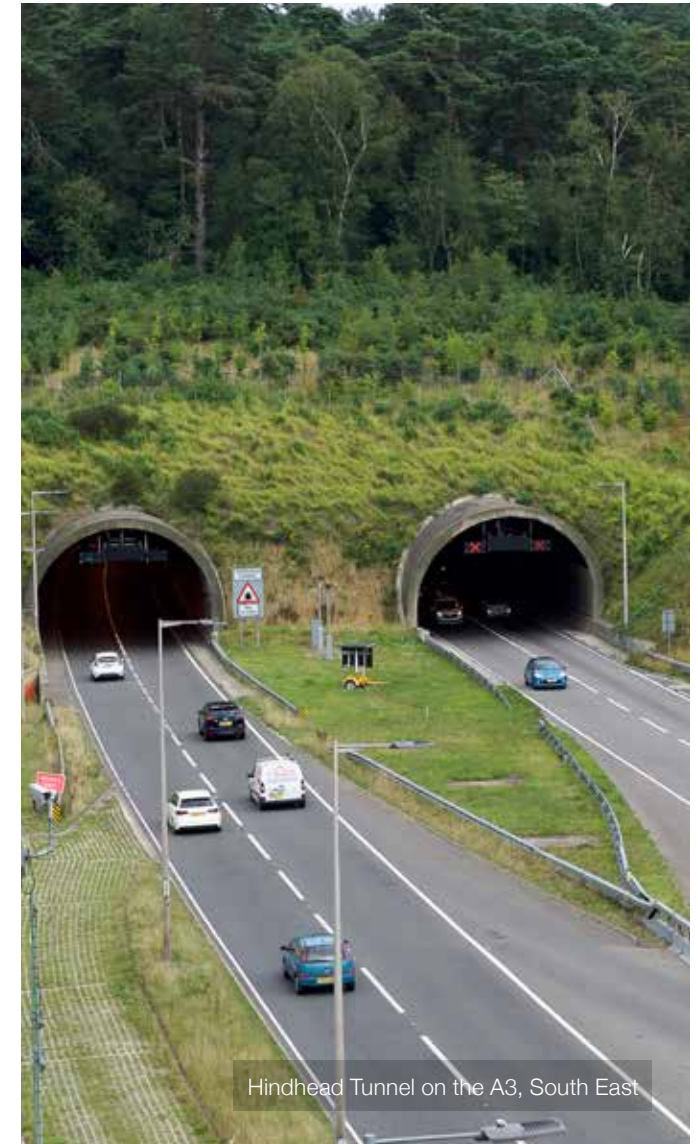# Our assets: challenges and condition

Growing and changing asset base

The number and type of assets we manage have continued to increase and change. In the third road period, as Design, Build, Finance and Operate (DBFO) contracts end, we will see the equivalent of 10% of our current network size, 1,842 lane miles, come back under our direct operation and management. We will need to ensure we can manage this increased responsibility, and maintain the level of service that our customers have been accustomed to.

We now have around 100,000 roadside technology assets, such as CCTV, stopped vehicle detection systems and software. We expect the number of these assets to continue growing, as we move towards greater connectivity and automation on our network. As our use of this technology increases, we need to continue investing in it, as with our other assets, to ensure it remains secure, available and resilient. This is important to make sure we can keep our network open and reduce the number of restrictions, and also to reduce the risk of cyber crime on our network.

The condition of our assets

Over the following pages, we discuss the different parts of our network, giving an overview of the purpose of each group of assets and their current condition.

Our network contains approximately:

22,000 Lane miles of road surfaces	**8,000** Miles of safety barriers
>20,000 Structures	**>120,000** Road lighting assets
1.35M Drainage points	**30,000 ha** Of land (soft estates)
12 Road tunnels	**8,400** miles of earthworks (cuttings and embankments)
100,000 Roadside technology assets	

Hindhead Tunnel on the A3, South East

Our assets: challenges and condition

Road surfaces

- We have over 22,000 lane miles of road surfaces, which are made of either flexible asphalt or rigid concrete.

- A good quality road surface is vital to enabling vehicles to travel safely and allowing smooth and safe journeys for cyclists.

- Road surfaces deteriorate over time, this is a result of weather exposure and the constant flow of traffic that they support. Without intervention, this wear would lead to more potholes, ruts, and higher risk of skidding. This in turn leads to more lane closures and speed restrictions to ensure our customers can continue travelling safely on our network, and risks an increase in disruptive and reactive road works.

- We survey all of our road surfaces annually, so that we understand their condition, how they change over time, and to spot potential risks at an early stage. This allows us to plan for our long-term renewals as well as our regular maintenance activity.

Our asphalt road surfaces

- Around 96% of our road surface is asphalt. Since 2000 the main kind of surfacing used during repair or renewal has been a type of asphalt known as thin surfacing. It has many advantages, in particular it is quicker to lay and so minimises disruption to users. It also reduces spray, is quieter and provides a smoother ride for customers than alternative surfaces.

- Thin surfacing requires replacement about every 12 years, although this can vary depending on the characteristics of the road. Over the third road period we will need to renew more of these surfaces so that they can continue providing safe and smooth journeys for our customers.

Our concrete road surfaces

- Approximately 4% of our road surface is concrete. Most of these were constructed between 1950-1985 and had an original design life of around 40 years.

- When these roads reach the end of their life they need more significant upgrades and replacement, otherwise they can quickly become unsafe, resulting in lengthy and disruptive emergency repairs.

- In 2020, we started a national programme to repair and replace our concrete road surfaces. We need to continue this into the third period and beyond to ensure these roads remain safe and works are carried out with minimal disruption to our users.

Our assets: challenges and condition
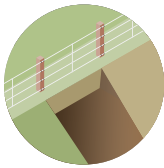
Structures

- There are over 20,000 structures on our network. These range from small gantries or retaining walls to exceptionally complex structures, such as the Thelwall Viaduct and the Severn Bridges.

- These allow our network to safely cross water, rail and other roads, enabling more direct journeys and, vitally sometimes offering the only direct route.

- Many of our structures on the SRN were built with construction techniques no longer used and 42% of our bridges and large culverts were constructed before 1980. Reinforced concrete was used to build 66% of them, at a time when the industry did not fully appreciate the implications of the operational environment, for example the impact of exposure to road salting. The increasing age of our structures, legacy design and construction issues means they are becoming increasingly more complicated to maintain in a safe and serviceable condition.

- Many of our structures have already had historical works to extend their life. This means that the only viable option for them as they reach the end of their life is more significant replacement and renewal to maintain their functionality.

- It is vital that these structures can continue providing the function that they were built for. If we are not able to invest in their maintenance and renewal, we would need to use lane restrictions, weight limits and propping to ensure they could still carry traffic safely. In extreme circumstances a structure may have to be taken out of service or demolished. This would result in significant disruption and delay for users of our network.

Case study
A1089 Dock Road

The A1089 is a strategic trade route connecting Tilbury Docks to the rest of the country. As the docklands only major road connection, it provides an essential economic link, vital to our freight customers and the movement of freight from water to road.

The dock road is a structure originally constructed in the 1960s and the bridge carries the A1089 carriageway across a busy railway. Recent assessments have identified a need to improve its load resilience. As a result, load restrictions have been applied that restricts abnormal loads accessing Tilbury Docks.

Given the strategic importance of this route the restriction has numerous implications. From frequent diversion disruptions to the local road network, to an increased carbon footprint as these loads are forced to use alternative ports to access the UK.

The structure was originally designed and constructed for a low level of loading relevant to those expected in the 1960s. As the nature and scale of international trade has evolved over time so have the requirements on our structures. We have proposed a series of interventions, that will improve its abnormal load resilience, maintain its functionality and ultimately the availability of our network.
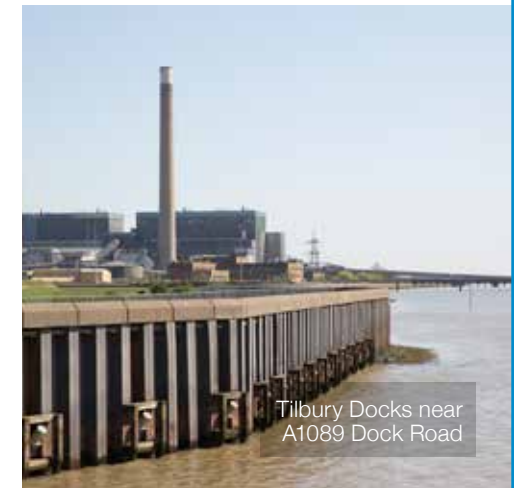
Tilbury Docks near A1089 Dock Road

Our assets: challenges and condition

Structures (continued)

- In September 2022 we had 172 structures on our network that were subject to restrictions, or an increased inspection regime to ensure they remain safe and available.

- In the second road period we started our biggest ever structures renewals programme. We need to continue to ensure that the number of restrictions on our network does not increase and impact the reliability of our network and the need for emergency disruptive works or closures.
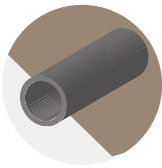
Safety barriers
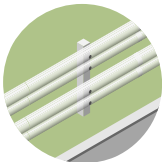
- We have over 8,000 miles of safety barriers on our network, consisting of three main types: wire, steel and concrete. They can either be in the central reservation or on the roadside.

- Safety barriers play a vital role in keeping everyone who travels or works on our roads safe. The main purpose of these barriers is to absorb the impact of a vehicle, reducing the severity of incidents.

- When safety barriers near the end of their design life, they start to lose their ability to withstand the impact of vehicles for which they were designed. It is essential that we continue renewing these assets before the safety benefit they provide to our network is lost.

- Part of our renewals programme in RIS3 will be to carry out these essential replacements where they are needed. This will ensure they can carry out their vital and fundamental safety function.

Workers installing a safety barrier

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Our assets: challenges and condition

Drawing

- Drainage is one of our less visible assets, and plays an important role in protecting the safety of motorists. It manages rainfall run-off to mitigate the risk of flooding to and from our network. It protects motorists from hazardous surface water, and reduces the potential for associated disruption.

- Drainage also reduces the risk of water affecting the foundations of structures or earthworks. It helps to preserve the quality of surrounding habitats by reducing the potential for pollution entering other waterways. Poor drainage management has wide reaching consequences on other assets and it is vital that it remains functional and able to take water away as quickly as possible in a responsible way.

- We have 1.35 million drainage points, which collect, store and remove surface water.

- We prioritise drainage renewals by assessing the risk of flooding in locations. We identify a range of possible solutions and invest in those where there are the highest benefits and lowest impacts on service.

- As climate change leads to more, high intensity rainfall, our drainage assets will be increasingly essential for both the safety of our customers and the resilience of our network. Drainage will require more interventions and potential replacement in sections which have increasing vulnerability to flooding, and in order to bring these assets in line with the latest standards.

Case study
A14 Flooding hotspots

The A14 is a key strategic route for freight logistics from the port of Felixstowe to the Midlands. On Christmas Eve 2020, torrential rain and widespread flooding of low-lying agricultural land led to the west bound carriageway and the junction to the village of Wooley becoming impassable.

We closed the road, on safety grounds, for ten miles between Thrapston in Northamptonshire and Ellington in Cambridgeshire.

This individual incident was caused by unprecedented rainfall of over 40mm in a 24 hour period across large parts of the two counties. More frequent and intense rainfall events have caused more frequent run-off into filter drains on the A14 that have become increasingly congested.

National Highways invested £1.5m within three months. In March 2021 we combined works across two flooding 'hotspots' into one scheme to efficiently carry out capital renewals. We recycled and re-instated the filter media along more than a mile of the carriageway, managing the risk at this high priority location.


Rain on the A1(M)

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Our assets: challenges and condition

Technology

- We have a vast range of technology assets, from those on the roadside and in our operational centres, to those systems and databases which support our day to day activities.

  ▶ **Please see pages 53 to 55 for more details on the condition and challenges facing technology assets**

Lighting
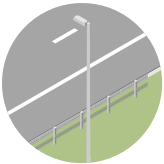
- We use lighting in various places across our network to help improve visibility. We also use temporary lighting to support safe working conditions for our staff and supply chain.

- We recognise the impact that lighting can have on the environment, especially on nocturnal animals. We work to balance safety and customer experience with the need to limit light pollution and its environmental impact.

- We have over 120,000 road lighting assets, including road, sign and subway lighting, as well as columns and bollards.

- Many of our lighting columns are now reaching the end of their original proposed design life. They will either need to be replaced or removed, if no longer needed.

- Our lighting uses significant electricity. Across our network, electrical assets represent 50% of our corporate carbon emissions. Replacing lighting with more energy efficient alternatives such as LEDs, or determining whether we still need them, will be a core part of our journey to achieving net zero corporate emissions by 2030.

The Severn Bridge

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Our assets: challenges and condition

Land (soft estates)

- We manage 30,000 hectares of land that runs alongside and integrated in our roads, which is equivalent to about 40,000 football pitches in size.

- This land contains a range of protected habitats, including species-rich grasslands and woodlands, and even rare and protected animals.

- This asset has an increasingly important role to play in supporting national objectives, including around biodiversity and carbon emissions. It also supports our own network by improving climate change resilience.

- In the third road period, we want to make sure we are managing our soft estates as an asset class in its own right. This will reflect the important role it plays in helping us deliver our environmental outcomes.
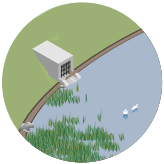
Tunnels
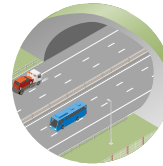
- Tunnels allow our roads to run under natural obstructions, such as hills. Without them, route and journey times would be significantly longer, impacting the wider economy. There are also often few practical local diversion routes, increasing the need for carefully planned and timed interventions to minimise disruption.

- There are 12 road tunnels on our network, five of which are managed by us: Roundhill, Hindhead, Saltash, Southwick and Meir.

- Tunnels comprise components and systems essential to their safe operation, including ventilation, lighting, drainage and electrical power supply. They also have communication systems, fire safety equipment, traffic control systems and CCTV.

- We closely monitor the condition of our tunnels. Our interventions are driven by the unique nature of each of the tunnels we manage. We have bespoke plans to make sure our tunnels remain safe and that we avoid unplanned closures.

- We need to ensure that our tunnels can continue to meet the safety standards and replace those components and systems that are beyond reasonable end of life. This will make sure that they remain open and not result in unplanned and extremely disruptive closures.

Introduction

Overview of our third
road period proposals

**Understanding
our network**

Working towards
our long-term vision

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

Our assets: challenges and condition

**Earthworks
(cuttings and
embankments)**

- We have over 8,400 miles of earthworks, including cuttings and embankments, that support our road surface and the neighbouring land.

- These assets are critical to the safe and reliable operation of the SRN. Although they are largely stable, they do become less predictable over time so it is important we continue monitoring and assessing them.

- Renewals are considered through an engineering assessment that follows a risk-based approach, prioritising those which have the potential to impact running lanes.

- Severe weather can have a particular impact on earthworks assets, potentially making them unstable. As part of our preparations for climate change and more severe weather, we must consider the long-term impacts. We must also continue closely monitoring the risks and condition of our earthworks to proactively make plans for their ongoing management.

**Other assets,
including road
markings and
street furniture**

- Our road network also includes a variety of safety assets including road markings, road studs, non-electronic signs, fences, barriers and pedestrian guard rails, and footpaths, bridleways and cycleways.

- We have a good understanding of how often we need to replace many of this group of assets. For example, road markings and road studs wear rates are dictated by the volume of traffic over them. As other parts of the asset base such as fencing, footpaths and cycleways deteriorate variably over time, we must use inspection information, along with asset age, to influence increased investments in these assets.

- Our carbon reduction ambitions and focus on active travel will put greater emphasis on the maintenance and repair of many of these assets.

- The move towards autonomous vehicles also increases the importance of road marking visibility to support lane control.

national highways

Our technology assets

When we talk about technology, we are not just talking about the assets you can see. We are also talking about the systems that sit behind them and importantly, the data they produce. In the future, we expect the role and importance of this technology to grow, both out on our network, in customers vehicles, and in improving how we deliver.

Our two main types of technology

Our **operational technology** can be found at the roadside and in our regional operations centres. It includes technology such as CCTV, electronic signage and weather detection, helping us to:

- **Monitor** – CCTV, electronic signage and weather detection help us to operate and manage incidents and respond in a timely and appropriate way, helping to keep our customers safe and minimising disruption.

- **Control** – helping us manage traffic flow on parts of our network and enabling enforcement where appropriate, such as around Red X signs. This is vital for safety and is located on targeted sections of our network, including smart motorways.

- **Inform** – using data to provide customers with the information they need to make decisions before or while using our network, helping them have a reliable and positive journey experience.

Our **information technology** plays a vital role in making sure our network is secure. The management and operation of the SRN is dependent upon a 'system of systems', enabled by data, which is increasingly critical and interdependent in its effectiveness.

As part of these systems, we have a range of information technology that drives:

- **Asset management** – capturing valuable data and insights on our assets, that helps guide our commissioning of maintenance and renewals.

- **Design and construction** – driving how we manage and plan our increasingly integrated and complex design and construction activities.

- **Enterprise management** – providing systems, applications and collaboration tools to empower people to do their jobs safely, efficiently and effectively.

We need to invest in technology so that we can fully exploit its operational functionality and to place us on a stable footing for the future. This would allow innovation in mobility that we know will have a beneficial impact, not a disruptive influence on the SRN.

We also need to invest in the next generation of secure and resilient technology and systems to ensure we can continue delivering safety for customers.

Our technology assets

Current condition and challenges facing our technology assets

Increased renewal

We are increasingly reliant on operational technology to support our decision making. Like our other assets, these deteriorate over time and our technology assets have a much shorter design life than other assets. They often also have the challenge of becoming obsolete and unsupported by the hardware or software provider. This means that sometimes they are cheaper to renew than to maintain. As installations of operational technology peaked in 2009, in the third road period we will need to invest more to keep this technology up to date so that it works effectively and remains secure. It is important to note that the sophistication of technology is increasing, allowing us to do more with each generation of equipment.

Inconsistent and legacy systems

Our operational technology has evolved and been added to over time. We have inherited different technology from regional contracts. For example legacy systems from disbanded asset support contracts, which do not always work effectively with our other systems. As we become more reliant on technology and data, we will need a common standard of operational technology across our network, improving reliability, resilience and security.

Greater consistency will also be required if we are to take advantage of the opportunities that greater connectivity and automation can offer. Some of our operational technology is currently not suitable for a connected network, such as depot-based systems using dial-up modems. While we have started work in the current road period to address these, we need to continue this work into the third road period.

Our current on road technology

Our existing operational technology enhances our ability to make intelligent-led decisions on the network to support improvements in capacity and reduce delays and how we respond to incidents:

- A range of roadside infrastructure monitors traffic conditions and reports to control centres.
- This includes various roadside monitoring systems, which can directly alert control room operators to congestion, a broken down vehicle or an incident. On some parts of our network, these systems can also automatically set signs and signals.
- Our emergency roadside telephones allow drivers to call our operators directly to report an incident or breakdown.
- Operators in control centres respond to conditions and incidents through a range of approaches, helping keep the SRN safe and free flowing.
- This includes deploying traffic officers, setting signs and signals and alerting and coordinating emergency services as needed.
- Our National Traffic Information Service connects our control centres and is responsible for providing strategic traffic information services to professional subscribers and third parties such as Waze.
- It also provides traffic information directly to drivers via social media, website, and email alerts to support journey planning.

Significant increases in data, connectivity and technology will bring opportunities and choices in how we carry out this role in the future.

Introduction

Overview of our third
road period proposals

**Understanding
our network**

Working towards
our long-term vision

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

Our technology assets

Cyber security

Increasing interconnectivity and dependency on data and technology bring significant benefits and also risks. We need to improve our cyber security to meet our legal duties and support government's policy objectives for critical national infrastructure. We must ensure that our future network is safe, built on a resilient foundation and that our solutions are trusted by our customers, colleagues, partners and stakeholders

Employee in a regional operations centre

Introduction

Overview of our third
road period proposals

**Understanding
our network**

Working towards
our long-term vision

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

Understanding wider priorities

Introduction

- Our planning has been guided and underpinned by DfT's strategic objectives for our network.

- We have also worked hard to listen to, and learn from, all those who use, rely on or live alongside our network. As well as our route strategies, we have well-established means to gather insight from customers, communities and stakeholders.

- These include understanding insight from key stakeholders, such as Transport Focus, and gathering insight through our own focus groups, surveys and research.

- We have also worked more extensively and closely with other transport bodies, including STBs, than ever before. Our focus has been on integrated planning and developing joint priorities to support transport users, regional economies and the environment.

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Government priorities

DfT's strategic objectives

DfT's strategic objectives for our network, as set out in *Planning ahead for the strategic road network: developing the third road investment strategy,* have shaped our planning. DfT's objectives describe the role the SRN should have in:

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

These objectives are consistent with government objectives from recent road periods, telling us that our core focus is still the right one.

They also look to drive increased focus on environmental outcomes, how we manage and plan for the future as well as the role of technology. They are consistent with new legislative requirements and emerging DfT policy objectives.

Wider government priorities

We recognise the importance of the SRN in supporting government's wider priorities and helping meet some of the broader challenges facing our society today. Some of the wider priorities we have reflected in our proposals include:

- The *Net Zero Strategy: Build Back Greener* identifies the policies and proposals which will support the transition to a net zero nation by 2050. It highlights the importance of decarbonising the transport sector, and road travel in particular, to achieve this aim. The strategy is supported by DfT's *Decarbonising Transport: A Better, Greener Britain,* which places emphasis on the need to accelerate the transition towards public and active transport.

- Government's *Levelling Up* white paper, highlights steps to tackle regional economic and social disparities across the UK. The white paper's strategies are supported by the *Union connectivity review: final report*, which identifies where targeted improvements in transport infrastructure can improve connectivity and accelerate economic growth, allowing communities to thrive.

- International trade post-Brexit is a key element of government's vision to move towards a Global Britain. Supporting freight on our network has an important role to play. As the *Future of Freight: a long-term plan* highlights, road travel needs to become more 'freight friendly', integrated, resilient and efficient to enable this vision.

- We also continue supporting the delivery of the national strategy for suicide reduction, *Preventing Suicide in England: A cross government outcomes strategy to save lives*. This aims to reduce the number of suicides and attempted suicides nationally and provide better support for those affected.

- The *UK Digital Strategy* illustrates some of the opportunities presented by digital infrastructure, technology and data. We know investment in technology allows us to harness the opportunities of today and also future-proof our network and operations. To help deliver this, our *Digital Roads* strategy considers how we can embed digital, data and technology in everything we do.

What this means for the third road period

Our proposals for the third road period, detailed in Planning for the third road period, provide new, structured strategic approaches to supporting government. Our planning and prioritisation have been guided by DfT's strategic objectives for our network as well as government's wider priorities.

We are also aware that new priorities can emerge from government after the RIS is set. We will seek to remain flexible so that we can respond to any emerging needs.

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

The needs of road users, communities and stakeholders

Beyond our route strategies, we gather customer insight in a number of ways, including from the advice we receive from Transport Focus, our own dedicated research and scheme-specific learnings. While there are a wide range of views and priorities represented, consistent themes have emerged and we have used these valuable insights to inform our planning.

Research undertaken for the development of *Road users' priorities for improvement*

10
In depth interviews with senior managers from freight and coach operators or trade bodies representing these sectors

Over
5,600
Online driver interviews

14
Focus groups

10
In depth interviews with drivers with disabilities

Transport Focus' *Road users' priorities for improvement*, August 2021

Transport Focus is the independent watchdog, representing the specific interests of road users on the SRN. From their extensive research with drivers and other road users, they identified a number of top priorities for the third road period.

Improving safety:
- Road surface quality was the top priority, followed by safer design and upkeep of roads.
- Users also expressed a need for more focus on improving driver behaviours and for more or better rest areas and services.

Uneventful, delay free journeys:
- Users wanted to see better management of roadworks to reduce journey times. They wanted better management of unplanned delays, such as incidents, and better information about unplanned disruptions.
- The need for accurate information was especially emphasised by freight and coach operators.

Well-maintained roads:
- The majority of road users wanted the focus to be on keeping existing roads in good order through operations, maintenance and renewals before building new ones. Improvements were still recognised as important.
- There was a clear expectation that user experience should be maintained or improved.

Improved environmental impact:
- Users expected to see action on the negative environmental impact of vehicle traffic.
- Enabling electric vehicles and promoting active travel alternatives, such as walking or cycling were also considered a priority.

Planning for the future:
- Users expected us to be thinking ahead about new technology, particularly related to electric vehicles and about how additional demand would be accommodated.

national highways

The needs of road users, communities and stakeholders

Our focus groups:

Our research (June 2021 to March 2022)

We conducted independent research to inform the development of this *Initial Report* and the future needs of the SRN, holding:

36	55
Focus groups 12 in June 2021 and 24 in 2022	Hours of targeted discussions

231

Road user and community participants gave their views

49

Stakeholder representatives attended

Performance improvement focus

We asked our focus groups where, in our performance, they wanted us to focus and improve. Overall, feedback showed:

- Safety is of paramount importance, with a desire for more investment and more ambition in this area.

- Reliable journey times are important for most people, with particular support given to smaller schemes or those that would tackle local congestion.

- Communication of accurate information remained a priority.

- There was growing support for our ambition to deliver better environmental outcomes in the third road period, with our role well understood and supported.

- The value of investing for the future was understood, with strong support for electric vehicle charging on our network and for National Highways to play a larger role in this area.

Focus of investment

We also asked our focus groups where they most wanted us to invest. Feedback showed:

- Keeping our current network open and safe as well as responding to incidents, emerged as the highest priority for all stakeholders, particularly emergency, safety and recovery groups.

- Renewing our network was also a high priority, to get our current network to a consistent and accepted condition and maintain levels of service before investing in improvements.

- While major national improvements were still seen as important, customers preferred local improvements where they could see the direct benefit. They supported increased investment in this area.

- Regional and national improvements were also seen as important, particularly by freight, logistics and STBs. They recognised that these schemes needed to be balanced with carbon and environmental objectives. Although enhancement schemes were less supported by environment stakeholders.

Broadly similar themes emerged from our focus groups and Transport Focus' research. An investment programme aligned to these views would have a focus on safety and well maintained roads, ensuring the reliability, availability and integrity of our existing network. There would be increased focus on smaller enhancements schemes, with local interventions that deliver clear local benefits. There would also be a greater focus on the environment and carbon reduction than there was in RIS2, with better support for electric vehicle charging on our network and National Highways playing a broader role in this area.

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

The needs of road users, communities and stakeholders

Our focus groups: key perspectives

Through our focus groups, we engaged with public sector, private sector and charitable stakeholders to understand their views. Key perspectives included:

Road users

Road users wanted safety to remain a focus for improvement in RIS3. There was particular support for tackling issues around driver behaviour. The beneficial impact of technology on safety was also highlighted more by road users than in previous research. Road users also supported more ambitious targets in this area.

The condition of the road surface was another key issue for road users, in part because they related poor road condition with safety. Although they viewed current performance in this area relatively positively, they felt it was important for current road standards to be maintained or improved. They also recognised the need to renew an aging network.

Customers wanted to see a continued focus on maintaining levels of journey time reliability, with a focus on congestion pinch points and worst served areas to ensure value for money and efficient delivery. They highlighted that they would like to see better management of roadworks to reduce their duration and the delays caused. The provision of timely and accurate information is a high priority, particularly where it allows them to effectively plan their journeys and identify alternative routes when there are incidents on our network.

When considering priorities for the third road period our customer research suggests that road users favoured prioritising maintaining and renewing the current network. There was still support for enhancing our network, in particular around smaller, more local interventions. These were considered to have the greatest day to day impact on their journeys and on the safety of our network.

Road user groups also strongly supported an increased focus on preparing for the future, particularly considering the move to electric vehicles, and the need to update our network to support this transition. They were also keen that we invest in our network to protect the environment and mitigate the impacts of climate change.

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

The needs of road users, communities and stakeholders

Communities

Community groups include a mix of non-motorised users and people living either on or close to the SRN, or on diversion routes. These groups included urban, suburban, and rural communities.

As with other road users, safety is of paramount importance to communities. They highlighted a desire to improve the segregated provision for cyclists and walkers. They also wanted to see improvements in the condition of cycle and foot paths, noting the difference in standards between the road surfaces.

Communities highlighted the importance of minimising how long SRN road work lane closures are in place due to the knock-on effects they typically have on local communities. They stressed the impact that traffic diverting onto local roads from the SRN can have on putting non-motorised users at greater risk, along with creating increased congestion and delays.

Improvements in environmental outcomes was a high priority for community groups. They welcomed current environmental targets and challenged us to be more ambitious. They considered biodiversity as the most important factor to them. They also highlighted that more could be done to tackle concerns such as noise from the SRN, including the impact of roadworks and/or diversions.

As with road users, they supported an investment programme that prioritised running and renewing the existing network, noting the need to maintain footpaths as well as our network. Similarly, supporting increased investment in local improvements due to factors such as safety, particularly for cyclists, reduction in congestion, as well as environmental and economic benefits.

Non-motorised users

Safety is a top priority for walkers, cyclists and horse riders, who are naturally more vulnerable than motorised users when travelling on or around our network.

These groups prioritised local improvements and stressed the importance of the type of road surface and its condition for safety. They highlighted the need for continued investment in maintaining and renewing our existing network.

Non-motorised users also highlighted a desire for more dedicated, segregated and continuous cycle provision, as well as wider non-motorised user facilities.

To ensure that future investment is effectively delivered to increase usage, improve satisfaction and reduce community severance, non-motorised users would also like evidence-based evaluation of the benefits of previous projects. They also wanted to see more done to monitor non-motorised user satisfaction before and after network improvements. This includes how suppressed demand can be addressed through our improvements.

Users also expressed the importance of seeing how their needs are prioritised, particularly in relation to other user groups.

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

The needs of road users, communities and stakeholders

Freight and logistics

The effective movement of freight is part of a functioning and growing economy. Our freight stakeholders, such as the Road Haulage Association, Logistics UK and DHL, supported the need for investment in running and renewing our network to help deliver delay free and reliable journeys. Delay was the most important metric for them due to the business implications. While these groups accepted that some delays were inevitable, they wanted to be able to plan for them and know alternative routes to provide resilience. Safety and accurate roadworks information were also priorities.

They would welcome a wider focus than simply the condition of our network, incorporating the SRN as part of the wider freight network and increasing cross-modal collaboration and partnership. The availability and quality of freight facilities were increasingly recognised as a problem, with these stakeholders wanting better facilities for their drivers.

This included parking as well as increased charging points for low-emission vehicles and commercial fleet. *The National Survey of Lorry Parking report* found that 18,670 vehicles parked overnight across England.

There are only 15,012 total available on-site spaces, leaving a potential of shortfall of over 3,000 vehicles without on-site parking.

We hear from industry that supply chains are stretched and the modern shift to just in time delivery has resulted in a relative reduction in warehousing in the UK. Through our improved route strategies and working with the sector, we recognise the opportunity to support warehousing development and greater consolidation where appropriate and beneficial.

Throughout our engagement, these stakeholders also highlighted the need for improved communication. This included more digital connectivity and real-time sharing of traffic and CCTV information to help keep them informed with greater visibility of network performance and incidents.

Night-time diversions were recognised as a challenge for these groups, and in the very immediate term, improved signage would be welcomed.

Business and Industry

The Confederation of British Industry and Chartered Institution of Civil Engineering Surveyors were focused on investment in our network. They also stressed the importance of national and regional enhancements schemes to improve journey times and the performance of our network.

The importance of the SRN to freight movements

Over two-thirds of lorry miles in England are driven on the SRN, despite the SRN making up only 2.4% of the road network by length. Road freight is the most cost-effective mode of transport for shorter distances. For example, the last mile from a rail freight interchange or movements under 50 miles for bulk traffic and 100 miles for consumer goods. It is generally accepted that rail freight becomes economically viable over longer distances of over 50 miles for bulk goods and over 100 miles for consumer goods.

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

The needs of road users, communities and stakeholders

Environmental bodies

Environmental stakeholders such as the Environment Agency, Woodland Trust and Wildlife Trusts wanted us to do more to support decarbonisation and environmental sustainability across all our activities. They wanted us to reduce our environmental impact, and deliver better environmental outcomes, prepare for the future of electric vehicles, and for reaching net zero carbon.

They valued improvements to the running and renewal of our network. They preferred demand management to address delays and capacity constraints, rather than building new roads or expanding our existing roads.

They wanted to see a more holistic view of network performance measures and significant increases in ambition across our performance metrics and targets. For example using measures for tranquillity, rather than the number of houses benefitting from noise reduction. Although some groups said the existing road network was adequate, others considered the wider impact of the SRN on biodiversity and habitats, which they felt should be improved.

Maintenance and management of the sites of special historic interest near our roads was seen as important for future active travel.

Emergency, safety and recovery groups

In 2021, we dealt with 281,844 breakdowns across the SRN. Emergency, safety and recovery stakeholders, including the National Fire Chiefs Council, Association of Vehicle Recovery Operators and the Professional Recovery Operators Foundation, prioritised the running and renewal of our network, highly valuing network availability and reliability. These groups identified safety as the most important issue, followed by delay and road surface condition. Lane closure from roadworks, air quality and timely and accurate information about roadworks were also important.

Safety when working at the roadside was key for the recovery industry. They wanted a greater focus in our performance metrics on the safety of roadworks. This would support post-incident reviews and the implementation of training to prevent future incidents.

Like freight, logistics and wider business stakeholders, they wanted to see more digital connectivity and real-time sharing of traffic and CCTV information to support post-incident location and response times.

Emergency response organisations highlighted their need for improved access to the motorway network between junctions to reduce response times. All groups had strong support for an investment programme that provides the future infrastructure needed for the increasing number of electric and autonomous vehicles.

All our stakeholders valued the basics done well, with the top concerns of safety, journey times and the environment remaining as consistent priorities for the third road period. An investment plan reflecting these views would also need to balance a range of priorities, some of which are complementary. For example, promoting active travel alternatives, delivering better integration with the wider transport network, and increasing and improving roadside facilities.

Introduction

Overview of our third
road period proposals

**Understanding
our network**

Working towards
our long-term vision

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

The needs of other transport bodies and modes

Sub-national transport bodies

Engaging and working closely together

STBs have a key role in identifying investment priorities at the sub-national level, including for highways, and developing regional transport strategy.

In developing our priorities for the third road period, we have worked more extensively and closely with STBs than ever before, going beyond the scope of our route strategies. Our focus has been on integrated planning and developing joint priorities to support transport users, regional economies and the environment. STBs have welcomed this level of engagement and we will continue working closely together as we evolve our plans.

A12 running alongside a railway line

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

The needs of other transport bodies and modes

Understanding regional strategic transport plans

The regional transport strategies developed by STBs have directly informed our route strategies and fed into our wider strategic planning. They have identified the continuing need for investment in our roads.

Their strategies support targeted investment to maximise the capability of our network. They focus on delivering a safe and efficient network that supports wider regional environmental, economic and social goals.

STBs recommend that we should plan for RIS as one part of a systems-wide approach to future road investment. They express the need to consider the transport 'ecosystem' and plan collaboratively.

This means working together as a wider transport network to ensure that:

- the SRN receives the investment required to connect the country
- local transport authorities have the resources to operate, maintain and improve their local highway networks
- comprehensive active travel networks are able to support local trips by walking and cycling

STB priorities

We have worked closely with STBs to understand their priorities. We know that STBs would like to see the following priorities addressed in the third road period:

- Building network resilience and reliability to address maintenance and climate change challenges.
- Meeting national and regional policy objectives on *Levelling Up* and on planned growth. For example supporting nationally-significant programmes such as Free Ports, development of nuclear and renewable energy sites and delivery of strategic housing sites.
- Supporting and planning for local growth and improved productivity, bringing economic benefits, linked to local movement of people and goods as well as supporting strategic traffic.
- Facilitating the efficient and reliable movement of freight on the SRN and between the SRN and other networks (rail, waterways and local roads).
- Driving the decarbonisation of our network and supporting wider sustainability goals. This includes improving biodiversity and provision for active travel and public transport, as well as joint work on mode shift.
- Working collaboratively to tackle transport-related social exclusion, ensuring that investment on the SRN improves access for all modes of travel. For example, supporting local bus service improvement plans and delivery of local cycling and walking networks.
- Facilitating collaborative and evidence-led investment at scale and pace into electric vehicle charging infrastructure and alternative fuels.
- Exploring and maximising opportunities presented by new technology and digital systems to deliver an enhance customer experience and quality of service.

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

The needs of other transport bodies and modes

Rail passengers

We want to manage growing SRN demand in a more sustainable way. This means exploring a wider range of levers as part of our 'decide and provide' approach.

Better integration with rail is one of the levers. We would like to explore opportunities for joint planning with local and regional authorities and Network Rail. Coordination will be especially important in urban areas where congestion is most acute and where public transport can be a viable alternative mode.

Government's ambition to move towards a connected Global Britain and further facilitate international trade and competitiveness, underlines the importance of the SRN and the efficient movement of people and goods. There is consensus amongst industry, transport operators and government that going forward, deeper strategic partnerships across modes and systems will be key.

Buses and coaches

In March 2022, we undertook a review of the 1,422 bus stops on our network. We know that the quality of bus and coach facilities are important for our customers and stakeholders, and supports effective integration of services with our network. The data will help us understand what upgrades will be required and where, informing a prioritised programme of improvements. Some examples of these are:

- raised platforms
- bus shelters
- seating
- lighting
- off-vehicle ticket machines
- secure cycle storage

Port and airports

Ports and airports are critical to our national economy. In 2021, English ports handled more than 310 million tonnes of freight. Although carrying less freight, airports also play a critical part in the transport system, as well as serving high numbers of passenger trips. Our network directly serves 4 of the 5 busiest airports.

We are investing to address congestion challenges at these gateways. In 2021 we completed our £44 million M6 junction 19 scheme which will support expansion at nearby Manchester Airport.

Supported by our route strategies, we want to address known challenges and deliver freight corridor improvements. We also want to continue working with government to manage increased border traffic, particularly at southern ports.

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

The needs of other transport bodies and modes

Active travel

Few journeys start and end on our network. We are working to better integrate our network with other transport modes, with a focus on sustainable active travel modes such as walking, cycling and horse riding.

Walking, cycling and horse riding

In 2021-22, we invested £26.3 million across 76 cycling, walking and horse riding projects through our users and communities designated fund. This included schemes to improve public rights of way and reduce problems of severance caused by our network.

We recognise the importance of our role in continuing to support wider government objectives to increase travel by active modes. By working closely with Transport Focus and stakeholders such as Active Travel England and Cycling UK, we want to remove the barriers that discourage active travel on, around, or instead of the SRN.

The availability and quality of network crossing points are one of the primary areas where we can improve the experience of our non-motorised users. Even though we are making good progress, continued investment in new infrastructure and improvement of existing facilities is needed. This will be key to increasing accessibility and addressing important concerns for personal safety and security at underpasses and bridges, particularly those in isolated locations and where crime has been identified as a problem.

For those travelling along our network, we want to do more to make their journeys safer and more enjoyable. We know that cyclists would like to see more segregated and continuous cycle lanes that reduce their exposure to motorised vehicles. Where non-motorised users do directly share roadspace, we must very carefully balance the often competing priorities of different users on our network. We see an opportunity to explore a range of options focused towards more vulnerable users, from how we consider active travel in our scheme development, to influencing traffic speeds and user behaviours on existing parts of our network.

Case Study
A66 Keswick to Threlkeld trail

In 2020 an improved trail between Keswick and the village of Threlkeld was opened, exactly five years after it was severely damaged during Storm Desmond.

This was made possible by our Designated Funds programme which covered almost half of the £7.9 million project costs. The trail provides a much safer and pleasant traffic-free alternative to cyclists and walkers than using the A66.

Cyclists on the Keswick Trail

Introduction | Overview of our third road period proposals | **Understanding our network** | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

The needs of other transport bodies and modes

Micro-mobility

We recognise the increased use and importance of micro-mobility modes, such as e-bikes and e-scooters. They are already providing people with new travel options for shorter distance journeys. E-bikes, in particular, are opening up active travel to more people, and will need to be part of our considerations for the third road period and beyond. We want to support government as it continues to trial these modes and work to understand their implications on the SRN, particularly in terms of widening journey choice and modal integration.

Addressing the barriers that our roads can create for more vulnerable users is key to promoting active travel. In balancing the competing needs of active travel and motorised users, we know there are 'win-win' opportunities. We also know that there may be difficult trade-offs, and it will be important to ensure that the needs of active users are not perceived to be secondary.

Other transport modes

We have a role in ensuring that our roads work as part of a fully integrated, wider transport network, supporting all our customers. This includes our connections with rail, ports, airports, and bus and coach operators.

Rail freight

Goods vehicle volumes on our network are now regularly exceeding pre-Covid levels, and growth is set to continue in the coming decades.
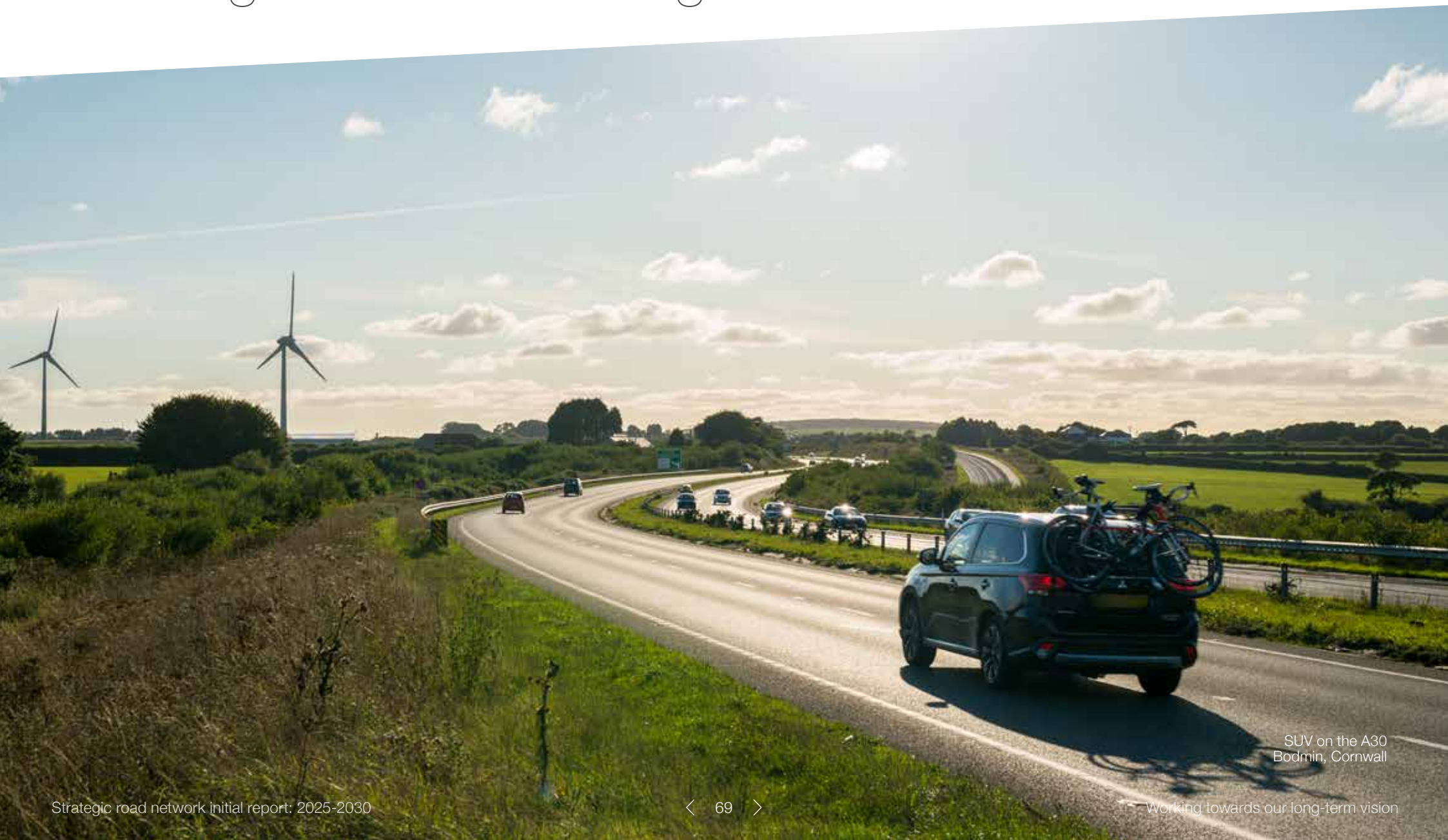
In 2021, we published our pioneering joint strategic study, the *Solent to the Midlands multimodal freight strategy.* This analysed how we can work with Network Rail to support the balance of freight movements on the A34 and the equivalent rail route. The study has identified a number of opportunities to support network capacity, economic growth and reductions in carbon emissions through joined up network planning.

We see an opportunity to deepen this partnership on other routes, and also more widely in support of government's long-term *Future of Freight plan*. It establishes a commitment to a cross-modal approach and development of a national freight network that better joins up industry and operators to maximise modal shift opportunities and system capacity.

We are committed to exploring the opportunities to better combine with other modes. We recognise that the majority of freight will continue travelling by road, particularly between distribution centres and destinations, where it is more flexible and cost effective. Targeted shifts to rail will be possible, and the ability of the rail network to accommodate future growth may be constrained by factors including its own infrastructure and capacity.

► **To find out more about our proposals to unlock freight and logistics growth in the third road period, please see .**

Introduction

Overview of our third
road period proposals

Understanding
our network

**Working towards
our long-term vision**

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

Working towards our long-term vision

SUV on the A30
Bodmin, Cornwall

Introduction | Overview of our third road period proposals | Understanding our network | **Working towards our long-term vision** | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Planning for the long term

Our purpose is to connect the country

The SRN is a vital service that the UK will continue to rely upon now and in the future. All scenarios show that our roads will remain the most common mode of travel, and the nation will continue to rely on our network to connect people and business. We recognise that the way we deliver this service will change in the future. We must continue to respond to unprecedented challenges around decarbonisation and our shared natural environment. The need to support vibrant, healthy communities, and the opportunities presented by new digital technologies are just some of the changes we must continue to address.

To help us on this journey, we have developed a new long-term vision.

Alongside this report, we have published *Connecting the country: Our long-term strategic plan*. This describes our vision for 2050, and the short, medium and long-term steps we believe are needed to make our vision a reality. The plan sets our long-term direction of travel over successive road periods. In the following pages, we summarise how our vision has informed our proposals for the third road period. We see this as the first step in delivering our new vision for our customers and the SRN.

Our 2050 vision

The SRN is 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.

Connecting the country:

Our long-term strategic plan

2030   2050

Informing our third road period (RP3) planning and delivery

Initial Report	Strategic business plan
Road Investment Strategy	Delivery plan

Shaping our long-term direction for future road periods

RP4 2030 - 2035	RP5 2035 - 2040
RP6 2040 - 2045	RP7 2045 - 2050

national highways

Our planning approach

Deciding and providing

Our strategy is vision-led and we have moved to a 'decide and provide' approach. This means we are increasingly proactive in shaping the future we want for our customers and network. We will continue forecasting ahead to understand possible future scenarios. We have a clearer sense than ever before of our preferred vision for the future, and the steps we will need to take to make this a reality.

In developing our vision, we have considered the potential trends that will likely shape the SRN and influence our operations over the next 30 years and beyond.

The development of our long-term plan can be broken into three key stages:

- **Trends** – horizon scanning to create a bank of ideas on trends and possible events which will shape the future.

- **Visioning** – defining our ambitions for the future of our network and the service we provide to our customers.

- **Delivery planning** – using road mapping techniques to understand how our trends combine over time and determine the short, medium and long-term steps we will take to realise our vision.

Recognising uncertainty

The vision we set out is challenging and aspirational, and, importantly, we believe it is achievable. It is based on pathways for change both on our network and through collaboration with associated sectors and partners.

We know that the future is uncertain. Since publishing our first long-term plan in 2017, much has already changed. The Covid-19 pandemic, geopolitical instability and volatile energy markets have demonstrated just how quickly and profoundly shocks and stresses can affect our daily lives. They have underlined the importance of ensuring that an adaptive approach is built into our organisational planning.

Clear evidence of an acceleration of climate change impacts and heightened awareness of the decline in our natural environment have also shown the need for us to continually review societal challenges and our response to them. Flexibility will be critical to ensuring the systems and infrastructure we provide are fit for the future, and help to actively shape it.

We will continually evaluate our progress, and where appropriate, adjust and realign our response to keep us on the right path. We will work closely with our customers and stakeholders throughout, drawing on their perspectives to guide us.

Our nine focus areas

In *Connecting the country: Our long-term strategic plan*, we set out the potential trends, our vision and corresponding plans against nine key focus areas, split across three groups:

How much our customers will travel.
- Growth and levelling up
- Car travel
- Freight and logistic

How our customers will experience travel.
- Safety
- Digital
- Decarbonisation

How we will manage our network.
- Customer experience
- Sustainable network development
- Asset resilience

► **In the following pages we explore our long-term focus areas further, and explain how we are using them to inform our third road period proposals.**

Introduction Overview of our third road period proposals Understanding our network **Working towards our long-term vision** Planning for the third road period Delivering in the third road period Summary and next steps
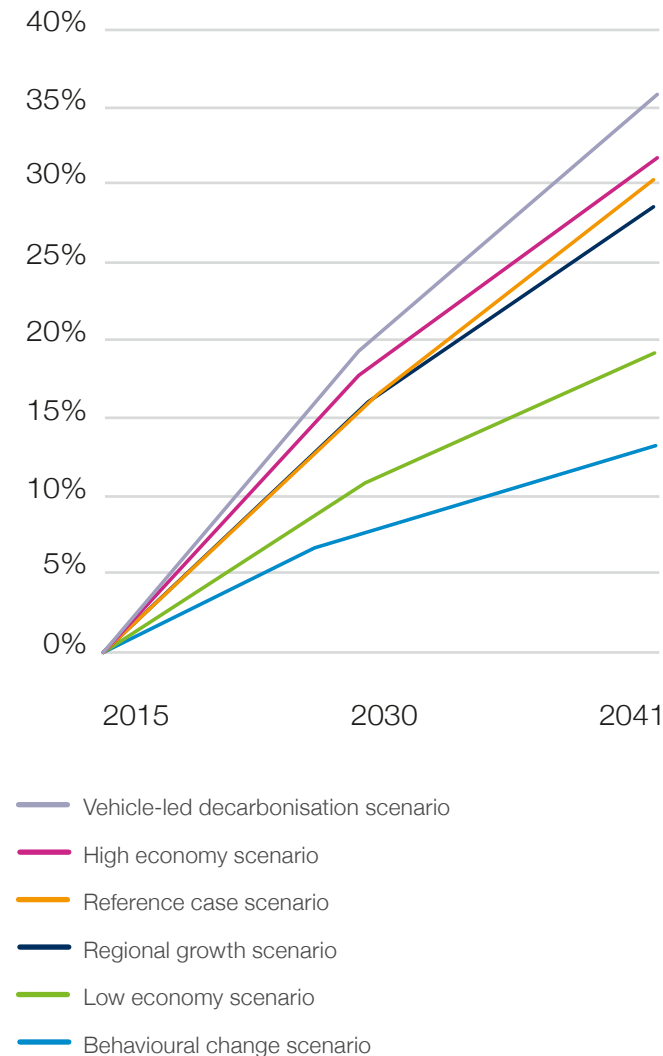
national highways

Future demand for travel

Understanding how future demand for travel on our network could change is an important part of our 'decide and provide' approach to strategic planning. If we understand where and how changes are likely to take place then we can make informed decisions about how to respond. For example, identifying areas of congestion or increased usage where we may need to target future investment. This could be through helping drivers plan their journeys to avoid congestion, increased maintenance needs due to higher levels of traffic, or where we may need to consider strategies to increase capacity, such as at junctions. It also forms an important part of our value for money assessment as we quantify and compare the potential costs and benefits of different interventions.

There is always uncertainty around predicting the future. Forecasting demand on our network is no exception as demand is also influenced by wider travel policies at a local and national level.

Since our modelling was carried out DfT have published updated forecasts, which reflect in greater detail the recent changes in population, GDP predictions and impact of wider factors. As we develop our plans we will update our analysis to reflect changes to these published analytical models. This will ensure our plans continue to reflect potential future demand on our network and options to respond.

Projected traffic growth from 2015

Legend:
- Vehicle-led decarbonisation scenario
- High economy scenario
- Reference case scenario
- Regional growth scenario
- Low economy scenario
- Behavioural change scenario

Our demand assumptions

We have used the RTF18 reference case in our route strategies to help inform our long-term strategic plan. We recognise these forecasts will not account for some of the latest changes in behaviours and population prediction which have the potential to materially influence demand.

To account for some of this uncertainty we also considered two additional scenarios from RTF18:

1. Travel behaviour: Reflecting a world where people embrace new and more flexible ways of working, shopping or travelling.

2. High ZEV: Capturing a future where there is a high up-take of zero emissions vehicles, with increased road travel compared to other modes.

By considering a range of demand scenarios, we predict demand for our network will increase in the third road period and over the longer term. Reductions in the rate of population growth and revised GDP forecasts mean the pace of growth is expected to be slower in the medium term than we previously predicted. We still anticipate the need to manage increasing demand-related pressures on our network in RIS3.

We will continue updating our assessment against latest modelling and forecasts, including the recently published update to the *National Trip End Model, Version 8.0.*

Introduction | Overview of our third road period proposals | Understanding our network | **Working towards our long-term vision** | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Roads in a net zero economy

Supporting sustainable growth

It will be vital to consider how we manage our network and its use in a way that is sustainable and helps to meet the *Sixth Carbon Budget*.

The advice from the Climate Change Committee shows that some traffic growth is still possible in meeting the *Sixth Carbon Budget*. It emphasises the importance of other factors including the shift to electric vehicles and increased vehicle efficiency, alongside other, broader transport policies that are compatible with the UK's net zero trajectory.

We are already committed to delivering PAS 2080 across our capital programmes, catalysing change across our supply chain and the rest of the industry.

In developing RIS3, we have also considered how we can apply the principles of PAS 2080 more broadly at our strategic planning level. This means challenging the root cause of construction and only delivering schemes where the problem cannot be fixed through other approaches. This is set out in the chart on this page.

Our solutions need to consider how we can make it easier for customers to make informed choices about when, how, and whether they travel, underpinned by greater integration with other transport modes, networks and bodies.

▶ **More information on PAS 2080 can be found on .**

Build **nothing**

Operate our network for our customers and the environment.

Only intervene where necessary. Building where there is a strong case to do so. Working with partners to support solutions that provide additional capacity without additional road space, including digital roads. This continues to be the option adopted for the majority of our network.

Build **less**

Maximise the benefits of our network whilst minimising construction.

Design interventions that minimise the replacement of assets, reuse existing components and/or require minimal additional materials. Maximise the use of existing assets (e.g small changes to junctions/alignment that use the existing network) and use of digital technologies.

Build **clever**

Use low carbon solutions to reduce emissions when we build.

Innovating to develop new low carbon solutions to trial on the network and update to standards. Incentivising and working with the supply chain to implement low carbon solutions on our network.

Build **efficiently**

Use new methods to reduce construction emissions.

Use modern methods of construction to minimise waste and site works. Use digital solutions to reduce site visits and redesign. Design and construct right the first time, considering asset longevity and whole life carbon to reduce emissions and improve service for customers.

Introduction | Overview of our third road period proposals | Understanding our network | **Working towards our long-term vision** | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

How much our customers will travel: challenges and opportunities

Growth and levelling up

- The SRN is vital to the success of the national economy. Government is committed to growth as part of the country's recovery from the Covid-19 pandemic, with infrastructure forming a pillar of this growth. We know that our network has a key role in connecting people to opportunities.

- Demand for the SRN is expected to increase over the period to 2050. Economic pressures and demographic changes have introduced new uncertainties, meaning that demand could grow more slowly in the medium term. Historically, the demand for travel has grown with increases in economic productivity. We expect this relationship to endure, with greater digital accessibility to services having a key role in supporting future growth.

- Socio-economic outcomes are not equally distributed. Government aims to increase pay, employment and productivity in every area by 2030, supported by greater physical connectivity and globally competitive cities.

Car travel

- Population is a key driver of demand with current estimates suggesting it will rise over the long-term, albeit at a slower rate than previously forecast. It is also forecast to become more urbanised. Although those living in large towns and cities may be less car dependent, significant population growth is expected in wider urban conurbations. This includes new garden communities, where reliance on the SRN is high, and where future growth could exacerbate existing congestion challenges.

- The introduction of electric vehicles and connected and autonomous vehicles could radically change the cost of car travel. While dependent on usage and pricing, we expect demand for the SRN to grow and for the car to remain the most common mode of travel.

- Covid-19 had the biggest single-year impact on road traffic since records began in 1949. Car traffic on the SRN is already back at 95% of pre-Covid levels, showing that the demand for our network remains strong.

- Historically, a significant proportion of trips on SRN A-roads have been short distance. Though location-specific, opportunities exist to target shifts to active and public modes and encourage the right mode for the journey.

Freight and logistics

- The vast majority of future freight will still travel on the SRN. There are opportunities to re-mode freight to short sea shipping and rail. Even with increased capacity, shifts from road will need to be highly targeted.

- Covid-19 has accelerated a trend of more freight on our network. Goods vehicle demand for our network has quickly bounced back, now consistently exceeding pre-Covid levels. Rises in online sales are expected to continue driving light commercial vehicle growth and HGV movements and distances are forecast to increase in the period to 2030.

- There are opportunities to make freight movements more efficient. Average haulage lengths have risen by approximately 25% between 1990 and 2017 but in the UK approximately 20% of road freight vehicle miles are empty[2].

Introduction | Overview of our third road period proposals | Understanding our network | **Working towards our long-term vision** | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

How much our customers will travel: challenges and opportunities

Growth and levelling up

Supporting economic growth

£409.7bn

GVA of SRN reliant sectors

90%

of the population live within 6 miles of the SRN

91%

of businesses located within 9 miles of the SRN

By 2030

Government is targeting increases in pay, employment and productivity in every area of the UK

Every part of England that wants one will have a devolution deal with powers at or approaching the highest level of devolution

Car travel

Increasing UK population

67m 2020 → **71m** 2050

Cars are the usual method of travel to work for:

68%

of commuters in England

Car demand for the SRN has already returned to:

~95%

of pre-Covid levels

40+

garden communities planned

Delivering up to

16,000

homes per year from 2025

Increased demand for the SRN predicted by 2050 with growing pressure where it meets urban areas

Freight and logistics

Our network carries

two-thirds

of all freight

Increasing HGV trips

2-4%

increase between 2025 and 2030[3]

Goods vehicle demand for the SRN is now regularly:

>100%

of pre-Covid levels

National Infrastructure Commission's 'Business as Usual' scenario for the *Future of Freight Demand* assumes e-commerce will account for:

65%

of total retail sales in 2050[4]

Introduction | Overview of our third road period proposals | Understanding our network | **Working towards our long-term vision** | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

How much our customers will travel: our long-term vision

	Our long-term vision	**Implications for our delivery in the third road period**

Growth and levelling up

Regardless of which region our customers are travelling through, they will receive the same high level service and connectivity.

The SRN will help deliver improved productivity and support regional and sub-regional aspirations for sustainable, inclusive growth. Regional disparities in performance and connectivity will have been removed.

The SRN has a critical role in enabling higher levels of productivity and economic growth across all regions. Subject to environmental compliance, we want to progress plans for targeted improvements that meet national and regional priorities. Our investment plans must be developed more collaboratively, aligned to government's *Levelling Up* missions and local delivery plans.

We want to expand our role in proactively shaping spatial plans to support sustainable development and the objectives of local leaders and stakeholders, unlocking inward investment. We also want to use our position to support the industry, invest in skills and research, to innovate and share best practice.

► **For details of our approach to network improvements please see page 131 to 137.**

Car travel

Network optimisation and modal integration will enable delay free and reliable journeys.

We will optimise our network to deliver focused improvements to customer journeys. We will play our part in the creation of a fully-integrated national transport system, working with partners to deliver seamless multimodal travel.

The demand for our network is growing and we will need to support and stimulate economic growth in a more sustainable way. This means exploring a wider range of levers than ever before to manage demand as part of our 'decide and provide' approach.

By harnessing digital technology we can help customers make more informed decisions about if, when, and how they travel, and manage our network more efficiently in real-time. We will evolve our approach to investment, only enhancing where need is most pressing and prioritising more locally-focused schemes, particularly those that deepen integration with other modes, roads and hubs.

► **To find out more about how we are integrating our network, please see page 114 to 116.**

Introduction

Overview of our third
road period proposals

Understanding
our network

**Working towards
our long-term vision**

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

How much our customers will travel: our long-term vision

	Our long-term vision	**Implications for our delivery in the third road period**
Freight and logistics 	Our network will provide unimpeded access to domestic and world markets, driving national and international competitiveness. Freight will move freely across the SRN, enabled by network improvements on key freight corridors, around international gateways and at major consolidation centres.	The movement of freight is set to increase during the third road period. Our priority is to address existing challenges on our network, improving connectivity around international gateways and other key freight routes. We want to build on our collaboration with DfT, Network Rail and SRN-reliant sectors to establish plans to make movements more efficient, served by a joined up multimodal network. ► **To find out more about our ambitions to improve the whole journey experience of our freight customers, please see pages 117 to 118.** ► **For details of how we want to evolve our customer offer in the third road period, please see pages 111 to 121.**

Introduction | Overview of our third road period proposals | Understanding our network | **Working towards our long-term vision** | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

How our customers will experience travel: challenges and opportunities

Safety

- Our roads are amongst the safest in the world. In recent years we have achieved significant reductions in the number of people killed or seriously injured on our network.

- To achieve our vision of a zero harm network, maintaining current safety performance will not be enough. Incremental gains in our safety performance have become increasingly challenging.

- The introduction of connected and autonomous plant (CAP) and vehicles (CAVs) promise significant safety benefits for our roadworkers and customers. They provide new opportunities to reduce human exposure during construction and human error by drivers.

- The pace of uptake will be key, and we know that they will only be one part of our wider Safe Systems approach.

Digital

- Digital technology is developing at pace and scale, creating opportunities for better customer experience and more efficient infrastructure delivery. Wider adoption of digital design and construction techniques, such as modular and off-site construction, could help transform how we renew and improve our network.

- Digital connectivity speeds and coverage are set to expand by 2030. The UK will have nationwide gigabit-capable broadband, with 5G coverage for most of the population. Faster wireless connectivity opens up the possibility of using real-time asset and vehicle data to support dynamic and pre-emptive network management.

- The path to vehicle autonomy will be phased. Before full automation, new vehicle technologies will bring fundamental changes to travel on the SRN. Automated lane keeping systems are already at high levels of technical maturity and are expected to emerge within the decade.

Decarbonisation

- Human activity is changing our climate. There is a need for collective action to limit further global warming and the country and our organisation has a legal obligation to deliver net zero greenhouse gas emissions by 2050.

- While road travel represents a higher carbon way to travel in the UK today, advances in battery, fuel cell and hydrogen production, accompanied by forecast reductions in costs, mean this is changing fast.

- A net zero Britain will still travel by road in 2050. Non-electric cars could largely be significantly reduced by 2040, by which point new HGVs will also have to be zero emission. Government has also committed to setting a legal end date for the sale of new diesel buses.

- As the grid begins to decarbonise and operational emissions decrease, the relative impact of construction is projected to increase in significance, accounting for 90% of emissions in 2050[5]. There is an opportunity to catalyse the construction industry to deliver the Climate Change Committee's call for the industry to be largely decarbonised by 2040.

Introduction | Overview of our third road period proposals | Understanding our network | **Working towards our long-term vision** | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

How our customers will experience travel: challenges and opportunities

Safety

Safer journeys

41% reduction in fatalities on the SRN in 2019 compared to 2005-09 baseline

0.9 England

1.7 Germany

2.2 France

motorway fatality rate per billion vehicle kilometres (2018)

~25% CAV penetration could account for

>40% reduction in motorway traffic conflicts[6]

A safer SRN

95% reduction in traffic officer injuries since 2015

50% reduction in supply chain injuries since 2015

Digital

Connectivity

75% of new cars will have some level of autonomous and data sharing capability by 2050[3]

Construction sector efficiency

£ up to

£200bn in benefits by 2040 by introducing connected and autonomous plant across the sector from 2020-2035

Studies suggest that

>50% CAV penetration could account for

7% reduction in delays on the SRN[7]

Delays on the SRN could be reduced by up to

40% for a fully automated fleet

By 2025 government aims to have self-driving in testing and operation

UK CAV market worth up to £42bn by 2035 creating 38,000 jobs in the sector

Decarbonisation

Emissions

Surface transport accounts for:

22% of total GHG emissions in the UK

Our *Net zero highways plan* outlines how we'll reduce SRN emissions to zero by 2050

6,000 high-powered, open-access charge points across England's motorways and major A-roads by 2035

Sustainable travel

2030 sole internal combustion engine car sales banned

From **2035** all new cars and vans will be fully zero emission at the tailpipe

2040 zero-emission HGVs

How our customers will experience travel: our long-term vision

	Our long-term vision	**Implications for our delivery in the third road period**

Safety

Our roads will be the safest in the world. No one will be harmed when travelling or working on the SRN.

Every death or serious injury on our roads is a tragedy. Improving safety reduces physical, mental and emotional harm to individuals. A safer network also improves journey time reliability, providing economic benefits.

Safety will remain our first imperative, its importance underlined by our ambitious zero harm vision. Recognising how incremental gains in road safety performance are becoming more challenging, in the third road period we will need to go further than in previous road periods to ensure we are on track to realise our vision.

Our efforts will need to be sustained over multiple road periods. While we expect the safety benefits of our long-term digital transition to be significant, we remain committed to a holistic Safe Systems approach. The third road period offers an opportunity for us to prioritise parts of our network with the lowest safety ratings and to persist in bringing our *Home Safe and Well* safety culture to the fore.

► **To find out more about our plans for a step change in safety, please see pages 89 to 96.**

Digital

National corridors will be CAV enabled providing congestion and safety benefits. Freight automation will be established on routes to major international gateways.

Our customers will travel on digitally-enabled roads, making their journeys safer, more efficient and sustainable. Our design, construction and operations will be fully digitised and automated.

We want our customers to enjoy travel on a fully digitally-enabled SRN. In the third road period we want to lay the foundations for greater levels of system operation and the fundamental shifts in how our future network will be operated and managed.

To support this, we must ensure that our technology ecosystem is secure, reliable, and standardised to a consistent national standard. By taking a systematic approach to upgrading our operational technology, its associated data architecture, software, and business processes, we will be able to maximise the value of the data we share with our customers and use internally. We can't do this alone, and want to continue working in partnership with government, industry and Transport Focus as we evolve.

► **To learn more about how digital is changing our delivery, please see pages 145 to 146.**

How our customers will experience travel: our long-term vision

	Our long-term vision	Implications for our delivery in the third road period
Decarbonisation 	The SRN will be decarbonised, placing roads at the heart of the UK's net zero future. Our ambition is to be net zero for our own operations by 2030, with our maintenance and construction emissions net zero by 2040. Travel on our network will be net zero by 2050.	The third road period is a key stage in the decarbonisation of the SRN. *Net zero highways* outlines our plans to become net zero for operations by 2030, to reduce our maintenance and construction emissions between 40 and 50% by 2030 compared to a 2020 baseline. Carbon reduction will be a critical, underlying theme for all we do in this period. Our holistic approach means managing growing demand for our network in new ways, applying a global standard for managing infrastructure carbon, called PAS 2080, to our investment planning, and minimising new construction. It also means adopting lean and circularity principles, as well as promoting positive shifts in how future travel is powered by enabling the installation of sustainable charging infrastructure. ► **To find out more about our path to net zero carbon, please see pages 122 to 130.**

Introduction | Overview of our third road period proposals | Understanding our network | **Working towards our long-term vision** | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

How we will manage our network: challenges and opportunities

Customer experience

- Journey time is the number one factor of overall customer satisfaction. From listening to our customers we know that 'delivering the basics' will remain a top priority over the period to 2050.

- Improved technology and digital connectivity is likely to bring users closer to network operators. Customers will expect interconnected mobility services, placing the onus on providers to collaborate closer than ever before.

- Our freight and coach customers want us to provide better journey information and deliver national improvements to driver facilities, improving provision for existing drivers and making the industry more attractive to new ones.

- We have an opportunity to set the standard for customer-centric charging infrastructure. Provision of reliable, high quality charging services will be key to supporting a positive transition to electric vehicles for our customers.
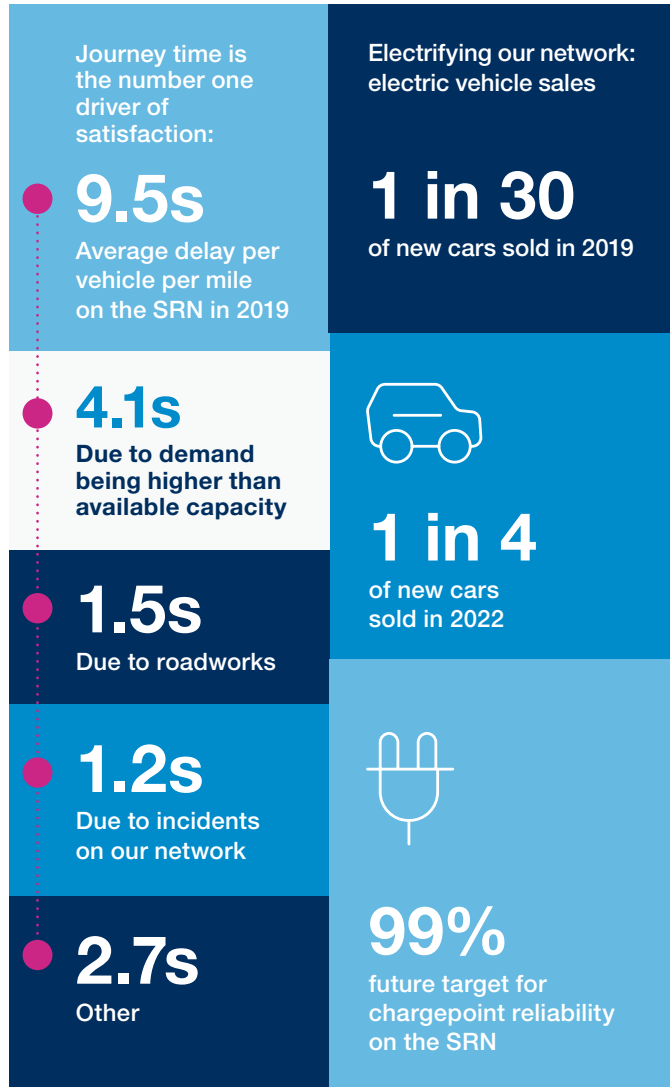
Sustainable network development

- Wide-ranging interventions are needed to halt and reverse the historic decline in biodiversity. Transitioning to net gain will require a systematic approach. First seeking to avoid and minimise damage, taking measures to rehabilitate or restore biodiversity, before finally offsetting any residual, unavoidable impacts.

- Economies are seeking to decouple economic growth from the use of finite resources. For the SRN this will mean making more of the existing network, designing for disassembly and promoting circularity.

- There is a need to improve community health and wellbeing. In England, the total combined cost to the NHS and social care as a result of emissions of particulate matter ($PM_{2.5}$) and nitrogen oxides could reach £18.6 billion by 2035.

- Electrification will rapidly reduce exhaust emissions, and most $PM_{2.5}$ and PM_{10} emissions attributed to road transport are non-exhaust, generated by brake and tyre wear, road surface abrasion and resuspension of road dust.
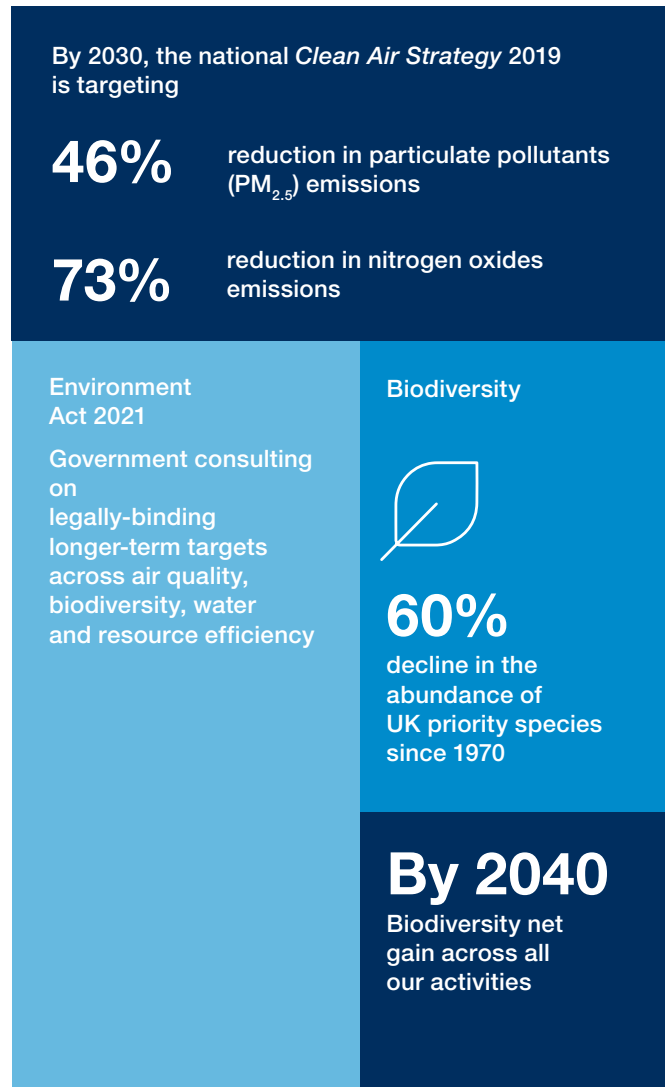
Asset resilience

- Much of our network was constructed in the 1960s and 1970s. in the coming decades, we expect the volume of our renewals work will need to increase, including programmes focusing on our road surfaces.

- We are already seeing changes to our climate. Our network will need to be resilient to warmer temperatures across the year, drier summers, wetter winters, and more frequent and intense extreme weather.

- Changes across digital technologies, the type of vehicles on our roads, and increasingly connected assets will create new operational demands. These will require different skills and approaches across our organisation.

- The emergence and reliance on technology and information will require digital resilience, both for vehicles and our network. Cyber security will be paramount as we operate an increasingly connected set of systems.

Introduction

Overview of our third
road period proposals

Understanding
our network

**Working towards
our long-term vision**

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

How we will manage our network: challenges and opportunities

Customer experience

Journey time is
the number one
driver of
satisfaction:

9.5s
Average delay per
vehicle per mile
on the SRN in 2019

4.1s
**Due to demand
being higher than
available capacity**

1.5s
Due to roadworks

1.2s
Due to incidents
on our network

2.7s
Other

Electrifying our network:
electric vehicle sales

1 in 30
of new cars sold in 2019

1 in 4
of new cars
sold in 2022

99%
future target for
chargepoint reliability
on the SRN

Sustainable development

By 2030, the national *Clean Air Strategy* 2019
is targeting

46% reduction in particulate pollutants
$(PM_{2.5})$ emissions

73% reduction in nitrogen oxides
emissions

Environment
Act 2021

Government consulting
on
legally-binding
longer-term targets
across air quality,
biodiversity, water
and resource efficiency

Biodiversity

60%
decline in the
abundance of
UK priority species
since 1970

By 2040
Biodiversity net
gain across all
our activities

Asset resilience

Ageing assets
Our assets were predominantly built in the 1960s and 1970s

~70%
of concrete road miles
are over 35 years old

Coping with
extreme weather

35%
**wetter winters
by 2070**

Design, Build, Finance
and Operate

10%
increase in network under
our direct control in the
third road period, from
the return of sections
previously managed
through DBFO

5.4°C
increase in max
temperature by 2070

Introduction

Overview of our third
road period proposals

Understanding
our network

**Working towards
our long-term vision**

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

How we will manage our network: our long-term vision

	Our long-term vision	Implications for our delivery in the third road period
Customer experience 	Customers will enjoy stress-free end-to-end journeys, enriched by new digital services and attractive on-route rest areas that offer rapid sustainable fuelling. Safe and reliable journeys will be foundations for our 'whole journey' approach that will make travel on the SRN and adjoining roads, modes, and hubs more enjoyable and stress-free.	To realise our long-term vision we believe we will need to evolve our traditional remit as a highway operator. We see a need to increasingly work in partnership, whether with third party wayfinding providers and the automotive industry to support our closer digital relationship with customers, or with local and regional stakeholders to strengthen the SRN integration with public and active modes. We see a potentially greater 'off-network' role improving freight parking, refuelling and welfare facilities, as well as identifying gaps in existing provision. We want motorway service areas to become more enjoyable places, where customers can take time to relax amongst high-quality greenspace, retail, and charging infrastructure. ► **To find out how we've evolving our customer offer, please see pages 111 to 121.**
Sustainable network development 	Our network and estate will support a thriving environment, enabling healthier and safer communities and a richer, more biodiverse natural environment. We will be an established force for good in communities. We will balance network improvements with wider impacts and creating value beyond our roads.	We have an opportunity to demonstrate environmental leadership, going beyond our carbon commitments as part of a wider, holistic approach to sustainability. We want to demonstrate how our roads can work more harmoniously with the natural environment and support the health and wellbeing of current and future generations. Our land (soft estates) will become increasingly important as we target biodiversity net gain. We want to work with partners to accelerate environmental delivery. Nature-based solutions and recovery strategies are examples of where we can simultaneously deliver diverse benefits, adapting to climate change, improving landscapes, sequestering carbon, and supporting habitats. ► **To learn more about our sustainability plans, please see pages 122 to 130.**

Introduction

Overview of our third
road period proposals

Understanding
our network

**Working towards
our long-term vision**

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

How we will manage our network: our long-term vision

	Our long-term vision	**Implications for our delivery in the third road period**
Asset resilience	Asset and operational resilience will be maximised through an intelligent data-led approach. Assets will be digital by default, providing real-time condition and performance updates to support predictive, data-led decisions that keep our network open, safe and serviceable.	The third road period is an important step in our response to the long-term challenges facing our assets. Our network is ageing and in need of a more significant programme of asset renewal to keep it safe and available. Some parts our network are also vulnerable to climate-related weather impacts. We want to strengthen priority areas of our network to increase its resilience to longer-term climate effects, as well as those that are already starting to cause operational challenges. Expanding our use of sensor technology will help increase our ability to remotely and pre-emptively manage asset and operational risks. ► **For more details on how we'll manage our assets, please see page 97 to 110.**

Introduction | Overview of our third road period proposals | Understanding our network | **Working towards our long-term vision** | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Acting today and planning for tomorrow: our environmental sustainability strategy

Aligned to our long-term strategic plan, we are refreshing our Environmental sustainability strategy. It will bring together a holistic approach to delivering a thriving environment while connecting the country. It will outline how we are putting the environment at the fore of every decision we take. It will also define the environmental outcomes we want to achieve and chart our course to deliver them. Below we explore how our long-term direction is informing our third road period planning.

A richer natural environment	Healthier communities	A net zero network
We recognise that the environment is a key resource which underpins our economy, livelihood and wellbeing. Our estates and our business activities offer real opportunities for the protection and enhancement of the natural environment.	The relationship between the SRN and the wider landscape is key to the health, wellbeing and overall quality-of-life of communities close to our network, and their 'sense of place'.	Road travel will decarbonise fast. Our *Net zero highways plan* sets our trajectory to net zero by 2050. By the end of the third road period we are aiming to reduce carbon emissions from construction and maintenance by between 40 and 50%, when compared to a 2020 baseline, as well as reaching net zero corporate emissions. To achieve this we are making fundamental changes across our whole organisation.
In the third road period one of our areas of focus will be on better understanding the true value of our land (soft estates). Working with stakeholders to develop a programme of interventions that better integrate our land as part of the wider natural environment and historic landscape. This will improve habitat connectivity, enhance biodiversity and create better resilience to climate change. We will manage our land as an environmental asset, building it into our project and management decision-making.	In the third road period we see an expanded role in supporting the health and wellbeing of local communities living adjacent to our network. We will manage our impacts more proactively through targeted interventions that address air quality, noise, water quality, flooding and which preserve and enhance heritage features. We will aim to support more sustainable communities through better design and improved resilience to climate change.	We are rising to the challenge, and we know that the third road period will be central to achieving our commitments. We want to adopt a broad approach, from how we source our energy, our investment choices and procurement and construction, how we influence demand for the SRN, through to supporting the roll out of fast and reliable electric charging.

A connected country
A thriving environment

Nature — We will create, restore and enhance a richer, resilient and more biodiverse natural environment

Carbon — We will deliver net zero corporate emissions by 2030, supply chain emissions by 2040 and road users emissions by 2050

Communities — We will support community wellbeing by tackling local environmental impacts and increasing climate resilience

▶ **To find out more about how we're adapting our network in response to a changing climate, please see .**

Paving the way for Connected and Autonomous Vehicles (CAVs)
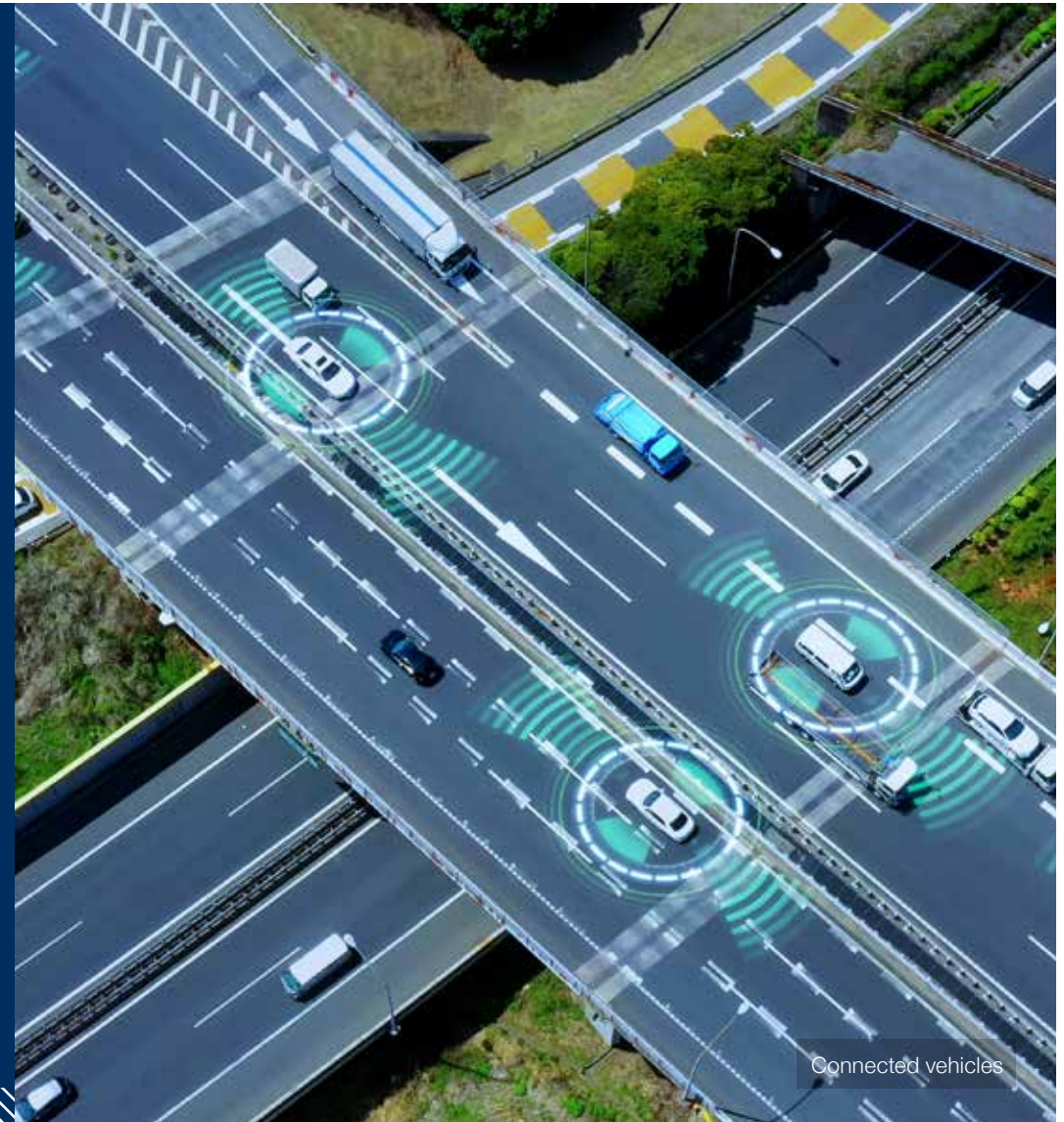
By 2035, highly autonomous vehicles are expected to account for 36% of vehicle sales in the UK[9]. The potential benefits of this include safer roads, increasing economic growth, as well as supporting decarbonisation. To build trust and realise these benefits, there will need to be a new regulatory and safety framework. Much of the focus to date has been on developing the vehicles themselves, and physical and digital infrastructure will also be critical.

CAV adoption on the SRN will require real time personalised journey information, which will depend on developments in our data architecture, as well as full network connectivity. It will require continued investment in our dedicated fibre network, with sensors deployed widely across the SRN to enable it.

Our infrastructure will both provide and receive real-time personalised information. New vehicle to infrastructure data streams, artificial intelligence and machine learning will present opportunities for us to balance the demands on our network in real time and allow us to move towards a semi-automous approach to signalling across our network.

To realise the full potential of automation, the road network will need to operate as a single system across England. We support DfT's one network approach, and will support local authorities in adapting to CAVs using the insights from our Digital for Customer programme. Initially focused on where the SRN meets the local road network, this can form the foundation and architecture of one network.

Ultimately, CAVs will change the way we design our infrastructure and transport networks. We will continue developing our understanding of the impacts, ensuring we support the country's ambition to be a CAV leader by delivering the infrastructure to match.
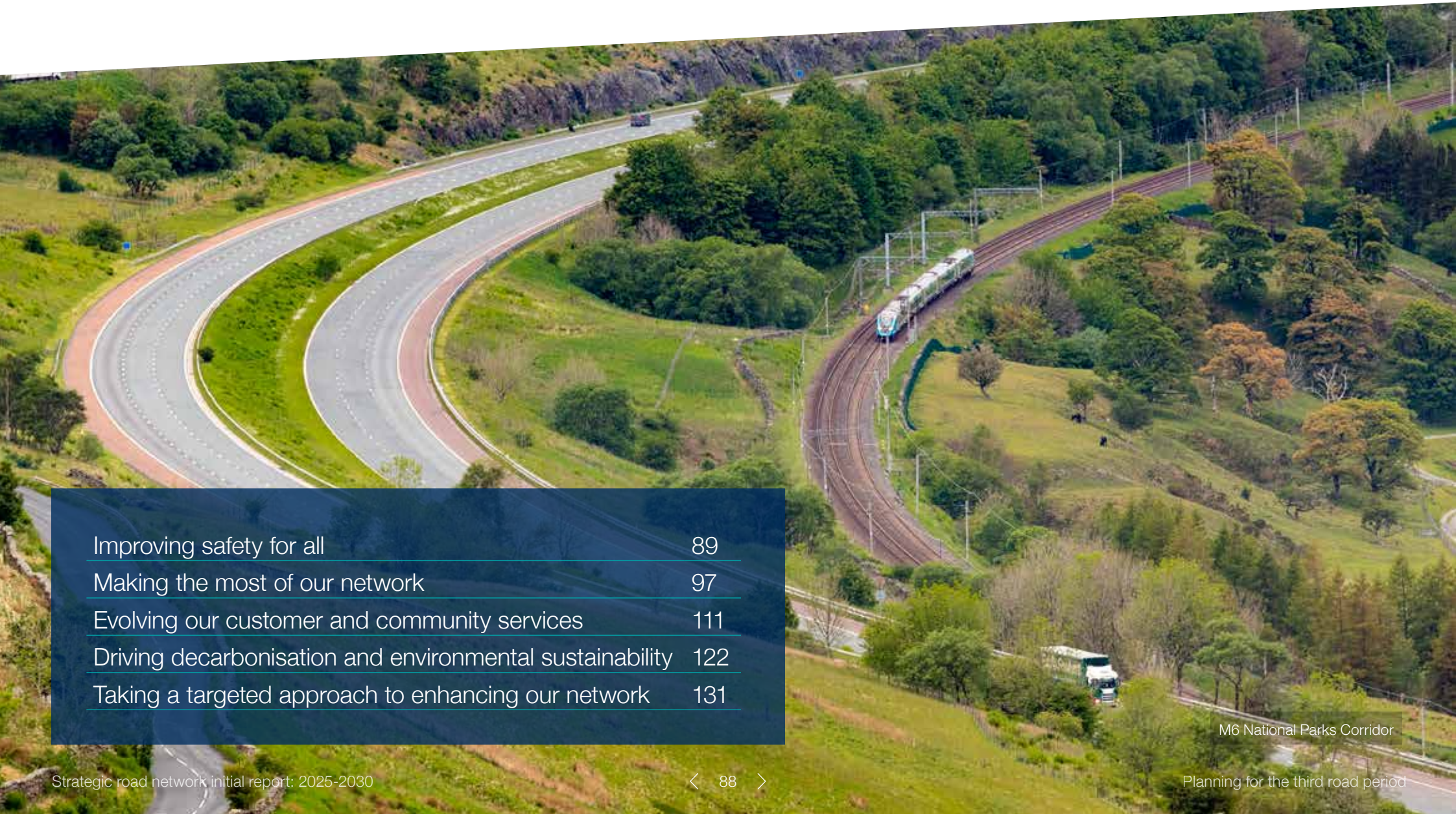
Connected vehicles

Planning for the third road period

M6 National Parks Corridor

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Improving safety for all

Priorities for the third road period

To achieve zero harm we need a renewed focus on investment across every aspect of road safety. Equally importantly, we know that to achieve this ambition widespread collaboration and buy-in is needed. We want to stay on the trajectory of reducing the number of people killed or seriously injured on our network year on year. Our key proposals include:

- Reducing the risk on our 1-star and 2-star rated roads aiming to improve 50% over RIS3 where possible.

- Continue the year on year reduction in the number of people killed or seriously injured on our network.

- Investing more into safety communication campaigns, working with partners and stakeholders to help inform drivers, change behaviours, and deliver broader education campaigns for drivers across multiple formats.

- Embedding safety teams across our organisation with dedicated relationship mangers to influence vehicle manufacturers on the development and implementation of in-vehicle technology and its use in those vehicles on our network.

- Influencing stakeholders to improve the standards of commercial fleet so they have comparable safety technology to those of cars.

- Working with emergency services to identify how we can collectively improve response times to incidents on our network.

- Working with DfT and local police forces on the implementation and continuous improvement of the *National Roads Policing Strategy*, identifying ways to deter dangerous driving on our network.

- Launching wider or further trials for mobile telephone and seat belt detection through the use of cameras and AI.

- Continuing to identify barriers and concerns that impact the perception of safety and confidence for users driving on our network. Focusing activities and interventions to address these concerns.

- Taking suicide prevention into account during the delivery process for all our schemes, implementing the measures in the suicide prevention toolkit on new infrastructure and retrofitting measures at high-risk sites.

- Expanding the Roads for All Forum to include other areas beyond disability and widening our understanding of how we can improve our infrastructure and services to meet the needs of others, such as; lone women, older drivers and non-English speakers.

national highways

Improving safety for all

Achieving zero harm requires increased investment over the longer term

In the third road period, we need to take a holistic approach to safety to reduce the likelihood and severity of incidents and promote greater ownership for safety among everyone who designs, builds, manages and uses our roads. Our approach is grounded in investing and collaborating across the six pillars of road safety, based on the best-practice Safe Systems approach; placing equal focus on each pillar is vital to ensure success. This is supported by key stakeholders, including the Road Safety Foundation.

In this chapter, we summarise key priorities. We know from previous research that all user groups are interested in reducing the number of people killed or seriously injured. Our own RIS3 safety research shows that safety continues to be the number one priority, with a desire for more investment and more ambition in this area.

Our safety priorities will also be informed by our Road to zero harm public consultation, starting in 2023. Through this consultation, we are aiming to understand and validate those safety priorities which have the greatest impact from 2025-2040 which will help us as we move towards our ambition of zero-harm. We will also continue working with government and ensure we carry on aligning to their ambitions and priorities for road safety with the plan to publish their Road safety strategic framework later this year.

Our six pillars of road safety are based on the Safe Systems approach, which is globally recognised and prominently used across Europe, Australasia and North America. We have specifically assigned one of our pillars around safe speed. We believe there needs to be a debate around the role of speed and its place in helping us to achieve a zero harm network.

Our six pillars of road safety

A Zero Harm Network

- Safe roads
- Safe people
- Safe vehicles
- Post collision response
- Road safety management
- Safe speeds

Improving safety for all

Achieving zero harm requires increased investment over the longer term

Safe roads

We will maintain our substantial investment to maintain and modernise our network which will include a range of safety measures to provide a safer, more forgiving and reliable network for our customers. Our focus will be around tackling those parts of our network which have high-frequency or high-impact incidents.

Proposed areas of focus

- The 2020 iRAP star rating model identified about 19% of our network, or 1,458 miles, as being 1-star or 2-star roads. The objective safety score ranges from one (low) to five (high). The survey showed that when accidents do occur on these roads, 40% of them lead to people being killed or seriously injured, making them some of the highest rate of people being killed or seriously injured per vehicle mile.

- In the third road period we will target our highest risk roads. We want to reduce the risk on our 1-star and 2-star rated roads, with the aim to improve 50% over RIS3 where possible. This would involve focusing our investment on our all purpose trunk roads and the edges of our network, for example where we have junctions with local roads or other networks.

- To support this objective we would look to deliver more, smaller value, £2-25 million enhancements schemes and a programme of works along 17 routes.

We also want to continue delivering and maintaining targeted safety measures to reduce incidents that are as a result of conflict between users and roadside objects. For example making verges safer by removing obstacles and installing restraint systems. Also, by identifying and providing safer means by which workers can access the network for maintenance.

We want to implement measures that improve speed limits compliance on our network. Where there is an identified safety need and priority we will consider the need to install or upgrade our enforcement cameras.

We recognise that smart motorways remain one of the most scrutinised parts of our network.

▶ **For more information about our improvement proposals, please see pages 131 to 137.**

International Road Assessment Programme (iRAP)

The star rating protocol, set out by iRAP, is a way to measure how safe our roads are. Every five years, our road network is surveyed and independently assessed to calculate star ratings. The highest risk roads are 1-star rated, while those which pose the least risk for road users are 4-star or even 5-star rated. We are now using iRAP star rating to help provide insights into risks along specific routes to support improvements to our network. This will help us maintain our position as one of the leading road authorities in the world. The iRAP model is also evolving to become more challenging, requiring us to do more to achieve 3-star or better standards.

Improving safety for all

Achieving zero harm requires increased investment over the longer term

Safe people

The ability for people to use and interact with our network safely is key to ensure our progress towards a zero harm network. Education, engagement and communication plays an integral part in enabling safe road use for both road users and workers.

Proposed areas of focus

- It will remain critical to engage with our customers to understand different user groups' perceptions of safety across our network and use this insight to define our future programmes of engagement and education for our users.

- We propose investing more into safety communications campaigns. We will work in consultation with partners and stakeholders with the aim to help educate drivers and make positive improvements to their behaviour while using our network. This will build on the communication campaigns we have run to-date across key safety topics, such as close-following, vehicle checks and 'Red X' compliance.

- We also propose delivering broader education campaigns for drivers across multiple formats, to reach as many of our users, customers and communities as possible, including increasing professional driver training with operators on maintaining the roadworthiness of HGVs and vans.

- A clear priority for our non-motorised users is the need to continue investing in initiatives to protect our vulnerable users such as walkers, cyclists and horse riders. We propose a wide range of initiatives in response, including installing barriers to separate non-motorised users from our network, improve and install dedicated crossing points, more dedicated, signed and well-lit dedicated lanes for non-motorised users.

- We will work with DfT and authorities to support the *National Roads Policing Strategy* to identify and endorse opportunities to deter dangerous driving activities on our network, such as speeding, drink and drug driving, distraction and non-wearing of seatbelts.

▶ **For details of our proposals around active travel and integration, please see pages 114 to 116.**

Protecting vulnerable people by improving our suicide prevention measures

We believe that suicide is not inevitable, our long-term vision is that nobody attempts to take their life on our roads. We know there is much more we need to do. In 2021 there were 59 suspected suicides on our network, an increase of 20 from the previous year, this too was an increase from previous years.

Our *Preventing Suicide in England* strategy, published in May 2022, outlines how we will improve road safety by reducing the number of people who attempt to take their lives and reducing the impact suicide has when these tragedies occur.

In the third road period, we propose developing predictive analysis measures that will help us understand the level of suicide risk within communities and at specific locations to help us work proactively. We will ensure that suicide prevention continues to be taken into account during the delivery process for our schemes and work to implement the measures in our suicide prevention toolkit on new infrastructure. We also want to retrofit measures across our network at high-risk sites.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Improving safety for all

Achieving zero harm requires increased investment over the longer term

Case Study
Roads for All
Accessibility on the SRN

In 2018 we established a forum to improve our understanding of the experiences of disabled people who use our roads to better understand how we can improve our infrastructure and services to meet their needs. With one in five people reported to have a disability, and 3% of all vehicles registered in the disabled tax class, it is vital that we increase accessibility and inclusivity of our network. To give disabled people the confidence to use our roads more frequently and independently, to take advantage of the opportunities that such travel brings such as socialising, work, holidays, leisure and shopping.

The forum brings together those working directly with disabled road-users, as service providers or representative organisations, drawing on their experience and expertise to inform our planning and decisions and providing a better experience for disabled people using the SRN.

The forum supports the development of our network and related services by:

- Enabling disabled people, organisations and other stakeholders to share ideas, raise issues and concerns, make suggestions for improvements.

- Commenting on and helping shape and deliver plans for future developments.

- Providing challenge on issues and concerns and working with us to identify solutions.

- Discussing relevant developments, insight, research, trends and innovations and how these could inform future network and service design.

- Identifying potential opportunities and improvement activities to meet the needs of those with a disability or mobility issues.

- Using our collective communication channels to promote good practice and shared initiatives.

The forum has developed and broadened its membership each year, bringing on new members who reflect a range of impairments and experiences that disabled people face when travelling on our network. This has helped develop several customer service innovations making our roads and services more accessible and inclusive, including:

- Providing accessible means for people to contact us if they have broken down on the motorway and are unable to use the roadside telephone. This included developing an SMS text message facility and providing a British Sign Language video interpreting service that customers can access from their mobile phones.

- Collaborating with us to develop videos to help disabled people understand how to stay safe when travelling on the motorway, including what to do when breakdowns occur.

- Identifying the need for disability access guides to all motorway services.

- Raising the importance of disability awareness, especially for those with hidden impairments. This has resulted in members of the forum providing webinars for our people and our supply chain, devising and producing a disability awareness course for traffic officers and encouraging partnership with the Hidden Disabilities Sunflower scheme.

We need to continue using platforms such as this, and others, to inform and embed inclusive design in everyday projects, policy development and service improvements. We will look to expand the forum to include other areas beyond disability to widen our understanding of how we can improve our infrastructure and services to meet the needs of others such as lone women, older drivers and non-English speakers.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Improving safety for all
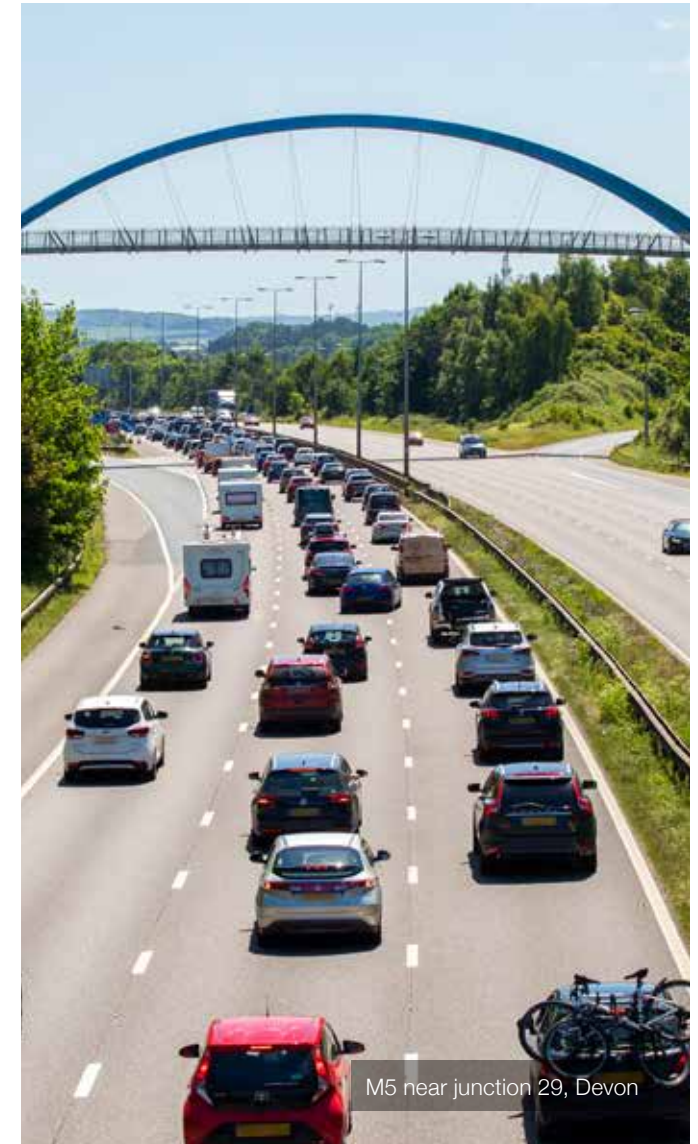
Achieving zero harm requires increased investment over the longer term

Safe vehicles

The safety of our network relies on the road-worthiness of vehicles and people's understanding of how to safely maintain and use them, including how to respond when breakdowns occur. We want to play an ever-stronger influencing role with government and vehicle manufactures to raise standards of safety in vehicles.

Proposed areas of focus

- We want to educate customers about the use, benefits and limitations of safety technologies within their vehicles, such as automatic emergency braking.

- We want to work more in collaboration with vehicle manufacturers. We propose to embed our regional safety teams alongside dedicated relationship managers with the aim to influence industry to improve vehicle safety. We also need to continue understanding the future safety aspects of autonomous vehicles and how they interact with our network.

- We want to work more closely with government around the current and future regulation of in-vehicle technology and the benefits of increasing the mandate of use while driving on our network.

- We also want to work with stakeholders on how we can influence the improvement of standards of commercial fleet (vans and HGVs) on our network, so that they have the same or comparable safety technology to those of cars. With one in five incidents in 2020 involving a HGV the potential benefits this technology could provide is significant. We will also continue working with businesses and stakeholders on education and communication campaigns, to improve the standards of maintenance of professional and commercial vehicles on our network and improve professional driver behaviour.

- We expect to see an increase in the coverage and quality of data we need to provide to support emerging in-vehicle technology. We initially propose to improve technology and data to provide real-time personalised information and prepare for connected journeys and vehicles.

► **For details of our proposals around technology, please see pages 102 to 103 and 112 to 113.**

M5 near junction 29, Devon

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Improving safety for all

Achieving zero harm requires increased investment over the longer term

Post-collision response

Post-collision response is vital for ensuring that people are cared for effectively. It helps minimise network closures, disruption to our road users and reduces the risk of further incidents. Our role is to facilitate access for emergency services and rapidly clear collisions to avoid secondary incidents.

Proposed areas of focus

- We want to identify how we can work more closely with emergency services to improve response times to incidents on our network. This includes embedding dedicated safety teams in our organisation to collaborate with emergency services and drive our First Responder programme.

- We also want to educate, motivate and enable road users, starting with professional drivers, about how to report or respond to incidents they see on our network, by supporting quick responses to those in need.

REFLECTING INSIGHT
From our route strategies

Our priorities are in line with the findings of our route strategies and the strategic objectives laid out on a route-by-route basis. An example objective for the London to Wales route focuses on: Providing safe and reliable journeys through provision of a resilient and consistent route, particularly on the M4 in the western Berkshire authorities and Bristol and the Air Balloon Roundabout (A417).
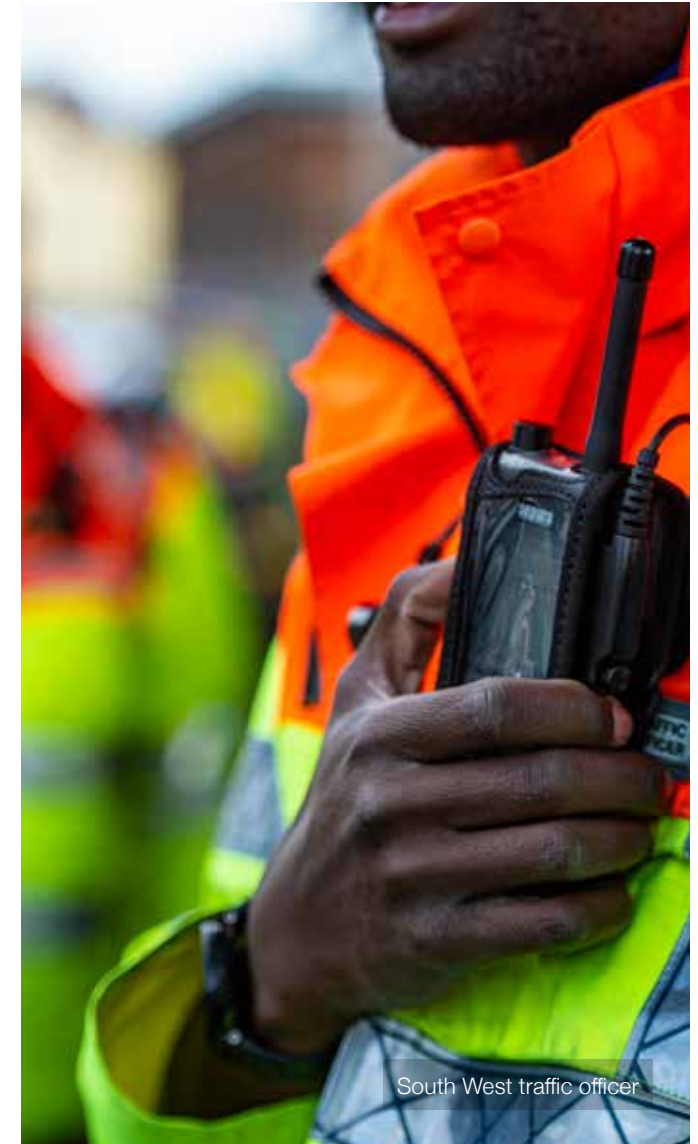
South West traffic officer

Introduction

Overview of our third
road period proposals

Understanding
our network

Working towards
our long-term vision

**Planning for the
third road period**

Delivering in the
third road period

Summary
and next steps

national
highways

Improving safety for all

Achieving zero harm requires increased investment over the longer term

Road safety management

Our approach to road safety management is assisted by technology and based on the growing volume of data, research and evidence available to us.

Proposed areas of focus include:

- We propose launching new trials for mobile telephone and seat belt detection, building on the successful trials completed during the second road period.

- More widely, we want to continue analysing the risk and cause of incidents to understand the best way of avoiding them. This includes speed restrictions or other mitigations where it is not possible to manage speeds.

- We want to build on our approach to auditing the collection, validation, storage and reporting of our data, ensuring we are basing decisions on the best available, factual information.

- We will also continue sharing knowledge and information with local road authorities, working collaboratively to support safe onward journeys.

Safety traffic cones

Introduction

Overview of our third
road period proposals

Understanding
our network

Working towards
our long-term vision

**Planning for the
third road period**

Delivering in the
third road period

Summary
and next steps

national
highways

Making the most of our network

Priorities for the third road period

Our key proposals include:

- Continuing to keep road users safe through active traffic and incident management, including using and improving the technology at our disposal to monitor our network and respond to issues as they occur.

- Expanding our maintenance programme to support the increasing number of assets under our direct operational responsibility as a result of DBFO contract take-back.

- We want to prioritise proactive maintenance, with the aim of reducing large repairs and disruption, better planning of our interventions to reduce delays and carbon-emitting congestion.

- Taking action to build climate resilience and prepare for the forecast impacts of climate change.

- Delivering increased targeted renewals. Our advice is that in responding to our ageing assets which are more complex to manage and in response to historically deferred works, we should:

  - Increase the volume of renewals of our flexible asphalt surface and continue the proposed increased investment in our concrete road replacement programme as set out in RIS2.

  - Ramp up our structures renewals programme targeting those that present the greatest potential for disruption to our network and movement of freight and people, and ensure the condition and stability of our asset stock remains.

- Tackling the backlog of technology assets which are at end-of-life, upgrading legacy or out-dated systems to current standards and increase consistency across our technology estate.

national highways

Making the most of our network

Operating our network

We operate our network 24 hours a day, 7 days a week, 365 days a year. Our customers prioritise the need for a safe and effectively run network. Through our seven regional operations centres and customer contact centre, we are able to respond quickly to incidents and provide real-time, accurate information to our customers.

How we operate our network

- Our regional operations centres provide real-time traffic management across England to maximise the capacity of what we have, for example through the use of variable speed limits.

- They also direct our on-road response to incidents and set signs and signals to keep people safe and keep traffic flowing.

- Our traffic officers, who patrol our roads, manage incidents safely and quickly, clear incidents quickly to get people on their way and act to reduce carbon-emitting congestion.

- We give information to road users so they can plan their journeys before they set off and during them; our information systems provide partners and customers with traffic data and alternative routes.

- We manage other incidents and issues, like Operation Brock, directing to Covid testing and vaccination centres and managing traffic for large events.

A vehicle from our traffic officer fleet

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Making the most of our network

Operating our network

Keeping our network safe, serviceable and resilient

- We need to continue keeping road users safe through active traffic and incident management.

- This means using and improving the technology at our disposal to monitor our network and respond to issues as they occur.

- This also means managing the speed on our motorways, using variable signs and signals to help drivers avoid hazards, maximise the flow of traffic through congested periods and providing information direct to our customers.

- When a road user is in difficulty, we must still be able to marshal a response, directing our traffic officers and working with emergency and vehicle recovery services to get customers to a place of safety and on with their journeys.

- We want to support the changing needs of road users by increasing our work with on-road responders and emergency services to provide electric vehicle recovery and support.

- We propose extending our regular safety patrols to account for the approximate 10% increase in length of our network 1,842 lane miles under our direct control, as eight stretches of road previously managed under DBFO contracts are returned to our operational management.

- This will enable us to spot potential hazards before they have an impact on the safety and quality of our road users' journeys. This includes identifying damaged assets or responding to local conditions such as extreme weather or snow.

- Weather stations and winter fleet enable safe journeys for customers in adverse weather. We propose improving our response to managing severe weather on our network through focusing on known vulnerable points and extending our role to cover the increased network under our direct control.

- We also need to support our corporate carbon priorities. We propose continuing the rolling replacement of our traffic officer vehicles, delivering on our commitment to run a fully electric light fleet by 2030, supported by a network of high-speed charging points. We are seeking alternatives to build a sustainable winter fleet.

Reflecting insight
From our route strategies

These priorities are in line with the findings of our route strategies and the strategic objectives laid out on a route-by-route basis.

An example objective for the Birmingham to Exeter route focuses on improving 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.

Making the most of our network

Maintaining our assets

Every day, hundreds of maintenance activities are carried out across our network. In 2021-2022, we carried out repairs on over 45,000 defects with over 19,000 repaired within 24 hours. These activities range from repairing potholes and removing graffiti to collecting litter and cutting grass. Regular maintenance is vital to ensure we can keep our network open and in good condition to allow our customers to have safe and reliable journeys. Timely maintenance helps us to avoid the need for major disruptive and unplanned works on our roads. In the third road period, we want to increase our programme of works and become more effective in our delivery to ensure that our network continues to function safely and effectively, as expected by our customers and stakeholders.

Our fundamental activities

- Proactive, everyday activities keep our network in good order, for example clearing silt from our drains to prevent flooding, testing electrical equipment to keep our technology available and maintaining the land alongside our roads to keep our signs visible. These activities help to keep our assets in good condition and reduce the potential need for interventions, supporting a better customer experience on our network.

- Reactive work helps us rectify and repair unexpected network needs which prevent an immediate hazard for road users, for example fixing potholes, making our roads safe after vehicles hit safety barriers or cleaning the road after spillages.

Improving how we maintain our roads for the benefits of our customers

- By the third road period, all six National Highways regions will be operating under an approach we call Asset Delivery that gives us greater responsibility for establishing what we do, when we do it and how we do it. This will give us increased and direct control over managing our assets, helping us deliver consistent and integrated improvements in the way we work and deliver benefits to our customers.

- We want to use improvements in the accuracy and timeliness of data to better understand our assets and identify where and how to maximise their function in the most cost-effective way.

- We want to embed a consistent approach to how we manage our assets and the role that maintenance plays alongside renewals, and increase our ability to implement lessons learnt to drive improvements across all regions.

- We also want to increase our focus on proactive maintenance, which is less disruptive and costly to our customer, helping to minimise reactive works.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Making the most of our network

Maintaining our assets

Expanding our maintenance programme

- We need to expand our maintenance programme to account for the increased length of network under our responsibility. This includes eight stretches of road, previously managed under DBFO contracts, which will come back under our direct control.

- We want to increase proactive maintenance activities to reflect the growing volume of technology assets on our network and their increasing important role in supporting the management of traffic flow and operating our network.

- We need our network to be increasingly resilient to extreme weather events. We want to increase our maintenance regime to focus on those assets which have the greatest vulnerability to severe weather, such as our drainage.

- We want to continue maintaining the landscapes that run alongside our roads, with increased focus on ensuring that habitats and wildlife are managed as part of wider ecosystems and interlinked environmental corridors. How we look after these landscapes will be vital to helping us meet our increasing environmental commitments, especially as we work towards delivering biodiversity net gain across all our activities.

A worker fixing a road sign overnight on the M61

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Making the most of our network

Using digital and technology to run our network

We have an extensive and complex technology infrastructure that enables us to safely operate our network and supports the billion vehicle miles travelled annually by our customers. Every day, we use technology to help make decisions on how best to operate, maintain and manage our network, working to increase safety, reduce delays and improve capacity. As the reliance on technology has rapidly become a core component in the way we operate our network and connect with our customers, we need to maximise the opportunities and benefits of our current technology and ensure that our systems are reliable, secure and resilient.

8,750
Traffic monitoring sites: 30 million vehicle counts per site per year

250
Weather monitoring sites: informing 550 gritters

Improving how we manage our network

As set out in our *Digital Roads* strategy, the use of technology and data can help us make better, proactive choices on how we manage our network:

- Our priority is to ensure that our existing technology functions effectively, which we propose to address through our renewals programme.

- We want to further improve our use of roadside and regional operations centre technology, such as stopped vehicle detection and sign settings. This will help us improve how we manage our network and make decisions, enabling us to respond quickly and appropriately to incidents.

- We also want to make better use of technology, such as flood sensors and embankment slip warnings, to increasingly provide us with real-time asset data. This would reduce the need for manual inspections of the different parts of our network.

- There is also the opportunity to significantly increase remote access to technical assets and fault resolution capabilities, reducing road worker exposure and equipment down-time.

- We want to improve the quality of our data, and how we use it, to help us manage risk more effectively and increase our resilience to events that could impact our network

▶ **For information about our proposed technology renewals, please see .**

Technology that supports our network

10
Traffic management centres

4,000
CCTV cameras: 16 million camera switches monthly

10,500
Electronic signs: 6.3 million settings monthly

7,200
Emergency roadside telephones: 39,000 calls handled annually

70,000
Sensors, including traffic sensors

Making the most of our network

Using digital and technology to run our network

Evolving how we operate our network

Our existing system allows us to monitor our network, control traffic where we need to and informing customers of changes. Significant increases in data, connectivity and technology will bring opportunities and choices in how we carry out this role in the future.

Our role could range from providing better real-time data on current and predicted travel conditions to vehicles and customers to implementing a full Intelligent Transport System which uses sensors, real-time data, traffic and control systems and data analytics to maximise network performance.

Our operational role will depend on the type of road and customer needs, as well as wider policy and technology developments. *Connecting the country: Our long-term strategic plan* and *Digital Roads* strategy set out some of this long-term thinking.

In the third road period, we need to lay the foundations to prepare for greater levels of system operation. This will range from improving the data we collect and provide to customers to increasing the security and reliability of our technology, as well as investing in even safer roads.

Building a cyber-secure network

We need to ensure that our data and systems are able to perform at a consistent national standard by:

- including cyber security principles at the very start of any project or system design, aiming to be 'secure by design' across all digital systems

- strengthening our 24/7 security operations centre that actively monitors and tests critical and identified at-risk systems. Ensuring our systems which would support connected vehicles are secure, resilient and able to perform at a consistent national standard

National Highways' West Midlands regional operations centre

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Making the most of our network

Renewing our assets

We undertake renewals to our assets as they reach end of life to ensure they are able to continue to provide their required function to our network.

As part of our planning for the second road period, we forecast a growing third road period renewals programme, responding to our ageing assets which are becoming more complex to manage and in response to historically deferred works. We also forecast that we would be increasingly technology dependent, with shorter life assets becoming ever more central to how we manage our network, and that there would be a need to develop and plan for future climate resilience.

Our view is that this remains true for the third road period, and that if we are to maintain current performance of the network, we would need to increase the volumes of our renewals work in certain areas.

Our approach

- Our approach to renewals typically involves a combination of replacement, refurbishment and holding works.

- We use models to predict the performance of our assets, balanced with evidence from inspections and engineering judgement from our subject matter experts to help us manage asset risks effectively and consistently.

- Our aim is not to fix everything. We aim to balance condition with the level of service we need to provide, making whole life decisions and best use of available resources.

- Our work will continue presenting strong value for money, through making informed, timely, interventions underpinned by strong asset management principles.

M60 junction 14 and A580, North West

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Making the most of our network

Renewing our assets

Our proposed renewals in the third road period

Flexible, asphalt road surfaces

We know from our research and insight from Transport Focus that good quality road surfaces are important to our customers. We work to provide smooth and safe flow of traffic by renewing and maintaining our road surfaces.

- Our analysis shows that we need to increase the volume of renewals work compared to the second road period. This would ensure our road surface continues to perform as it needs to, and in turn provides the same level of service to our customers in the third road period.

- In addition to a predicted increase in the volume of works, we predict a need to carry out more intrusive work to repair a number of structural defects in the underlying deeper layers of the road. This is necessary to ensure that the surface can achieve its full proposed design life and avoid defects returning more quickly and more frequently.

Rigid, concrete road surfaces

As first set out in our RIS2 investment case, there is a need for a multi road period programme of works focused on our concrete roads to ensure their continual safety and availability. As we built up our capacity and capability in the second road period, this enables us to ramp up the programme in the third period.

- Our preliminary analysis predicts a potential increase in the number of lane miles of reconstruction compared to the second road period.

- In the third road period we propose a balance of full renewals alongside holding works that will repair and extend the life of our concrete road surfaces. This will ensure that we have a programme that is deliverable with the specialist resources it requires, conscious of the disruptive impact that a full renewal can bring.

- We recognise that intervening at the right time to avoid rapid deterioration of concrete road surfaces is vital. We will propose a programme of work that we can dynamically flex where rapid deterioration happens as a result of extreme weather or factors beyond our control.

Structures

Through periodic inspections and monitoring of our whole stock of highly diverse structures, we will shape a programme combining maintenance and reactive works to maintain the safety and availability of our network, with proactive renewals across the structures portfolio.

- In the second road period we identified a programme of works for our larger, more complex or vulnerable structures where the cost of intervention was significant. In the third road period we will need to continue with this dedicated programme, targeting those structures that have the greatest potential to present a safety risk or to cause network disruption.

- Within our portfolio many structures have safety critical elements on them that create a specific priority risk as a result of how they were historically designed. We need to manage a rolling multi-year process for their safety and to support timely interventions. We will create specific management plans and special inspections for each, so that we ensure an appropriate funding and resource allowance is available to carry out necessary interventions to maintain their safety and functionality.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Making the most of our network

Renewing our assets

Structures (continued)

- We have a number of structures that we label as 'at risk' because of concerns such as headroom for HGVs, vulnerable piers or specific concrete degradation. We will continually manage these structures and intervene to ensure they remain safe.

- Most of our structures renewal needs are determined by collated inspection condition data, predictive decision support tools and represent coordinated component replacements. These indicate the most effective way we can maintain the condition over multiple road periods. Early indications with this analysis tells us that there is a potential need to increase our predicted preventative programme of works compared to the second road period.

Safety barriers

We have carried out preliminary assessment of the condition of our safety barrier across our network. We have built an initial programme of works to account for the increase in age of the asset base and consideration of how it degrades over time and other factors such as road salting which can accelerate degradation.

- We propose an increasing programme of works in the third road period to replace those barriers that are reaching the end of life and that are at risk of no longer being able to appropriately provide the safety functionality for which they were intended.

- We will continue with a blended approach of full replacement along with short length repairs, managing risk by condition and location of our steel and concrete barriers.

Drainage

We know that drainage is key for managing water away from our network, reducing surface flooding to traffic and reducing damage to our assets and the environment. Our programme of works will help to manage this safety risk, and will also seek to minimise the impact of the runoff on the environment, both in terms of flood risk and water quality.

- We propose a need to increase activities to help manage the impacts of climate change and the potential for more frequent and intense weather events, including improving sections of our network where there is a high risk of it becoming overwhelmed.

M27 Romsey Road bridge

Making the most of our network

Renewing our assets

Technology

We are increasingly reliant on our varied and extensive operational technology to identify incidents, control traffic flow and provide information to our customers. In the third road period, we propose an increase in the volume of renewals activities to maintain the growing number of technology assets that operate across our network.

- We will seek to prioritise replacing faulty devices and ensuring that our technology continues to work effectively, helping prevent single points of failure.

- We propose tackling the backlog of assets which are at end of life to bring all technology within the recommended age range.

- We seek to upgrade legacy or out-dated systems to current standards and increase consistency across our technology estate.

- Through this increase in renewals activity, we aim to deliver a common standard of technology across our network by the end of the third road period. This would make our network more consistent, resilient and secure, helping us deliver more reliable journeys for our customers.

- This work would also enable us to have the appropriate platform to take advantage of the opportunities presented by greater connectivity and automation, in the third road period as well as into the future.

Lighting

In determining the need to renew our lighting asset we consider the benefit and opportunities that the asset can provide to support safe journeys on our network. We also continue to identified opportunities to utilise solutions that reduce our overall environmental impact.

- We propose to target our programme to address our aging lighting columns and consider the benefit to replace or remove them from the network where they are no longer needed.

- We will seek to continue the roll out of LED across our lighting asset to help to continue to reduce our network's carbon footprint.

Tunnels

Our renewals activity is driven by the unique design and operational requirements of each of the tunnels we manage.

- We seek to prioritise investment in our tunnels to allow them to continue to meet safety standards and to replace those components that are beyond reasonable end of life.

Land (soft estates)

The land that runs alongside our roads has a key part to play in our ambitions to improve biodiversity and reduce carbon emissions.

- We have identified a need for a potential increase in investment for issues such as ash dieback and for more significant capital investment of vegetation and habitats that will support our wider carbon and biodiversity agenda.

Points for further consideration

Delivering operational technology improvements

- Once our existing technology is up to standard and constituency across our existing assets we could look to do more.

- Longer term we could also expand on-road technology across our network, including to more remote parts.

- This would enable us to improve how we monitor, control and inform across more of our network.

Making the most of our network

Renewing our assets
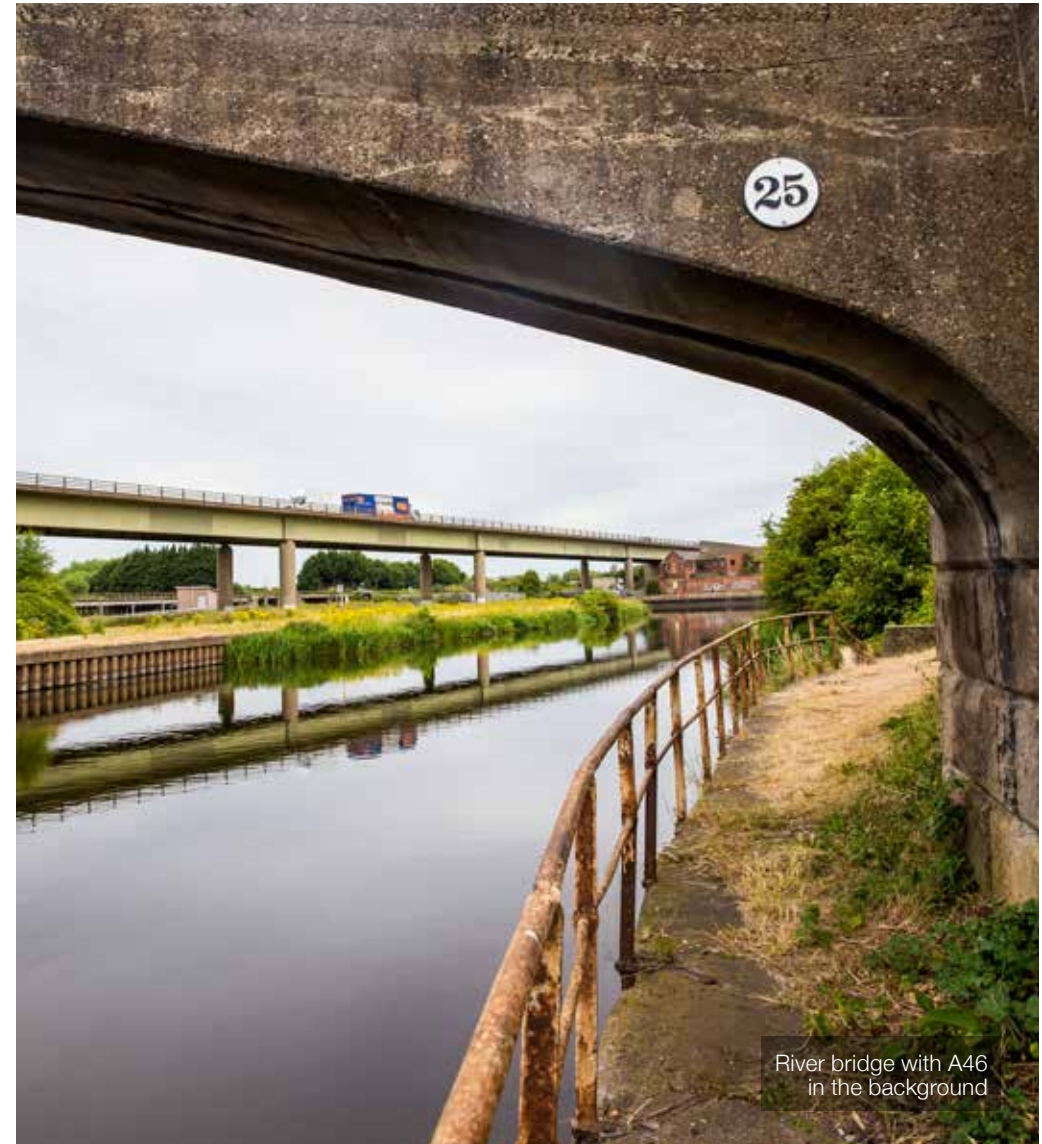
Earthworks, including cuttings and embankments

Our earthwork assets typically have a long service life and degrade slowly overtime. We carry out inspections and use a risk based approach to determine the need of renewals for these assets, prioritising those which have the greatest potential to impact the running lanes.

- Road Period 2, and seek to increase reactive response activities. This will enable us to respond to issues arising from events such as localised and extreme weather events.
- We also propose investing in our readiness to respond to, and prepare for, emerging climate change impacts.

Other assets, including road markings and street furniture

Renewals of these numerous assets are based on well-understood replacement frequencies.

- We propose we will need to increase activity if we are to maintain current levels of overall condition.

River bridge with A46 in the background

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Making the most of our network

Adapting to climate change

A30 near A391 junction

In February 2022, we published our third *Climate adaptation report*, setting our vision that "in 2050, the SRN is resilient to climate change and incidents, such as flooding, poor weather conditions, blockages on connecting transport networks". Longer life assets such as bridges, tunnels, drainage and earthworks will endure for many decades, so we need to consider how the climate will affect them over a long period. It is critical that we take account of long-range climate change, not just today's weather. To prepare our network for the forecast impacts of climate change, we have already started a multi-period programme of works which will need to continue in the third road period.

Long-term risks from future climate change

We know that there are a range of long-term risks from future climate change that we need to adapt to. According to the Met Office's *UK climate projections: Headline Findings*, by the end of the twenty-first century:

- All areas of the UK are projected to be warmer.
- Summers will be, on average, hotter and drier.
- Winters will be, on average, milder and wetter.
- Extreme weather will become more common.
- Lying snow will disappear almost entirely.
- Sea levels will rise, and the increase will be greater in the south and east.

We are already seeing the impacts of these changes now and are working to make our network more resilient to climate change.

The government's *UK Climate Change Risk Assessment 2022* identified key risks to transport infrastructure:

- Risk to infrastructure networks from cascading failures, e.g. energy network failure.
- Risk to infrastructure from river, surface water and groundwater flooding.
- Risk to transport networks from slope and embankment failure.
- Risk from high and lower temperatures, high winds, lightning.
- Risk to services from coastal flooding.
- Risk to bridges and pipelines from flooding and erosion.
- Risk to infrastructure from subsidence.
- Risk to digital from high and low temperatures, high winds and lightning.

Making the most of our network

Adapting to climate change

A590 near Lake District

Proposed actions in the third road period

Our standards include requirements to consider climate change and how we assess the impacts of our projects on the climate. For example, we have updated our standards for drainage design to ensure we build bigger drains able to cope with increased rainfall. We have already started building with more heat-resistant materials.

There are also key actions that we need to take across operations, maintenance and renewals to build resilience so our network can continue delivering the expected level of service for our customers. These long-term actions include:

- Investing in drainage to respond to surface water risk.

- Trialling nature-based solutions to slow the flow of water and reduce the risk of flooding.

- Responding to at-risk embankments and slopes, forecasting that some parts of our network will be more vulnerable to the impact of climate change than others.

- Improving our maintenance activities to respond to extreme weather events.

- Increasing our winter fleet to account for the increasing number of assets under our direct operational responsibility, which will grow in the third road period due to DBFO take-back.

- Inspecting structures that are susceptible to erosion and take remedial action, where fast water streams can cause foundations to lose their strength.

- Investigating new road surface materials that can better respond to extreme temperatures. For example, we have updated our standard for warm mix asphalt. This allows asphalt to be laid at lower temperatures, meaning that it cools more quickly. This prevents delays in maintenance and construction work during warm weather conditions.

Introduction

Overview of our third
road period proposals

Understanding
our network

Working towards
our long-term vision

**Planning for the
third road period**

Delivering in the
third road period

Summary
and next steps

national
highways

Evolving our customer and community services

Priorities for the third road period

Across our activities we seek to reduce congestion and improve journey times, which is key to customer satisfaction. This is not the only a requirement of our customers. We want to grow our capabilities to understand and respond to the complex needs of our diverse customer base, and recognise and address the legacy impacts of the SRN. Our key proposals include:

- Providing customers with more real-time information that they can personalise and tailored to their route requirements, before and during their journeys, and developing strong relationships with a range of third parties to encourage data sharing.

- Ensuring early adopters of connected and autonomous vehicles can take advantage of increasing connectivity, while also ensuring that our network continues to run effectively for all our customers, regardless of their vehicle capabilities.

- Continuing to work proactively with mayors, local authorities, STBs and other transport network providers, in particular engaging earlier in the local and regional planning development process.

- Broadening our activities around improving customer travel choice and supporting better end-to-end journeys, including developing a third road period programme of improvement and enhancements schemes on our active travel infrastructure.

- Developing new freight corridor studies for priority areas, continuing to conduct joint strategic planning with Network Rail.

- Refocusing designated funds, investing across a more specific set of priorities aligned to our strategic objectives and to meet the needs of customers, communities and the wider environment.

Points for further consideration

- Partnering with local authorities more extensively to support local transport plans, to tackle specific congestion on our network.

- Look for more extensive opportunities to introduce segregated provision for non-motorised users along our network.

- setting out an approach to improve the provision of freight facilities, supporting end-to-end journeys and driver welfare.

Introduction   Overview of our third road period proposals   Understanding our network   Working towards our long-term vision   **Planning for the third road period**   Delivering in the third road period   Summary and next steps

national highways

Evolving our customer and community services

### Meeting changing customer expectations and connectivity through technology

We already use technology to meet customer needs, such as using variable speed limits to increase network capacity. As set out in our *Digital Roads* strategy, the digital revolution continues to change what our customers expect and the services we can offer.

We believe that connectivity will be central to customer experience in the third road period. Increasingly sophisticated connected capabilities are changing expectations around real-time data availability, informed decision-making and personalisation.

Providing better real-time information

- We want to provide customers with more real-time information that they can personalise and tailored to their route requirements.

- This would include advanced information on planned roadworks, events affecting their journeys, current incidents, congestion and availability of electric vehicle charging points.

- This live, data would also give our customers greater travel choice, whether by presenting options for alternative routes or by giving details of available electric vehicle chargers.

Sharing our data more widely

- We want to develop even closer relationships with a range of third parties, including transport authorities, transport operators and infrastructure owners. This would enable us to share data and support the delivery of a seamless and integrated end-to-end journey experience for our customers. This would include working with third party information providers, such as Waze.

- Data on customer journeys and needs could also support policymakers and investors with future decision making.

- This could, for example, include evidencing the need for increased investment in electric vehicle charge points based on the number electric vehicles travelling on our network and the journeys they are making.
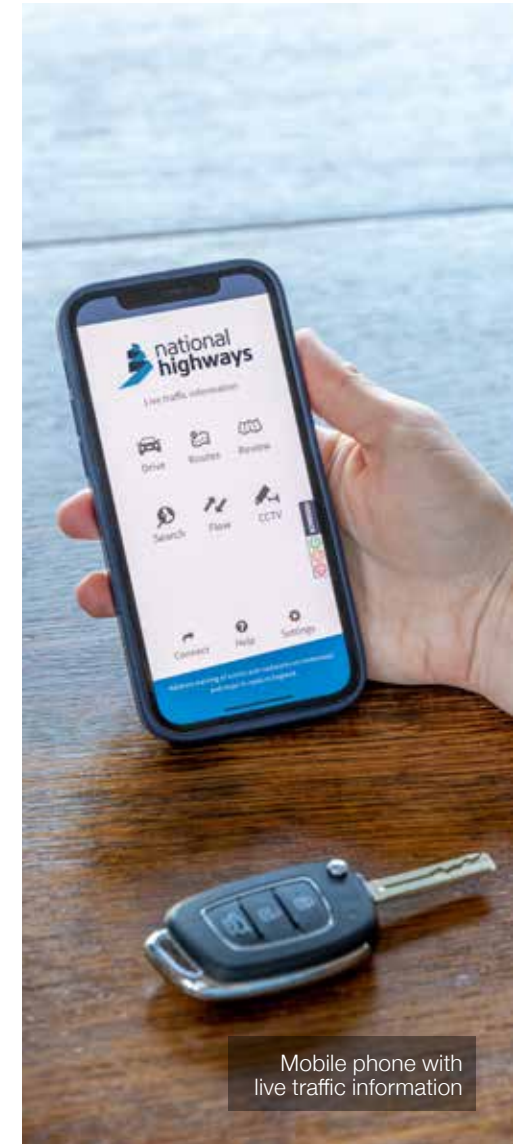
Mobile phone with live traffic information

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Evolving our customer and community services

Meeting changing customer expectations and connectivity through technology

Preparing our network for autonomous vehicles

- Transitioning to high levels of autonomous vehicles is likely to provide many exciting benefits and opportunities, both for our network and those who use it. This will be a gradual process and there is likely to be a mixed traffic environment for a significant period.

- In the third road period, we need to make crucial changes to our systems, data and technology to ensure early adopters can take advantage of increasing connectivity. We also need to ensure our network continues to run effectively for all our customers, regardless of their vehicle capabilities.

- We will work with manufacturers, technology bodies and regulatory and standards bodies to understand the requirements for full network connectivity. This will support preparation for the integration of connected and autonomous vehicles and widespread communication with in-vehicle systems, allowing for the future decommissioning of roadside operational technology.

- When looking at improving connectivity, we could prioritise roads expected to have the highest levels of service and connectivity in the long-term, as set out in *Connecting the country: Our long-term strategic plan.*

REFLECTING INSIGHT
From our route strategies

Our priorities are in line with the findings of our route strategies and the strategic objectives laid out on a route-by-route basis. An example for the London to Leeds route focuses on better informed drivers: "Improving communications to better inform drivers and improve their end-to-end journey experience for trips involving or crossing the A1/A1(M) and M11. Allowing drivers to make informed route choices".
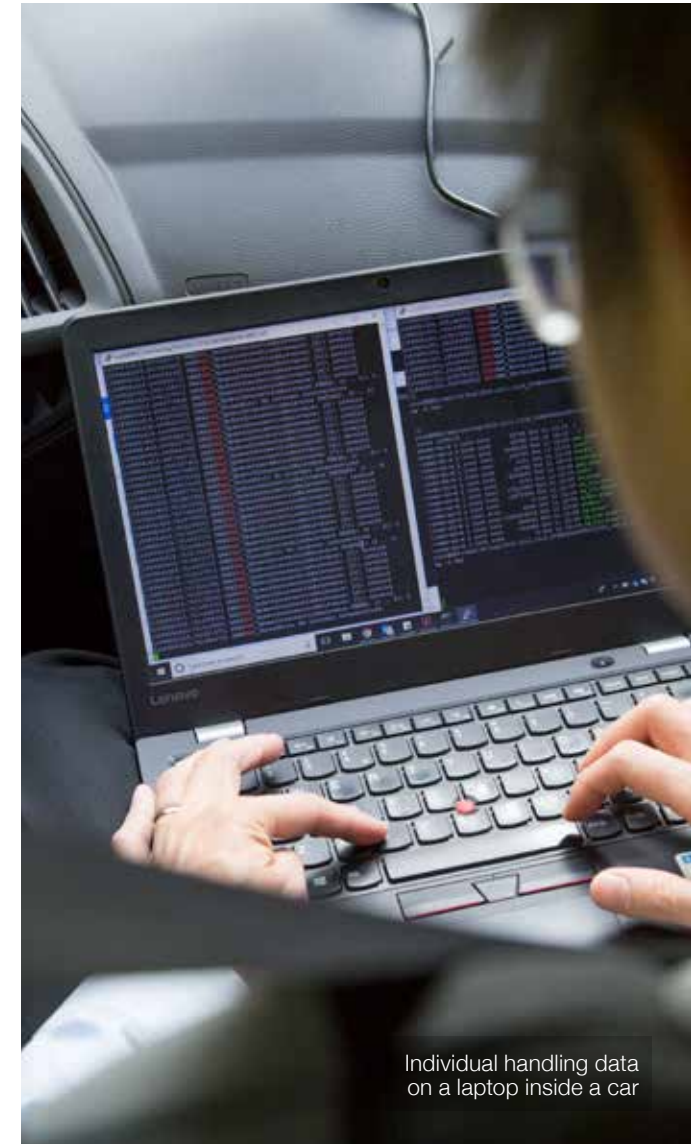
Individual handling data on a laptop inside a car

Evolving our customer and community services

Increasing integration with local roads and other transport modes

Each region identifies their local and regional needs by working with STBs, local authorities and metropolitan mayors. As power is further devolved as part of the *Levelling Up* missions, we must collaborate more closely to bring forward growth and support the areas which need it the most. Crucially, we want to integrate our network, working more proactively and closely to shape the solutions to known issues, enable sustainable development and provide greater travel choice for our customers.

Managing our network for our customers

- We believe that the 'extent' of our network, that we manage, versus that which is managed by others, such as local authorities, is broadly right.

- We want to continue working with government and Transport Focus to look at individual areas where there may be a case for a change in ownership. For example, around junctions where ownership or split ownership affects the consistency of services provided.

- In many cases, we believe issues could be solved through more effective partnership with local partners and land owners. We want to continue working with Transport Focus to understand where solutions to issues require a collaborative approach.

- As part of a wider review of motorway service areas, we also want to look at how we can better work with service owners to improve problem areas, such as signage and access.

Increasing proactive collaboration

- Building on our route strategies, we want to work more proactively with mayors, local authorities, STBs and other transport network providers to identify needs and support development objectives.

- We propose engaging earlier in the local and regional planning development process, helping shape high-level development plans that align with our route strategies and enable sustainable development.

- We want to continue supporting local development sites as a statutory planning consultee, aligning to government's growth and environment objectives.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Evolving our customer and community services

Increasing integration with local roads and other transport modes

Improving travel choice for our customers

- We want to broaden our activities around improving customer travel choice and supporting better end-to-end journeys.

- As part of this we want to improve our evidence base around how people travel and active travel on our network, supporting better decision making.

- We also want to carry out a formal assessment of how re-timing and re-moding journeys could play a role in tackling issues during individual scheme development, in line with our commitment to applying the PAS 2080 carbon reduction standard.

- Successful approaches would need to be tailored to specific local contexts and needs.

Points for further consideration

Providing more extensive support for local transport

- We could partner with local authorities more extensively to support local transport plans. This could mean working to deliver a programme to tackle specific congestion on our network, identified through our route strategies and scheme assessments.

- It could also include delivering or supporting further park and ride facilities, increasing access to public transport and promoting journey choice, or wider actions to support modal shift in towns and cities.

- We could also explore a programme to increase vehicle occupancy, working with local authorities, industry and local businesses to encourage measures including lift sharing and bus and coach travel.

REFLECTING INSIGHT
From our route strategies

Our priorities are in line with the findings of our route strategies and the strategic objectives laid out on a route-by-route basis. As an example, one objective for the South Pennines West focuses on: "Supporting safe and effective local connectivity through improved integration with sustainable transport modes in urbanised areas in locations such as Greater Manchester, Merseyside, Lancashire and West Yorkshire, to minimise the impact of short distance journeys and benefit the environment".

Another objective for our Birmingham to Exeter strategy focuses on: "Supporting effective local connections and integration with bus and rail, particularly in the Greater Bristol and Exeter areas, and facilitating modal transfer for people and goods to reduce route demand and support decarbonisation."

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Evolving our customer and community services

Increasing integration with local roads and other transport modes

Improving active travel infrastructure

- We want to renew and maintain the paths that we have for active travel across our network, which enable non-motorised users, such as cyclists, walkers and horse riders, to safely use and cross our network.

- We also want to go further to improve active travel infrastructure for non-motorised users and local communities, supporting Transport Focus' priority for better and separate facilities.

- We propose conducting an assessment of active travel integration along our routes to identify major or complex severance issues, as well as opportunities to connect with wider active travel provision, such as national cycle networks.

- This would allow us to identify the improvements and enhancements needed on our active travel infrastructure, working with stakeholders such as Active Travel England and Cycling UK.

Points for further consideration

More proactive and segregated active travel provision

- We could also look for more extensive opportunities to introduce segregated provision for non-motorised users along our network.

- This could mean, for example, acquiring more land to create physically segregated 'link' paths alongside, and away from, our highways, in well-managed and environmentally-positive corridors.

Cyclists on a cycle lane next to the A27

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Evolving our customer and community services

Unlocking growth of freight and logistics

The effective movement of freight is part of a functioning and growing economy. Over two thirds of lorry miles in England are driven on the SRN. With rises in online sales expected to continue, HGV movements and distances are forecast to further increase by 2030. We also expect the requirement for freight facilities to increase, highlighted as a problem area in our customer research. Consultation will be key to understanding current and future needs, and we will continue developing relationships with the businesses and sectors most reliant on our network. Analysis connected to DfT's *Future of Freight: a long-term plan* is ongoing and we will integrate emerging thinking into our delivery planning.

Considering freight needs across our schemes and operations

- We are committed to considering freight provision and requirements across all our operations and schemes.

- We want our schemes to consider freight needs from the outset and build in requirements during the development stage. This would mean, for example, building lorry parking into design, costs, planning and construction on projects, where a need is identified.

- We want to work with the freight and logistics industry to support the wider planning process. This would include providing proactive planning support to developers, operators and planning authorities to increase the likelihood of successful outcomes.

- We also want to expand and evolve the information services we provide, further tailoring these to the freight community to help them plan their journeys.

Supporting joint strategic planning for freight corridors

- We propose conducting joint strategic planning with Network Rail and developing new freight corridor studies for priority areas.

- These would build on the process and findings of our joint publication, *Solent to the Midlands multimodal freight strategy* (June 2021), which identified where freight could be moved from the A34 to the equivalent rail route.

- Further freight corridor studies would include the development of consolidated data sets and ways of working, as well as identifying aligned improvement proposals, where possible.

REFLECTING INSIGHT
From Our Route Strategies

Our priorities are in line with the findings of our route strategies and the strategic objectives laid out on a route-by-route basis. An example for the south-west peninsula focuses on: "Supporting the efficient movements of goods: Improve the reliability of freight journeys on the east-west M3, M27, A303, A35 (West Dorset), A30, A38 corridors and north-south on the A46 (Bath) and A36 corridor, alongside improved driver parking and welfare facilities to support both the regional and national economy".

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Evolving our customer and community services

Unlocking growth of freight and logistics

Road sign for East Midland Gateway Rail Freight Terminal

Points for further consideration

Expanding our role to provide more and improved freight facilities

- We believe there is more we could do to support the development and delivery of improved freight facilities. In some cases this would take us beyond our core remit and involve incorporating this within the planning and delivery of schemes. This may impact costs and require more land to be acquired, so would need more extensive discussion with government, local authorities, existing site owners and operators, as well as the freight and logistics sector.

- We support Transport Focus' proposal to develop a formal strategy for facilities, particularly to support the freight and logistics sector. We want to review location demand and provision shortfall to set out an approach to improve the provision of freight facilities, supporting end-to-end journeys and driver welfare.

- This could include assessing the extent to which facilities could be provided as part of our estate strategy, for example considering surplus depots and site compounds to see if they could be repurposed for lorry parks.

- A further option could be the development of a specification toolkit for high standard facilities, including an accreditation scheme, to stimulate competition, and support investment that drives improvements in the quality of existing provision.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Evolving our customer and community services

Investing through designated funds

Since 2015, government has invested in designated funds tailored to meet specific needs and which have the flexibility to make comparatively small investments that have a large societal impact. From 2015 to 2020, we used these to invest more than £653 million in over 2,000 projects, which otherwise might not have received funding. We know our stakeholders welcome the positive contributions designated funds make to local areas. We want to ensure that these funds are used for the right purpose, providing local benefits to our neighbouring communities such as to address legacy network issues or promote environmental sustainability. These funds are not for funding the statutory requirements of schemes.

We will refocus designated funds to invest across a more specific set of priorities aligned to our strategic objectives. We want to encourage further partnering and close working with stakeholders, making these funds easier to access. We will create a Designated Funds programme pipeline to improve delivery. A key change will be that we will identify and develop investment programmes using our route strategies, and through increased collaborative working with stakeholders maximising the opportunities and benefits that can be delivered.

A fresh approach

We want to make our funds more accessible and simpler to apply for, reaching and appealing to a broader set of third-party organisations. With that in mind we are reviewing the processes and governance for our designated funds.

Designated funds investment proposals will:

- Demonstrate collaboration and strong support: Investment decisions will be informed by stakeholders and the Designated Funds Advisory Group to more fully understand how and where we should invest and maximise value. We will look for opportunities for partnership working and joint funding.

- Demonstrate clear strategic benefit: Designated funds will act as a funding mechanism for specific objectives. Projects will show how they contribute to achieving our KPIs or performance indicators, improving overall performance.

- Take a programmatic approach: Investments will form part of a planned designated funds pipeline, with a rolling programme to improve delivery. Some flexibility will remain to respond to changing priorities. Further consideration and discussion will be given to developing specific targeted programmes around areas such as climate resilience, route treatments for safety or other areas that are not currently delivered as part of other programmes.

- Maximise benefits of enhancements and renewals schemes by delivering in parallel: Enhancements schemes will be fully funded to deliver all required outcomes, including statutory obligations. Designated funds will focus on additional investment opportunities, which can be delivered at the same time as major enhancements or renewals schemes. This is more efficient and will reduce disruption to users as well as delivering wider strategic objectives that provide benefits and mitigations to communities.

Sign to Severn Beach cycle path

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Evolving our customer and community services

Investing through designated funds

Investing through four funds

We propose for investment to be split across the following four ring-fenced funds: Safety and congestion; Environment and wellbeing; Users and communities; and Innovation and modernisation. Although broadly similar to the Designated Funds programme for the second road period, our four funds will have a more specific set of focus areas. We will look at what outputs, currently delivered through designated funds, could be carried out more effectively as part of other activities across our network or specific targeted programmes. We will undertake further consultation with our stakeholders and customers to more fully define these priorities.

Safety and congestion fund

Safety remains our number one priority, with continued investment required through a ring-fenced fund to make small network interventions to create a safer network for road users, road workers, neighbours and stakeholders.

- Delivering small, impactful network interventions to improve safety on high risk roads, high frequency accident locations and suicide-cluster areas.
- Segregating people from harm by removing obstacles and installing more safety barriers, footbridges and footpaths.

Environment and wellbeing fund

We will seek out areas in and around our network where we are not already doing work, and use this fund to help address historic network issues, improve the health and wellbeing of our neighbours and promote environmental sustainability. The types of activities would include:

- Addressing the severance of communities by our roads in the past or restoring urban centres that have been de-trunked.
- Reducing noise, improving air quality, improving our heritage assets and restoring a sense of pride in place back to areas on or close to our network.
- Taking opportunities to improve the natural environment on or near to our network through restoring the landscape and improving flood resilience, biodiversity, beyond statutory obligations, and landscape integration.

M6 near Killington Reservoir

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Evolving our customer and community services

Investing through designated funds

Users and communities fund

We want to work more closely with local community groups and local planning authorities as well as other stakeholders. Such collaboration would help us identify where we can use this fund to promote and support active travel, small scale regeneration and improve services for more modal choice and better journeys.

The types of activities would include:

- Building facilities to enable active travel and supporting non-motorised transport on and around our roads, would help improve journeys as well as support people's health and wellbeing.

- Supporting our communities through local initiatives such as small-scale regeneration schemes to restore social cohesion, by learning more about community priorities and building stronger relationships. This will be enabled through a grants administration service, making funding more easily accessible to a more diverse range of stakeholders.

- Improving services, including working with third parties. Improving infrastructure for coaches, buses and freight on and around our roads, providing high quality lorry parking in the right places and driving improvements to roadside facilities. In addition our work continues in improving the quality and timeliness of information for road users and improving inter-modal operability.

Our developing active travel strategy and plan, which will create a portfolio of work to target active travel, will be a vital input to the communities fund, alongside the developing integration investment plan. This will set out the activities we need to do around bus stops, park and ride facilities and public transport hubs. Both these plans will inform our Designated Funds programme.

Innovation and modernisation fund

This fund gives us the ability to test and trial new ideas that we would have not been able to pursue through our normal research and development programme. We will continue using the innovation fund to solve current and future challenges such as:

- improving construction safety

- trialling zero-carbon materials

- moving towards a decarbonised network

- supporting the move to autonomous vehicles

- predicting and responding to customer needs.

Points for further consideration

Creating targeted programmes for effective delivery

- We are developing our understanding of the scope and scale of the challenges for areas such as freight facilities, climate resilience, and route treatments.

- To achieve this we will work in collaboration with our stakeholders to consider whether a set of targeted programmes across these or other areas would be an effective means of delivery.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Driving decarbonisation and environmental sustainability

Priorities for the third road period

Carbon: Embedding and enabling low-carbon approaches across our organisation, network, supply chain and industry This means:

- Achieving net zero corporate emissions by 2030, without purchased offsetting, including by decarbonising our own travel and transitioning our energy generation and usage.

- Reducing maintenance and construction emissions by between 40 and 50%, against a 2020 baseline, by minimising new construction, using Lean construction practices, circular economy principles and other carbon management approaches that minimise construction emissions.

- Enabling the transition to zero carbon motoring on our network, including by encouraging the use of alternate transport, such as active travel, and supporting the installation of approximately 2,500 high-powered, open-access charge points across our network by 2030 through the government rapid charging fund.

Wider environment: Demonstrating wider environmental leadership, working holistically to support social value, health and wellbeing, improving ecosystems and conserving natural resources. This includes:

- Supporting community wellbeing by tackling local environmental impacts such as air, water and noise pollution and increasing climate resilience.

- Delivering activities that restore, enhance and manage a richer, resilient and more bio-diverse environment for current and future generations.

Points for further consideration

To encourage and enable electric vehicle travel on our network, we could go further to support electric vehicle charging facilities. This could mean going beyond our current role and providing the physical infrastructure for charging points that can then be used by our customers.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Driving decarbonisation and environmental sustainability

Achieving net zero for corporate emissions

Our immediate ambition, as published in *Net zero highways*, is to achieve net zero corporate emissions by 2030 without purchased offsetting. This covers the energy used to light and power our network, travel by our traffic officers and the energy used in our offices and other travel. We also include the carbon locked up in trees and plants on our motorway verges.

Transitioning our energy generation and usage

- We propose accelerating the retrofitting of our road lighting, aiming to replace 70% of our road lighting with low-energy LED lighting by 2027. Our electrical assets currently account for 50% of our corporate carbon.

- We want to generate at least 10% of our electricity from renewable sources, such as solar panels, on or near our estate by 2030, subject to site availability. We also want to switch the gas heating for our owned estate to renewable sources by 2030.

- Capitalising on our organisation's new flexible and agile ways of working, implemented since the start of the pandemic, we aim to reduce the overall size of our estate buildings by one third by 2027.

Working to decarbonise our own travel

- Our vehicle fleet, including those used by our traffic officers and inspectors, accounts for 6% of our corporate carbon emissions.

- We are already making progress with decarbonising these vehicles. By 2027, we want 100% of our light fleet, excluding traffic officer vehicles, to be electric. By 2030, traffic officer vehicles should also be electric. Our approach and speed will be based on market availability of appropriate electric vehicles, the whole life greenhouse gas footprint of different fuel options and existing vehicle lease expiry.

- We want to continue incentivising low-carbon travel options for all our people, including updating our expense policy to encourage low carbon emissions business travel.

Continuing to capture and remove carbon from our network

We want to continue tree planting on our network, working towards planting an additional 3 million trees between 2021 and 2030. We also want to undertake more substantive ecological management of the landscapes that run alongside and connect our roads to increase the removal of carbon from our network.

▶ **For more details on our approach to wider environmental sustainability, please see pages 125 to 126.**

Traffic officer charging a National Highways electric vehicle

Introduction

Overview of our third
road period proposals

Understanding
our network

Working towards
our long-term vision

**Planning for the
third road period**

Delivering in the
third road period

Summary
and next steps

national
highways

Driving decarbonisation and environmental sustainability
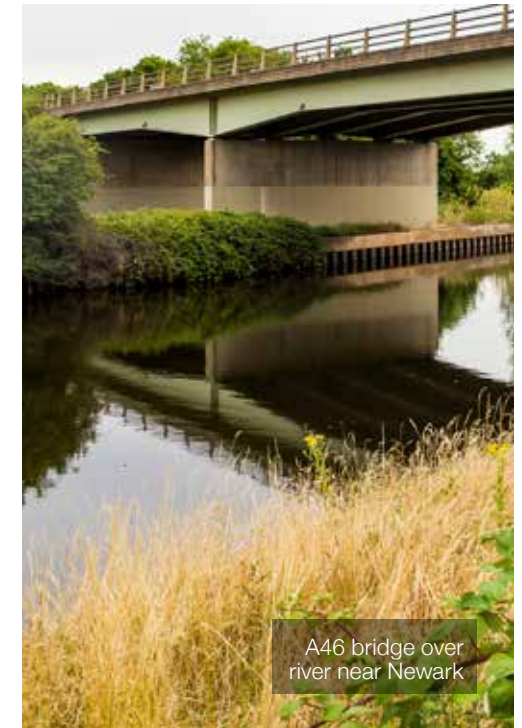
Cutting our maintenance and construction emissions

Our *Net zero highways plan* also set out a longer-term ambition of being net zero for maintenance and construction emissions by 2040. This covers the greenhouse gases emitted in making the materials we use, transporting these materials and construction work on our sites. As one of the UK's largest buyers of construction materials, we know we need to do even more to reduce our impact in this area.

Working to a global standard for managing infrastructure carbon

In the third road period, we will work to a global standard for managing infrastructure carbon: PAS 2080. This framework looks at the whole value chain, aiming to reduce carbon and minimise costs through more intelligent design, construction and use.

This will include our capital portfolio planning, catalysing change across our supply chain and the rest of the industry. We will provide government with the evidence on how to meet network needs by:

- Building nothing – Operate our network for our customers and the environment. Working with partners to support solutions that provide additional capacity on our existing network, such as through digital roads, and building only where there is a strong case to do so. This continues to be the option adopted for the majority of our network.

- Building less – Maximise the benefits of our existing network. Design interventions that minimise the replacement of assets, reuse existing components and/or require minimal additional materials. Maximise the use of existing assets (e.g small changes to junctions/alignment that use the existing network) and use of digital technologies.

- Building cleverly – Use low carbon solutions to reduce emissions when we build. Innovating to develop new low carbon solutions to trial on the network and update to standards. Incentivising and working with the supply chain to implement low carbon solutions on our network.

- Building efficiently – Use new methods to reduce construction emissions. Use modern methods of construction to minimise waste and site works. Use digital solutions to reduce site visits and redesign. Design and construct right the first time, considering asset longevity and whole life carbon to reduce emissions and improve service for customers.

A46 bridge over river near Newark

Driving decarbonisation and environmental sustainability

Cutting our maintenance and construction emissions

Our ambition for the third road period

To help us on our journey to achieving net zero for maintenance and construction by 2040, we have set ourselves a stretching target for the third road period. We want to reduce construction and maintenance emissions by between 40 and 50%, when compared to a 2020 baseline.

While working to meet this target will incur a net increase in costs, we believe this will drive sustainable cost reduction for the industry over the longer term. The short-term increase in costs are likely to come from accelerating plant and vehicle electrification and using lower carbon versions of materials. There will also be opportunities for savings, through innovation or optimising existing possibilities such as using electricity on site more efficiently. These actions will also act as a catalyst for the supply chain to adopt lower carbon technologies and approaches that have benefits beyond SRN construction and maintenance.

New and net zero construction approaches

- We propose using Lean construction practices, circular economy principles and other carbon management approaches that minimise construction greenhouse gas emissions.

- We aim to use only zero carbon plant on our sites and site cabins by 2030.

- We also aim to design a major net zero road scheme in 2025, and complete our first minor net zero scheme in 2030.

- We will continue finding, trialling and adopting the latest innovation and technologies to cut emissions.

Points for further consideration

Delivering a carbon neutral improvement programme

- We could go further to reduce our construction emissions by working with government to agree the delivery of a carbon neutral improvement programme for the third road period, offsetting remaining emissions through high-quality schemes.

Digger on a construction site

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Driving decarbonisation and environmental sustainability

Case Study
Delivering Lower Thames Crossing
A local project with national significance

Our proposed Lower Thames Crossing is an essential component in England's future transport infrastructure. The existing Dartford Crossing provides the only road route for trade, freight and commuters across the Thames, east of London. It experiences high levels of congestion, journey times are extremely unreliable and it is a single point of failure on our network. The Lower Thames Crossing will relieve pressure on Dartford, connect the Channel Ports with the Midlands and the north and is vital for the logistic hubs that serve the London area from Kent and Essex. It supports government's Thames Freeport policy and will release the potential of the region.

A carbon pathfinder
- The Lower Thames Crossing is the first major infrastructure project in the UK to procure for a low carbon solution. We have adopted the best proven technology available in the market as our starting point and provided commercial incentives for every additional kg of CO2e saved. We have also committed to supporting innovation from the supply chain, subject to an appropriate carbon business case.

- We aim for this to be the first major UK infrastructure project to use low carbon hydrogen at scale to power heavy construction machinery. This supports our 2030 target for diesel free construction sites as well as Thames Estuary Growth Board ambitions to create a hydrogen economy in the region, helping make Britain a global leader in this emerging technology.

- We will also bring forward to scale, innovations in key construction materials including concrete, steel and asphalt. This will accelerate the implementation of our decarbonisation roadmaps:

  - Our approach will deliver significant wider benefits for the whole construction sector.

  - Commercialisation of low carbon technology, that will become the norm for future projects.

  - Leading to significant carbon savings across the construction industry.

  - Increasing the achievability of the *Sixth Carbon Budget*.

An exemplar for biodiversity
The scheme provides the opportunity for landscape scale improvements to biodiversity and public amenity. National Highways has worked closely with stakeholders across the region to develop an ambitious programme of wider investment.

We will deliver more connected habitats, including:

- over 400 hectares of woodland planting

- new public parks in Thurrock and Gravesham

- a new community woodland in Brentwood

Over one million extra trees are expected to be planted as part of our plans and there will be a 40% increase in ponds. Green corridors, including seven green bridges, 50 miles of new hedgerows and 4 more miles of ditches will connect existing habitats to the new areas of planting. This will enable wildlife to move and plant life to spread through the landscape more easily, helping them to adapt to future pressures such as climate change. Our approach will support a significant increase in biodiversity across the region.

Work has already commenced, ahead of the main scheme, with £4m of funding already committed for stakeholders to start to deliver more than 20 environmental projects across the region.

Delivery partners include Essex Wildlife Trust, RSPB, West Kent Downs Countryside Trust, Thames Estuary Partnership, Essex County Council, Kent County Council, Forestry England, Gravesham Borough Council, National Trust, and Thurrock Council, as well as private landowners.

Driving decarbonisation and environmental sustainability

Reducing road user emissions

We have set a long-term ambition, as published in our *Net zero highways plan*, for all our customers to be travelling using net zero transport by 2050, in line with the UK *Climate Change Act 2008*. The largest source of emissions comes from vehicles on our network and we need to act fast to enable the transition to zero carbon motoring.

Supporting the roll out of electric vehicle charging and zero emissions HGVs

- All new vehicles will be required to have significant zero emission capability from 2030 and be 100% zero emission from 2035.

- A key barrier to electric vehicle adoption is easy access to charging points. Currently, a driver is never more than 25 miles away from a rapid 50 kilowatt charge-point anywhere along England's motorways and major A-roads, with a total of 809 open-access rapid charge-points, as of 1st January 2020.

- Since January 2022 we have been assisting the Office for Zero Emissions in the development of their £950 million rapid charging fund, separately funded to the RIS. Through this fund, we aim to future-proof charging capacity at motorway and major A-road service areas. The Office of Zero Emissions have set an ambition to install around 2,500 open-access rapid charge points by 2030, starting in the second road period, to promote uptake of electric vehicles.

- We will also continue supporting government's zero emission HGV trials and developing policy, and will agree our preferred investment plan for HGV charging by 2028.

An electric vehicle plugged into a charging point

Driving decarbonisation and environmental sustainability

Reducing road user emissions

Continuing in the third road period

- We want to implement our plan, developed in the second road period, to reduce, remode, reroute and retime journeys. Focussing on journeys under 5 miles and in areas of re-occuring congestion.

- We want to implement our plan to improve public transport on the SRN, which we aim to publish in 2023.

- We also want to have a greater emphasis on purposefully supporting active travel. We aim to use our route strategies to identify how we can improve and integrate active travel routes, and work formally with active travel stakeholders to identify opportunities and review priorities. Interventions would be funded through our designated funds (see pages 115 to 117 for more details), as well as through scheme-specific improvements made through our improvement programme.

- This includes making sure we accommodate current and emerging forms of micromobility, which range from e-bikes and e-cargo bikes to e-scooters and e-mopeds, supporting government's position and understanding that these play an important part in social mobility, journey choice and connectivity.

Points for further consideration

Expanding our support for the roll out of charging infrastructure

- To encourage and enable electric vehicle travel on our network, we could go further to support electric vehicle charging facilities.

- This could mean going beyond our current role and providing the physical infrastructure for charging points that can then be used by our customers.

Traffic light for cyclists and pedestrians

Driving decarbonisation and environmental sustainability

Wider environmental sustainability

We want to take a holistic approach to wider environmental sustainability in the third road period and beyond. The natural environment is a key resource which underpins our economy, livelihood and wellbeing. Together with our aims for decarbonisation, we want to ensure we make decisions across all our activities today that do not compromise or 'mortgage our future' from an environmental perspective.

Our investment priorities for the third road period

We will restore, enhance and manage a richer, resilient and more bio-diverse environment for current and future generations. Our estates and our business activities offer real opportunities for the protection and enhancement of the natural environment.

- **Climate resilience:** Delivering a programme of nature-based solutions that slow the flow of water at a catchment level, in partnership with stakeholders. These projects will support the creation and restoration of wildlife-rich habitats, improve landscapes and sequester carbon

- **Biodiversity:** Exploring opportunities across all our activities to support national efforts to increase species abundance. In particular, deliver our requirement of a minimum of 10% biodiversity net gain on new nationally-significant infrastructure projects, and working towards biodiversity net gain across all our network.

- **Reconnecting the landscape:** Implementing a programme to create safe crossings for both wildlife and people, joining up habitats, and integrating roads into the surrounding landscape to preserve the long-term health of the environment along and next to our network.

- **Waste and resources:** Identifying opportunities to apply circular economy and responsible sourcing targets to pilot schemes to reduce waste and conserve natural resources.

Flowers by A590 East of Victoria services

Driving decarbonisation and environmental sustainability

Wider environmental sustainability

The relationship between our network and the wider landscape is key to the health, wellbeing and overall quality of life of communities close to the network, and their sense of place. Our proposals for the third road period will support community wellbeing by tackling local environmental impacts and increasing climate resilience.

- **Flood protection:** Working even more collaboratively with national infrastructure providers and stakeholders, enabling us to identify integrated environmental solutions and win-win opportunities, such as projects like our A1M Catterick flood alleviation scheme.

- **Water quality:** Accelerating our improvement programme to mitigate all high-risk legacy water pollution discharges by 2030, reducing runoff of pollution and microplastics, improve the quality of the country's waterbodies and support the national objective of halting the decline in species by 2030.

- **Air quality:** Trialling technologies and developing a programme of initiatives to improve NO_2, NH_3 and $PM_{2.5}$ to support our work to bring all our network into compliance with government's national air quality limits on NO_2 and improve the health and wellbeing of local communities.

- **Sites of Special Scientific Interest (SSSI):** Improve SSSI land in our ownership by 2030, supporting national efforts to increase species abundance. Bringing all our heritage assets up to an adequate condition, as a minimum, by 2030.

- **continuing to improve our heritage assets by 2030:** Improving the condition of all our heritage assets by 2030, supporting our aim to respect and preserve heritage features in our ownership.

Our approach

Scaling up – Following successful pilots and trials, we would look to implement more and bigger projects and programmes of work on a larger, landscape scale.

In partnership – We must work collaboratively, sharing expertise and knowledge across organisations to better understand the environment we impact and jointly identify and implement opportunities to mitigate, conserve and improve our natural environment.

Increasing delivery pace – We want to deliver more quickly, for example by accelerating a programme or using different delivery approaches so that we can achieve benefits earlier.

More holistic – We want to manage, create and design more holistically, delivering projects and programmes that provide multiple benefits.

Reflecting insight
From our route strategies

Our priorities are in line with the findings of our route strategies and the strategic objectives laid out on a route-by-route basis. An example for the East of England focuses on:

"Safeguarding sensitive and protected environmental assets along the route and improving environmental conditions for residents impacted by the SRN -minimising impacts at environmentally-important locations like Thetford Forest (A11), the Broads (A47), Dedham Vale (A12) and supporting improved air quality and noise conditions along the A47, A12 and A120"

Introduction

Overview of our third
road period proposals

Understanding
our network

Working towards
our long-term vision

**Planning for the
third road period**

Delivering in the
third road period

Summary
and next steps

national
highways

Taking a targeted approach to enhancing our network

Priorities for the third road period

We believe there remains a strong case for improving our network to increase safety, improve journeys and enable national and local economic growth. Our research shows that customers still believe in the need for these schemes to address existing issues, with increasing preference for smaller schemes that bring tangible local benefits. Our key proposals include:

- Assessing all options against the PAS 2080 global standard for managing infrastructure carbon.

- Continuing to develop and deliver committed schemes from RIS1 and RIS2, addressing bottlenecks and the varying standards of roads which are the legacy of inconsistent investment in our network.

- Continuing to take forward all stocktake actions and working with DfT to deliver the recommendations made in the Transport Select Committee's report to further improve the safety of smart motorways.

- Where funding allows, increasing focus into smaller £2-25 million local schemes to support levelling up and spread opportunity, tackle current known issues and enable growth and align with local travel plans; we have already identified a potential programme of small schemes across the country.

- Increasing safety on single carriageways and other A-roads, in particular through route treatments to deliver improvements along a whole route, rather than one specific part of the road.

Taking a targeted approach to enhancing our network

Ensuring we improve our network in a sustainable way

As well as keeping our existing assets running safely and reliably, we need to invest to improve our roads where they are not up to the job the country asks of them. We must be ever more mindful of our impact, delivering improvements in a sympathetic and sustainable way.

Improving our existing network, not adding new roads

- There is no doubt that balancing network needs with the demands of the 21st century will require compromise and difficult choices. We must think carefully about the scale and nature of our improvement portfolio.

- We identify potential improvements based on current performance, customer requirements, government initiatives, local growth plans and future performance indicators.

- Emissions from the provision of additional capacity on our network, from construction itself and the increase in traffic the additional capacity enables, will be small. We recognise that these still need to be carefully managed.

- Crucially, we must assess all options against the PAS 2080 global standard for managing infrastructure carbon.

- It is important to note that improving our network does not necessarily mean adding new roads. We are committed to investigating all non-physical methods of providing solutions to local problems before building. This means, for example, increasingly using technology, facilitating active travel and facilitating moving traffic off our network.

- We propose developing schemes only when problems cannot be fixed by other approaches, progressing those schemes that have wide and varied support from stakeholders and users.

- We must also continue ensuring our improvements programme as a whole delivers robust value for money, and that it is more flexible to uncertainties in demand and can continue to meet changing needs.

► **For details of our commitment to applying PAS 2080, please see page 124.**

Worker carrying out roadworks

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Taking a targeted approach to enhancing our network

Delivering committed schemes

Bottlenecks and varying standards of roads affect journeys. The legacy of inconsistent investment prior to RIS1 has led to our network being developed in a piecemeal fashion, impacting safety, effectiveness and customer experience. We already have a series of committed enhancements schemes, set out in RIS1 and RIS2, which are focused on tackling these challenges.

Progressing our existing commitments

- RIS1 and RIS2 set out priority areas for improvements to bolster capacity, increase resilience and drive economic growth, providing opportunities for people and businesses across the country.

- Twelve new enhancements schemes were announced in RIS2, ranging from Lower Thames Crossing in the south-east to the A66 Northern Trans-Pennine in the north-west.

- A large part of our improvement portfolio for the third road period is likely to consist of schemes which we have already committed to deliver. These are expected to bring significant benefits, including improved traffic flow, greater connectivity and reduced congestion.

- We must continue working closely with government and stakeholders in the development of these schemes to ensure they meet the future needs of our network, meet our environment commitments and demonstrate value for money.

Points for further consideration

Delivering a carbon neutral improvement programme

- We could go further to reduce our construction emissions by delivering a carbon neutral improvement programme for the third road period, offsetting remaining emissions through high-quality schemes.

| Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps |

national highways

Taking a targeted approach to enhancing our network

Delivering committed schemes

Segment of a smart motorway (M1)

Smart motorways

It is now over three years since the Transport Secretary published the *Smart Motorway Safety: Evidence Stocktake and Action Plan* in March 2020.

During 2021, the Transport Select Committee undertook an inquiry into the roll out and safety of smart motorways, publishing their report in November 2021. In January 2022, the Department for Transport (DfT) announced that it had accepted all of the committee's recommendations, including the pausing the roll out of new all lane running schemes to allow the collection of further data and stakeholder feedback.

The Department subsequently announced that plans for new smart motorways will be cancelled in recognition of the current lack of public confidence felt by some drivers and cost pressures due to inflation. Smart motorways earmarked for construction during the third Road Investment Strategy (2025-2030) and previously paused schemes will now not go ahead.

We propose to continue working towards achieving the commitments set out in the Smart Motorway Safety: Evidence Stocktake and Action Plan and working to deliver the recommendations made in the Transport Select Committee's report to further improve the safety of smart motorways.

A decision on whether to retrofit emergency areas across the remainder of all lane running smart motorways will be considered as part of the development of RIS3, based on the evidence.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Taking a targeted approach to enhancing our network

Delivering more, smaller enhancements schemes

Transport Focus, our customers and other stakeholders, such as STBs and MPs, have advocated for an increased priority on smaller, locally-focused enhancements schemes in the third road period. These schemes would tackle current known issues on our network and bring tangible local benefits, such as reduced accidents and congestion, helping enable growth and support government's *Levelling Up* agenda. These schemes can typically be delivered quickly and cost-effectively, with the benefits realised sooner. They usually have lower environmental impact than larger and more complex schemes.

Tackling pinchpoints and problem areas

- We propose, subject to funding, increased focus on into smaller £2-£25 million schemes.

- We want to focus, in particular, on the edges of our network, helping address the forecast congestion around them and with cities at the end of the second road period.

- This would help us improve how our roads connect with the wider road network, for example through better slip roads, as well as improve integration with other transport networks, for example through redesigned junctions. This would support local movement and local priorities, such as reducing traffic in city centres.

- As these schemes would be predominately within our network, they would typically have low or even positive environmental impact, for example, improving the air quality of local communities by removing pollutant-emitting congestion.

- Through our evidence gathering process, including from our route strategies and work with STBs, we have already identified a potential number of small schemes across the country. The next step would be to develop a programme of schemes for each of our geographic regions for consideration.

Increasing safety on single carriageways and other A-roads

- Following a study to determine how to address actual and predicted safety concerns across our network, using guidance endorsed by the Road Safety Foundation, we want to increase our focus on single carriageways and other A-roads.

- We have identified the opportunity to make improvements along 17 routes or stretches of these roads in the third road period, which would represent 147 miles of our network.

- We refer to these as 'route treatments' as we want to deliver improvements along a whole route, rather than one specific part of the road.

- Our works would consist of a variety of interventions, including installation of roadside barriers, improvements to signs, road markings and lighting, junction improvements and pedestrian and cycle crossings.

- Through these interventions, we would improve safety on these typically rural roads, benefit the communities that rely on them, spreading opportunity and supporting government's *Levelling Up* agenda.

Taking a targeted approach to enhancing our network

Meeting current and emerging needs through new schemes

We continually work with stakeholders to understand the evolving needs and priorities for our network. We have already identified a wide range of potential schemes to resolve key issues on targeted parts of our network, including increasing safety, reducing congestion, improving local integration and increasing resilience. These schemes will help us meet the needs of our customers and stakeholders as well as supporting economic growth and preparing for the future. We currently have more options for consideration than we would be able to deliver in a single road period. Importantly, we would only progress new schemes if there is a strong case and ensure they can be delivered in a way that meets our environmental commitments.

Evaluating the possible schemes set out in RIS2

- In RIS2, government identified over 30 possible 'pipeline schemes' across our network for delivery in future road periods. These schemes vary in scale, with potential costs ranging from £50 million to £2 billion.

- They are focused on meeting national and regional priorities, including reducing congestion, improving resilience on import routes and supporting economic growth.

- Many of these schemes, if selected to progress, would need to be delivered across multi-road periods.

- We have worked, and will continue working, closely with DfT to assess the suitability of these schemes. Our appraisal approach, which has environmental considerations at its core, will help us assess which schemes are of most benefit to our customers and communities.

Progressing our strategic studies

- We currently have five strategic studies, which are designed to support government in understanding how to resolve some of the most complex challenges on our network.

- These studies involve assessing over 40 solutions covering multiple road periods, around improving connection, reducing congestion and facilitating growth of economic regions.

- It is important to note that potential solutions would not necessarily determine the need for new roads, and could instead identify how best new and existing developments could work with existing infrastructure.

- In collaboration with our stakeholders and government, we will determine how best to support and prioritise those solutions for inclusion in RIS3.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | **Planning for the third road period** | Delivering in the third road period | Summary and next steps

national highways

Taking a targeted approach to enhancing our network

Meeting current and emerging needs through new schemes

Reviewing our long list of feasibility studies

Since we were formed as a government-owned company in 2015, we have collated a significant database of information on the past, present and future needs of our network, as well as options to improve its function and benefits to customers and those who depend on it. We have used this information, as well as consultation with public and stakeholders, to refine our view of the future needs and requirements of the SRN through our Route Strategies. This information will also be used to help inform proposals for future road periods.

Reflecting insight
From our route strategies

We will use our route strategies and the strategic objectives laid out on a route-by-route basis to inform our portfolio of new improvements.

A relevant priority for the London to Scotland East (North) route focuses on: "Supporting sustainable economic growth and levelling up in the north through smooth and reliable journeys on the M1, the A1 and the A19".

Points for further consideration

National programme for freight facilities

- We propose to establish a national programme to deliver more and improved freight facilities across the country, responding to the clear need to support the freight and logistics sector.

► **For details of our proposed improvements, please see .**

A64 Hopgrove

national **highways**

Delivering in the third road period

A14 Cambridge to Huntingdon

Introduction

Overview of our third
road period proposals

Understanding
our network

Working towards
our long-term vision

Planning for the
third road period

**Delivering in the
third road period**

Summary
and next steps

national
highways

Evolving how we deliver

Introduction

We are continuing to evolve, as we aim to offer more than just road building and operational management of our network. We want to carry on being the leaders in our field, working with government, customers, communities and stakeholders to make road transport safer, greener and cleaner to meet the changing demands and challenges of the third road period.

In the previous chapter, we set out what we propose to deliver to help us meet our third road period vision. Here, we discuss how we will change as an organisation and work with our supply chain to meet these changing demands and address the challenges of delivery.

Delivering our ambitions will require new approaches, processes and tools to be developed and adopted across both our organisation and the supply chain. Many of these are not yet widely available on the market and will need to be developed internally or in collaboration with partners.

Introduction

Overview of our third
road period proposals

Understanding
our network

Working towards
our long-term vision

Planning for the
third road period

**Delivering in the
third road period**

Summary
and next steps

national
highways

Delivering RIS3 Successfully

Since the creation of our organisation as part of Roads Reform in 2015, our programme of work has grown in size and scope. As such we have evolved as an organisation, both in capacity and capability to ensure we continue delivering all that is asked of us. The *Evaluation of Roads Reform: the changes made to the management and operation of England's Strategic Road Network since 2014*, published in July 2022, supported this, concluding that we have adopted a more commercially-driven culture of efficiency, high performance and continuous improvement. It is vital that we continue providing confidence and assurance that investment of public funds in National Highways to manage the SRN is spent responsibly.

As we progress through the second road period and look towards the third, we need to ensure our organisation and supply chain evolves sustainably. This will allow us to deliver in the most effective way, remaining flexible and responsive to the evolving needs and priorities of our network and its users.

The key to ensuring that we do this effectively as an organisation is by having:

- The right people with the right skills, technology, data and the operating environment in which they can perform at their best.

- A more integrated and cross-functional organisation focused on improving safety, customer service and delivery.

- A coordinated and central transformation approach aligned to the future objectives of the SRN and our organisation.

- A commercially efficient and effective supply chain that can support our organisation.

M42 Junction 6 staff working

We will focus on five areas as we continue evolving in response to the challenges we face:

- Harnessing data, technology and connectivity to improve the SRN and the way we deliver.

- Maturing our asset management approach, focusing on customer service and resilience.

- Enabling rapid decarbonisation of our roads in the way we identify and deliver solutions and robust evidence on how we understand and mitigate impacts.

- Driving efficient delivery of enhancements and renewals schemes on our network by taking lessons learnt from best practice.

- Improving how we operate as a business to be more agile and responsive to the future needs of our users and our network.

This will be supported by a programme of work aimed at developing the capabilities we need for the third road period and beyond. Focussing on attracting and retaining the right skills, strategically planning our workforce while continuing to develop early talent through graduate and apprenticeship schemes.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | **Delivering in the third road period** | Summary and next steps

national highways

Building a skilled and inclusive organisation

With a current workforce of over 6,000 people, we manage 4,500 miles of road, facilitate 95 billion customer driven miles every year and, since our creation in 2015 have delivered 50 major schemes. To continue delivering the road improvements that will make journeys safer, more reliable and integrated, we want to continue developing our workforce. We want to attract talent from a wider and more diverse group in order to create an organisation representative of the users and communities it supports.

Staff in meeting

Ensuring we have the skills to deliver

Our future ambitions require a highly capable workforce, covering a variety of existing and new skills that continually evolve in response to future demands and challenges. From an increased focus on digital, to growing environmental consciousness, we aim to improve our capabilities to enable successful delivery in the third road period and beyond.

To achieve this we have developed a people capability programme, identifying twelve critical people capabilities required to deliver the varying and challenging activities we undertake. We are in the process of assessing the maturity of each of them within the organisation, as well as setting the ambition for what is required for the short, medium and long-term. To help us achieve the intended level of maturity, we are developing and implementing an action plan which seeks to deliver specific actions for each capability, with a set of key themes that cut across all of the capabilities, including:

- Longer-term workforce planning aligned to these capabilities.
- Improving our employee value proposition and attraction to acquire the right talent more effectively.
- Retaining existing talent by developing our talent pools aligned to these capabilities.
- Developing our early talent pipeline aligned to our future capability requirements.

- Building specialist skills in a targeted way across the organisation, whilst also developing our people's general understanding of each capability.

Developing early talent

We are developing a pipeline of talent across several skill sets focused on the capabilities we need for the future. From transport planners, project managers, economists and civil engineers to cyber security technicians, we are investing in early talent programmes to develop our future leaders.

We are focused on attracting talent from a wide variety of backgrounds. Alongside our well established graduate and apprentice schemes, we are offering industry placements, trainee schemes, T-Levels and internships, providing a range of entry level career routes into and across the organisation.

Since 2015 we have taken on over 500 graduates and apprentices across 30 different schemes. Eighty new graduates and apprentices joined us in September 2022 and we have a planned intake of 150+ in 2023. By the end of RIS3 we will have 5% of our workforce as early talent, which will be around 350 graduates, apprentices and placement students on schemes with us at any one time.

Introduction

Overview of our third
road period proposals

Understanding
our network

Working towards
our long-term vision

Planning for the
third road period

**Delivering in the
third road period**

Summary
and next steps

national
highways

Building a skilled and inclusive organisation

Promoting diversity and inclusion

We believe representation and diversity in the workplace matters. Different backgrounds and perspectives breed new ideas and solutions which have the potential to revolutionise our ways of working.

Great progress has been made in previous decades to shake the stereotype of a construction and transport professional, and we believe there is still more to be done.

We are increasing the quality of our workforce diversity data in order to inform improved decision-making and better support our workforce. This in turn will enable us to:

- Provide an inclusive working environment that enables all our people to thrive and bring their whole selves to work.

- Increase the diversity of our people, to better reflect the communities we work in and support through proactive outreach campaigns.

- Embed inclusion throughout human resources policies, procedures and processes, to increase the capability of our people.

- Support our employee networks to thrive and work in partnership on the design and delivery of our inclusion objectives.

- Reduce the number of pay gaps between diverse groups of our people.

Roundtable discussion at one of our regional operations centres

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | **Delivering in the third road period** | Summary and next steps

national highways

Continuing to become more effective in our delivery

We continue to improve our approach and methods of delivery, supported by improvements to our ways of working and how we engage and work with our supply chain.

Moving into the third road period we have developed changes to the process of securing Development Consent Orders (DCO), helping us to minimise the risk to delivery. We will continue supporting similar initiatives to accelerate delivery through better and more effective planning processes.

We are also at the start of a digital journey that will improve the way we design, build and operate the SRN. Our *Digital Roads* strategy sets out how we will continue to capitalise on the benefits of data, technology and connectivity through the second road period, and this is just the start. In the third road period we will look to identify further opportunities to harness new technologies and data insights to make us a more effective organisation.

Accelerating delivery through effective planning processes

Project Speed was unveiled by government in the Summer of 2020 with the aim of bringing forward proposals to deliver public investment projects more efficiently. In supporting the initiative, we reviewed every part of the infrastructure project lifecycle and looked to remove and reduce longstanding constraints within our complex planning processes.

We identified key areas which could be streamlined such as governance, environmental assessments, traffic modelling, economic assessments and the DCO process. We have trialled these new learnings and approaches on the A66 Northern Trans-Pennine upgrade which will transform east-west connectivity across the North of England. We will take the lessons learnt in this trial and look to roll out further efficiencies across nationally significant infrastructure projects and small-scale enhancements schemes, enabling quicker delivery and realisation of benefits for future public investment projects.

Developing our DCO process

To minimise delivery risk of associated DCO delays, we are transforming the way we work. Working with stakeholders, we developed the DCO action plan, setting out how we will respond to the major challenges we face. Workstreams identified include:

- Developing a risk matrix for schemes yet to be consented, to identify where greater focus is needed from National Highways and stakeholders in order to progress.

- Using the lessons learnt from schemes that have completed the DCO process and ensuring they have been embedded into other schemes, to better inform and streamline the process for other schemes.

- Improving pre-engagement prior to DCO submission, to improve first time approvals.

- Risk mitigation for schemes at examination stage to increase delivery confidence.

Introduction Overview of our third road period proposals Understanding our network Working towards our long-term vision Planning for the third road period **Delivering in the third road period** Summary and next steps

national highways

Continuing to become more effective in our delivery

Improving design and construction activities

Our future delivery of construction will also need to be more effective to minimise disruption to customers on our network as traffic volumes are forecast to increase.

To support this, we will improve the processes that we use. We will work even closer with stakeholders and our supply chain to move delivery decisions forward more quickly, from consents through to completion.

We will advocate and embrace how we can employ new technologies such as digitally enabled design, modular construction, automated plant and connected construction sites to transform the delivery of our major enhancements schemes and renewals programme. Using these technologies will provide greater safety to our users and workers, reduce our carbon outputs and environmental impacts and increase our design and onsite productivity.

Construction workers laying foundations

Continuing to become more effective in our delivery

Using digital to become a more effective organisation

Digital design and construction is a critical component of the *Digital Roads* strategy. The strategy focuses on improving the technology and data available to teams across National Highways and the wider supply chain, in order to improve design and construction activities.

Through standardised platforms and services, we will be able to roll out application tools and technologies to meet our evolving business process requirements.

Our focus on improved information management and data integration will enable us to communicate more effectively, both internally and with our supply chain. This will provide more foresight, intelligent interventions and decision-making across end-to-end works delivery. Digital rehearsals of construction cycles will drive efficiencies and productivity, reduce carbon impacts and minimise disruption to neighbouring communities and natural environments.

Using technology to drive efficiencies in construction timescales and improvements in safety

Our Rapid Engineering Model is one of the tools we are now using to increase the safety, quality and speed of road design. So far, we have developed 11 schemes using this model's workflow. The time to produce the operational concepts for these schemes has decreased from around nine months using traditional approaches to a matter of weeks. Some aspects of preliminary design timescales have decreased from around a year to just eight weeks.

Alongside our Rapid Engineering Model, we are using drones to build 3D maps of our network. We have recently mapped all 120 miles of M25 and are putting this data to immediate use on construction sites. Sharing this data across project teams will help to:

- Reduce carbon emissions by 95%, compared to traditional surveys.

- Improve safety outcomes by reducing exposure of road workers to live traffic.

- Minimise customer journey disruption caused by lane closures.
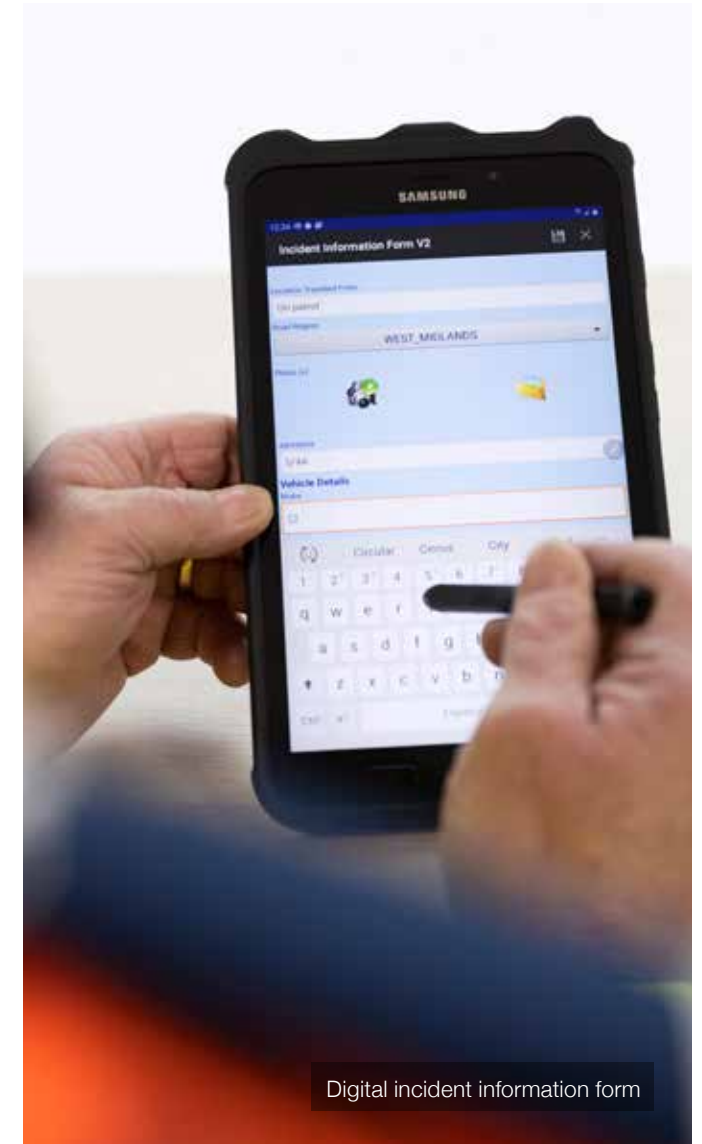
Digital incident information form

Introduction   Overview of our third road period proposals   Understanding our network   Working towards our long-term vision   Planning for the third road period   **Delivering in the third road period**   Summary and next steps

national highways

Continuing to become more effective in our delivery

Digitally enabled design

The success of our enhancements and renewals schemes is underpinned by high-quality design. Increasing the use of computer-aided design software will enable better decision making as we harness and consider more data in our route selection and design proposals. This data includes environmental, safety, and community impacts aligned against programme, cost and construction approaches.

While computer-aided design is already prominent within our enhancements schemes, harnessing these benefits within our renewals programme will be important in the third road period.

Our use of digital design will also provide long standing benefits for our network management. We intend to use design modelling to build a digital twin of our network. This means creating digital simulations of the different physical entities on our network, enabling us to better understand how our assets work and their future maintenance and renewal needs.

Digital construction

We will increasingly rehearse site activities using digital simulations to minimise disruption to construction and assembly. This will allow us to mitigate safety risks to workers and road users as our systems flag potential hazards.

We want to use data from increasingly connected sites in our digital twins to improve logistics, construction activities, programme planning and reduce carbon emissions.

Over the longer term, connected and autonomous plant has the potential to transform our construction sites by delivering safe, automated and efficient construction.

In the third road period, we want to progress on our journey to full autonomy, increasing the use of semi-autonomous plant to reduce road worker risk and increase efficiency.

Modularised and standardised approaches

We will also increase our use of offsite fabrication and modular construction. By constructing elements of our network in factories and then transporting them for installation we will reduce network disruption, remove safety hazards, increase productivity and drive efficiencies.

To aid modular construction, we will increase the standardisation of the assets and components that form to make our network. This will allow our delivery partners to pick components straight from the brochure, avoiding costly, inefficient bespoke designs.

Introduction

Overview of our third
road period proposals

Understanding
our network

Working towards
our long-term vision

Planning for the
third road period

**Delivering in the
third road period**

Summary
and next steps

national
highways

Delivering safely

In 2019 we launched *Home, Safe and Well: Our approach to health, safety and wellbeing*. It set out a framework to be ingrained across all that we do. Our approach focused on building a positive culture, promoting greater ownership, embracing innovation and placing more importance on health and wellbeing. Simply put, we want everyone who works for us and with us and everyone who travels on our network to get home safe and well.

While we and our supply chain have made significant improvements since our first health and safety plan published in 2015, there are still incidents occurring today. There is more that we want to do to realise our safety goals.

As we prepare for the third road period, we will look to update our *Home Safe and Well* approach to drive continuous improvements in the way we and our supply chain can deliver safely.

We need to ensure that we continually evolve our rigorous approach to controlling those risks that can lead to fatalities or serious harm. We need to maximise the opportunities that technology and digital can provide to enable and change our ways of working to reduce the potential for harm. We will not be able to achieve lasting and long-term improvements without challenging and instilling the right cultures and behaviours first.

Culture maturity

Following on from the successes of the launch of our existing behaviour change programme, Be the Change, we need to strengthen our culture internally and encourage our supply chain to do the same. Our aim is to improve on our current safety culture maturity to achieve safety leadership and value driven continuous improvement in all aspects of our work by:

- Furthering our understanding of drivers that obstruct changes in behaviour and work with our people and supply chain to unblock these.

- Using decision support tools to enable workers to make safe decisions in high-risk environments.

- Undertaking a proactive and sustained programme of education on safety behaviours. This will include, joint training campaigns and sharing of best practice with our supply chain, creating a more people-centric culture leading to fewer injuries and incidents and with a stronger focus on health and wellbeing.

Worker at a construction site

Delivering safely

Reducing the potential for harm

Working collaboratively with our supply chain and industry, we want to exploit innovation in technology and our approaches to limit and reduce the exposure to risk, alongside continual improvements in our existing risk controls. This could include:

- Real time data tools to predict risk and likelihood.

- Technology to geofence hazards to improve awareness of risks on site.

- Increasing use of remote surveying and monitoring equipment to enable more remote monitoring of our assets, reducing our proximity to live traffic.

- Increasing use of automated plant and equipment.

- Identifying more opportunities to jointly research with organisations and academia to understand the cause of high risk, high frequency, incident occurrence and innovate ways to respond.

- Artificial intelligence systems for worker data to use machine learning to identify opportunities to improve our safety performance.

- Intelligent assets that report on their health before they fail, reducing the potential for harm.

- Creating a decision support tool for our people to ensure they always make the safest decisions in high-risk environments.

- New virtual training for on road employees, so they're aware of the hazards and how to avoid them before facing them in the real world.

Supporting our people

Alongside those existing initiatives to support the health, safety and wellbeing of our people and supply chain who work on site or on the front line, we want to continue improving the occupational health and wellbeing for all who work for us through:

- Determining key health risks to our people, categorising by population and their potential exposure, and continually improving our risk controls to mitigate known mental and physical health risks. For example by, considering the stress impact in our change management approach.

- Improving our understanding of those most common chronic physical and mental illnesses reported and create bespoke assistance for the business to help support our people.

- Creating specific wellbeing provisions that are targeted to individual team health and wellbeing needs and risk. For example, identify where our workforce would benefit from more intervention regarding musculoskeletal specialists as a result of their tasks and work with the evaluation of work practices to reduce the risks.

- Developing wellbeing tools that are accessible to all who work for us, including our supply chain, to drive improvements and consistency in provisions available.
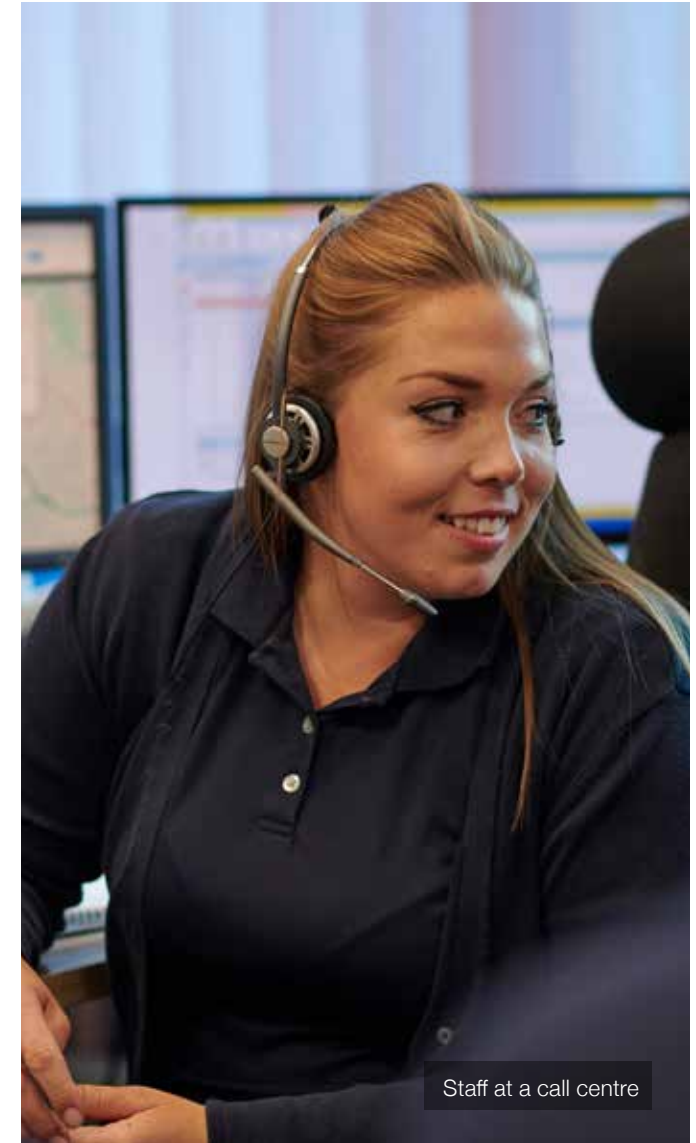
Staff at a call centre

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | **Delivering in the third road period** | Summary and next steps

national highways

Collaborating with our suppliers to create better outcomes for our customers

Our vast and diverse supply chain is critical to us achieving our objectives and imperatives.

We connect, catalyse and inspire by sharing knowledge, insights and capability with our supply chain. By supporting their development, our suppliers are more effective and efficient, enabling them to deliver better performance and value to our customers. The ability of our supply chain to grow its skills and capability to support ambitions for RIS3 is vital to the SRN. A key benefit of a five year funding programme is that it allows us to develop long-term plans and provide certainty to our suppliers to commit resources, and people and deliver efficiencies.

Supporting capacity and capability

We're working with our supply chain to develop the capability and capacity required to deliver in line with our customer expectations and objectives around the environment by:

- Encouraging potential new suppliers to work with us and developing new routes to markets.

- Improving our attractiveness by developing improved project bank accounts and actively promoting engagement through our 'supplier guide' and 'meet the buyer' events.

- Working to increase the diversity of the sector, with regard to sex, ethnicity and disability as well as actively promoting construction careers.

- Requiring our suppliers to demonstrate how they meet our equality, diversity and inclusion objectives, and regularly assessing our suppliers' maturity in relation to these objectives.

- Working to increase the contribution to social value that can be made by the sector.

- Delivering efficiencies through our supply chain by embedding a category management approach to procurement of goods and services, and involving our suppliers early on with our decision-making processes.

- Supporting removal of cost and waste from our supply chain through our Lean programme and aiming to train up to 1,500 of our supply chain operatives in Lean techniques.

- Working with the roads sector we are developing current and future leaders through the Roads Academy. This provides individuals with the confidence and capability to meet ongoing challenges; aligning and developing their skill and knowledge sets to achieve sector, business and personal aspiration.

- Utilising our position as a partner in the Supply Chain Sustainability School to grow capability in the industry around the environment, promote skills and knowledge around our objectives through the Supplier Development System and our Sector Improvement Projects.

Discussion at a meeting

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | **Delivering in the third road period** | Summary and next steps

national highways

Collaborating with our suppliers to create better outcomes for our customers

Continuously improving procurement

The work our supply chain undertakes is diverse and challenging. It ranges from investment planning, through the design and construction of improvements, into operating and maintaining our network, post project evaluation and customer service management. We also procure ancillary services such as organisational change, commercial management, marketing services, insurance advice, facilities management and IT services.

Our commercial strategy is currently designed to support our delivery of the second road period ensuring we have access to the right services and skills. We recognise our approach to procurement will need to evolve to meet the new challenges and expectations of the third road period. As we look forward, we will build upon the success of our existing frameworks and routes to market by keeping those elements that have and will continue working effectively, while addressing the identified shortcomings and opportunities for improvement.

Our first Regional Delivery Partnership Framework has transformed the delivery of our Regional Investment Programmes since its founding in 2018. The Regional Development Partnership Framework is designed to secure supply chain capacity and capability through long- term planning and provide incentives for suppliers to produce better outcomes. As our first Regional Delivery Partnership Framework comes to an end in 2024, its successor will build upon the approach developed and incorporate identified improvements. These include:

- Considering appropriate risk appetite and allocation.
- Avoiding duplicative effort across functions by establishing clarity around roles and responsibilities.
- Assessing governance structures to avoid decision delays.
- Introducing flexible contracts which can be amended in response to evolving technologies, changing standards and new priorities.

We will build on our existing approaches, introducing new procurement methods to drive better value and innovation in the sector to deliver projects faster and realise savings for tax payers.

Our commercial strategy going forward will also be flexible in responding to government policy and company strategies. Already we are:

- Ensuring contracts reflect our ambitions to reduce carbon emissions across corporate, maintenance and construction activities.
- Working with the supply chain and other external stakeholders to embed practices that will help meet our net zero targets for 2030, 2040 and 2050.
- Expecting our Tier one and two suppliers to have certified carbon management systems in place.
- Ensuring that Social Value is included in all in-scope procurements.
- Supporting government targets around increasing opportunities for SMEs, such as by developing supplier and performance approaches that include requirements which encourage greater use of SMEs in the extended supply chain.

national highways

Collaborating with our suppliers to create better outcomes for our customers

Prioritising Value

The priorities and values of our customers are changing and we need to ensure that social, economic and environmental benefits are part of our delivery by:

- Increasingly focus on competing on value through new commercial models, focus on behaviours, outcomes and technical approaches.

- Focusing on what our customers want and positively impacting their journeys by challenging our traditional thinking of value and its impact on our contracts and procurements.

- Broadening our definition of value from technical solutions and cost to include customer focused outcomes such as end-to-end journeys and societal, environmental, and economic benefits.

- Placing greater emphasis on selecting suppliers with appropriate values and competencies.

- Developing new contracts and routes to market while evolving how we recognise, measure and use performance to encourage the correct behaviors and outcomes.

- Developing our suppliers by strengthening our relationships with them to embed, mature, and evolve our contractual and commercial approaches, Encouraging shared visions, goals and objectives to promote collaboration at all stages.

Due to the size of our national supply chain, we have the ability to catalyse change, innovation and support growth in new skills. All of which promote Britain's position as a leading world exporter of skills and setting the frontier of global change. As we develop our approach with suppliers to deliver RIS3 we need to continue ensuring value for money. Our frameworks and contracts must represent the changes and priorities of RIS3 and support our suppliers, drive value and maximise productivity.

Staff Meeting

Measuring performance

Introduction

Delivering our ambitions for the third road period will require our existing Performance Framework to be reviewed to ensure it reflects the plans and proposed outcomes we have set out in this *Initial Report,* along with customer and stakeholder needs.

By measuring our performance and reporting on progress we will be able to identify opportunities for improvement and continually improve our capability, processes and how we work to drive further efficiencies.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | **Delivering in the third road period** | Summary and next steps

national highways

Working with government and ORR to evolve performance reporting and monitoring

Our Performance Framework, introduced at the start of the second road period, brings together the requirements we are committed to deliver. We are working closely with our customers and stakeholders to identify improvements that could be made to our existing measures and gaps where new metrics and targets may be needed to reflect our changing priorities.

Performance Framework

Performance specification

- Key Performance Indicators
- Performance Indicators
- Descriptive Commitments

- Capital specification: Enhancements, renewals and designated funds.
- Protocols: Activities conducted on behalf of the Secretary of State, such as maintaining the national strategic salt stock.
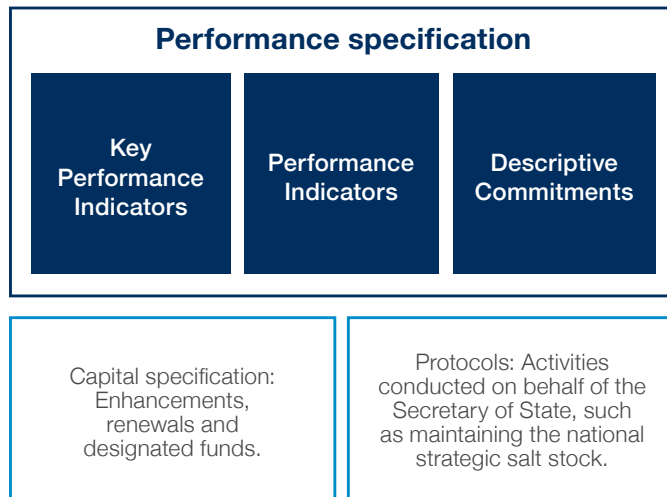
Guiding principles

In order to create an effective Performance Framework we have defined the following principles:

- **Focused priorities:** to maintain focus and align with best practice we want to agree a maximum of 10 KPIs.

- **Outcome-based metrics:** we want measurement to be balanced across outcome areas and demonstrate outcome-based performance.

- **Stability:** we propose keeping our framework broadly stable and continuing to monitor many long-standing KPIs, allowing us to show performance over time.

- **Reviewing metrics:** it is important that we refine or remove metrics that are no longer fit for purpose and assess the feasibility of metrics being developed during the second road period.

- **Accessibility and transparency:** we plan to make our performance data more accessible and transparent, and improve regional performance reporting for appropriate measures.

Reflecting the proposals set out in this report

It is important that our performance framework reflects the plans and proposed outcomes we have set out in this *Initial Report*. This means:

- Developing a carbon metric to reflect our ambition to enable and embed low-carbon approaches, building on our existing KPI and helping us monitor progress against our net zero plan.

- Updating our biodiversity metric to reflect the latest legislation and achieve 10% biodiversity net gain from nationally-significant infrastructure projects.

- Exploring how we can effectively measure improvements in our operational technology as we work to increase the reliability and security of our roads.

- Reviewing how our renewals programme is monitored to reflect the greater focus on investment to provide a reliable, sustainable and safe road network.

- Reviewing our approach to monitoring designated funds, recognising its targeted approach to deliver social value and support *Levelling Up*.

- Exploring a performance indicator that supports active travel by understanding the views of our cyclists and walkers.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | **Delivering in the third road period** | Summary and next steps

national highways

Working with government and ORR to evolve performance reporting and monitoring

Gathering insight on our metrics

As part of our customer and stakeholder research, we sought views on our second road period metrics. We heard many consistent views across the different stakeholder groups, as well as some interesting differences in priorities that would need to be balanced in planning for RIS3. Their different views on which aspects of performance were important reflected the different nature of their use of our network and needs from it.

Safety was consistently seen as important across all groups, and it was felt essential that we retain our ambitious safety KPI that drives improvements across all our activities, network, company and supply chain. Condition of the road surface, delay and reliability were also consistently raised as key areas of focus. The impacts of road closures were also flagged as being important for both communities and road users, recognising the impacts of diversions. The environmental impacts of our network also came up as consistently important, and there was a desire to see a focus on these for RIS3. Environmental stakeholders in particular wanted to see a more holistic view of network performance measures and significant increases in ambition.

Our engagement also identified that we need to use simpler language and be clearer about the influence that we have on delivery of outcomes.

A40 near Gloucester

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | **Delivering in the third road period** | Summary and next steps

national highways

Working with government and ORR to evolve performance reporting and monitoring

Continued ambition for efficiency

Progress to-date

One of the key objectives of the RIS is to realise efficiencies through mass investment and long-term commitment. During the first road period, we over-delivered on the efficiency objectives that we were set by 15%, with £1.4 billion cost savings to taxpayers, equivalent to the cost of resurfacing 7,500 lane miles or 11,2000 miles of concrete barriers.

Our original funding for the second road period included an efficiency target of £2.2 billion. Delivery delays led to a reduced funding requirement, and consequently our efficiency target was reduced to £2.1 billion to reflect the new funding envelope. In 2021–22, we achieved efficiency savings of £259 million, taking our cumulative efficiencies total to £502 million, exceeding our milestone target of £471 million. By the end of the second road period, we plan to have saved taxpayers £3.5 billion across ten years, £1.4 billion from the first road period, and a target of £2.1 billion efficiency for the second road period.

M11 by Great Chesterford

Looking to the third road period

As we develop our plans for the third road period, we will build on the success of previous periods and lessons learnt to set ourselves a challenging efficiency target. We envisage that our biggest opportunities can be realised through continually improving our capability, our processes and how we work with our supply chain.

We would anticipate seeing our biggest efficiency gains through the following improvements in our approach:

- Evolving our organisation to meet future needs.
- Developing more effective ways of working.
- Collaborating with our suppliers to create better outcomes for our customers.
- Using digital to become a more effective organisation.
- Maturing our asset management approach focusing on customer service and resilience.

Our plans and assessment of the level of efficiencies we plan to achieve will be subject to rigorous independent review by ORR to ensure they are both challenging and deliverable.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | **Summary and next steps**

national highways

Summary and next steps

M60 junctions 14 and 15

Introduction

Overview of our third road period proposals

Understanding our network

Working towards our long-term vision

Planning for the third road period

Delivering in the third road period

Summary and next steps

national highways

In conclusion: summarising our third road period proposals

In this report, we have set out a range of proposals for the third road period, grounded in evidence and guided by insight. We have been clear about what we require to deliver a network the country expects and needs, highlighting how different investments could help achieve different outcomes. Inevitably, the answer will lie in striking a balance. There are trade-offs which will need to be made, and in some key areas we have also set out a case for stepping outside our traditional activities. As we progress through the strategic planning process, we will work with government to agree the right balance of funding. Below we summarise the key elements of our proposals, linking these back to government's strategic objectives for our network.

A5 near Nesscliffe, Shropshire

Introduction   Overview of our third road period proposals   Understanding our network   Working towards our long-term vision   Planning for the third road period   Delivering in the third road period   **Summary and next steps**

national highways

In conclusion: summarising our third road period proposals

Growing the economy

Our network plays a vital role in supporting and growing the economy, and the range of investments in our roads will continue to offer value for money to the taxpayer.

We believe there remains a strong case for enhancing our network to increase safety, improve journeys and enable national and local economic growth. A large part of our improvement portfolio for the third road period is likely to consist of schemes which we have already committed to deliver. We propose that any new enhancements schemes would have a greater focus on smaller interventions to spread opportunity, tackle known safety and congestion issues and enable growth.

There is no doubt that balancing network needs with the demands of the 21st century will require compromise and difficult choices. We must think carefully about the scale and nature of our improvement portfolio, which must support our new carbon and environmental commitments.

We want to work more proactively with local areas to support *Levelling Up* investment and align with wider local transport plans.

Improving safety for all

Safety will remain our number one priority. We want to reduce the number of people killed or seriously injured on our network, taking a holistic Safe Systems approach to road safety.

We know that we need focused, and possibly radical, safety improvements to help us achieve our long-term zero harm ambition. A key part of our work would be focused on reducing the risk on our existing iRAP-rated 1-star and 2-star roads, and targeting schemes where they can have a big impact on safety. We also want to increase our role in influencing driver behaviours and vehicle safety standards, as well as expanding our engagement to help us understand and improve how we meet the needs of all our road users.

Network performance to meet customer needs

Our customers tell us they want reliable, safe journeys on roads which are well maintained and in good condition. In the third road period, we need to continue our vital 24/7 operational services on an increasingly connected network and expand our maintenance programme, including increasing proactive maintenance.

We also need to continue and extend our programme of major renewals, enabling us to tackle our ageing network and act as responsible stewards for the future, ultimately keeping our network safe, open and performing well. This would need to prioritise renewing road surfaces, structures and technology.

We recognise that customer requirements go beyond their travel on our network. We want to partner with local authorities more extensively to support local transport plans. We also want to increase travel choices for our customers, exploring how we can support alternate methods, such as walking and cycling, particularly for shorter journeys in urban areas.

Improved environmental outcomes

Our plans have shown how we intend to balance investing in our network to support the economy while tackling the pressing need for carbon reduction. We must play our part in reducing the emissions we control or influence, and in facilitating the decarbonisation of travel. As an organisation, we are focused on becoming net zero for corporate carbon emissions by 2030. We are committed to applying a global standard for managing infrastructure carbon, called PAS 2080, to our investment planning, only enhancing where there is no viable alternative and working to achieve between 40 and 50% reduction in maintenance and construction emissions, against a 2020 baseline.

More widely, our increasing focus on the environment means the land we own will become ever more important. We will work to deliver a minimum of 10% biodiversity net gain on nationally-significant infrastructure programmes. We want to look at air quality and noise across our network and how we can use all the levers we have to improve them. We must also manage our existing natural landscapes, such as road verges, more consciously and effectively.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | **Summary and next steps**

national highways

In conclusion: summarising our third road period proposals

Managing and planning the SRN for the future

Our customers tell us that they want us to invest in an SRN that is ready for their future needs. Our 'decide and provide' long-term strategic approach means that, in planning for the third road period, all our activities are focused on delivering our network as we want to see it in the future, and that the country needs.

One clear area where customers will require support in the third road period is around electric vehicle charging infrastructure. Through the Office for Zero Emissions' £950 million rapid charging fund, separately funded to the RIS, we aim to future-proof charging capacity at motorway and major A-road service areas.

We need to ensure our network is able to cope with future severe weather. This includes investing in climate resilience activities such as improving drainage to respond to surface water risk and trialling nature-based solutions to slow the flow of water and reduce the risk of flooding.

A technology enabled and enabling network

Technology already plays an important role in our network, and it needs operating, maintaining and renewing like all our other assets. Our key aim for the third road period is to improve the security and reliability of technology, to deliver benefits for customers today and to provide us with a stable base for even more significant changes in technology in the future. We also want to improve the data we provide and use, to help us become more efficient and reduce the carbon impacts of our activities.

We want to provide customers with more real-time information that they can personalise and tailor to their route requirements, both before and during their journey. We want to develop even closer relationships with a range of third parties, to share data and support the delivery of a seamless and integrated end-to-end journey experience for our customers.

Transitioning to high levels of autonomous vehicles will be a gradual process. There is likely to be a heavily mixed traffic environment for a considerable period. In the third road period, our role would be to make changes to our systems, data and technology to ensure early adopters can take advantage of increasing connectivity, while also ensuring that our network continues to run effectively for all our customers, regardless of their vehicle capabilities.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | **Summary and next steps**

national highways

Looking to the future: next steps

Public consultation

The publication of this document will initiate a public consultation on the future of roads investment for the third road period. This will be led by DfT in line with our *Licence*.

We want our customers, stakeholders and the wider public to put forward their views on our plans, helping shape the future of the SRN. All feedback will be considered.

Developing and publishing our strategic documents

We will work with government to understand and establish our plans for the third road period.

Government's final RIS3 is due to be published in 2024. In parallel, we will develop and publish a strategic business plan and a detailed delivery plan, setting out what and how we intend to deliver.

This will be informed and supported by the publication of our finalised 20 *Route Strategy Initial Overview Reports* and technical outputs.

Reporting on progress

During 2025-30, we will report annually on progress against our objectives through our delivery plan update.

M4 junction 17

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Appendices

M11 by Great Chesterford

national highways

Appendix 1: Route Strategies List

Introduction

We prepare and publish route strategies, a vital set of research documents which directly inform our investment priorities and government's RIS.

The tables over the following pages list all 134 of our route objectives detailing the:

- route through which they run
- objective they relate to as set out in the *Route Strategies Initial Overview Reports*
- route objective

Route	Objective Letter*	Route Objective
Birmingham to Exeter	A	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 effective movement of people and freight.
Birmingham to Exeter	B	Facilitate safe and effective connections to adjoining east-west routes, including the Severn Crossings, the A46 Trans Midlands Trade Corridor and Exeter Gateway, to promote strategic and regional connectivity and support sustainable economic activity.
Birmingham to Exeter	C	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.
Birmingham to Exeter	D	Support delivery of regionally significant and sustainable economic development and housing, while maintaining the safe and effective operation of our network.
Birmingham to Exeter	E	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.
Birmingham to Exeter	F	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.
Birmingham to Exeter	G	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, Ashchurch, Gloucester, the north fringe of Bristol and Avonmouth, Cullompton and Exeter.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Appendix 1: Route Strategies List

Route	Objective Letter*	Route Objective
East of England	A	Provision of a safer, more resilient and consistent network that improves road user experience of safe and reliable journeys through provision of a more consistent network.
East of England	B	Support improved connectivity across the route that supports local accessibility for residents near the route and other areas that experience high volumes of collisions involving walkers and cyclists limiting connectivity within local communities.
East of England	C	Improve conditions and facilities for freight drivers travelling between the region's international gateways that supports economic growth associated with the region's major ports, airports and distribution centres through providing safe and regular facilities.
East of England	D	Improve communications to better inform drivers of incidents to reduce delay and uncertainty surrounding journey time reliability to drivers and improve their end-to-end journey experience to support the regional and national economy.
East of England	E	Support sustainable growth of the East Anglian coast and International Gateways that supports the development of international gateways (including the ports of Felixstowe, Ipswich, Harwich, Great Yarmouth and Lowestoft and Stansted and Norwich airports), offshore energy and year round tourism.
East of England	F	Support sustainable growth and levelling up for deprived areas and coastal communities that improves connectivity to key developments including proposed housing and business growth enabling residents to better connect to jobs and services and supports the continued economic growth of more deprived areas.

Route	Objective Letter*	Route Objective
East of England	G	Be a better neighbour by protecting environmentally sensitive sites and improving environmental conditions for residents impacted by the SRN that minimises impacts at environmentally important locations and supports improved air quality and noise conditions.
East of England	H	Increase the resilience of the A47 and A12 against future adverse weather events that supports reliable journeys for road users through reducing the impact of adverse weather events on the route.
Felixstowe to Midlands	A	Investigate safety issues at identified locations. Consider known safety issues on links and junctions such as A14 at Bury St Edmunds, Copdock as well as between Ellington and Thrapston to the benefit of motorists, local communities and active travel users.
Felixstowe to Midlands	B	Supporting strategic east-west connections to support the Energy Coasts. Develop safe and efficient east-west connectivity for strategic movements to and from the East of England to support both the local and national economy.
Felixstowe to Midlands	C	Promote sustainable access to key freight destinations. Support partners to encourage modal shift away from car and HGV to more sustainable modes to and from Freeport East to the benefit of the environment, communities and road users with a particular focus on freight movements.
Felixstowe to Midlands	D	Improve communications to better inform drivers of incidents to reduce exposure to potential delay and uncertainty surrounding journey time reliability and improve their end-to-end journey experience on the A14 corridor and M6 to support the regional and national economy.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Appendix 1: Route Strategies List

Route	Objective Letter*	Route Objective
Felixstowe to Midlands	E	Support the needs of the freight industry. Support the development of more rest facilities and parking particularly on the A14 for HGVs by providing additional driver service areas and facilities for HGVs to ensure their safety and support the national economy.
Felixstowe to Midlands	F	Reduce the impact of strategic traffic using local roads. Reduce the impact on local communities caused by strategic traffic using local roads at junctions.
Felixstowe to Midlands	G	Support sustainable housing and business development in growth areas such as Kettering, Northampton and Bedford to benefit the regional economy.
Kent Corridors to M25	A	Support safe and efficient freight movement to and from air, rail, sea and freeports in the Kent Corridors. Support driver welfare, including supporting provision of appropriate driver facilities and reducing delay, particularly on the M2/A2, A249 and A13/A1089.
Kent Corridors to M25	B	Support sustainable development within Kent and Thurrock. Support effective local and regional connectivity through improved integration with sustainable transport modes to minimise the impact of short distance trips from key growth areas and strategic development sites to benefit the economy.
Kent Corridors to M25	C	Promote the Kent Corridors as a region that sets the standard in supporting the use of technology. Improve communication technology to better inform users during periods of disruption, providing an improved end-to-end journey experience. Maximise the use of emerging technologies to support the net zero economy, and use schemes such as the Lower Thames Crossing to test low carbon innovation and approaches.

Route	Objective Letter*	Route Objective
Kent Corridors to M25	D	Improve resilience of routes from Dover, Sheerness, Tilbury and Thames Gateway Ports to the M25. Provision of safe, suitable, and efficient routes to improve resilience between the M20/A20 and M2/A2 corridors and A13/A1089, improving journey time reliability and reducing impact on the local road network.
Kent Corridors to M25	E	Promote sustainable connectivity in the region. Improve connectivity of ports, airports and the rail network (including access to high-speed services and east-west connectivity), to broaden mode and route choice and reduce vehicle use where possible.
Kent Corridors to M25	F	Be a better neighbour by safeguarding the environment and reducing the impact of poor air quality and noise on local communities including Dover, Maidstone, Aylesford, Ashford and Canterbury. Support schemes that reduce the impact of travel on neighbours, and protect areas with environmental designation around the route notably the Kent Downs ANOB and Special Areas of Conservation which lie directly adjacent to the M20 and A2.
London Orbital and M23 to Gatwick	A	Promote the safe and reliable strategic function of the London Orbital. Improve efficiency of our network for strategic journeys using the M25 and support improved choices for local journeys travelling on the SRN within the region, in particular the south-west quadrant and at Dartford.
London Orbital and M23 to Gatwick	S	Support sustainable development in London and the wider south-east region, improve regional connectivity including through effective integration with sustainable transport modes to minimise the impact of short distance journeys from key growth areas and strategic development sites, notably in the Thames Gateway and Essex, to benefit the economy.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Appendix 1: Route Strategies List

Route	Objective Letter*	Route Objective
London Orbital and M23 to Gatwick	C	Encourage sustainable access to London's International Airports. Support mode choice solutions for access to the key international airports in and around London, notably at Heathrow and Gatwick, broadening route choice and improving experience for road users travelling to the airports and sharing road space on the M25 sout-west quadrant and M23 in particular.
London Orbital and M23 to Gatwick	D	Address severance issues between the SRN and urban environments within and around London. Be a better neighbour in particular in and around the M1, M11, M3 and M4 corridors to reduce severance by complementing the quality of life, and interaction with local communities at its point of integration with the urban environment.
London Orbital and M23 to Gatwick	E	Improve transport connections into the capital. Improve transport connectivity on arterial routes between the capital and the surrounding regions, to provide consistent and connected journeys to improve end-to-end experiences for all users of transport networks.
London Orbital and M23 to Gatwick	F	Support UK economic growth with safe and efficient freight connections to international gateways. Improve network resilience and reduce delay for freight, notably in the east and north of the London Orbital, with improved cross-river connectivity for all road users connecting to international gateways, notably on the south coast & Thames Estuary.
London Orbital and M23 to Gatwick	G	Support the London Orbital by being a better neighbour. Ensure the environmental impacts of the London Orbital are minimised by enabling sustainable infrastructure for all road users, reduce the impact of travel on neighbours, and protect areas with environmental designations around the route notably adjacent to SSSIs, Kent Downs and Surrey Hills AONB.

Route	Objective Letter*	Route Objective
London to Leeds	A	Provide safe journeys on the A1, A1(M) and M11, to benefit road users and local communities.
London to Leeds	B	Support reliable strategic connectivity for the UK for people and goods between the north, East Midlands, eastern and south-east England, including their ports and airports, promoting the UK and regional economies.
London to Leeds	C	Improve the reliability of freight and coach journeys along the A1, A1(M) and M11, alongside improved driver parking and welfare facilities to support both the local, regional and national economy.
London to Leeds	D	Support sustainable economic and housing growth, particularly in growth areas and other economic clusters in Yorkshire, Newark, Grantham, Peterborough, Cambridgeshire, Hertfordshire and Essex.
London to Leeds	E	Be a better neighbour by safeguarding the environment and reducing the impact of adverse air quality, noise and severance on local communities along the A1, A1(M) and M11, in areas such as Sandy, Beeston, Seddington and around Doncaster.
London to Leeds	F	Improve communications to better inform drivers and improve their end-to-end journey experience for journeys involving or crossing the A1/A1(M) and M11, to allow drivers to make informed route choices.
London to Scotland East (North)	B	Support sustainable economic growth and levelling up in the north through efficient and reliable journeys on the M1, A1 and A19.

Appendix 1: Route Strategies List

Route	Objective Letter*	Route Objective
London to Scotland East (North)	G	Support effective connectivity to urban centres, including Sheffield, Leeds and Newcastle, through improved integration with sustainable transport modes to minimise traffic impact on the route and benefit the environment.
London to Scotland East (North)	E	Support the Yorkshire and north-east visitor economy by improving gateways to the Northumberland National Park, the Nidderdale AONB, the Yorkshire Dales National Park, North Pennines AONB and the North York Moors National Park.
London to Scotland East (North)	C	Support the needs of the freight industry through the efficient movement of goods on the M1 and A1, to support the regional and national economy.
London to Scotland East (North)	F	Minimise the impact on communities in locations such as Wakefield, Darlington, Hartlepool and Stockton-on-Tees due to strategic traffic using the local road network when collisions and closures occur on the SRN.
London to Scotland East (North)	A	Improve user experience of safe journeys through provision of a resilient and consistent network across the route.
London to Scotland East (North)	D	Be a better neighbour by safeguarding the environment and reducing air quality and noise impacts on settlements within close proximity of the route.
London to Scotland East (South)	A	Improve road safety on the A5 between Milton Keynes and Rugby and address locations with higher numbers of accidents on the M1 including around Luton, Leicester and Mansfield.

Route	Objective Letter*	Route Objective
London to Scotland East (South)	B	Be a better neighbour by safeguarding the environment and reducing the impact of adverse air quality and noise impacts on local communities adjacent to the M1 and A5 in Luton, Newport Pagnell, Leicester, Nottingham, North Nottinghamshire and Milton Keynes.
London to Scotland East (South)	C	Support reliable UK strategic north-south connectivity for people and goods between London and the south-east of England, the North of England and Scotland.
London to Scotland East (South)	D	Support reliable UK strategic connectivity for people and goods between the south-west, South Wales and the North of England and Scotland, via connections to the A38/ M42, A43 and A46 corridors.
London to Scotland East (South)	E	Support access for essential mobility of people and goods to the cities, towns and international gateways along the route: Sheffield, Nottingham, Derby, Leicester, Northampton, Bedford, Luton, Milton Keynes, Hemel Hempstead, East Midlands Airport and London Luton Airport.
London to Scotland East (South)	F	Support regionally significant and sustainable employment growth close to the M1 and A5 including at East Midlands Gateway, Magna Park in Lutterworth, DIRFT, Northampton, Milton Keynes and London Luton Airport.
London to Scotland East (South)	G	Support regionally significant and sustainable housing growth close to the M1 and A5 including around Leicester, Derby, Northampton, Rugby, Bedford, Luton and Hemel Hempstead.
London to Scotland West (North)	B	Improve road user experience and support the economy by improving technology to better communicate with drivers.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Appendix 1: Route Strategies List

Route	Objective Letter*	Route Objective
London to Scotland West (North)	C	Support sustainable economic growth through safe and reliable access for housing and employment sites such as Bailrigg, St. Cuthberts, Parkside, and Cuerden.
London to Scotland West (North)	D	Reduce the adverse impacts of severance created by the SRN on local communities by ensuring the M6 is not a barrier to sustainable modes, particularly at motorway junctions.
London to Scotland West (North)	E	To be a better neighbour by safeguarding the environment and reducing the impact of emissions on local communities, with particular focus on areas such as Cheshire, Warrington, and Wigan.
London to Scotland West (North)	F	Improve the facilities for freight and coach journeys on the M6, alongside improved driver parking and welfare facilities to support both the local, regional and national economy.
London to Scotland West (North)	A	Provide safe journeys on the M6, particularly in Central Lancashire, near Preston and the M6 around Warrington and St Helens, to benefit road users and local communities.
London to Scotland West (South)	A	Providing safe journeys on the M40, M42, M5, and M6 to benefit road users, including vulnerable users crossing motorway junctions.
London to Scotland West (South)	B	Support reliable strategic and cross border connectivity for the UK for people and goods between London, the Midlands, the north-west, and Scotland, promoting the UK and regional economies.

Route	Objective Letter*	Route Objective
London to Scotland West (South)	C	Supporting sustainable economic growth and development, including local plan development, at key sites around the M40 around Oxford and Banbury), M5 near Bromsgrove, M42 near Solihull, M6 near Stoke-on-Trent and along the wider corridor.
London to Scotland West (South)	D	Enable effective local connectivity through better integration and coordination with active travel modes at locations on or near to the A5, A458, A483, A49 and A40 north of Gloucester, to benefit active travel users and local communities.
London to Scotland West (South)	E	To be a better neighbour by safeguarding the environment and reducing adverse air quality, noise and severance impacts on local communities surrounding the route.
London to Scotland West (South)	F	Improving communications to better inform drivers and improve driver experience throughout the route, including on local roads approaching SRN junctions.
London to Wales	A	Provide safe and reliable journeys through provision of a resilient and consistent route particularly on the M4, Berkshire, Bristol, and A417.
London to Wales	B	Promote strategic connectivity between England, M49, M4, M48, M5 and M32, and South Wales as well as facilitating efficient access to key gateways at Heathrow Airport, Port of Bristol and Bristol Airport.
London to Wales	C	Support the delivery of regionally significant and sustainable economic development in Berkshire, Swindon and Bristol while maintaining the safe and effective operation of our network.

Appendix 1: Route Strategies List

Route	Objective Letter*	Route Objective
London to Wales	D	Support effective local connections and integration with other transport modes to reduce short distance travel demands on the SRN and promote transfer to alternative modes of transport and reduce carbon particularly in Berkshire, Bristol and Swindon.
London to Wales	E	Support regional and national economies through the efficient movement of freight on the M4 and A417/A419, by enhancing lorry parking and driver facilities along with the transfer of freight to alternative modes, where appropriate.
London to Wales	F	To be a better neighbour by safeguarding the environment and reducing the impacts of severance, adverse air quality and noise on local communities along the M4 in Reading, M4 and M32 in Bristol and A417/A419 in Swindon.
Midlands and Gloucestershire to Wales	A	Provide safe journeys on the sections of the A40, A49, A5, A458 and A483 with low safety ratings, to benefit all road users and local communities.
Midlands and Gloucestershire to Wales	B	Improve the gateways of the A5, A458, A483 and A40 between Wales and the Midlands, supporting cross-border connectivity, freight strategy, economic links and the tourism industry of the Marches and mid-Wales.
Midlands and Gloucestershire to Wales	C	Enable and support effective connections between communities with high deprivation and key employment opportunities and services in the West Midlands, Gloucester and Bristol.
Midlands and Gloucestershire to Wales	D	Provide efficient, safe and reliable north-south connectivity for people and goods between and within settlements on the A49 corridor, particularly the economic centre of Hereford.

Route	Objective Letter*	Route Objective
Midlands and Gloucestershire to Wales	E	Enable effective local connectivity through better integration and coordination with active travel modes at locations on or near to the A5, A458, A483, A49 and A40 north of Gloucester, to benefit active travel users and local communities.
Midlands and Gloucestershire to Wales	F	Be a better neighbour by safeguarding the environment and reducing air quality and noise impacts along the A49, A483 and A5, and on settlements with AQMAs and Noise Important Areas.
Midlands and Gloucestershire to Wales	G	Promote improved communications to better inform drivers and improve driver experience throughout the route, including on local roads approaching SRN junctions.
North and East Midlands	A	Providing safe journeys around Leicester and A46 near Lincoln, A52 near Nottingham and A500 near Stoke-on-Trent to benefit road users, customers and local communities.
North and East Midlands	B	Improve road users experience of reliable journeys through provision of a resilient network.
North and East Midlands	C	Be a better neighbour by safeguarding the environment and reducing the impact of air quality, noise and severance on local communities near the A500 Stoke-on-Trent, A38 Derby and A52 Nottingham.
North and East Midlands	D	Supporting sustainable economic and housing growth at key sites to the south of Derby, north of Leicester, East Midlands Gateway, east of Nottingham and Lincoln.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Appendix 1: Route Strategies List

Route	Objective Letter*	Route Objective
North and East Midlands	E	Support the needs of the freight industry, including HGV facilities, to ports both within the route corridor, such as East Midlands Airport, and as a connector to ports, including freeports, and destinations outside the rout, (such as Ports of Immingham and Liverpool, and Birmingham Airport.
North and East Midlands	F	Improve communications to better inform drivers and improve driver experience throughout the route, including on local roads approaching SRN junctions.
North Pennines	B	Support reliable access to the east and west coast ports and airports, serviced by the A66, A69, A590 and A595, to encourage sustainable economic growth and strategic connectivity.
North Pennines	C	Support Trans-Pennine connectivity for all users, particularly freight and coaches, between the Cumbrian and north-east energy coasts and centres of highly skilled industries, and support, where appropriate, future growth locations, to assist in levelling up the region.
North Pennines	D	Support access to regionally-significant sustainable development, in locations including Carlisle, Whitehaven, Kendal, Barrow-in-Furness, Ulverston, Cockermouth and Newcastle.
North Pennines	E	Support the North of England visitor economy by improving gateways to the Lake District National Park, such as Newby Bridge, Warwick Bridge, Kendal, Keswick and Whitehaven, and other significant tourist destinations accessed by the route, such as the North Pennines AONB, the Yorkshire Dales and Hadrian's Wall.

Route	Objective Letter*	Route Objective
North Pennines	F	Support effective local connectivity through improved integration with sustainable transport modes on the A66, A595, A590 and A69, benefitting rural communities and the environment.
North Pennines	A	Improve user experience of safe and reliable journeys through provision of a resilient and consistent network across the route.
North Pennines	G	Improve communications to better inform drivers and improve their end-to-end journey experience, to support the regional and national economy.
Solent to Midlands	A	Facilitate improved strategic access to the corridor from the wider road network by managing issues related to safety and congestion. With a focus on supporting links with local and strategic centres via key SRN junctions including the A34/A303, A43/M40 and junctions between the M4 and M40.
Solent to Midlands	B	Support local access and active travel modes where infrastructure integrates with or impacts the SRN. Promotion of non-motorised transport usage by improved access and safety on cycle routes along the A34 corridor in Oxfordshire and the M3, M27 and M271 in Hampshire.
Solent to Midlands	C	Maintain the strategic function of the corridor and manage the integration of local traffic needs to improve customer service. We aim to support the strategic function of the A34, M3 and M27 where they provide a mixed strategic and local function near the urban areas of Oxford, Winchester and Southampton.

national highways

Appendix 1: Route Strategies List

Route	Objective Letter*	Route Objective
Solent to Midlands	D	Enable more efficient freight movements along the corridor, M3 and A27 to and from key gateways. With a focus on Southampton, Portsmouth, and the wider Freeport. Encourage access to freight based multimodal interchanges in addition to recognising the importance of lorry parking facilities in strategically important locations for freight and logistics.
Solent to Midlands	E	Support regionally significant planned developments. We aim to support sustainable future economic growth stemming from large housing and employment developments on the A43, A34 between Bicester to Didcot and M3/M27 between Winchester and Portsmouth.
Solent to Midlands	F	Be a better neighbour and protect residents and assets from adverse environmental impacts of the SRN. Where the A34 passes in close proximity to homes, schools and other local facilities we aim to be a better neighbour by minimising adverse impacts and improve wellbeing for local communities and protected areas between the M4 and M40 junctions.
Solent to Midlands	G	To support sustainable transport options in the north of the route. We aim to encourage connectivity to and from Oxford and surrounding towns including Didcot and Bicester, through improved integration with sustainable traffic modes to benefit local residents.
Solent to Midlands	H	To support sustainable transport options for the south of the route. We aim to encourage connectivity to and from Southampton and surrounding cities and towns including Portsmouth and Winchester, through improved integration with sustainable traffic modes to benefit local residents.

Route	Objective Letter*	Route Objective
South Coast Central	A	Provide a safe and serviceable network to improve journey quality, user experience and safety for customers, particularly on the A21 and A27 corridors.
South Coast Central	B	Support the strategic functions of the corridors by enhancing strategic travel and improve integration of local and strategic trips particularly for road users and communities on the A27, A21 and A3 corridors.
South Coast Central	C	Protect communities and environmentally sensitive assets, acting as a better neighbour to enable appropriate and effective local access to visitor destinations, including ANOB and South Downs National Park.
South Coast Central	D	Support sustainable regional and local growth aspirations adjacent to corridors, improve opportunities for freight movement and business and community interaction on the A27, A3 and for the Gatwick Diamond.
South Coast Central	E	Support sustainable travel and integrated transport improving local community accessibility, enhancing connectivity and east–west movement in the region.
South Coast Central	F	Maximise the opportunities offered by new technologies to better inform road users and improve reliability and access to innovations and information systems.
South Midlands	A	Provide safe journeys on the A46 and A5, for local communities and all road users, including walkers, cyclists and horse riders.

Appendix 1: Route Strategies List

Route	Objective Letter*	Route Objective
South Midlands	B	Support sustainable development in employment centres and housing in Leicester (M69), Coventry (A46), Burton-upon-Trent (A38), Wolverhampton (A449), Tamworth and Rugby (A5).
South Midlands	C	Improve regional connectivity between the West and East Midlands, connecting the main regional economic centres and improving accessibility to international gateways such as East Midlands Airport and Birmingham Airport.
South Midlands	D	Improve integration with sustainable transport modes to reduce the number of short distance journeys by car and encourage active travel along the A5 and A46.
South Midlands	E	Provide facilities to enable the efficient movement of goods, and help improve driver welfare, within the Midlands region and to strategic destinations across the UK.
South Midlands	F	Be a better neighbour by safeguarding the environment and reducing the impact of air quality and noise on communities along the route.
South Pennines East	A	Improve the safety on the route, particularly the A64 between Hopgrove and Flaxton, Welburn to Musley Bank and Rillington to Sherburn on the A180 and A160 near Immingham.
South Pennines East	B	Grow the visitor economy by enabling better access to visitor attractions in York and the east coast via the A64 and tackling seasonal delays.

Route	Objective Letter*	Route Objective
South Pennines East	C	Enable sustainable economic growth and levelling up enabling improved freight access to Freeport sites in Hull, Immingham, and Goole, and logistics hubs in locations such as Doncaster.
South Pennines East	D	To be a better neighbour by safeguarding the environment and reducing adverse air quality, noise and severance impacts on local communities surrounding the route.
South Pennines East	E	Minimise traffic from the SRN diverting through local communities, particularly in Malton from the A64, Brough and North Ferriby from the A63, and Hatfield and Thorne from the M18.
South Pennines East	F	To be a better neighbour by reducing air quality and noise impacts on local communities in Scunthorpe, Hull and Malton, on the A64 and M18 Doncaster and the clean air zone in York.
South Pennines East	G	Reduce severance for sustainable transport modes into towns such as Malton on the A64, Goole and Howden by the M62, Brigg on the M180; as well as communities on the A63 corridor west of Hull, to benefit local communities, connectivity and the environment.
South Pennines West	A	Benefit road users and local communities by providing safe journeys on the route, particularly focusing on vulnerable road users where they interact with the SRN in urban areas.
South Pennines West	B	Support effective local integration with sustainable transport modes in urbanised areas such as Greater Manchester, Merseyside, Lancashire and West Yorkshire, to minimise the impact of short distance journeys and benefit the environment.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Appendix 1: Route Strategies List

Route	Objective Letter*	Route Objective
South Pennines West	C	Be a better neighbour by safeguarding the environment and reducing the impact on air quality and noise, where possible, where the SRN passes through urban areas such as Greater Manchester, West Yorkshire, and Merseyside.
South Pennines West	D	Promote sustainable economic growth, the visitor economy and levelling up in the North through efficient connectivity to both existing and future housing and employment sites in Preston, the Fylde Coast, East Lancashire, Greater Manchester, the M57 corridor in Liverpool, St Helens, and the Wakefield District including the towns of Pontefract, Normanton, and Castleford.
South Pennines West	E	Support safe and reliable trans-Pennine journeys on the M62, A628 and A616 to ensure that economic activity can grow across the Pennines.
South Pennines West	F	Support cross-border connectivity for people and goods between Wales and the North of England with a focus on reliability and safety on the M56, M53, A55 and connecting SRN routes to Wales, promoting the UK and regional economies.
South Pennines West	G	Support the needs of the freight industry including major businesses and logistics hubs such as the Ports of Liverpool and Salford, Mersey Freeport, Trafford Park and Manchester Airport, to support the regional and national economy through the efficient movements of goods.
South West Peninsula	A	Promote safe and reliable journeys to improve customer experience through the provision of a resilient and consistent network particularly along the A31/ A35, A38, A30 and on the A36 / A46 and A303.

Route	Objective Letter*	Route Objective
South West Peninsula	B	Improve the resilience to and management of additional seasonal traffic flows to tourism locations such as the New Forest, Dorset, Stonehenge, Bath, Exmoor, Dartmoor and Cornwall to support the route's wider economic function for all users.
South West Peninsula	C	Support regionally significant and sustainable economic and housing growth, particularly in garden communities, enterprise zones and freeport sites, whilst maintaining the safe and effective operation of the route.
South West Peninsula	D	Support the needs of the freight sector to achieve the efficient movement of goods on the east-west M3, M27, A303, A35, A30, A38 corridors and north-south on the A46 and A36 corridor.
South West Peninsula	E	To be a better neighbour by reducing adverse impacts of air quality, noise and severance on the communities on the A31 in Dorset / Hampshire, A35 in Devon and Dorset, A303 in Somerset and Devon, A36 in Bath and Wiltshire, and the A30 / A38 in Devon and Cornwall.
South West Peninsula	F	Support shifts in modes of transport through better integration with public transport and improved active travel options to relieve pressure on the SRN, particularly in urban areas including Southampton, Bournemouth, Salisbury, Exeter, Plymouth and Truro.
South West Peninsula	G	Support improved connectivity for the strategic movement of traffic between the M4, Dorset Coast and Southampton through the provision of a resilient and consistent route.
South West Peninsula	H	Support the role of the A303/A30/A358 corridor as the key strategic route between London and the far South West, to improve long distance connectivity and to support regional economies.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Appendix 2: Glossary of terms

Term	Definition
Active travel	Relates to journeys involving physical activity, such as walking or cycling.
Autonomous vehicles	'Autonomous vehicles' are expected to use information from on-board sensors and systems to understand their global position and local environment, enabling them to operate with little or no human input for some, or all, of their journey.
Biodiversity net gain	Biodiversity net gain is an approach to development which means that habitats for wildlife must be left in a measurably better state than they were in before the development. Achieving biodiversity net gain means that natural habitats will be extended or improved as part of a development or project.
Connected vehicles	'Connected vehicles' are expected to have the ability to communicate with their surrounding environment, including infrastructure and other vehicles, and to provide information to the driver that informs decisions about the journey and even activities at the destination.
Demand management	Demand management is an umbrella term for the application of strategies and policies to reduce travel demand, or to redistribute this demand in space, mode or time.
Development Consent Orders (DCO)	A statutory order which provides development consent for a project and means that a range of other consents, such as planning permission and listed building consent, will not be required.
Digital twins	A digital representation of a physical object and its operation that can be interrogated and queried.
Embodied carbon	Carbon emissions associated with the extraction, processing and production of materials used in construction.

Term	Definition
Enhancements	Enhancements schemes are a crucial element of our investment portfolio. They refer to different types of projects which may help reduce journey times, increase reliability and improve connectivity and capacity, driving economic growth and providing opportunities for people and businesses across the country.
Geofence	Location-based technology where a virtual boundary is assigned to a physical location to support security and safety.
Green bridges	Bridges built across roads and railways to allow wildlife movement.
GVA (gross value added)	An economic productivity metric that measures the contribution of a company, region or sector. It is calculated using the value of goods and services produced, minus the cost of inputs used for production.
Integrated transport	Combining different modes of transport to maximise ease and efficiency for the user in terms of time, cost, comfort, safety, accessibility and convenience.
Lean	Systematic method for the elimination of inefficiency in processes, production and manufacturing.
Light fleet	Light duty vehicles such as passenger cars, minivans and passenger vans.
Modular and off-site construction	Process of using modules manufactured in a factory environment which are then transported to site and connected together.
multimodal	Term used to refer to multiple modes of transport, for example rail, maritime, active travel.

national highways

Appendix 2: Glossary of terms

Term	Definition
$PM_{2.5}$ and PM_{10}	Particular matter refers to particles in the air that are not in gas form, some of which can be toxic. $PM_{2.5}$ refers to particles less than 2.5 micrometres in diameter, and PM_{10} are those less than 10 micrometres.
Rapid Engineering Model	A tool developed by National Highways to support the design, delivery and operation of infrastructure. It helps increase the speed, quality and safety of road design.
RIDDOR	RIDDOR is the Reporting of Injuries, Diseases and Dangerous Occurrences Regulations.
Site of Special Scientific Interest (SSSI)	An area protected due to its flora, fauna, geological or physiographical features.

Introduction | Overview of our third road period proposals | Understanding our network | Working towards our long-term vision | Planning for the third road period | Delivering in the third road period | Summary and next steps

national highways

Appendix 3: References

Reference number	Reference
1	The British Ports Association & Port Centric Logistics Partners (PCLP). (2021) Port Traffic Analysis Including Modal Transport Splits, available at: https://www.britishports.org.uk/content/uploads/2022/07/Port-Traffic-Analysis-including-Modal-Transport-Splits-1.pdf
2	Report prepared for the National Infrastructure Commission by Vivid economics. (2019) The value of freight, available at: https://nic.org.uk/app/uploads/Future-of-Freight_The-Value-of-Freight_Vivid-Economics.pdf
3	Innovate UK. (2021) UK Transport Vision 2050: investing in the future of mobility, available at: https://www.ukri.org/wp-content/uploads/2022/01/IUK-110122-UK-Transport-Vision-2050.pdf
4	National Infrastructure Commission. (2019) Better delivery: the challenge for freight, available at: https://nic.org.uk/app/uploads/Better-Delivery-April-2019.pdf
5	UK Green Building Council. (2017) Delivering Low Carbon Infrastructure, available at: https://ukgbc.s3.eu-west-2.amazonaws.com/wp-content/uploads/2017/09/05153000/Delivering-Low-Carbon-Infrastructure.pdf
6	Alkis Papadoulis, Mohammed Quddus, Marianna Imprialou. (2019) Evaluating the safety impact of connected and autonomous vehicles on motorways, Accident Analysis & Prevention, Volume 124, available at: https://www.sciencedirect.com/science/article/abs/pii/S0001457518306018?via%3Dihub

Reference number	Reference
7	Atkins. (2016) Research on the Impacts of Connected and Autonomous Vehicles (CAVs) on Traffic Flow, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/530091/impacts-of-connected-and-autonomous-vehicles-on-traffic-flow-summary-report.pdf
8	Defra. (2010) Air Pollution: Action in a Changing Climate, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/69340/pb13378-air-pollution.pdf
9	Connected Places Catapult. (2021) Market Forecast For Connected and Autonomous Vehicles, available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/919260/connected-places-catapult-market-forecast-for-connected-and-autonomous-vehicles.pdf

Appendix 4: Picture credits

Page number	Reference
1	© National Highways, M62, Scammonden Reservoir #8778
5	© National Highways, M621, North East & Yorkshire #10846
6	© National Highways, M6, North East #10118
7	© National Highways, Map of Great Britain, outlining the SRN
8	© National Highways, A12, East #9594
9	© National Highways, infographic, illustrating an A-road
10	© National Highways, M5, South West #377
18	© National Highways, vision of the Strategic Road Network Illustration
19	© National Highways, M6 / J37, North West #5705
21	© National Highways, M20, Kent #7402
23	© National Highways, A14, M1, M6, East Midlands #228
26	© National Highways, infographic our approach to customer service

Page number	Reference
27	© National Highways, M5, Aztec West cycle scheme #4905
29	© National Highways, M5, South West #4905
30	© National Highways, North East & Yorkshire #9899
31	© National Highways, A46, West Midlands #10418
34	© National Highways, infographic supports the route strategies development
35	© National Highways, A64, North East #9809
37	© National Highways, A66, North West #7635
42	© National Highways, WIP Cover of North Pennines Initial Route Strategy Overview Report
42	© National Highways, WIP Cover London to Leeds Initial Route Strategy Overview Report
43	© National Highways, illustration of a section or road and its immediate surroundings
45	© National Highways, A3, Surrey, South East #3601

national highways

Appendix 4: Picture credits

Page number	Reference
45	© National Highways, infographic the volume of different types of assets on our network
-	© National Highways, icons
47	© National Highways, Essex #441
48	© National Highways, M20, South East #7410
49	© National Highways, A1(M), North East #910
50	© National Highways, The Severn Bridge, South West #8063
55	© National Highways, APS / Julian Calverley #5041
58	© National Highways, infographic Transport Focus to support the development of Road users' priorities for improvement
59	© National Highways, infographic understand the needs of road users, communities and stakeholders
64	© National Highways, A12, South East #9324
67	© National Highways, APS / Julian Calverley #5076
69	© National Highways, Photograph #4516

Page number	Reference
70	© National Highways, Infographic Connecting the country: Our long-term strategic plan
72	© National Highways, Infographic graph depicting the Road Traffic Forecast 2018 scenarios
73	© National Highways, Infographic graph depicting the PAS2080 carbon reduction hierarchy
75	© National Highways, Infographic how much our customers travel and use the SRN
76, 77, 80, 81, 84, 85	© National Highways, Illustrations
88	© National Highways, M6, North West #6904
94	© National Highways, J29, M5, South West #10825
95	© National Highways, Operations South West #8031
96	© National Highways, Safety traffic cones #8590
98	© National Highways, National Fleet Event #10195
101	© National Highways, M61 Greater Manchester #9373

national highways

Appendix 4: Picture credits

Page number	Reference
102	© National Highways, Infographic he volume of different types of technology that supports our network
103	© National Highways, Regional Operations Centre #5044
104	© National Highways, A580, North West #2293
106	© National Highways, M27, Hampshire #6057
108	© National Highways, A46, East Midlands #10905
109	© National Highways, A30, A391 junction, South West #271
110	© National Highways, A590, North West #5657
112	© National Highways, traffic information app #8767
113	© National Highways, Kent, South East #4221
116	© National Highways, A27, South East #937
118	© National Highways, A453, East Midlands #10960
119	© National Highways, M49, South West #8869

Page number	Reference
120	© National Highways, M6, Cumbria #5703
123	© National Highways, South West #8679
124	© National Highways, A46, Nottinghamshire #10907
125	© National Highways, A14, East Midlands #209
127	© National Highways, #8757
128	© National Highways, A27, South East #945
129	© National Highways, A590, North West #7014
132	© National Highways, M6, North West #9523
134	© National Highways, M1, Bedfordshire #2507
135	© National Highways, A303, Wiltshire #2598
137	© National Highways, A64, Yorkshire #9812
138	© National Highways, A14, Cambridgeshire #5781
140	© National Highways, #10263

Introduction

Overview of our third
road period proposals

Understanding
our network

Working towards
our long-term vision

Planning for the
third road period

Delivering in the
third road period

Summary
and next steps

national
highways

Appendix 4: Picture credits

Page number	Reference
141	© National Highways, #4489
142	© National Highways, West Midlands #10591
144	© National Highways, A11, Norfolk #9888
145	© National Highways, West Midlands #10542
147	© National Highways, South East #5558
148	© National Highways, #4308
149	© National Highways, #5546
151	© National Highways, #10226
154	© National Highways, A40,Gloucestershire #11032
155	© National Highways, M11, Cambridgeshire, #10968
156	© National Highways, M60, North West #2291

Page number	Reference
157	© National Highways, A5, Shropshire #10784
160	© National Highways, M4, South West #334
161	© National Highways, M11, Cambridgeshire, #10967