

Task Force on Climate-related Financial Disclosures Report 2023



Introduction

Roads connect the country and are a convenient, low cost and practical way to travel to see family, to work and to deliver goods around the UK. With almost nine out of ten passenger miles travelled by road and 79% of freight goods moved by road, Britain's roads are an integral part of our economy and wider transport system.

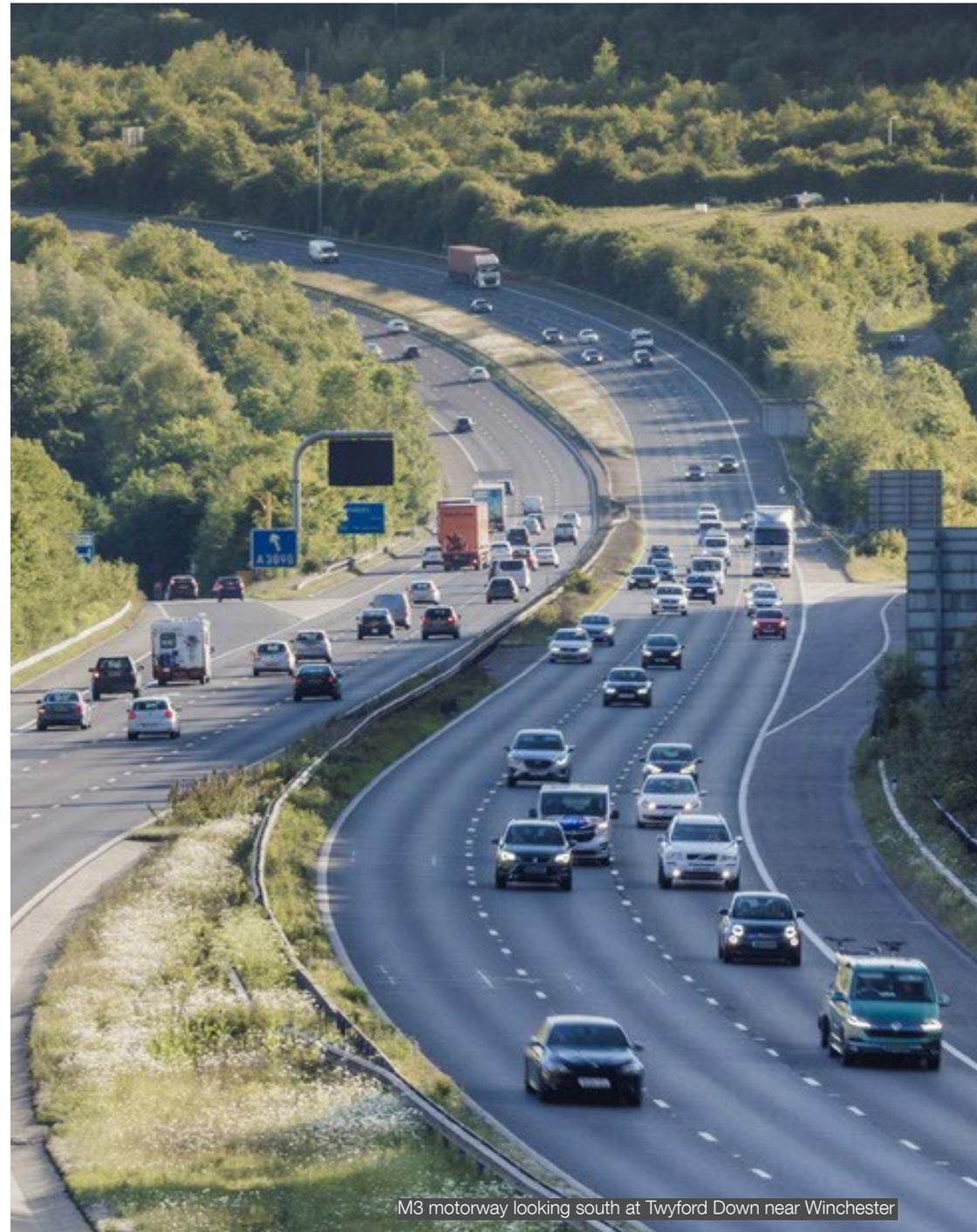
This is why we are leading the drive for net zero transport whilst providing a reliable, safe network for our customers.

We recognise that, like everything else, our network is becoming more prone to extreme weather events. This is why we are working hard to reduce greenhouse gases, the biggest cause of climate change, and taking steps to adapt to change. In 2021, we published our ambitious [Net zero highways plan](#). In 2022 we issued our third climate risk assessment [Preparing for climate change on the strategic road network](#).

This report summarises our progress against the four pillars of the [Task Force on Climate-related Financial Disclosures \(TCFD\)](#): governance, strategy, risk management and metrics and targets. It sets out how we are identifying, and managing climate risks in National Highways today, and how we plan to integrate this further over the coming years.



Vanessa Howlison
Chief Finance Officer



M3 motorway looking south at Twyford Down near Winchester

What is Task Force on Climate-related Financial Disclosures?

The G7's Financial Stability Board (FSB) established the Taskforce on Climate-related Financial Disclosures (TCFD) in response to the increasing recognition that climate change represents a systemic risk to the financial system. The TCFD developed widely adoptable recommendations on climate-related financial disclosures, in four pillars: governance, strategy, risk management, and metrics and targets.

These are the disclosures covered within each pillar:

PILLAR	RECOMMENDED DISCLOSURE
Governance	Describe the board's oversight of climate-related risks and opportunities.
	Describe management's role in assessing and managing risks and opportunities.
Strategy	Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term.
	Describe the impact of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning.
	Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario. ¹
Risk Management	Describe the organisation's processes for identifying and assessing climate-related risks.
	Describe the organisation's processes for managing climate-related risks.
	Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.
Metrics and Targets	Disclose the metrics used by the organisation to assess climate-related risks and opportunities in line with its strategy and risk management process.
	Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks.
	Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.

¹ Keeping the increase in the global average temperatures to well below 2C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5C is agreed to in the Paris Agreement.



In addition to the inherent risk of climate change, there are now several key drivers for organisations to report on their climate-related risks and opportunities using the TCFD framework.

These are:

Regulation. The UK has announced its intention to make TCFD-aligned disclosures mandatory across the economy by 2025. The government's Roadmap towards mandatory climate related disclosures highlights that a significant portion of mandatory requirements towards TCFD alignment is to be in place by 2023.

Strategic planning. In addition to its use as a risk management tool, TCFD may have even greater use as a strategic planning device. As the process considers much longer timeframes, it can provide a valuable tool for business planning under multiple futures.

Stakeholder expectations. TCFD enables organisations to showcase their organisational and operational resilience and appropriate asset and risk management capability to stakeholders and funders, who are in turn more frequently requesting this information.

The disclosures within the four pillars of TCFD are designed to assist organisations to systematically assess and disclose their organisation's handling of climate-related financial risks.

Presented here is our first TCFD report, creating a baseline for our alignment with the recommended disclosure framework.

By publishing our TCFD report ahead of the requirement becoming mandatory, we are adopting best practice immediately. We see this as an opportunity to further integrate climate-related risks and opportunities into our strategic planning. This ensures that we can apply a more efficient and effective approach to managing climate-related risks and help us achieve better climate resilience in the future.

About National Highways

National Highways is the arms-length, government-owned company responsible for operating, maintaining, and improving England's strategic road network (SRN). This comprises of motorways and major A-roads, as well as associated assets such as bridges, tunnels, and signage.

Our three imperatives are focused around keeping our customers safe on well operated and maintained roads.

Safety. This is our main priority, and we aim to deliver a network that is safe, dependable, and durable. Our target is to halve the number of people killed or seriously injured on our roads by the end of 2025, relative to the 2005-2009 average, and have a zero-harm target by 2040.

Customers. We will keep our roads running safely and smoothly, while keeping our customers informed and prepared. We will ensure that our assets, including everything from bridges to roadside signs, are well maintained and that we protect the surrounding environment.

Delivery. In order to manage and improve the SRN and to make journeys safer, smoother and more reliable, we plan and manage a programme of works to make sure our roads, and the various structures along them, are safe.

Delivering investment in the Strategic Road Network

We operate in five-year road investment periods, delivering the government's Road Investment Strategy (RIS) in each period. The RIS allow us and our supply chain to plan our work efficiently. We are currently in RIS2 (2020-2025), which specifies the performance standards we must meet and our proposed activities to meet these priorities. Planning for RIS3 (2025-2030) is currently underway.

Our Strategic Business Plan (2020-2025) describes our portfolio of investment. It also sets out our commitment to protecting the environment and communities while getting our roads ready to support future businesses, jobs and homes. The Strategic Business Plan is supported by our Delivery Plan (2020-2025) which explains how Government funding will be invested into the SRN up to 2025. It also sets out how the programme of work will be delivered, and targets met.



A21 Lamberhurst bypass, dual carriageway

Governance

National Highways delivers the Government's long-term plan for the SRN. Our performance is monitored by the Office for Road and Rail (ORR) and the consumer watchdog body, Transport Focus. Both organisations provide advice to the Secretary of State for Transport on our activities.

Climate governance is important because climate change is a recognised risk to our organisation. With good governance structures in place we are better equipped to deal with risks and respond appropriately to stakeholders and regulators.

Board oversight

The Board is accountable to our Shareholder (the Department for Transport) for all aspects of National Highways' activities and performance, including fulfilling our role and responsibilities as a strategic highways company. The Board is our primary governance arm in line with our fiduciary and other duties under company law. The Board's governance activities include setting strategy, overseeing performance, reviewing risks and appointing senior leaders.

A number of strategic, financial or other significant matters, including setting our strategic environmental direction, as well as our environmental policy and performance standards are reserved for approval by the Board.

The Board delegates accountability and responsibility for the day-to-day running and operations of the company to the Chief Executive and the Executive Team and this includes climate-related risk.

The Board maintains focus on our three imperatives of safety, customer service and delivery, and reviews performance against targets at each meeting. The Board approves the annual Business Plan and the Delivery Plan Update that support the delivery of the Government's RIS. Through the Investment Committee, the Board makes investment decisions based on recommendations from the Executive Investment Decision Committee and monitors progress of the capital programme.





The Board has oversight of the development of corporate strategy including any objectives on climate and carbon risks. We worked closely with the Board in developing our [Net zero highways plan](#) which they then approved. We followed a similar process for our wider Environmental Sustainability Strategy, which includes plans and ambitions for tackling climate resilience. This strategy was published after year end, in May 2023.

Our Board receives quarterly updates on progress made to manage our corporate-level risks, and has an annual strategy session with the Executive Team where corporate risks are discussed.

The CEO is responsible for monitoring how each of the directors and their respective directorates are performing against their objectives. The Executive Team report to the Board and provide feedback to management when it is important to communicate climate related information throughout the business.

The remit of the Audit and Risk Committee is to ensure the organisation has efficient and effective risk management, internal control and governance arrangements in place and oversee this on behalf of the Board. This will, from time to time, include risks and controls relevant to climate resilience.

The Central Carbon Team presents papers to the Executive Team on a range of climate matters, including climate risk and resilience to climate impacts, net zero and TCFD developments.

Management roles

At National Highways, the Executive Team sits directly below the Board and is responsible for oversight of climate risks.

Environment and Sustainability (E&S) is one of our transformation themes. This is being delivered through the Environmental Sustainability division, who work with the Executive Team and the Executive Transformation Committee to define our approach to managing climate resilience as we develop RIS3.

The Carbon Net Zero Steering Group oversee how our defined climate-related risks are delivered. Annual progress of the delivery of the Net zero highways plan is presented to the Group, prior to discussion at executive level. Results, together with other climate-related topics, form part of the conversation into developing our RIS3 approach and goals.

The [Net zero highways plan](#) is delivered through a series of specific projects – each with a leader (owner) and an executive sponsor. Each project leader produces a project delivery plan and provides sufficient resources to deliver it. Progress against the plan is tracked by the Central Carbon Team, which reports to the Net Zero Steering Group.

There are four action areas:

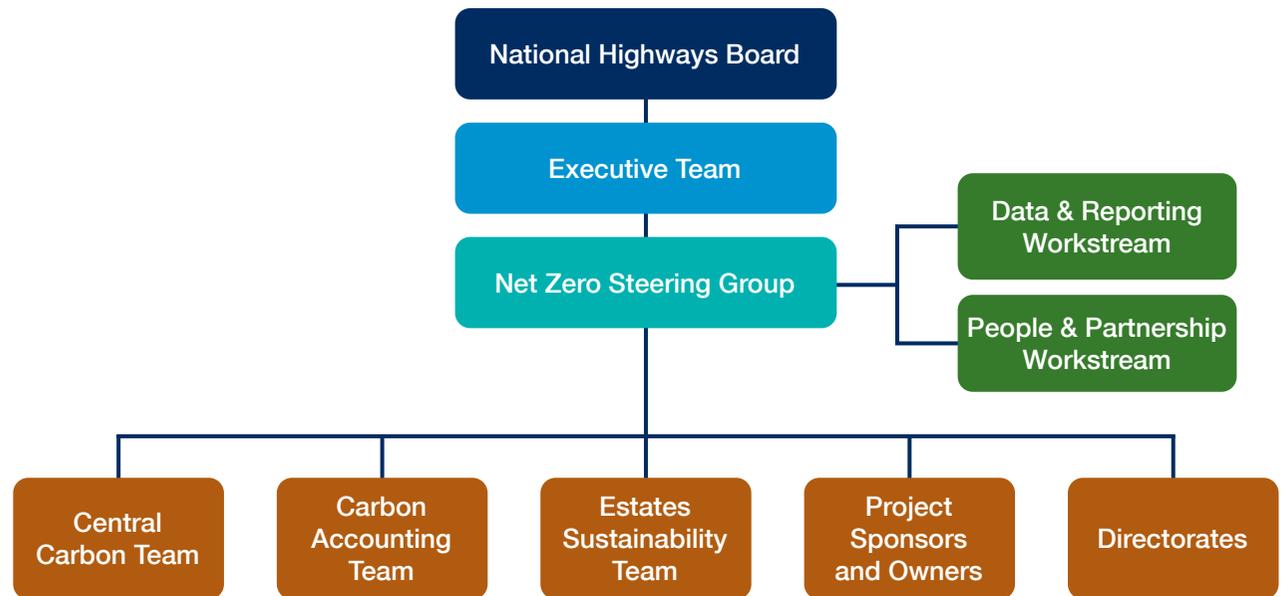
Governance & enablers

Corporate

Construction & maintenance

Road user

Figure 1 – Environment, Sustainability and Governance structure for National Highways



PAS2080 accreditation

In 2022, National Highways achieved accreditation to PAS2080 for our management system to reduce carbon during design, construction and operation. The standard recognises that we:

- have strategies in place to reduce carbon
- develop more collaborative ways of working to promote innovation, delivering benefit to society and communities
- make an important contribution to tackling climate change

This carbon management system has been incorporated into National Highways' existing business management systems through:

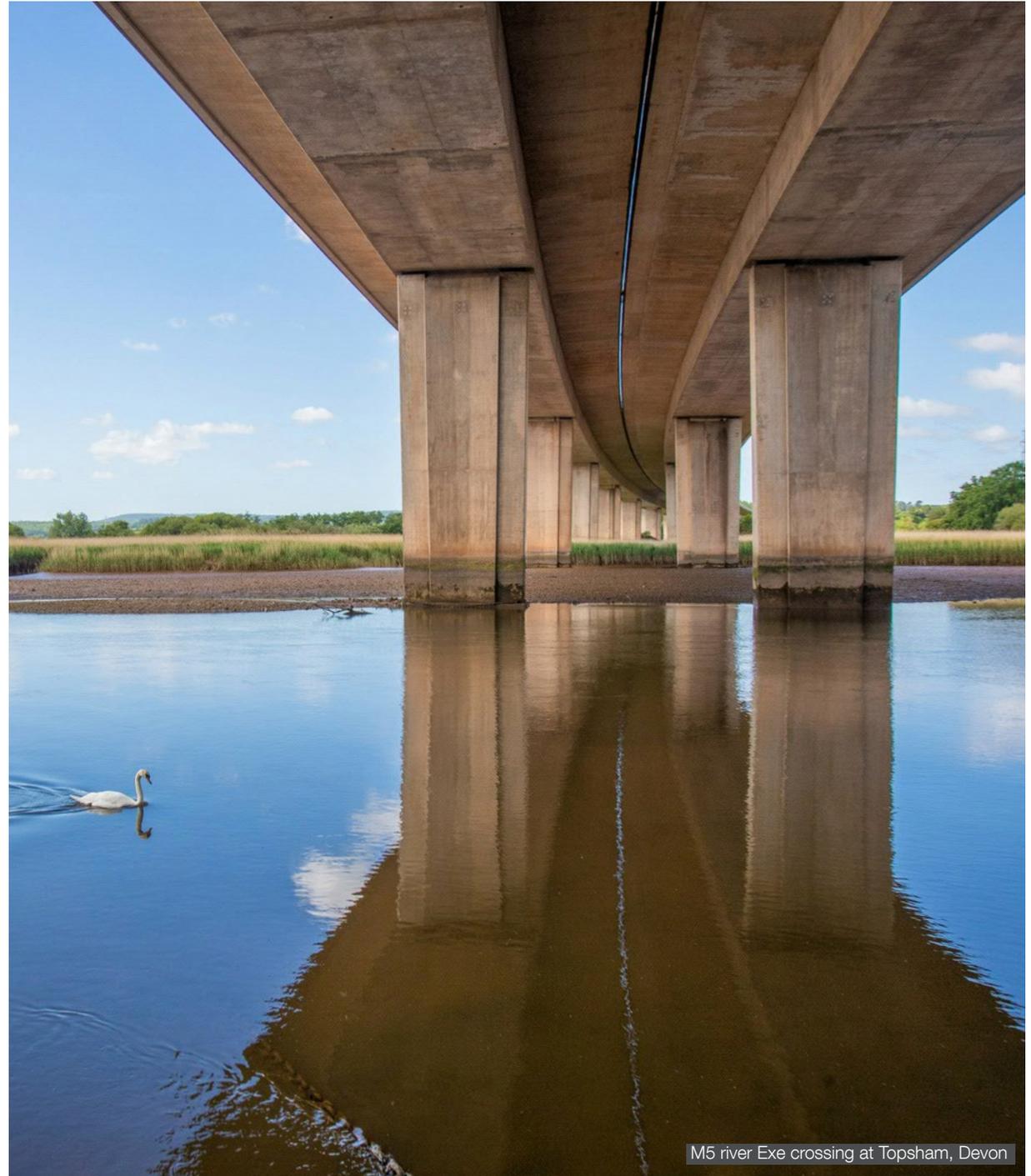
- inclusion of a Carbon Management Report product in Major Projects Directorate's Project Control Framework (PCF)
- inclusion of a Carbon Management Report product in Operations Directorate's 3D Governance Framework

We take a proactive approach to climate adaptation and resilience planning since the Climate Change Act (2008) came into force. The Act stipulated that reporting authorities should declare publicly their climate change risk, adaptation strategies and activities every five years. This is known as the Adaptation Reporting Power (ARP). We developed our first ARP (ARP1) in 2011, with ARP2 in 2016 and ARP3 in 2022. Our adaptation position, encompassing our ARP3 position, is now incorporated into our asset management transformation commitments. We use this to help inform our input into the government's wider adaptation work, such as the emerging National Adaptation Programme (NAP) reporting.

As many of the climate risks and actions are related to our assets, it is important that these are looked at within the context of our wider asset management and governance arrangements. Our Asset management policy establishes our principles for asset management. These are to:

- focus on customer service
- make efficient use of available resources
- consider the whole life of the asset
- align our strategic plans and delivery
- manage our asset risk effectively
- empower and connect our people

This is supported by our Asset management transformation programme who is currently working with all directorates to improve asset management capability. Review of key Asset Class Strategies and the Asset Management Risk Register has allowed for net zero and climate risks to be integrated into our asset management programme.



M5 river Exe crossing at Topsham, Devon

Strategy

The most recent UK Climate Change Risk Assessment (CCRA3) acknowledged the criticality of the climate risks impacting transport infrastructure. This criticality arises out of the interconnectedness of infrastructure systems and the resultant likelihood of cascading risks and failures.

National Highways operates, maintains and improves one of the most advanced road networks in the world, driving economic growth across the country, creating jobs, supporting businesses and opening up areas for development. We aim to provide all our customers with safe and reliable journeys, and to deliver a sustainable benefit to the environment.

Our strategic road network has a lifespan of many decades. Decades which will see the UK transitioning to net zero, requiring new technologies, a shift in thinking and changes to the regulatory environment giving rise to new road user demands and habits. At the same time, these will be decades which will entail a range of inevitable climate change impacts due to past greenhouse gas emissions. Therefore, as we build and maintain our roads, we must help tackle the causes of climate change by reducing emissions and preparing for a changing climate by adapting to future conditions. Climate action and climate related risks and opportunities are therefore strategically important.



M6, Spaghetti Junction, West Midlands

Business planning

We published our [Net zero highways plan](#) in 2021, setting out our net zero ambitions and our commitment to putting roads at the centre of a zero-carbon economy.

OUR PLAN HAS THREE STRONG COMMITMENTS:



CORPORATE EMISSIONS

Net zero for our own operations by

2030



MAINTENANCE & CONSTRUCTION EMISSIONS

Net zero for maintenance and construction by

2040



ROAD USER EMISSIONS

Net zero carbon travel on our roads by

2050

Our Plan is based on strong science and evidence and aligns with:

- The 1.5°C reduction goal of the Paris Agreement
- The UK's commitment to be a net zero economy by 2050
- Government's *Decarbonising Transport: A Better, Greener Britain* (2021) and the UK's Industrial Decarbonisation Strategy
- The Government's sixth carbon budget

The defined actions in our [Net zero highways plan](#) include a further range of sub-actions to support us in our transition to a low carbon economy. Action to deliver our Plan is contained within our investment planning within each five year investment period. This ensures that we have sufficient resources in our total investment and annual planning cycles to achieve our commitments.

Our work to prepare for a changing climate compliments this work. In 2022, we have published our reports [Preparing for climate change on the strategic road network](#) (ARP3) and [Climate change and the strategic road network](#). Both set out how we will build resilience for a changing future on the SRN – England's 4,500 miles of motorways and major A-roads – which includes assets of varying lifespan. 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 not just today's weather, but long-range climate change too.

Our ambitions for tackling climate-related matters, that is our net zero commitment as well as our plans for building resilience, will be embedded in our Environmental sustainability strategy, published in May 2023. This builds on our previously published Sustainable development strategy (2017), which sought to ensure resilience to climate change is embedded in the activities of our business to reduce whole life costs and increase safety.

We are integrating our net zero commitments and climate adaptation into our medium-term planning and costings for RIS3 now – covering the period between 2025 and 2030 – and aim to publish our plans for RIS3 in 2023.

Scenario analysis

We continue to investigate and understand what the future will look like for the SRN, the road users, as well as for our business, strategic and financial planning. Our aim is to ensure that we deliver the targets in our [Net zero highways plan](#) and adapt our strategic management to the risks and opportunities climate change will pose to enhance the climate resilience of our organisation. To this end, we have undertaken a climate scenario analysis based on UK Climate Projections and have conducted a gap analysis against the TCFD requirements to identify a range of steps to be progressed over the remainder of RIS2 and throughout the course of RIS3.

Physical climate risks

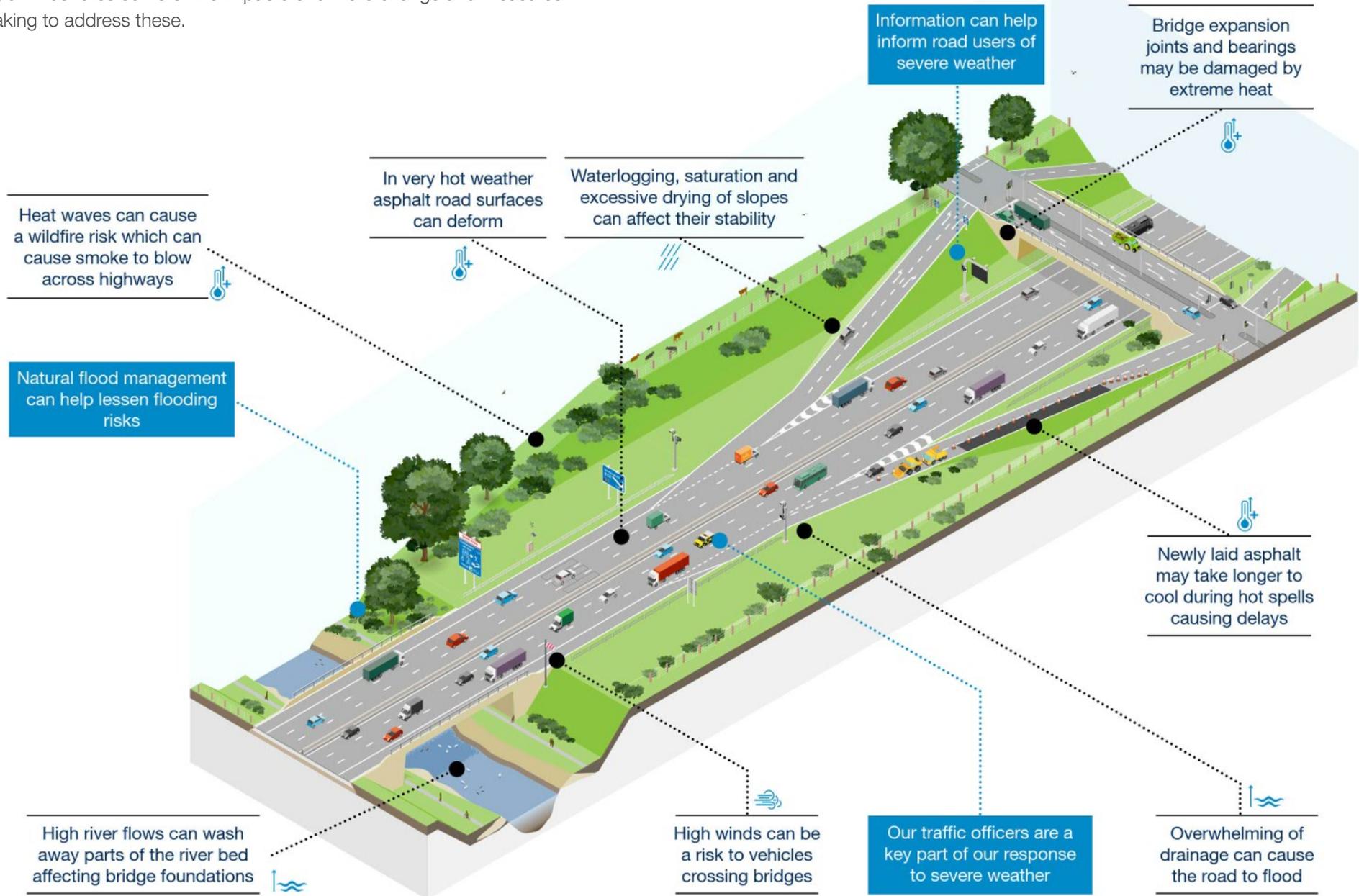
Climate change presents a range of risks to the strategic road network. It is important that we consider these risks and their management to ensure the resilience of the network and protect and improve safety. At the start of 2022, we published our report [Preparing for climate change on the strategic road network](#) as part of our submission to Defra for our third Adaptation Reporting Power (ARP3). To form the evidence base for this report, we conducted a physical climate change risk assessment (CCRA) covering our key asset classes:

- **Drainage** (for example: gullies, outfalls and culverts, soakaways, ponds, pipes and ditches and channels)
- **Geotechnical** (for example: embankments and cuttings)
- **Pavements** (for example: road surface and underlying structural layers)
- **Structures** (for example: bridges, footbridges, cycle bridges, bridge components, culverts, signals, gantries, retaining walls, buildings, road restraint systems and tunnels)
- **Soft estate** (for example: biodiversity, ecological corridors)



Figure 2 – How climate change may affect the strategic road network

This diagram illustrates some of the impacts of climate change and measures we are taking to address these.





Heavy weather conditions on M5 Junction 22, Bristol, South West

In the climate change risk assessment we considered a range of both acute and chronic physical risks. We did this by examining the projected change for a variety of climate hazards:

- Increase in mean summer temperature
- Increase in extreme summer temperature
- Change in extreme winter temperature
- Increase in mean annual precipitation
- Change in extreme precipitation
- Rise in sea level
- Change in fog
- Change in solar radiation exposure
- Change in wind and storminess
- Change in snowfall
- Change in freeze-thaw cycles

We extracted data from the UK Climate Projections 2018 (UKCP18) for the 2030s, 2050s and 2080s (at 25km resolution) and compared them to the reference time period of 1981-2010.

UKCP18 provides probabilistic climate projections aligned to Representative Concentration Pathways (RCPs). The probabilistic projections are made up of 3000 scenarios for each RCP and span a wide range of possible futures. They help to ensure that scientific evidence used in risk assessments and other adaptation activities is as robust as possible. Multiple RCPs are available for the probabilistic projections and provide a range of possible trajectories of how global land use and emissions of greenhouse gases may change through to 2100. RCP 4.5 and RCP 8.5 were chosen for this assessment as they roughly align to a future world where global average temperatures are 2°C and 4°C above pre-industrial levels respectively.

We conducted a vulnerability assessment, which considered the exposure (the extent to which an asset is exposed to a climate hazard) as well as the sensitivity of assets (the extent to which an asset is sensitive to a climate hazard). We used vulnerability as a proxy for likelihood.



We subsequently undertook a consequence assessment, which captured the magnitude of impact of the climate related risks through different lenses (finance, service continuity, health & safety and legal). We established risk scores through the combination of both likelihood and consequence. We focused on priority risks in our development of our adaptation actions.

For TCFD disclosure purposes we have classed our physical climate risks into acute and chronic risks. Acute risks are those risks that are event-driven such as the increase in severity of extreme weather events. Chronic risks are those risks that relate to longer term shifts in climate and weather patterns.

Table 1 overleaf highlights examples of specific acute and chronic physical climate-related risks and their potential impact. These were identified in our physical CCRA for ARP3. In addition to those listed in Table 1, we note that other corporate-level risks arise, such as not being able to meet our customer service imperatives due to safety incidents or a general increase in more unreliable journeys due to an increase in adverse severe weather events. Our climate risk assessment also recognised that further work is needed to address interdependent risks with other organisations.

A comprehensive description of all of our priority physical risks can be found in our report [Preparing for climate change on the strategic road network](#).

Table 1 – Physical climate risks considered in our climate change risk assessment

DESCRIPTION	POTENTIAL PHYSICAL IMPACT
<p>Acute</p> <p>Acute risks are those risks that are event-driven such as the increase in severity of extreme weather events. Our CCRA includes how acute risks such as flooding, extreme temperatures (heat and cold), and wind are likely to impact all of our asset classes and make it harder for us to operate a reliable, safe network.</p>	<p>Flooding. Heavier rainfall, high river flows, and rising groundwater levels are our most significant risk to the safe and reliable operation of our network. Examples of resultant risks are:</p> <ul style="list-style-type: none"> ■ Overwhelming of drainage causing the road to flood. ■ High river flows washing away riverbeds surrounding the support structures for bridges. ■ Waterlogging and saturation of slopes and earthworks affecting their stability. ■ Excessive water soaking into the layers of a road. ■ Excess surface water and decreased visibility during extreme rainfall events leading to less reliable, less safe driving conditions. <p>Extreme temperatures can cause issues with the durability of our road network and exceed the tolerance of structural elements such as the expansion joints and bearings in bridges. Very hot conditions may affect our road workers and road users.</p> <p>High winds/ storms. Climate projections show potential increases in wind speed in the second half of the century. Examples of resultant risks are:</p> <ul style="list-style-type: none"> ■ Wind action causing damage to structures such as bridges, signs and electronics. ■ Storm surges and associated washed away debris causing damage to bridges or changes to the river bed around bridge piers. ■ Trees or branches blowing on to the road. ■ Risks to vehicles, particularly high sided vehicles, overturning in higher winds.
<p>Chronic</p> <p>Chronic risks are those risks that relate to longer term shifts in climate and weather patterns. Our CCRA includes how chronic risks such as mean temperature and precipitation changes as well as sea level rise are likely to impact all of our asset classes.</p>	<p>Sea level rise. While the vast majority of the SRN is away from the sea, rising sea levels may increase the risk of flooding in parts of our network that are subject to long-term sea-level rise and may also impact on the structural stability of structures located near to tidal areas.</p> <p>Combined risks. Considering climate change is not simply about addressing the direct impacts of wetter or hotter future weather. Often weather conditions can combine to have an impact on our roads. In terms of combined rainfall and temperature changes, the key risks occur where repeated cycles of wetting and drying affect the ground underneath and surrounding the road. Examples of resultant risks are:</p> <ul style="list-style-type: none"> ■ Shrinking and swelling of soils can make features such as slopes less stable. ■ Damage to underground features such as drains or pipes from soil drying and shrinkage, amplified by sudden rainfall events. ■ Ground water level changes causing impacts on the foundations of some structures which could lead to a need for repair.

Transition climate risks

Tackling the causes of climate change requires a transition to a lower-carbon economy. This transition gives rise to a range of transition risks that organisations need to plan for and adapt to as well. These transition risks are grouped into four categories: policy and legal risks, reputational risks, market risks, and technology risks. The following are examples of specific transition climate-related risks that we are considering. Table 2 provides details on how these are being incorporated into our current strategic thinking.

Table 2 – Example transition risks included in our net zero actions

	DESCRIPTION	POTENTIAL BUSINESS IMPACT
Policy and legal risks	<p>The UK's commitment to delivering a net zero economy by 2050 means that every part of the UK must become net zero. The Committee on Climate Change has noted that RIS3 should be aligned to Carbon Budget 6.</p> <p>On specific road construction and improvement schemes, we have to adhere to the National policy statement for national networks, which also require assessment against Government carbon budgets. We face the risks of potential delays to the delivery of our schemes due to legal challenges raised relating to our approach to the environment, including carbon.</p>	<p>Delay to the approval of RIS3 and delivery of our RIS2 or RIS3 work programme would impact our ability to achieve our strategic objectives and any delays in work would also result in a cost impact.</p>
Reputational risks	<p>Projects and schemes that are not-aligned with a low-carbon transition could pose a reputational risk to us. Reputational risk is captured as one of our principal risks. This recognises that if we do not manage our reputation well, we may be subject to high-profile criticism and erosion of stakeholder or customer trust. This might lead to increased scrutiny of our portfolio and our operation of the SRN.</p>	<p>The public is becoming increasingly aware of the challenges posed by climate change and the role that key infrastructure providers, such as National Highways, play in tackling the climate crisis. Failure or perceived lack of ability to support the Government's carbon targets and the transition to a low-carbon economy could result in a negative impact on our reputation with our shareholder, employees and our road users.</p>
Market risks	<p>A perception that roads are not aligned with a net zero economy. Costs of maintaining the network could increase as carbon prices impact the cost of materials we use to maintain the network.</p>	<p>Higher costs could limit the ability for us to deliver RIS2 and RIS3 within budget, although our analysis has shown that in many cases carbon efficient schemes are also highly cost efficient, as they use fewer materials and employ lean construction processes.</p>
	<p>Legislation requiring increasing deployment of electric vehicles creates a demand that outstrips supply.</p>	<p>If there is insufficient supply of electric vehicles and their components, we may not be able to implement some of our defined actions in a timely manner. This would potentially result in us not being able to meet our Net zero highways plan targets.</p>
Technology risks	<p>Zero emission technologies will fundamentally change the nature of the vehicles travelling on our network.</p>	<p>Our ability to provide a reliable service to customers could be impacted if we cannot enable sufficient, reliable charging capacity on the network to meet demand. A slower transition to zero emission technologies could reduce our ability to meet our fair share of carbon budgets.</p>

Climate opportunities

For every risk there is also an opportunity. We have identified a number of specific opportunities in addition to those which arise from responding effectively to the physical and transitional risks already identified.

Table 3 – Climate opportunities considered by National Highways

OPPORTUNITY	DESCRIPTION	POTENTIAL BUSINESS BENEFIT
Safer journeys	By planning for future weather extremes more effectively, and implementing adaptation actions across our network efficiently we can continue to provide a safe and reliable network for our customers.	This would result in improved safety performance and confidence in National Highways that we run a network which is safe for road users and road workers.
More reliable journeys	By planning for future weather extremes more effectively, and implementing these across our network we can help meet our imperative of providing reliable journeys for our customers.	The potential benefit will be: a more efficient and effective network that meets the needs of our customers and improves our network performance year on year.
More effective use of RIS2 and RIS3 budgets	Applying PAS2080 thinking as part of lean design means that we need to buy fewer resources and can provide better value for money in our investment for Government (and ultimately the taxpayer) in all of our activities.	With better value for money we can support the case for continued investment and can potentially provide more maintenance on our network leading to more reliable and safer journeys.
Use of nature-based solutions	Use of techniques such as Natural Flood Management provide a resilient network and support our wider biodiversity goals.	Nature-based solutions deliver multiple benefits, such as increasing resilience to flooding for National Highways and our shareholder, safer roads and enhanced reputation.
Meeting our shareholder's wider net zero and adaptation targets	Our net zero and adaptation plans can help make the market for the UK to be a leader in net zero techniques, materials and adaptative capacity.	This would result in enhanced reputation for National Highways as well as contributing to our aim to meet the Government's overarching climate goals and plan.
Reputation	By showing how roads can be at the centre of a net zero, resilient economy, and how National Highways is leading the way on its delivery, we can demonstrate how we are a modern company delivering the UK's climate priorities.	This would result in enhanced reputation and a greater ability to attract and retain great people. It would also put National Highways at the centre of delivering a prosperous, resilient, and net zero nation.

Adaptation actions

The physical climate scenario analysis, undertaken as part of our ARP3 submission, helped to identify a range of priority risks. In our report [Preparing for climate change on the strategic road network](#), we identified actions that we are taking to address each of these priority risks. In the report, we also highlight additional actions that do not specifically address key risks but contribute to building adaptive capacity. We describe what we had committed to in ARP2, what we have done additionally over the last five years and what our ambitions are in direct response to the risks identified for ARP3.



M11 dual carriageway in rural Cambridgeshire, East Anglia

Following the ARP3, we are now developing an Adaptation Roadmap. This further develops the high-level actions in ARP3 and maps them against the UK CCRA. National Highways will report on progress against relevant UK CCRA actions through the National Adaptation Programme. All actions in the Adaptation Roadmap contain a clear timescale, an action owner and details on where funding and investment is required (such as for example, for Natural Flood Management (NFM), maintenance, monitoring, research, and others).

For each risk identified from the most recent UK CCRA applicable to National Highways, we have developed adaptation pathways, setting out anticipated outcomes and actions. These actions include high-level direct and indirect costs.

Taking actions

As part of our current RIS3 planning process, we are also considering the costs and funding required for actions to address our climate-related risks and opportunities. As our funding is provided by government through the Department for Transport (DfT), we have to demonstrate that our strategy and proposed actions align with and meet the government's carbon targets.

As well as funding actions, we also engage in research and development and a number of climate-related research projects are either under way or have been proposed. These include research related adaptation actions in the Adaptation Roadmap (for example research impact of drainage on ground related geotechnical assets), Conference of European Directors of Roads collaborative research projects on circular economy and climate resilience, and sharing of good practice on carbon, circular economy and adaptation through the Transport Infrastructure Efficiency Strategy (TIES) Communities of Practice.

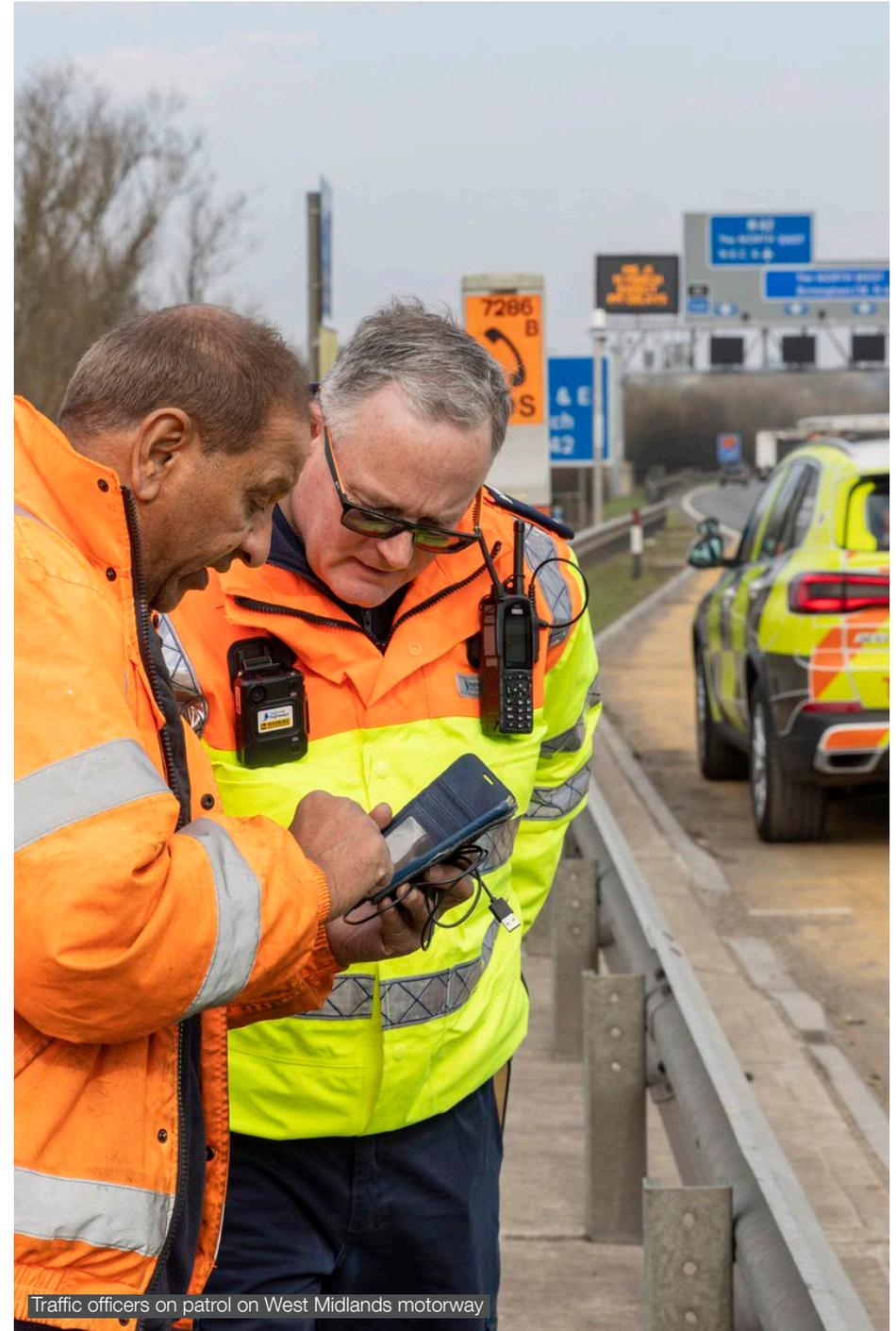
We recognise that engagement with our people is an integral part of facilitating a greater understanding of climate-related risks and opportunities. To this end, we have prepared a range of actions, including:

Our maintenance and construction activities delivered in accordance with our PAS2080-certified carbon management system: **Prepare our supply chain for PAS2080 requirements with resources, guidance and training.**

Traffic officers ready for electric vehicle breakdowns by the end of 2022: **Continue to provide training for new Traffic Officers.**

Every person has the necessary net zero skills, competency and knowledge. Carbon is an integral part of performance management: **Roll out carbon literacy training across the organisation through a mix of in-person training, webinars and online modules.**

We also need to engage our supply chain and do this, for example, through the supply chain, sustainability school, and training webinars on carbon management.



Traffic officers on patrol on West Midlands motorway

Risk management

Principal risks and uncertainties

Our risks are linked to our company's strategic outcomes, objectives and KPIs. To provide a broader sense of the level of exposure, we group all risks under our three imperatives: safety, customer service and delivery. This allows the Board and our Executive Team to focus their attention on areas of significant movement, rather than discussing each on a risk-by-risk basis. It also provides a different lens to show our data, recognising that risks can be assessed against more than their category, such as financial, operational or environmental.

Risk governance

The Board has overall responsibility for determining our risk appetite: the amount and type of risk that we are willing to take to meet our strategic objectives. Oversight of our risk management framework and its effectiveness is delegated to the Audit and Risk Committee. The outcomes from their work feed into the Board's wider business discussions.

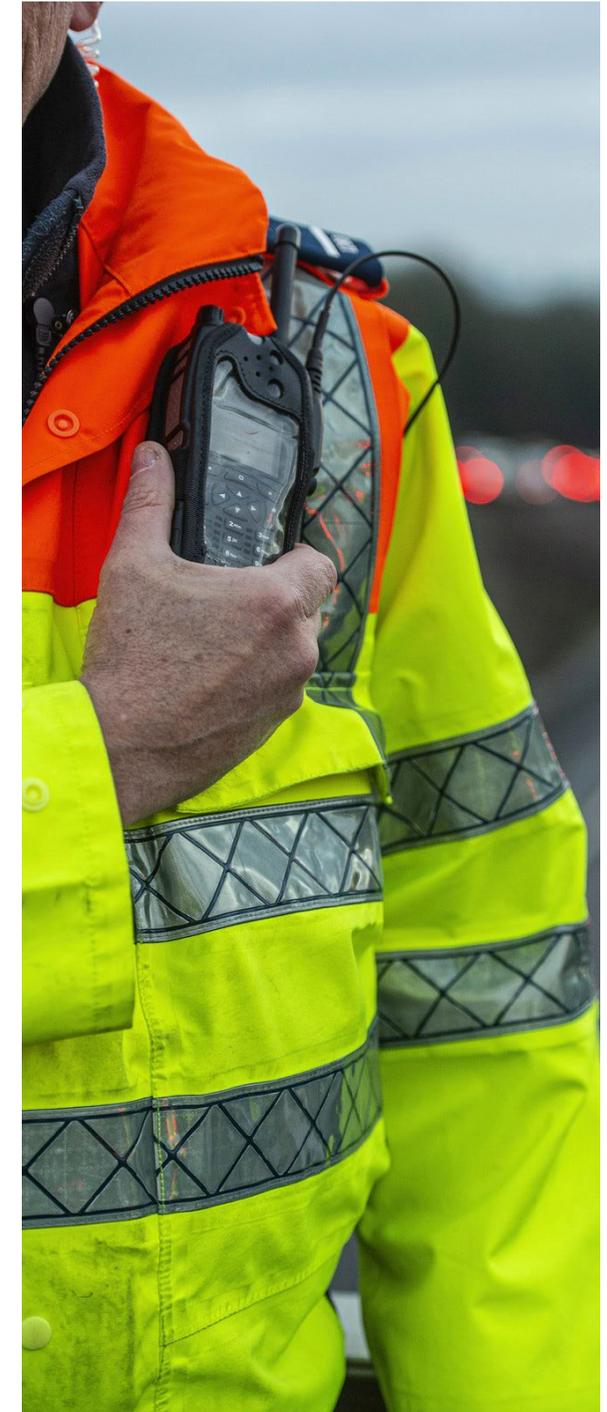
Our principal (or 'corporate') risks are owned by our Executive Team and monitored by the Board. Executive Directors also own risks relevant to their area of responsibility and delegate the management of these to the appropriate functions within our business. Risks that sit at this level are known as secondary risks and are linked directly to the relevant principal risk(s) held on our corporate risk register. This allows us to keep our principal risks broad, recognising that their attributes can be managed in the right part of our business. Collectively this helps us to understand our overall risk exposure.

We link our principal risks to our corporate governance forums at Board and Executive levels. This allows the Board to maintain strategic oversight of each risk and provides confidence that risk strategies are working as intended. At Executive level, linkage provides a greater opportunity to manage risk control frameworks and direct mitigations to reduce risk exposure or materialisation.

Collectively, the Board and our Executive Team maintain visibility of all risks sitting at principal and secondary levels, including status and mitigation plans, through our periodic risk reporting and review process.

Our risk culture builds on our company values, and our framework gives us the structure through which we can consistently escalate, prioritise, enhance, action, monitor and report risks.

Risk management is embedded as a key component in our decision-making. This enables individuals and groups to take the right risks in an informed manner.



Overview of our process

Our risk management process focuses on the early identification, assessment and management of risk. Our underlying principles are that risks are:

- identified, assessed and mitigated in line with our risk appetite
- monitored continuously
- reported through our established procedures

All risk aligns to our strategic outcomes, and the Board and Executive Team work together to identify, review and monitor these throughout the year. Our people are encouraged to identify, prioritise, manage, monitor and report all risks relevant to their working area. On a periodic basis, we review these risks and use the outputs to refresh and report our risk register information to the appropriate levels of our business.

Identification of risks

Identifying risks is a continuous process:

- The Board and our Executive Team update our principal risks and their mitigations throughout the year as new risks emerge or decrease in exposure. Our Executive Team work with their teams to manage these within our company's risk appetite.
- Each Executive Director identifies and manages risks relevant to their area of responsibility. These secondary risks can be identified at any level of our business and are escalated or cascaded to the directorate for ownership and management. Secondary risks form a link to those that sit on our corporate risk register and are closely monitored to help us to understand our overall risk exposure.
- At programme and project level, risk is the responsibility of our programme risk managers. This feeds into the overall portfolio-level view and, where relevant, any portfolio risk will then link into the corporate risk register as a secondary risk.

Oversight of risk at all levels is provided by our Corporate Assurance Division to ensure a cohesive view across our organisation.



Evaluation and management of risks

We consider external and internal risks that could affect our ability to achieve our strategic goals or locally set objectives.

We use a risk scoring matrix to evaluate risks against likelihood, impact and timing, and this is linked into our risk appetite framework. We assess each risk against:

- **The inherent risk**, which is the level of the risk without any mitigating action.
- **The residual risk**, which is the level of risk that remains after we have considered the effect of mitigating actions and controls in place.
- **The forecast risk**, which is the potential future level of risk if all agreed mitigating actions are implemented effectively and known events play out as anticipated.

We complete a formal review of the corporate register on a quarterly basis, in addition to an annual refresh exercise. Results are reported to our Executive Team and the Board and appropriate direction received and implemented.

Developing capability

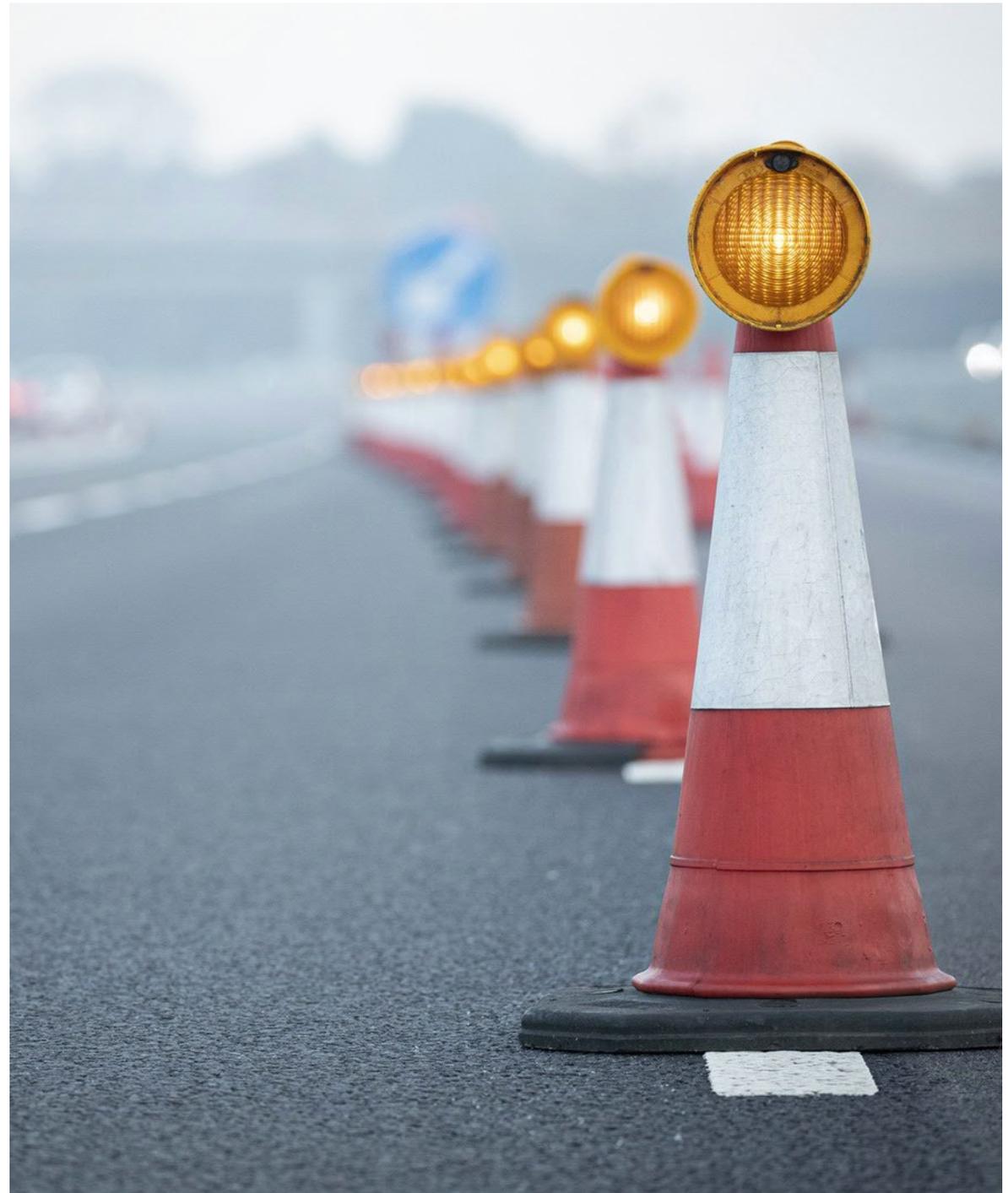
Our people are aware of their responsibilities to understand and highlight risks that might affect our ability to achieve our strategic goals. We have an established network of risk champions across the organisation, who identify the risks facing our business and share expertise and good practice. Within our project environment, we have a group of risk managers feeding information from project to programme to portfolio. Online risk management training is available for our project risk managers and risk awareness training for non-specialist staff, whose role involves risk management to a lesser degree.

Risk appetite

Our risk appetite statement describes the amount of risk that we, as a government-led organisation, are willing to be exposed to in the pursuit of our strategic goals and objectives. It forms an important part of our corporate governance and sets the tone for good risk management practice. It underpins our policies, processes and procedures and, when used correctly, the statement will support effective decision-making and demonstrate the rationale for those decisions. It is the responsibility of the Board to set the risk appetite and for the Executive Team to adhere to it.

Environmental outcomes

Delivering better environmental outcomes is an integral element of our current risk appetite statement. This accepts that, we are less risk averse and seek more opportunities to improve our activities. Environment is a core element of our risk assessment process, and all risks are evaluated against a set of environmental impact and likelihood statements. Both the assessment and the appetite statement are reviewed annually and amended based on new and emerging information.





Natural flood measures on A616, North East and Yorkshire

Assuring our risk

We have several teams who work together to help us manage risk properly. Each team has a unique perspective and specific skill sets. Their duties are coordinated carefully to avoid gaps and duplication of activity. We have created a four lines of assurance model, which recognises the activity conducted at all levels of the business. This provides the Board with an appropriate level of comfort that we are managing risks properly.

Addressing and managing environmental risk

We currently recognise 13 principal risks that encompass all key areas of our business. Our environment risk focuses on failing to meet government targets, which reflects all targets, including those that are climate related. We also recognise that all risk is interlinked and that several other principal risks would also be heightened due to climate related impacts. These include a significant legal event occurring, ineffective control over health, safety and wellbeing, asset failure, the delivery of our major enhancement schemes and risks over our supply chain.

Secondary environment risks that support our principal environment risk sit within our directorate, project and programme risk registers, and are owned and managed by the relevant part of the business. Those that are climate-related focus on the impact that adverse weather events may have on our network, our customers, and our ability to manage the risk now and in the future. Climate adaptation is embedded in the mitigation actions for a number of asset management risks.

We regularly monitor the environmental regulatory landscape and record our compliance in our Legal Register. We undertake additional horizon scanning activities through our [Net zero highways plan](#), the formal planning process as well as our commitment to the Science Based Targets initiative (SBTi). The SBTi sets and promotes best practice in emission reductions and net-zero targets in line with climate science. We are also regularly involved in policy relevant discussions directly with the DfT on net zero as well as climate adaptation.

Metrics and targets

The current Road Investment Strategy (RIS) sets out Government's investment in the SRN over 2020-2025. The Performance Specification in the RIS defines Government's expectations of National Highways. This sets out seven principal outcomes we, as a company must achieve, and our success is monitored through a series of performance metrics. These focus on activities or outcomes which are seen as most important, either by our stakeholders, our customers or which support wider government objectives. Progress against these is monitored by both the Department for Transport (our shareholder and client) and the Office of Rail and Road (ORR) (our regulator).

Two principal outcomes relate to climate change: delivering better environmental outcomes and a well-maintained and resilient network. The associated key performance metrics for RIS2 are:

- **Noise:** 7,500 households mitigated in noise important areas by March 2025.
- **Air quality:** bring links agreed with the department and based on the Pollution Climate Mapping model into compliance with legal NO₂ limits in the shortest timescales possible.
- **Biodiversity:** no net loss of biodiversity by March 2025.
- **Corporate carbon:** 75% reduction in corporate CO₂ by 2025 compared to 2017-18.
- **Pavement condition:** percentage of the network requiring no further investigation to be maintained at 95% or above.

We have a supply chain carbon performance indicator in the RIS Performance Specification, which shows total carbon equivalents (CO₂e) resulting from the work carried out by our supply chain and the carbon intensity of this work (per million spend). Our performance metrics offer trend-based measures to customers and stakeholders and provide additional context or cover areas of specific focus to inform ORR's monitoring.



Wildflowers on the A30 roundabout, Chiverton Cross, Cornwall, South West

As set out earlier in this report (on page 11), in 2021, we announced our [Net zero highways plan](#) and three strong commitments to reducing emissions across our operations. This plan includes a net zero target for corporate emissions by 2030, a net zero target for maintenance and construction emissions by 2040 and a net zero target for road user emissions by 2050.

Our Scope 1, 2, and 3 emissions for the three commitment categories are reported on within the [Net zero highways plan](#) and regularly updated in progress reports. We also state our Scope 1, 2 and 3 emissions for 2022-2023 on page 29 of this report. Progress updates follow a variety of widely recognised standards (including the Greenhouse Gas Protocol Corporate Standard, Value Chain (Scope 3) Standard and Scope 2 guidance as well as the Science Based Targets' (SBTi) criteria and recommendations).

National Highways use the Treasury Green Book as guidance for an internal carbon price, regulated by the UK government – this is used when we make decisions on new investment.

We have also worked with Department for Transport to agree our share of their Greening Government Commitments. We will reduce our corporate emissions the Greening Government Commitment methodology. Government uses a 2017/18 baseline.



Net zero by 2030 for corporate emissions

Covering our own energy and travel. Actions include:

- We have bought certified, renewable electricity for our network lighting and operations since 2020.
- We will replace 70% of our road lighting with LEDs by 2027.
- Our non-traffic officer vehicles will be 100% electric by 2027, with traffic officer vehicles to be 100% electric by 2030.
- We will plant at least 3 million trees by 2030.
- We will reduce our corporate emissions by 75% by 2025 when compared to a 2017/18 baseline.

Net zero by 2040 for maintenance and construction emissions

Covering emissions from making and transporting the materials used to maintain our network. Actions include:

- Launch a zero-carbon construction innovation programme.
- Finalised our [near-zero plan](#) for seven buying categories in 2022.
- Design and build the first net-zero major road enhancement scheme, open by 2035.
- Increase capacity on existing roads by roll out of our digital roads vision.
- We will follow a trajectory of 0-10% reduction by 2025, 40-50% by 2030, 70-80% by 2035 and net zero by 2040 against a 2020 baseline.

Net zero by 2050 for road user emissions

Covering emissions from users of our network. Actions include:

- We published our [proposed approach to zero carbon HGV trials](#) at the end of 2022.
- We will publish a blueprint for EV charging services on our roads by 2023.
- Integrate a strong expanding travel choice programme in Road Period 3 (RP3) building on our work to date.
- We are planning for a trajectory of 31-26 MtCO₂e by 2025, 25-15 MtCO₂e by 2030, 20-7 MtCO₂e by 2035, 8-3 MtCO₂e by 2040, 5-1 MtCO₂e by 2045 and net zero by 2050 against a 33 MtCO₂e 2020 baseline.



National Highways ecological survey, Cumbria

Our defined actions to help deliver our [Net zero highways plan](#) are initiatives established from existing carbon data. Each action has its own risks, metrics and interim targets and is owned at management level and sponsored by a member of the Executive Team. They contain enabling actions to assist in the delivery of the programme:

- Establish and maintain clear governance – for example, create a carbon team, or develop clear roles agreed for delivery and execution.
- We have a clear carbon data improvement programme that sets out what data we need when and the actions we need to take to deliver this.
- We will develop an effective strategic internal communications programme which engages and aligns employees to the Net zero highways plan and promotes net zero as a strategic priority.
- Every person has the necessary net zero skills, competency and knowledge. Carbon is an integral part of performance management.
- We work with central and local government and other partners to deliver net zero transport networks, highways maintenance and wider net zero travel.
- Net zero is part of our planning with DfT for each Road Period. We provide sufficient resources in our yearly budgeting process to deliver this strategy.

We aligned our [Net zero highways plan](#) to support the UK's decarbonisation pathway, set the ambition for SBTi (a standard which ensures companies' targets translate into action consistent with achieving net-zero by 2050) and have aligned to the following:

- 1.5°C reduction goal of the Paris Agreement
- UK's commitment to be a net zero economy by 2050
- Government's *Decarbonising Transport: A Better, Greener Britain (2021)* and *Industrial Decarbonisation Strategy (2021)*
- Government's sixth carbon budget

We have targets to reduce our corporate water and energy use by reducing our estate by 33%. We also have targets across schemes to reduce energy and focus on using renewable or low carbon energy sources across the three commitment pillars: corporate, maintenance and construction, and road user emissions. National Highways assess scheme performance against national carbon targets in the Design Manual for Roads and Bridges (DMRB) guidance on climate (LA114). Waste targets are assessed against regional mineral and waste supplies through the DMRB guidance on material assets and waste (LA110).

The metrics captured under the principal outcome 'A well-maintained and resilient network' are those most relevant to climate impacts and adaptation:

- **Drainage condition:** measure of percentage of carriageway that does not have an observed significant susceptibility to flooding. From 2024-25 it is intended that this metric will be weather normalised.
- **Geotechnical condition:** percentage length of asset in good condition.
- **Structures condition:** average structural condition; critical element condition; and structural condition index.



National Highways traffic officer charging electric vehicle



Pre-cast concrete installation

For a range of our metrics, we also have regular, structured engagement with our key stakeholders, including the ORR. We utilise our Carbon Emissions Calculation Tool to understand our carbon performance of major projects and operations and provide information on these to our Net Zero Steering Group as well as to report on our performance in our Annual Report and Accounts. The tool also enables us to report against our RIS2 supply chain carbon metrics too.

All road construction and maintenance schemes undertake environmental assessments covering climate resilience and carbon and show the mitigations put in place to reduce impacts in line with requirements set out in our DMRB LA114 standard on climate. As part of our PAS2080 accredited carbon management system, carbon information is collected for road schemes in a carbon management report across our project life cycle, from options identification to close out, in order to track performance against carbon targets and identify opportunities for carbon reduction.

National Highways produces Post Opening Project Evaluation (POPE) reports one year after the opening of a road scheme and again at five years. These reports evaluate whether the enhancement scheme met its scheme-specific objectives, including those relating to the environment.



Aerial view of M6 Junction 13, Birmingham, West Midlands

Looking forward

As the company responsible for England's strategic road network, we recognise the need for managing and preparing for climate-related risks and opportunities today. This is how we can continue to support the UK Government's ambition to be net zero by 2050.

This report has summarised some of the key activities and commitments we have in place to achieve net zero. It also outlines how we will increase resilience across the SRN. We are confident that we are making significant steps towards achieving those goals.

By publishing this report, we believe this will help show that addressing the physical and transition risks of climate change are central to our operating model. We intend to update our TCFD reporting on an annual basis to ensure that we remain transparent on the measures we have in place on governance, strategy, risk management and metrics and targets related to climate change. As part of this, we will continue to report progress against the TCFD recommended disclosures.

However, we acknowledge that our ambitions will require us to build further on progress already made in order to increase our preparedness for future climate change as well as the transition to a lower carbon economy.

Now that we have completed our initial assessment, we can focus our activities on those which will further enhance our alignment with the TCFD requirements. These will include further developing our scenario analysis for physical risks as we prepare for ARP4, completing our scenario analysis for transitional risks, and further analysis of the financial impacts of climate-related risks and opportunities.



Key priorities for physical and transitional risks

National Highways are working at pace to deliver on decarbonisation and manage climate impacts in 2023. Key priorities for the coming year include:

Supporting government to show progress against national climate risk priorities through the National Adaptation Programme

Further embedding climate resilience in our directorate risk registers

Working with other agencies to identify interdependent climate risks

Delivering against actions in our new Environmental Sustainability Strategy

Updating our Carbon Management System to PAS2080:2023

Delivering progress on corporate, supply chain and road user carbon actions through our net zero programme



If you need help accessing this or any other National Highways information, please call 0300 123 5000 and we will help you.

This image: Both the Lake District and Yorkshire Dales National Parks border the M6

Front cover image: M5 near Junction 20 in rural Somerset, South West

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