

National Highways Environmental Sustainability Strategy

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M5 over the River Exe, Devon

Foreword

from Nick Harris

At National Highways we connect the country. Our strategic road network is a vital and thriving part of everyday life. It sits at the heart of our national transport infrastructure and enables people and businesses to make safe and reliable journeys. In operating, maintaining and renewing over 4,500 miles of motorways and major A-roads, we facilitate the movement of over two thirds of freight goods, and contribute £314 billion to the UK economy.

Studies show that most journeys will still be made by road in 2050. So it is critically important that we look after our network in a way that balances our current delivery, safety and customer commitments alongside preparations to ensure that it is fit for purpose into the future.

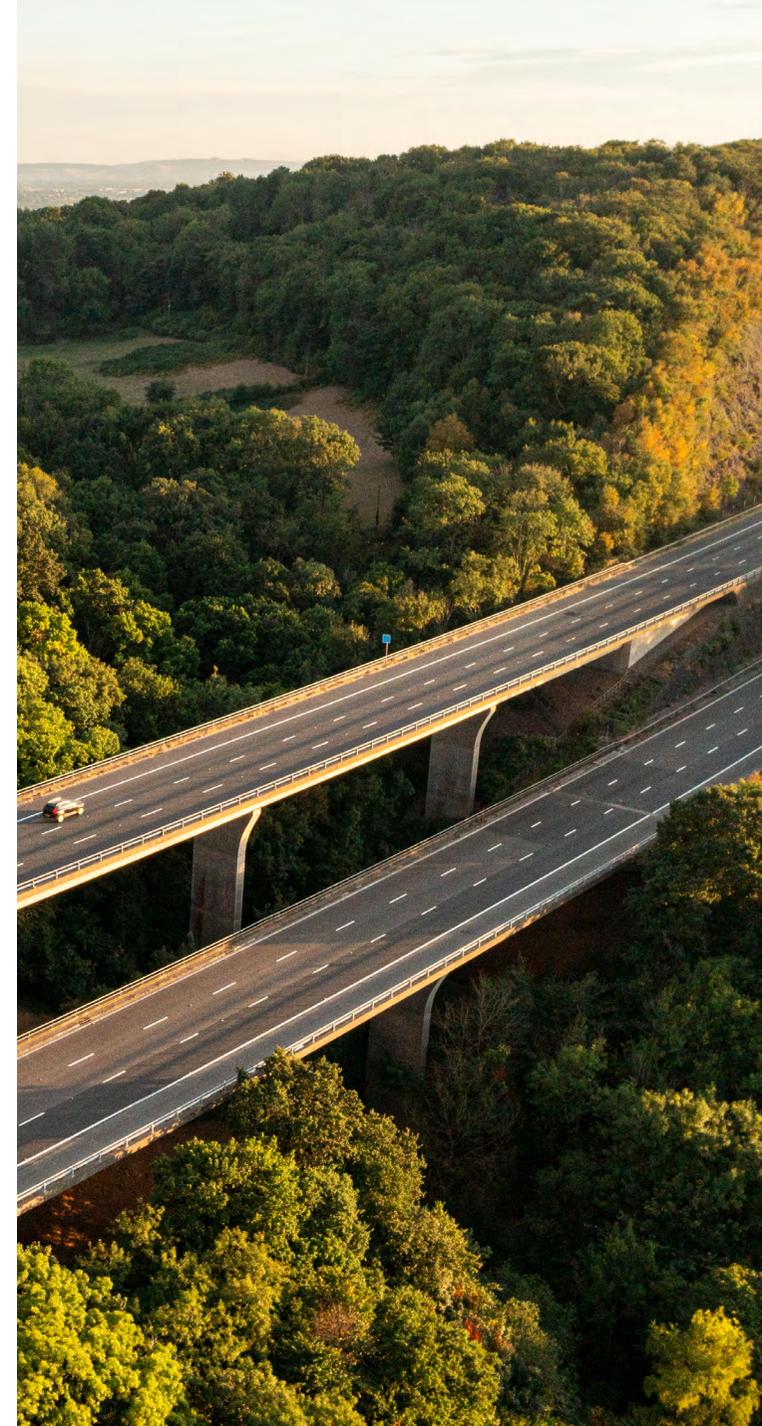


Nick Harris
Chief Executive

Part of this approach is about using all the latest technologies to our best advantage. And part of it is about embedding sustainable approaches into our ways of working, and making further, new commitments to protecting our natural environment.

Our work across the country uniquely positions us to play an active and positive role in conserving its resources and improving its ecosystems and green spaces for generations to come. We are taking robust action now, and have developed a wide-ranging programme of activities from our carbon net zero ambitions to procuring new technologies and renewable energies, increasing biodiversity, improving air quality, and preserving cultural heritage.

In this report, we detail how we will work in partnership with infrastructure providers, environmental bodies and our supply chain, alongside other key stakeholders, to facilitate significant improvements to our natural world and the environments surrounding our local communities. I am strongly committed to building better for the future, and these plans support both our culture of continuous improvement, and our promise to work ever more safely and sustainably in all that we do.



M5 Wynhol Viaduct, Somerset

Foreword

from Stephen Elderkin

Our challenge is to connect the country and support a thriving environment.

Our roads are how we get to work, come together as families and go on holiday. They are how goods get to homes and to export markets. Flexible, affordable, accessible roads connect everyone to everywhere. They underpin our national prosperity. But it matters how we connect the country. We need to do it safely, efficiently, and sustainably.

Our environmental performance is of national significance. With over a quarter of UK greenhouse gas emissions from road transport, we cannot meet our climate commitments without successfully making the transition to net zero highways.



Stephen Elderkin

Director of Environmental Sustainability

We own nearly 30,000 hectares of unpaved land, an area the size of the Isle of Wight. This land can provide corridors for nature, connecting the countryside. Working in partnership with other landowners we can help reverse the decline in nature. Tackling local environmental pollution from our network, we will support healthier communities.

This strategy sets out our vision for how we can continue to play a vital role in national prosperity and help to protect and enhance the environment. We are setting out our ambitious but credible plans to achieve net zero carbon, be positive for nature and reduce our environmental impacts on communities. Our purpose is to connect the country, today and for future generations.



The route of the old A3 has returned to nature after the opening of the Hindhead tunnel in Surrey

Our network matters for the environment

Our roads form a network – from Carlisle to Cornwall, from Lowestoft to Liverpool. The strategic road network criss-crosses England. It is a network of concrete, asphalt and steel, but it also includes 30,000 hectares of green land, containing a diversity of wildlife and habitats. It runs through some of our most iconic landscapes, such as the Lake District and South Downs National Parks and above the White Cliffs of Dover.

Our network matters for the environment. It matters because it impacts people's lives and it affects the health of the natural world. We know that our network is not always easy to live near and that it has impacts beyond its boundaries.

That's why we have been acting to make things better. We have a vision for a future where our roads are managed more sustainably and contribute to creating a thriving environment for generations to do the environmentally sensible thing, like only building if necessary, can also be the financially responsible thing.

We have a plan for making this vision a reality.

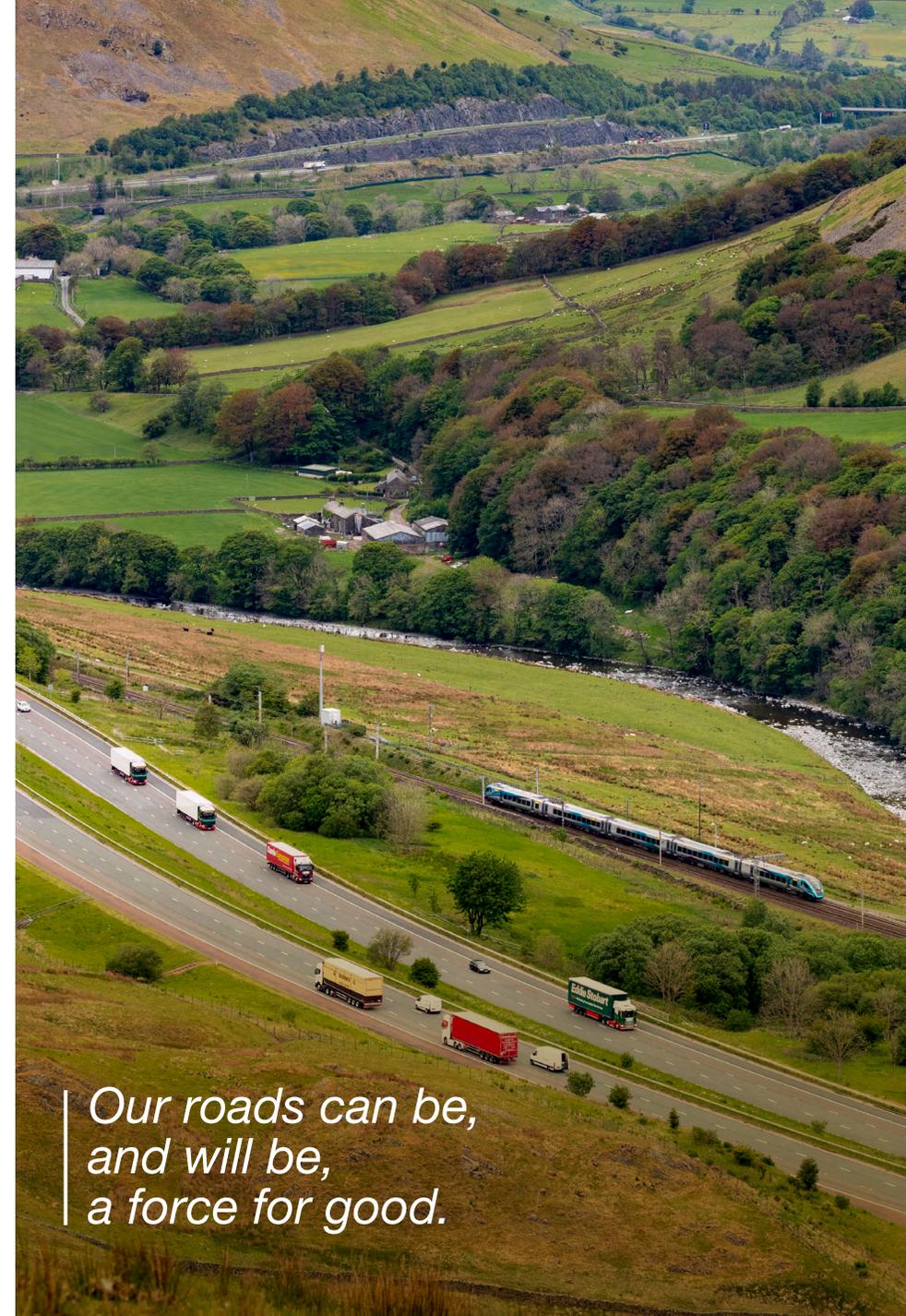
We can make use of our network of green land to reconnect habitats, reverse the decline in biodiversity, help wildlife thrive across a wider landscape and to build in environmental resilience to a changing climate.

We can invest in measures to remove carbon from how we manage the network and support the transition to zero emissions vehicles on our roads.

We can use innovation to develop new ways to reduce pollution, supporting community wellbeing and protecting health.

We have been listening to our customers and communities, and we are committed to delivering a more sustainable network, that protects and strengthens our environment for the future.

Our roads can be, and will be, a force for good.



*Our roads can be,
and will be,
a force for good.*

M6, Yorkshire Dales and Lake District National Parks

Introduction

Our roads have a critical role in supporting our country's economy and connecting our communities. However, our roads need to do this vital job sustainably, to ensure that the wellbeing of communities across the strategic road network is supported – both now and in the future.

This Environmental Sustainability Strategy explains how we will make this happen. It sets out:

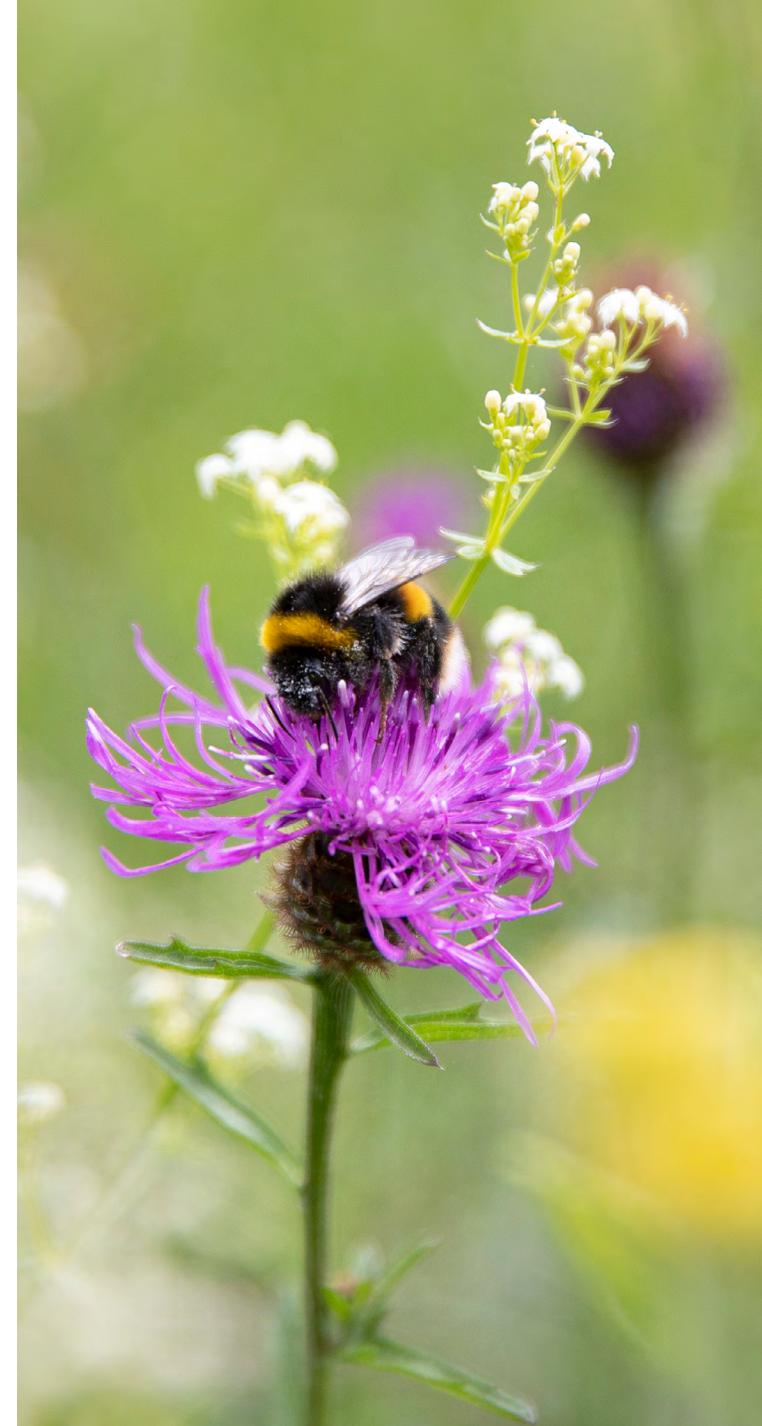
- our vision for environmental sustainability
- our Environmental Sustainability Framework, including our strategic outcomes for nature, carbon and communities, and our priority areas, which set out what we want to achieve and by when
- an outline of how we will implement this strategy – we recognise the importance of backing up our ambition with robust delivery mechanisms.

What do we mean by environmental sustainability?

We define environmental sustainability as:

“The responsibility to conserve resources and enhance the environment to support health and wellbeing for current and future generations.”

We consider the need to meet net zero carbon emissions as part of environmental sustainability, and this is part of our framework. Further details of how we will meet our carbon reduction ambitions are included in our [Net Zero Highways Plan](#).



A38 wildflowers

Our journey so far

We published our first Environmental Strategy in 2017, with a supporting action plan, and we have made good progress in delivering against it. We have:

- mitigated the impacts of noise pollution, from our network, for over 9000 households through home insulation, noise barriers and low-noise surfacing
- improved flood resilience at more than 100 flood vulnerable locations across our network
- delivered 95 biodiversity schemes including habitat connectivity and enhancement, new habitat creation and the planting of hundreds of hectares of species-rich grassland to support the National Pollinator Strategy
- enhanced 17 sites of cultural or historical significance on our network, as well as funding improvements to heritage sites that are impacted by their closeness to it
- improved more than 30km of water bodies through water quality initiatives such as the inclusion of fish passes and sustainable drainage systems

- published our ambitious Net Zero Highways Plan, which includes our targets and actions to achieve net zero carbon. Our work on carbon is now being brought within a wider environmental sustainability framework by this new strategy.

Engaging our stakeholders

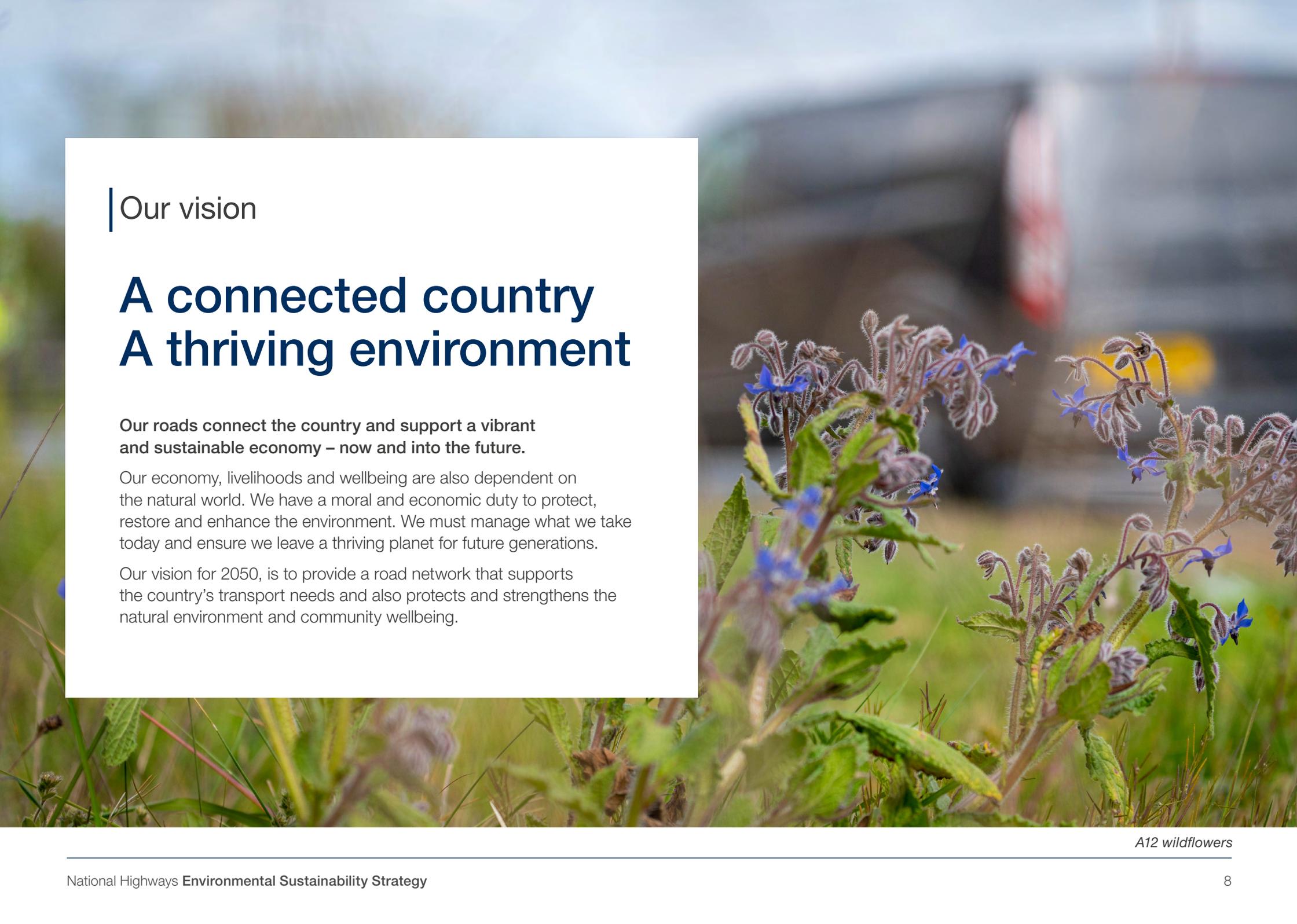
In developing this strategy, we have listened to a broad range of government departments, public bodies and non-governmental organisations – working in the areas of both transport and the environment. We've developed this strategy to align with the goals of these organisations.

As we implement the strategy, we will seek partnerships with other people and organisations that are working to improve the environment, because we can achieve so much more if we work together.

*We can achieve
so much more if
we work together.*



Green bridge connecting habitats over the A556

The background of the slide is a photograph of a field of wildflowers. In the foreground, several purple wildflowers with small blue blossoms are in focus. In the background, a large white truck is blurred, suggesting a highway setting. The overall scene is a mix of nature and infrastructure.

| Our vision

A connected country A thriving environment

Our roads connect the country and support a vibrant and sustainable economy – now and into the future.

Our economy, livelihoods and wellbeing are also dependent on the natural world. We have a moral and economic duty to protect, restore and enhance the environment. We must manage what we take today and ensure we leave a thriving planet for future generations.

Our vision for 2050, is to provide a road network that supports the country's transport needs and also protects and strengthens the natural environment and community wellbeing.

A12 wildflowers

Our strategic framework

Our new strategy considers environmental sustainability more holistically. It recognises that environmental issues are complex and interconnected, and require an integrated approach to their management.

Our strategy wheel (right) shows our ambitious vision for environmental sustainability and how we will achieve it.

Our vision

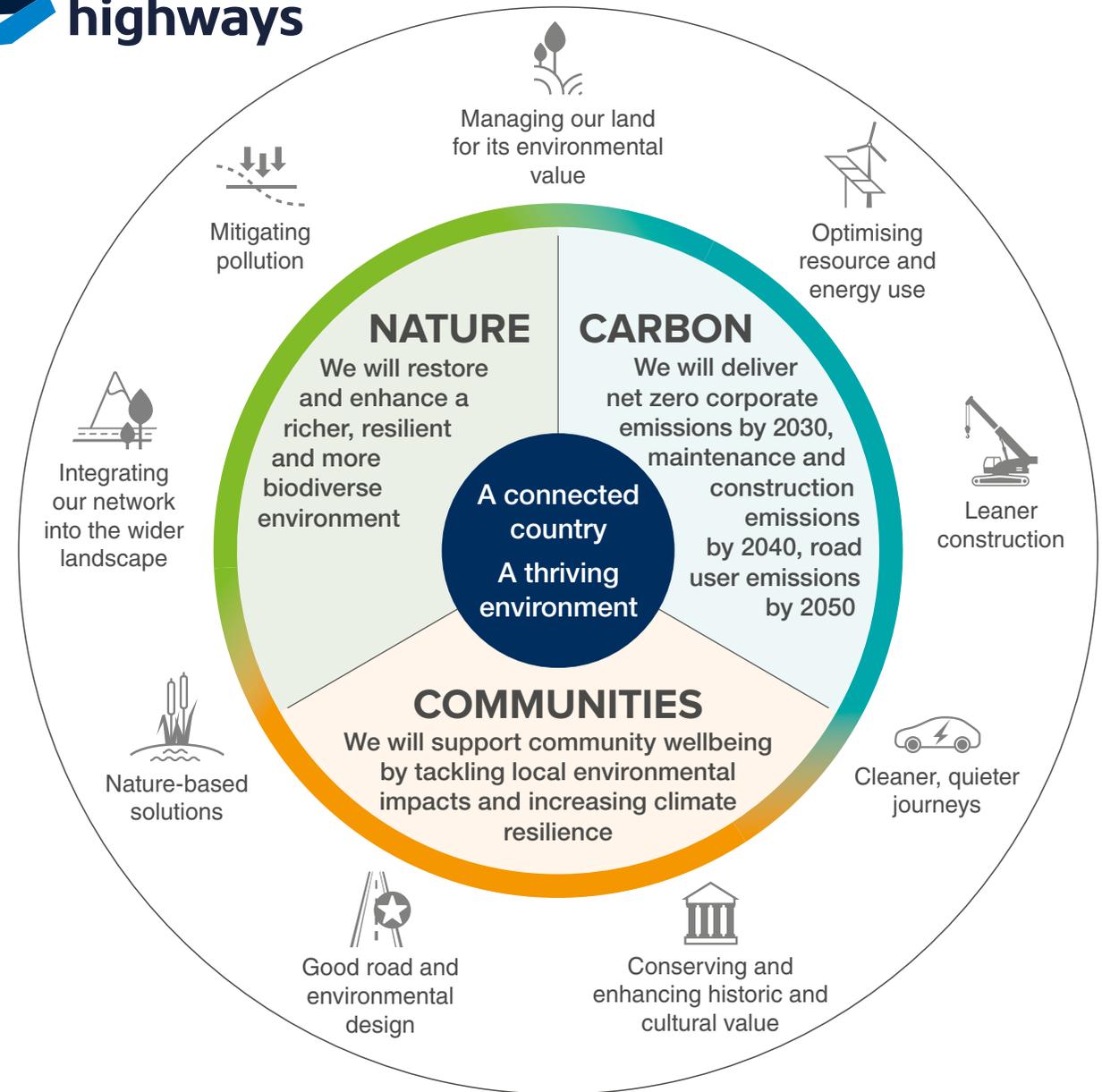
At the centre of our strategy is our vision: to fulfil our core purpose of connecting the country, in a way that supports a thriving environment for generations to come.

Our strategic outcomes

To realise our vision, we need to deliver ambitious, positive change for nature, carbon and communities. We describe what we want for each of these strategic outcomes.

Our priority areas

We've identified nine key areas where we can focus our efforts to maximise benefits across the three strategic outcomes. These priority areas set out the actions we will take to deliver our strategy for environmental sustainability.



Where are we now?

Our network has been developed over 60 years and covers over 4,500 miles. In some areas, this has caused severance issues for nearby communities, fragmented important habitats, altered our waterways, and affected the natural characteristic of the surrounding landscape.

Over four million road users travel across our network every day, contributing to our nation's carbon emissions and generating noise, air and water pollution that affects community health and wellbeing and the quality of the local environment.

We've taken action to address these issues, but we recognise that there is only so much we can achieve on our own. By working with communities and partnering with stakeholders, we believe we can deliver far greater environmental enhancements.



A composite picture of a typical part of our network

Where do we want to be?

Changes we could see across our network by 2050

What could we achieve through closer collaboration with landowners, infrastructure providers and stakeholders? Although it's unlikely we will see all these interventions in one place, this image shows some of the changes that could better integrate our network into the wider landscape – reconnecting habitats and people at a landscape scale.



1

Improving health and wellbeing

Air quality monitoring and solar panels on noise barriers

2

Promoting active travel

Supporting schemes and infrastructure to encourage walking, cycling and other forms of active travel

3

Using natural flood management

Wetlands and other nature-based solutions

4

Good road design

Reduced need for gantries, signs and signals; supporting innovative technologies such as heavy vehicle platooning

5

Promoting sustainable resource use

Designing with circularity in mind

6

Increasing connectivity

Partnership working and solutions such as green bridges

7

Enhancing cultural heritage

Conserving heritage features and improving access to them

Our organisational commitments

To deliver our vision, we need to change the way we operate. We are making a number of organisational commitments to make this happen.

Working in partnership

We will partner with our supply chain, other infrastructure operators, environmental stakeholders, landowners and civil society organisations to deliver this strategy.

Leading the way

We will take a greater leadership role, in the infrastructure sector and with our supply chain, in delivering large-scale environmental sustainability improvements.

Research, development and innovation

We will invest in research and development to improve our knowledge of environmental issues and their solutions, and share these findings.

Governance

We will establish a clear and accountable governance structure for environmental sustainability.

Cultural change

We will increase awareness, skills and knowledge about environmental sustainability, both in our business and in our supply chain, through a communications and training programme.

Transparency and disclosure

We will publish an annual progress report on the implementation of our Environmental Sustainability Strategy.



Public information events – listening to road users and communities

Nature

Strategic outcome

According to the 2019 State of Nature report, the abundance of UK priority species has declined by 60% since 1970. At National Highways, we recognise that a thriving environment is a key resource which underpins our economy, livelihood and wellbeing. Creating positive change for our natural environment is the right thing to do and our land and business activities offer real opportunities to achieve this.

Our ambition:

“We will protect, restore and enhance a richer, resilient and more biodiverse environment.”

We will deliver this through the following priority areas:

Understanding the **environmental value** of our land, prioritising habitats and delivering the right solutions in the right places.

Managing our estate as an **environmental asset** and building it into mainstream project and management decision-making. This will enable us to realise the true environmental potential of our land.



Working in partnership with adjacent landowners and strategic partners to better **integrate our network into the wider natural and historic landscape**. We will promote **connectivity and holistic environmental management** at landscape level.



Taking a whole lifecycle approach to managing trees and vegetation to support long-term, **climate resilient landscapes** as well as delivering vibrant, **species-rich habitats**.



Promoting a clean, healthy and tranquil natural environment by **reducing pollution** across our estate. This will enable us to restore and protect existing habitats and wildlife.



Employing **nature-based solutions** to enhance the habitats and wildlife of our land as part of the wider ecosystem. The strategic road network will become a backbone to nature recovery. It will connect habitats, and promote biodiversity and resilience to climate change.

Carbon

Strategic outcome

With over 4,500 miles of motorways and major A-roads, we are uniquely placed to help drive reductions in greenhouse gas emissions, which is key to delivering our contribution towards the government's vision for a thriving environment for generations to come. That's why we now integrate our Net Zero Highways Plan into our strategy for environmental sustainability.

Our commitment:

"We will deliver net zero corporate emissions by 2030, maintenance and construction emissions by 2040 and road user emissions by 2050."

We will deliver this through the following priority areas:

Working collaboratively with partners in the sector and academic institutions to research innovative solutions that accelerate **vehicle decarbonisation**. In this way, we can influence and promote reductions in road user emissions.



Promoting **leaner construction** wherever possible to minimise our carbon footprint, as well as the impact of road-building and maintenance on neighbouring communities and habitats.



Taking a **holistic approach** to managing our land to deliver multiple benefits and avoiding conflict between competing demands. Delivering the right solutions in the right places will enable us to **maximise carbon benefits** without compromising our ability to support communities and restore nature.



Investing in **renewable energy** on our estate to optimise our energy use, helping us to reduce emissions from our own operations to net zero by 2030.



Optimising resource use by improving our procurement of materials and taking a **whole life cycle approach** to design. We will deliver innovative solutions that last, minimising our **resource use** and maximising the life of our assets. This will reduce our carbon footprint as well as providing **better value for money**.

Communities

Strategic outcome

Our purpose is to connect people and places. We are responsible for delivering this in a way that benefits and supports local communities living alongside our roads. A strategic road network that tackles local pollution, promotes climate resilience and restores and reconnects the wider landscape is key to protecting the health, wellbeing, quality of life and 'sense of place' for those who live nearby. It is key for us to be a good neighbour.

Our ambition:

“We will support community wellbeing by tackling local environmental impacts and increasing climate resilience.”

We will deliver this through the following priority areas:

Minimising air, water and noise pollution by working collaboratively to research and develop innovative design solutions and mitigation techniques. For example, changes to construction materials could reduce tyre wear and pollution from particulate matter. This will reduce population **exposure to pollution** from traffic and network management activities, supporting healthier and safer communities.



Applying **good road and environmental design** to create a network that has high aesthetic value, is pleasant to live near and is more resilient to the effects of climate change. **Integrating our network into the wider landscape** will enable us to nurture community wellbeing and 'sense of place'.



Employing **nature-based solutions** such as natural flood management, to improve **climate resilience** of the network and neighbouring communities. By protecting and securing our network, we can protect quality-of-life and wellbeing for our communities.



Being a responsible custodian of heritage features on and close to the network by conserving and enhancing **historic and cultural value** for the enjoyment of future generations.



Taking action

Our priority areas

This section outlines our ambitions and key commitments for each of our nine priority areas, and sets out what we are doing already. These actions are the short and medium-term building blocks towards our longer-term ambitions and vision for 2050.



Good road and environmental design



Managing our land for its environmental value



Nature-based solutions



Integrating our network into the wider landscape



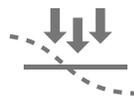
Optimising resource and energy use



Leaner construction



Conserving and enhancing historic and cultural value



Mitigating pollution



Cleaner, quieter journeys



Our priority areas

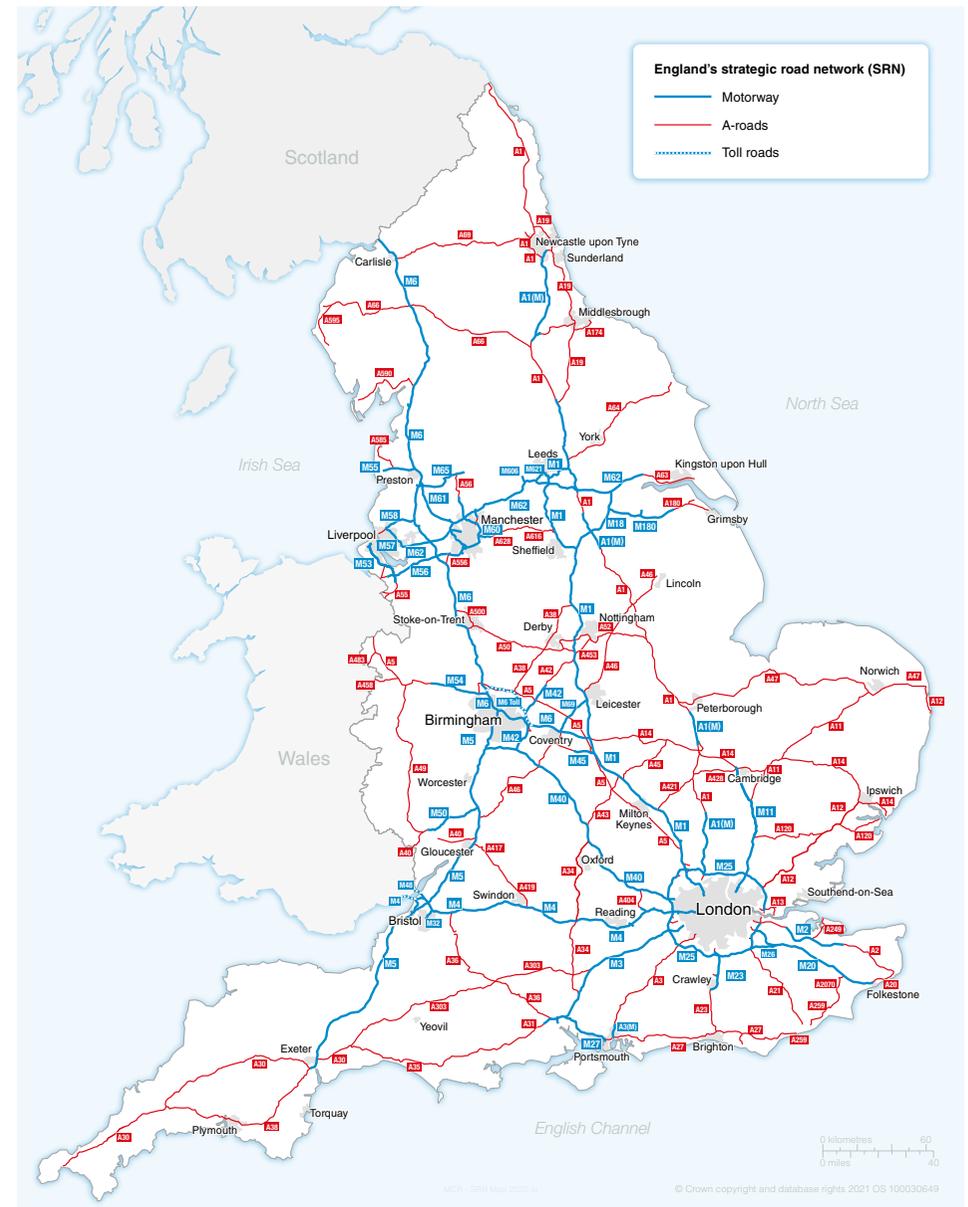
Making environmental sustainability a priority

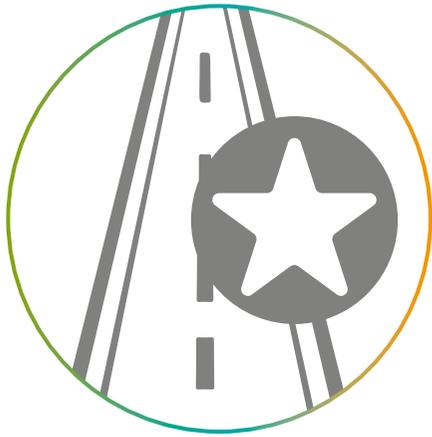
When developing the specific actions and implementation plans that will be required to deliver this strategy, in support of the government's transport and environment policy, we will make environmental sustainability a priority in our decision-making.

We will embed environmental sustainability into our wider business as part of the cultural change organisational commitment, delivering solutions that achieve multiple benefits across nature, communities and carbon. For example, nature-based solutions for drainage can bring broader benefits compared to hard engineering options, such as carbon capture and storage or habitat improvement. Mounds of soil used to block and dampen sound can provide a habitat for nature, whilst noise barriers generally do not.

Resourcing our plan

We are committed to becoming an environmentally sustainable organisation, and to achieving our three strategic outcomes for nature, carbon and communities. National Highways is funded through five-year road investment periods, and delivery of this strategy will be aligned with the agreed objectives of each road investment period. We will commit to reviewing and updating this strategy during each road period.





Good road and environmental design

Our ambition

Our principles of good road design will be fully embedded into our activities. This will create innovative and streamlined designs that consider the environment holistically and improve quality of life for communities nearby.

What are we doing now?

Good road design principles

We published our first design vision in 2018. *'The road to good design'* sets out our ten principles for good road design, helping us to achieve a more inclusive, resilient and sustainable network. This policy is supported by our follow-up guidance published in 2022, *'People, places and processes: A guide to good design at National Highways'*, which includes a focus on place to ensure that design is restrained, environmentally sustainable and fits its surroundings.

This guidance provides the basis for road schemes to be objectively reviewed and acknowledges that close engagement with communities, careful assessment of context, robust decision-making and collaborative working are all vital if ongoing road investment is going to truly enhance our urban and rural environments.

Strategic design panel

To improve the quality of our roads, we established our independent strategic design panel. The panel's role is to help us to ensure that all our road projects demonstrate design excellence in landscape, engineering and the built environment. For example, during design reviews the panel provides expert advice on how proposed project designs could be improved to add value and make the most of opportunities.



Our design vision, published in 2018



What will we do and when?



2025 Strategic road network corridors

Establish characteristics for how sections of the strategic road network respond to the varying landscapes and the principles of good design along their corridors.

2030 Community involvement

Develop an improved approach to environmental design of schemes based on input from local communities and test this approach on pilots during the third road period.

2035 Demonstrator project

Agree and deliver a landscape scale demonstrator project with measurable benefits for nature, communities and carbon with input from our strategic design panel and stakeholders.

What will change?



Roads will be designed to reflect and respond to the characteristics of the landscapes they pass through. Our work will reinforce the character and sense of place for communities next to our network.

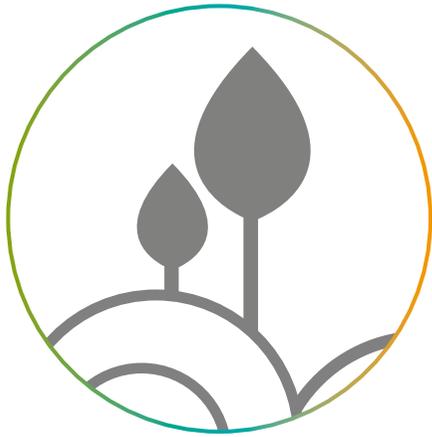
2025

A more inclusive approach will be taken to road and environmental design, which listens to local communities and works more closely with them to understand their needs.

2030

We will have the evidence and blueprint for how we can work collaboratively with others to deliver multiple benefits for carbon, nature and communities across the network.

2035



Managing our land for its environmental value

Our ambition

Net positive for nature across the third road period and beyond.

We will actively contribute to the national target of protecting 30% of UK land for the recovery of nature by 2030.

We will be recognised as a leader for the way we manage our land to deliver multiple environmental benefits.

What are we doing now?

Innovative green mapping project set to boost riverside biodiversity

In partnership with Manchester Metropolitan University, we mapped habitat types across our network to understand the state of biodiversity on our land. This innovative research uses more than 20 different sets of data, for our own land and 1km either side. While we already have detailed environmental maps of many individual locations, this new approach maps the entirety of England's strategic road network for the first time.

Nature recovery

We have joined forces with The Wildlife Trusts to launch a new £6 million Network for Nature programme that will improve habitats across England, benefitting people, nature and wildlife. These projects help create, restore and connect places for wildflowers, trees and wildlife where the environment has been impacted by activities from previous road building.

Key performance indicators

We have set ourselves ambitious targets for biodiversity, including no net loss by 2025.



Contains OS data © Crown Copyright and database right 2021; Contains data from OS Zoomstack.

Habitats across our network mapped in association with Manchester Metropolitan University



What will we do and when?

2023

Establish the soft estate as an asset class

Publish a soft estate asset class strategy, setting out how we will manage land adjacent to the road in our ownership.

2024

Environmental decision-making systems

Develop and use an environmental decision support tool to manage our asset better.

2025

Environmental data management

We will have comprehensive environmental condition data for all our land, and processes for updating this.

Biodiversity net gain

Deliver at least 10% gain for all Nationally Significant Infrastructure Projects that begin construction from the start of the third road period (2025-2030).

2030

Be the custodian of nature through management of protected sites

Ensure all land designated as a site of special scientific interest in our ownership is at 'favourable' status or better, from 2030 onwards.

What will change?



The soft estate will be valued equally alongside other assets owned by National Highways, with clearer objectives and appropriate resources to achieve improved environmental performance outcomes.

2023



Implementation of environmental data management and decision-making systems will deliver better environmental outcomes and value for money.

2024



Better quality data will improve decisions, and allow more robust tools, that will support a wider asset management system.

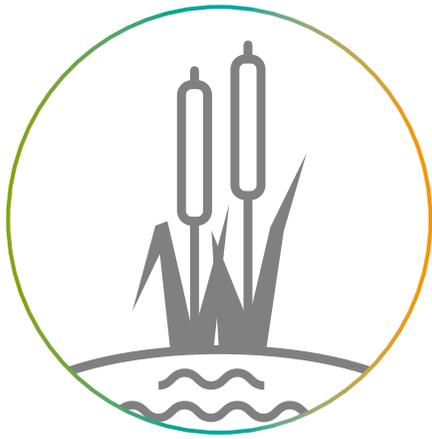
Enhanced performance metrics and reporting practices will give greater visibility and confidence that we have delivered required increases in biodiversity from our Nationally Significant Infrastructure Projects.

2025



The condition of our sites of special scientific interest will be progressively restored and enhanced to support improved environmental performance to at least favourable status.

2030



Nature-based solutions

Our ambition

Nature-based solutions will be our first choice for environmental improvements.

We will take a leadership role in delivering landscape-scale nature-based solutions, which deliver multiple benefits.

What are we doing now?

What are nature-based solutions?

Nature-based solutions are practices which involve working with nature to address climate and human-induced impacts. Examples include: natural flood management, sustainable drainage systems, grasslands and forest conservation.

Nature-based flood management pilot

In 2021, in partnership with the Don Catchment Rivers Trust and the Mersey Rivers Trust, we awarded more than £420,000 to 13 natural flood management projects aiming to tackle flooding in the Little Don, River Etherow and River Irwell catchments. The pilot developed a guiding set of principles and explored how we can work with farmers and landowners to reduce flood risk on sections of the strategic road network known to

be particularly vulnerable to flooding, using the power of nature. Solutions include measures such as creating storage ponds or planting woodland and hedgerows to regulate the flow of surface water runoff.

Establishment of working practices with landowners

To reduce flood risk to our network, we have set up a fund to support farmers and landowners in implementing natural flood management measures. Every landowner is likely to be able to help, irrespective of location within the catchment, and therefore can play an important role in reducing flooding in downstream areas.



Aerial view of one of the catchments included in our natural flood management pilot



What will we do and when?

2024

Opportunities for nature-based solutions

Publish a report on the opportunities to deliver multiple benefits (such as flood management, carbon capture, removal and storage, biodiversity, landscape enhancement, or climate change adaptation) from nature-based solutions on and close to our network.

2025

Scaling up our pilot programme

Building on our natural flood management pilot in the second road period, identify opportunities to implement nature-based solutions in the third road period.

2030

Agree and implement a programme of nature-based solutions in the third road period.

What will change?



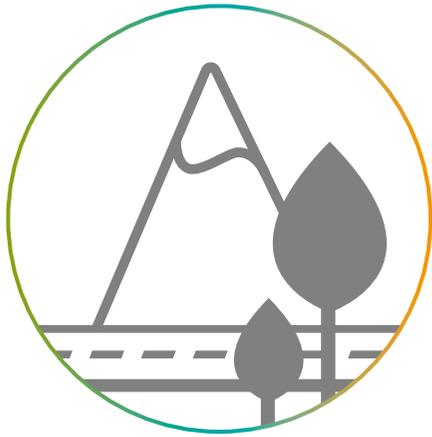
Increased understanding of the appropriateness of nature-based solutions and how these can be integrated into future designs.

2024



Nature-based solutions will feature in more of our designs, supporting a wider range of environmental benefits whilst helping us adapt to a changing climate.

2025



Integrating our network into the wider landscape

Our ambition

Our roads will be better set into the surrounding environment, improving urban and rural landscape character.

We will reduce instances of our roads fragmenting communities and ecosystems.

We will work with National Parks and areas of outstanding natural beauty to better integrate our roads.

We will work with partners to establish the strategic road network as a network for nature and landscape in its own right, connected to other landscape-scale networks.

What are we doing now?

Impact on wider landscape

Our standards for environmental assessment require us to consider how new roads will impact on the wider landscape and neighbouring land.

Designated funds

We are delivering targeted landscape-scale improvement projects through our designated funds programme. For example, we are funding projects close to the A30 in Cornwall to improve the quality and connectivity of the landscape and habitats adjacent to our network (see p40).

Working with National Parks England

We have a memorandum of understanding with National Parks England to work collaboratively to realise opportunities for improvements where our responsibilities overlap.

Strategic urban study

We are working with communities to develop a framework for management of the strategic road network that reflects and responds to the unique nature of the urban environment.

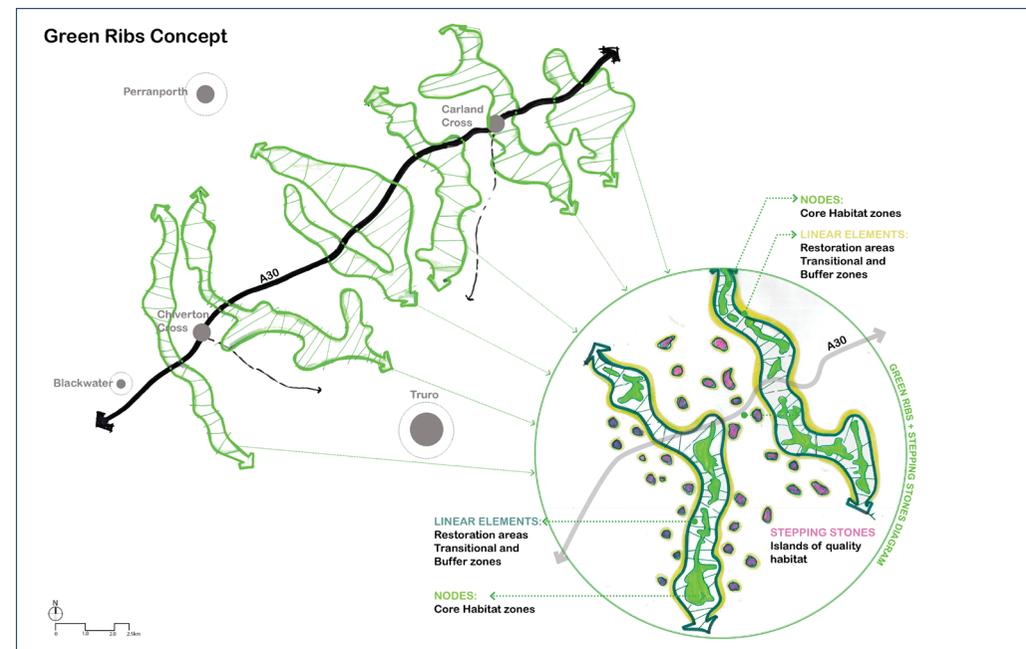


Diagram of our Green Ribs initiative – connecting landscape features and habitats as part of the A30 Chiverton to Carland Cross scheme. Credit: Arup



What will we do and when?



Adapting to a changing climate

Map the risk of future flooding to the strategic road network for climate change scenarios and identify opportunities to improve resilience.

From 2025

Agree and implement a programme of collaborative projects with stakeholders to improve resilience to future flooding on the network and support more sustainable communities.

Landscape scale connectivity

Identify the best opportunities to deliver landscape-scale initiatives to reconnect habitats and enhance the setting and connections of communities alongside the strategic road network.

From 2025

Agree and implement a programme of improvements from the third road period.

Improving the urban environment

Identify opportunities to improve the urban environment on and around our network.

From 2025

Agree and implement a pilot programme of urban environmental improvements during the third road period, and if successful, upscale this in later road periods.

Areas of high landscape and recreational value

Identify improvement opportunities such as noise mitigation, landscape restoration or dark skies for areas of high landscape and recreational value, including areas of outstanding natural beauty and national parks.

From 2030

Agree and implement a programme of improvements from the third road period.

What will change?



Comprehensive information on flood risks resulting from climate change, enabling increased flood resilience on the strategic road network and in communities.

2024

We will develop our expertise in delivering landscape-scale initiatives with stronger leadership in the wider engineering industry through sharing of best practice and knowledge.

2025

Enhanced understanding of how instances of community and ecosystem fragmentation from the strategic road network can be improved in the urban environment.

2025

Strengthen our contribution in establishing the government's Nature Recovery Network and building better partnership with DEFRA and Natural England.

2025



Conserving and enhancing historic and cultural value

Our ambition

Cultural heritage assets on and adjacent to our land (including those that are part of the Historical Railways Estate) will be protected and enhanced and given a long-term future and purpose.

We will enhance inclusive access to cultural heritage assets where appropriate.

We will enhance the experience of road users by providing information about the historic and cultural features of the landscapes and townscapes they travel through.

What are we doing now?

Conserving and enhancing heritage assets

We have a programme of interventions to conserve and enhance heritage assets on land that is adjacent to our network.

Performance indicators

We have cultural heritage performance indicators in place and report on the condition of our heritage assets.

Asset management plans

We have cultural heritage asset management plans for those important cultural and historical features that we own on our network, and a rolling programme to keep them up to date.



*Restoration of the Grade 1 listed Penshaw Monument which is visible from the A19, in partnership with the National Trust
Credit: John Millar*



What will we do and when?

2025

Customer experience

Identify opportunities to enable road users to better understand and appreciate the culture and heritage of the areas they are travelling through.

From 2030

Agree and implement a programme of improvements from the third road period.

2025

Enhance cultural heritage assets beyond the strategic road network

Identify opportunities to improve cultural and heritage assets close to our network.

From 2030

Agree and implement a programme of improvements from the third road period.

2025

Enhance our cultural heritage assets

Identify opportunities to improve the condition of cultural heritage assets on our road network, with the aim of achieving at least 'adequate' condition, and to improve access to these assets where appropriate. Include Historical Railways Estate assets in our approach to managing cultural heritage.

From 2030

Agree and implement a programme of improvements from the third road period.

What will change?



Our network will improve opportunities for road users to experience and learn about cultural heritage in the landscape they are passing through.

2024



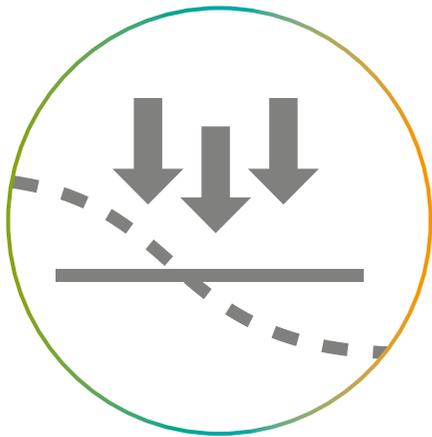
Knowledge about managing heritage assets will be more available and shared which will improve partnership working. More funded heritage asset improvement projects will be implemented.

2025



Heritage assets will be in better condition through funded improvement works. Communities and road users will enjoy heritage assets which are currently inaccessible.

2025



Mitigating pollution

Our ambition

To mitigate harm from new and historic pollution from our network to communities and the environment.

What are we doing now?

Comprehensive air quality monitoring

To help us monitor the improvements in air quality, we've established a comprehensive network of continuous monitoring stations – our National Air Quality Monitoring Network.

Noise Insulation Project

We have implemented a central programme of work to deliver noise insulation for households most affected by noise on our network.

Microplastics pollutions research

We have a rolling programme of projects to improve the water environment across the network. In addition, we are conducting research into microplastics pollution in run off to inform future policy and next steps.

Performance Indicators

Targets for noise, air quality and water quality are in place, with programmes of work to support the delivery with annual reporting of progress.



Reed beds created as part of a project to protect the Stover Country Park Wetlands, a site of special scientific interest in Devon, from contaminated water running off the nearby A38. The reed beds reduce levels of silt, oil and soluble metals released into the environment

What will we do and when?



Air quality conference

Hold an air quality research conference with academics, industry and other infrastructure operator organisations. We will then develop a research programme to identify more effective measures to reduce harmful air pollution.

Nitrogen deposition guidance

Publish guidance on the mitigation of nitrogen deposition on sensitive habitats.

Mitigating noise impacts

Identify opportunities to continue the programme of noise mitigation delivered in the second road period (2020-2025).

2030

Agree and implement a programme of improvements for the third road period.

Mitigating water pollution from our outfalls

Identify opportunities to address our highest risk water outfalls.

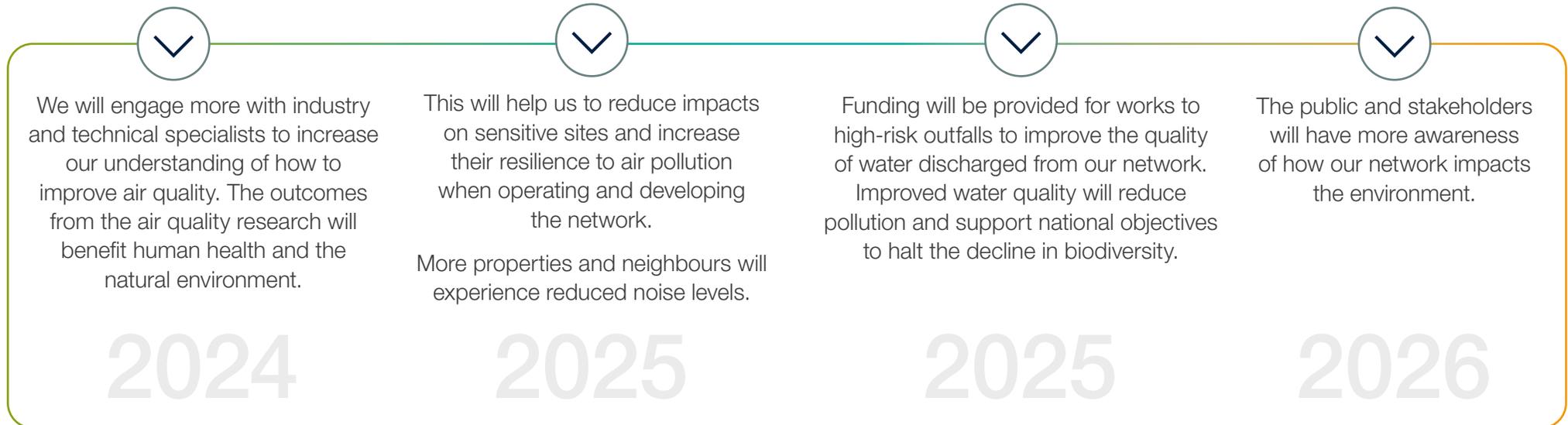
From 2025

Agree and implement a programme of improvements for the third road period.

Persistent pollution in the environment

Report on our understanding of persistent pollution such as litter, graffiti, fly-tipping and light pollution resulting from our network on our land and immediately adjacent to our network.

What will change?



We will engage more with industry and technical specialists to increase our understanding of how to improve air quality. The outcomes from the air quality research will benefit human health and the natural environment.

2024

This will help us to reduce impacts on sensitive sites and increase their resilience to air pollution when operating and developing the network.

More properties and neighbours will experience reduced noise levels.

2025

Funding will be provided for works to high-risk outfalls to improve the quality of water discharged from our network. Improved water quality will reduce pollution and support national objectives to halt the decline in biodiversity.

2025

The public and stakeholders will have more awareness of how our network impacts the environment.

2026



Leaner construction

Our ambition

We will undertake construction only if other solutions cannot meet network performance needs.

If construction is necessary, this will have a minimal footprint, and will minimise resource use, waste generation and carbon emissions.

What are we doing now?

Carbon management system

We have developed a carbon management system which has been accredited to PAS2080:2016 Carbon Management in Infrastructure, since December 2022.

We are the world's first road organisation to achieve this global carbon management standard.

We have developed and implemented the necessary processes and governance to embed the carbon management system in our business, and are also implementing a continuous improvement plan in 2023.

Carbon opportunities register

We compiled a register of low and zero-carbon products, technologies and opportunities, at different technology readiness levels, that we could use in construction and maintenance in place of traditional methods. Working closely with our innovation team, partners and suppliers, we will be refreshing this information regularly and are already using it to identify suitable options for piloting in our construction schemes, maintenance and renewals.



Trialling low carbon reinforced concrete on a temporary access road at junction 6 of the M42



What will we do and when?

2023

Investment decision making

Investment decision making, in accordance with PAS2080 carbon requirements, will be informed by an investment hierarchy.

2024

Environmental sustainability opportunities register

Develop an opportunities register to include innovative environmental mitigation options that deliver for nature and communities, including modular and off-the-shelf mitigation.

2024

Reduced road operational infrastructure

Publish a roadmap to achieve reduced need for roadside signs, gantries and signals through use of in-car information systems and other technology.

What will change?



Investment decisions will be informed by environmental sustainability considerations. Adopting emerging best practice from carbon to influence investment decisions.

2023



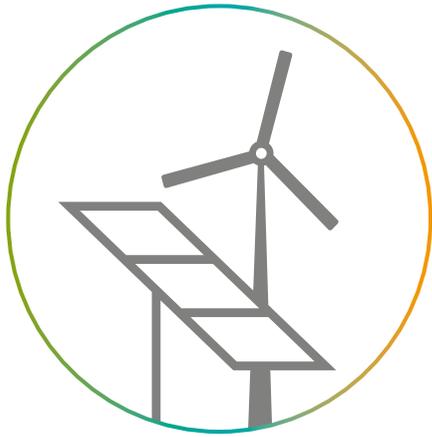
Awareness and understanding of opportunities to embed environmental sustainability measures into project delivery programmes will increase. Innovative solutions will be chosen in design decisions.

2024



Our approach and intention to reduce road infrastructure will be made clear and will influence the design of new schemes, and improvement schemes.

2024



Optimising resource and energy use

Our ambition

The principles of circularity (reusing materials for their highest value purpose and treating 'waste' as a resource), will be embedded into our business.

We will optimise energy use on our network.

We will be a resource efficient organisation with a whole life cycle understanding of the flow of materials.

We will minimise the environmental impact of our material purchasing.

What are we doing now?

Our Net Zero Highways Plan

As part of our Net Zero Highways Plan, we are delivering a number of actions to address our energy use. For example, all of our plant used on site and in site cabins will be zero carbon by 2030. We are greening our depots, including upgrading heating and lighting systems. And we are developing a plan for power micro generation on our land to help meet our energy needs.

Resource exchange mechanism

We have conducted feasibility research to explore the viability of establishing a national resource exchange mechanism to facilitate the trade of surplus materials, products, components and assets across UK infrastructure projects.

Forum for Circular Infrastructure

We are active members of the Forum for Circular Infrastructure to encourage the widespread re-use of materials in construction to deliver a range of environmental, cost-saving and social benefits.



Electric plant used during archaeological work, A63, Yorkshire

What will we do and when?



Environmentally responsible sourcing

Establish principles of environmentally sustainable procurement and develop an implementation plan.

Resource exchange mechanism

Trial and evaluate a resource exchange mechanism at a regional level and publish our findings and next steps.

Embed circularity into our design, construction, operations and maintenance

Develop performance metrics and baselines for circularity.

2030

Integrate circularity assessment requirements into all relevant design and maintenance standards, including reduction of virgin materials, waste management processes and material flows.

What will change?



The impact of our supply chain on the environment is reduced.

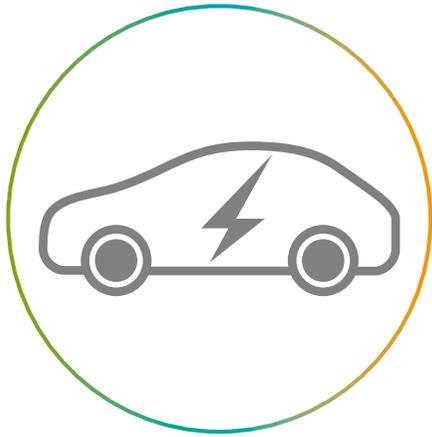
Provide a framework to implement the resource exchange mechanism across the whole business.

Circularity is considered in key design and procurement decisions. Our scheme design process considers circularity at each stage of development.

2024

2025

2025



Cleaner, quieter journeys

Our ambition

We seek ever lower pollution from vehicles on our network.

Our own vehicle fleet will be zero emissions by 2030.

What are we doing now?

Our Net Zero Highways Plan

As part of our Net Zero Highways Plan, we are delivering a number of actions to meet our ambitions for cleaner, quieter vehicles. We are already in the process of transitioning our own vehicles to electric, with a target of 100% electric non-traffic officer vehicles by 2027 and 100% electric traffic officer vehicles by 2030.

We were a key partner in the first real-world operational UK trials of HGV platooning in 2022, and we are also a key partner in the Department for Transport led Innovate UK zero emission road freight trials, which included a feasibility study into the potential for an electric road system demonstrator. We will continue to support the government in the transition towards low emission HGVs.

We are currently launching an electric towns and cities initiative. This will support a transition to low emission vans by giving grants to businesses.

We are supporting the Office for Zero Emission Vehicles with the delivery of Project Rapid, which includes investment in energy storage solutions and a £950 million Rapid Charging Fund to provide additional grid capacity for charging electric vehicles across the strategic road network.

We have also committed to several actions to promote sustainable travel choices. These include developing a programme to improve public transport operations on our network, promoting active travel and making the network more accessible to walkers, cyclists and horse riders, and implementing a comprehensive plan in the third road period.



Our new fleet of low-emissions vehicles. Some 307 new zero-emission and plug-in hybrid electric vehicles are set to cut around 250 tonnes of CO₂ emissions per year

What will we do and when?



2025

Tyre and brake pollution

Report on research currently underway into how vehicle components influence water, noise and air pollution, and publish an action plan if appropriate.

Engage with vehicle manufacturers and government around the findings from our research, identifying opportunities for faster collaborative action.

2025

Connectivity of the vehicle fleet

Building on our Digital Roads vision, we will identify opportunities for pollution reduction and environmental enhancement.

2030

Agree and implement a programme of improvements for the third road period.

What will change?



Increased knowledge of the impact of vehicle components on water, noise and air pollution.

2025



Enabling more sustainable, clean, safe, and efficient mobility across and beyond the network.

2025

Our roadmap to an environmentally sustainable strategic road network

2023

- Establish the soft estate as an asset class
- Make investment decisions in accordance with PAS 2080 investment hierarchy

2024

- Develop environmental decision tools
- Report on opportunities for nature-based solutions
- Map network-wide flood risks
- Hold air quality conference
- Create environmental sustainability opportunities register
- Develop roadmap for reduced road operational infrastructure
- Establish principles of environmentally responsible sourcing

2025-2030

- Establish characteristics of strategic road network corridors
- Involve communities in the environmental design of schemes
- Collate and maintain comprehensive environmental condition data
- Deliver at least 10% biodiversity net gain on nationally significant infrastructure projects
- Deliver programme of nature-based solutions
- Improve network resilience to flooding
- Enhance landscape scale connectivity
- Pilot programme of urban environmental improvements
- Improve customer experience of cultural heritage
- Enhance cultural heritage on and adjacent to our network
- Publish nitrogen deposition guidance
- Implement noise mitigation programme
- Report on persistent pollution resulting from our network
- Deliver water outfalls mitigation programme
- Trial resource exchange mechanism
- Embed circularity into design, construction, maintenance and operations
- Research and action on tyre and brake pollution
- Net zero for our own operations by 2030

2030 and beyond

- Deliver a demonstrator project with multiple benefits through partnership
- Maintain land designated as sites of special scientific interest to favourable status or better
- Implement improvements to areas of high landscape and recreational value
- Act on findings to reduce pollution and enhance the environment through vehicle connectivity
- Net zero for maintenance and construction by 2040
- Net zero carbon travel on our roads by 2050

Measuring our performance

What we do now

We currently measure and report our environmental performance through a number of environmental performance metrics. These form part of a wider suite of company metrics in our performance framework. These metrics cover the following topics:

- noise (number of households mitigated)
- biodiversity (no net loss)
- air quality (road links in legal compliance)
- corporate carbon emissions
- maintenance and construction emissions
- condition of cultural heritage assets
- water quality (length of waterbody improved) and litter (grading of network in terms of litter).

How we will improve

Our existing metrics are focused on a few specific environmental areas where we have prioritised improvement in our performance. We are likely to still have a small number of specific corporate performance metrics in the third road period.

While it is difficult to comprehensively measure our environmental performance, it's something we must do. We will look to develop a reporting framework and appropriate metrics to report more comprehensively on this strategy, so that we can measure our performance. This reporting framework will support the company to deliver the strategy, but will be separate from corporate performance reporting and monitoring by the government.

We will seek to improve the data we have, following the principles of natural capital accounting if possible. Nature capital accounting is a framework for measuring and valuing natural resources and ecosystems.



A5 – Dunstable High Street

What was the challenge?

With the A5 cutting through the middle of Dunstable, local residents and business owners were affected by very heavy traffic, with impacts on congestion, air quality and economic prosperity. Severe flash flooding had overwhelmed the local drainage infrastructure on several occasions and caused significant damage to local businesses.

What did we do?

The construction of a new bypass to take through-traffic away from the town centre presented an opportunity to de-trunk the Dunstable High Street and create a new, people-centred space based on consultations with residents. We worked in partnership with Central Bedfordshire Council to widen pavements, install cycle stands and market stall anchor points, create seating areas,

provide information boards and maps, remove railings and street clutter where safe to do so, and build raised pedestrian crossings. Rain gardens and sustainable drainage systems were installed, along with a 'hydro brake' to control the flow of water into the local drainage system.

What was the impact?

The project created a more accessible town centre for non-motorised users, with enhanced public and green spaces and better highlighting of historical features and local places of interest. Nature-based drainage solutions improved the landscape aspect, as well as providing vital protection against flash-flooding.



Dunstable High Street rain gardens



Supporting biodiversity in Cumbria

What was the challenge?

Like the rest of the UK, north-west Cumbria has seen a decline in crucial pollinator species over the years, as habitats have suffered deterioration and fragmentation. Lowland meadows and upland hay meadows in particular are priority habitats under the UK Biodiversity Action Plan, classed as under threat and requiring conservation.

What did we do?

Our verges provided a unique opportunity for long corridors of habitat creation, thanks in part to their low soil fertility; wildflowers grow well in poor soil compared to the grasses and weeds that would otherwise choke them out. Working with a large group of partners and stakeholders, National Highways supported the delivery of Cumbria Wildlife Trust's Get Cumbria Buzzing initiative.

A three-year programme of community engagement with volunteering events and workshops ran alongside a complete transformation of how we manage our network. We changed cutting and maintenance regimes, created diverse grassland habitats through seeding and planting, removed moss and scrub and created clearings.

What was the impact?

In total, our habitat creation and restoration with Cumbria Wildlife Trust covered 39 hectares of road verges, alongside Get Cumbria Buzzing's community initiatives and our wider programme of verge improvements across Cumbria and the North-West. A network of interconnected pollinator habitats was created, with pollen- and nectar-rich flower species.

These habitats provide forage, shelter and nesting sites for bees, butterflies, hoverflies and other insect species. Since the programme's baseline in 2018, biodiversity along the verges has increased dramatically. They also connect us to our ecological heritage, with the reinstatement of native habitats that have been at risk.



Priority Areas:



Nature-based solutions



Integrating our network into the wider landscape



Managing our land for its environmental value

Habitat creation along roadside verges, A66 (Cumbria)

A30 Keyn Glas – landscape scale connectivity

What was the challenge?

The A30 forms a spine through the Cornish peninsula, dividing habitats and landscapes. We identified an opportunity to go above and beyond standard environmental mitigations and create a programme of initiatives to deliver improved quality and connectivity of landscape and habitats, together with local and national partners.

What did we do?

Keyn Glas is a set of diverse projects on land owned by local people and stakeholders either side of the A30. It includes 'Green Ribs', a collection of green infrastructure corridors stretching up to 3km either side of the road, that were developed with the local farming community and through partnership with local expertise such as the Cornish Wildlife Trust.

Historic field patterns and traditional Cornish hedgerows were restored to enhance the character of the land. We planted trees and woodland, created species rich grasslands and meadows, and restored ponds and wetlands. Alongside Green Ribs, pilot projects have been delivered using nature-based solutions for flooding and water quality problems. More are in development including the Saints Trails cycle network, which will create 13km of dedicated on- and off-road trails for cyclists, pedestrians and horseriders.

What was the impact?

Keyn Glas has created a legacy of environmental growth in the Cornish countryside. There are now richer, more resilient habitats, and a beautiful, important landscape has been restored.

In total, 32 habitat areas have been connected so far and 13,000 trees planted, four pond habitats created or improved, along with five traditional orchards. Up to 2020, Green Ribs delivered a 97% biodiversity net gain, with 242% increase in hedgerow biodiversity. Tree planting will result in 10 tonnes of CO₂ being absorbed annually, along with improved air quality through interception of airborne vehicle emissions. The native plant species selected are more resilient to climate change. Natural flood management measures and wetland restoration have improved soil and water quality, as well as providing habitats and preventing pollutants from entering water courses.



Young livestock-proof thorny hedge planted with native species – A30 Green ribs project, Cornwall

Priority Areas:



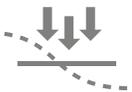
Conserving and enhancing historic and cultural value



Integrating our network into the wider landscape



Nature-based solutions



Mitigating pollution



Managing our land for its environmental value

Next steps

We will commit to update this strategy once during every road investment period. We will have a robust implementation plan, including assigned ownership and a set of actions with associated deadlines and metrics to monitor progress.

We will publish an annual progress report on the implementation of our Environmental Sustainability Strategy.

We will commit to an annual stakeholder conference with our supply chain partners, other infrastructure operators, environmental stakeholders, landowners and civil society organisations to promote best practice and strengthen relationships.

At National Highways we are committed to driving positive change and to ensuring that safety, sustainability and the wellbeing of people, communities and habitats are at the heart of everything we do.



M60 near junction 16, River Irwell, Greater Manchester

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