

# Net zero highways: Our 2030 / 2040 / 2050 plan Progress report 2022-2023

September 2023





A46 roundabout junction

# Foreword

We've made huge strides since we published *Net Zero Highways: our 2030 / 2040 / 2050 plan* in 2021. In the year since we published our first update, we've seen the Government re-affirm its commitment for the whole economy to reach net zero by 2050 with the publication of *Powering Up Britain*. Independent commentators have also been urging Government to go further and faster to achieve rapid emissions reduction by the 2030s. All this strengthens the case for us to get on and deliver our net zero plan, and we've been doing just that.

In this report, you'll see examples of how we're working more closely than ever with our partners to help our industry get ready for net zero. From updating our policy for corporate travel, to making sure we remove barriers to innovation in our maintenance and construction activities, I'm incredibly proud of the leadership our colleagues have shown across National Highways and our supply chain.

This year, we became the first major roads organisation in the world to achieve PAS2080:2016 certification for our carbon management system (CMS). This is the gold standard of carbon management for infrastructure developers and asset owners. We're also sharing our CMS with our supply chain to help embed best practice carbon management as quickly as possible.

Everything from our *Carbon Hub*, a digital library of net zero knowledge, news and resources, available to everyone in our supply chain, to our Low Carbon Opportunities Register, that helps our project teams share their innovations with others, is designed to get our industry to net zero faster than we could if working alone.

Our net zero plan now sits under our newly published *Environmental Sustainability Strategy*, which integrates net zero with our other key themes of nature and communities. We're also making sure that the actions in our net zero plan contribute to environmental health, resilience for nature, and the communities around our Strategic Road Network. I'm looking forward to seeing even more progress and opportunities for us to work together on tackling these challenges in the coming year.



**Nick Harris**  
Chief Executive Officer

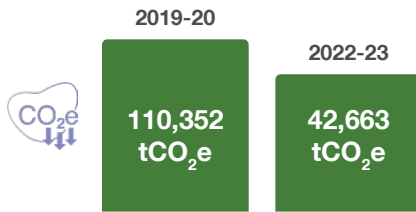
# Summary

Progress update on our 2030 / 2040 / 2050 plan



## CORPORATE EMISSIONS

### Net Zero by 2030



Purchase **99.7%** of our energy from zero carbon sources



Installed energy efficiency measures at **32 depots**



**28%** of our network is lit by low energy LEDs

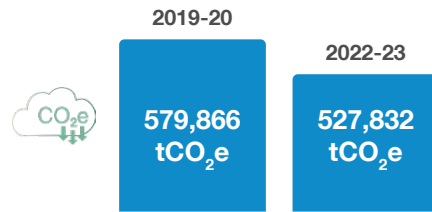


Launched our **green car salary sacrifice scheme**



## MAINTENANCE & CONSTRUCTION EMISSIONS

### Net Zero by 2040



Launched **PAS2080 certified** Carbon Management System



Published **net zero roadmaps** for concrete, steel and asphalt



Launched our **low zero carbon** opportunities register

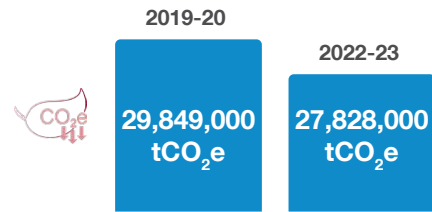


Launched our **Innovation Accelerator** programme



## ROAD USER EMISSIONS

### Net Zero by 2050



Invested approx. **£42.3M** in active travel schemes in current road period



Published our views on **net zero HGV trials**



Agreed **7 motorway service areas (MSA)** for energy storage solutions to be trialled for **ultra-rapid electric vehicle charging**

## ENABLING ACTIONS

- Launched our **Net Zero Knowledge Zone**

- Established the **Carbon Hub** as the home of our **carbon tools and resources**

- Developing an in-person **carbon literacy training programme**

- Reviewed and updated our **Scope 1, 2 and 3 baseline**

- Improved our **carbon data capture methods**

- Hosted over **70 webinars, talks, and drop-in sessions** attended by our staff and suppliers

# Introduction

This report contains our annual update on the progress we have made since publishing our ambitious net zero plan – *Net zero highways: our 2030 / 2040 / 2050 plan*.

At National Highways, we are proud of our role as custodians of the strategic road network (SRN). Our network is good for the country. It directly supports over 64,000 jobs and delivers £314 billion of benefit to the economy every year. We are the largest builder of cycleways in the country. However, we recognise that the good our network does comes at a cost. Currently it is a major source of carbon emissions.

Our vision is to decarbonise our network as quickly as we can. This is why we committed to be net zero for our corporate emissions by 2030, our maintenance and construction emissions by 2040 and our road user emissions by 2050 – using a robust and internationally recognised definition of net zero. We know we still have lots to do, and we are working hard to keep making swift progress on the commitments we made in our Net Zero plan.

## Our new ‘business as usual’

Throughout this update, we’re reporting our progress on the commitments we made in our *Net Zero Plan*. Some of these will take several years to become part of our ‘business as usual’ because they’ve never been done before, and it’ll take time to see the impact of the actions we’re taking now. Others, though, are quicker for us to adopt, like updating our statutory consultation guidance to include net zero.

To keep our reporting focused on our ongoing actions, we’ll only report on new or ongoing activities in the main progress update. However, our change log in Appendix A shows the commitments that have been updated to reflect changes to the actions, and the commitments that are completed. The actions that we have completed have become part of our business as usual and will no longer be reported on after this year.

## Our other sustainability reports

Our Net Zero Plan annual progress update includes all our direct and indirect carbon emissions, but we know that this is just one aspect of sustainability that’s important for us to measure. We also report on our sustainability performance through our *Annual Report and Accounts*, which, in addition to our corporate carbon emissions, covers our performance in key areas like climate action, biodiversity, and air quality. Our *Taskforce on Climate-related Financial Disclosures (TCFD) report* sets out how we are identifying and managing climate risks in our SRN today, and how we plan to integrate this further over the coming years.

As part of our commitment to data improvement, we have increased the quality of our data sources and our understanding of them, providing greater visibility of our data and enhanced collection methods. As such, the emissions data reported in our Net Zero Progress report represents an improved understanding of our carbon emissions compared to those reported in our Annual Reports and Accounts.

This year, we also published our *Environmental Sustainability Strategy (ESS)*, which sets out our priorities and actions for carbon, communities, and nature from now to 2050.

Our net zero plan directly informs the ESS as it relates to carbon, and the ESS in turn looks at how our efforts can add value to other aspects of sustainability that are important to us.



### Corporate Emissions: Net zero for our own operations by 2030

This area covers energy used to light and power our network, travel by our traffic officers, and the energy used in our offices and other travel. We also include the carbon locked up in trees and plants on our road verges and the land surrounding our roads in this target. It includes our Scope 1 and 2 emissions, and some Scope 3.



### Maintenance & Construction: Net zero for our maintenance and construction activities by 2040

This target covers the greenhouse gases emitted in making the materials we use to keep our network in good condition. This includes cement, steel, and asphalt. We also include the transport of materials to where we use them and emissions from construction on our sites.



### Road User Emissions: Net Zero for road user emissions by 2050

The largest source of emissions comes from the vehicles driving on our network. Government’s latest emissions projections to 2050 see an ambitious reduction in emissions from road transport. This is a rapid transition with up to a 55% reduction in emissions by 2030 and up to a 90% reduction in emissions by 2040. Our plan will enable this transition by providing the infrastructure needed for zero carbon motoring on the strategic road network.

## Our data improvement journey

When we developed the Net Zero Plan, we identified a series of enabling actions, which would be critical to the successful delivery of our other commitments. Improving our data was identified as a key enabler, so we developed our data improvement plan and have been working with all areas of National Highways to implement it since the publication of the plan in 2021. As a result, some of the data presented in Table 3 may not directly compare to our 2021/22 progress report if new or more detailed data has become available in the last reporting year. Please refer to last year's [Annual Progress Report](#) to see our emissions for 2022.

We are continuing on our journey to improve greenhouse gas data quality, coverage and consistency. As part of this journey we plan to update our emissions associated with commuting and home working next year, in line with results from our staff travel survey.

For more information on our data reporting methodology, please view our [2022/23 method statement](#), available [online](#).

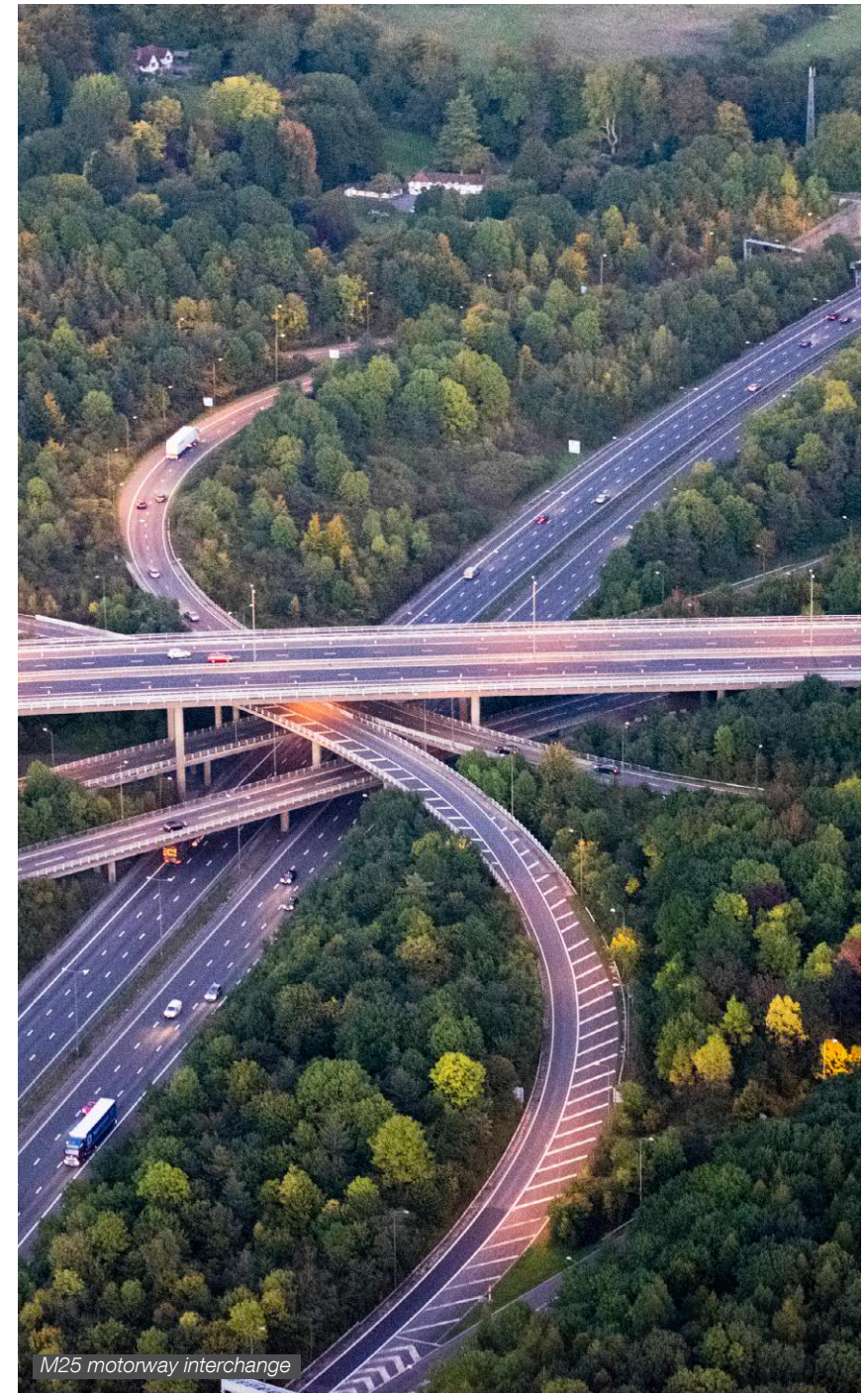
## Re-baselining our 2019-20 data

This year we have conducted a re-baselining of the carbon emissions that serves as the foundation for our Net Zero Plan. The original baseline was based upon a 2020 calendar year, with last years annual report covering emissions during the 2022 calendar year. As part of the re-baselining, we have moved to a 2019-20 financial year, with this years annual report covering the 2022-23 financial year. This initiative is in line with our commitment to continuously evaluate our data systems and identify opportunities to enhance data collection and utilisation, as outlined in our Net Zero Plan.

It is widely acknowledged as best practice for organisations to regularly review and update their Net Zero plans. By undertaking this re-baselining exercise, we have demonstrated our dedication to staying at the forefront of sustainability initiatives and ensuring that our Net Zero Plan remains robust and effective in achieving our environmental objectives.

## Our data reporting requirements

Our 2022-23 emissions (presented in Table 1 below) have been calculated using the Greenhouse Gas Protocol approach to carbon accounting, which is the most globally accepted method for measuring carbon emissions. It is the same methodology we use to calculate our baseline emissions. National Highways separately reports its greenhouse gas (GHG) emissions to the Department for Transport (DfT) as part of the UK Greening Government Commitment (GGC), which uses a slightly different approach to carbon accounting to provide consistency with other government bodies reporting requirements. As a result of these differences, the emissions reported vary slightly between this document and our Annual Report and Accounts document. More detail on the differences in scope and methodology is presented in Table B-1, in Appendix B.



# Our 2022-2023 emissions

This table shows our GHG emissions for 2022-23. Emissions are reported against the scope and requirements of Greenhouse Gas Protocol and Science Based Targets Initiative Net Zero Standard in line with the Global Reporting Initiative Standard 305 – see Appendix C for further details.



**CORPORATE EMISSIONS**  
Net zero by 2030

Emissions source	Scope	Baseline (tCO <sub>2</sub> e)	Reporting year (tCO <sub>2</sub> e)	Progress	Intensity ratio
<b>Corporate</b>		<b>2019/20</b>	<b>2022/23</b>		<b>tCO<sub>2</sub>e / full time equivalent employees</b>
Vehicle fuel	1	8,367	6,977	↓	1.15
Buildings gas	1	1,239	1,275	↑	0.21
Electricity	2	58,226	202	↓	0.03
Corporate purchases	3	22,744	19,029	↓	3.13
Business travel	3	2,856	1,987	↓	0.33
Leased assets	3	16,920	13,194	↓	2.17
<b>Total</b>	<b>N/A</b>	<b>110,352</b>	<b>42,663</b>	↓	<b>7.03</b>
<b>Maintenance and construction</b>		<b>2019/20</b>	<b>2022/23</b>		<b>tCO<sub>2</sub>e / £mil spent on maintenance and construction</b>
Cement and concrete	3	167,768	154,506	↓	67.82
Material transport	3	120,440	110,919	↓	48.69
On-site plant	3	67,611	62,266	↓	27.33
Steel	3	58,957	54,296	↓	23.83
Asphalt	3	88,074	81,111	↓	35.61
Other Materials and aggregates	3	49,367	45,464	↓	19.96
Supply chain operational energy	3	10,927	8,007	↓	3.52
Purchased goods and services	3	14,777	10,004	↓	4.39
FBS Depot	3	1,965	1,258	↓	0.55
<b>Total</b>	<b>N/A</b>	<b>579,866</b>	<b>527,832</b>	↓	<b>231.70</b>
<b>Road user</b>		<b>2019/20</b>	<b>2022/23</b>		<b>tCO<sub>2</sub>e / billion km travelled on network</b>
Cars	3	14,958,000	13,857,000	↓	
Articulated HGVs	3	7,206,000	6,798,000	↓	
Vans	3	4,989,000	4,688,000	↓	
Rigid HGVs	3	2,455,000	2,271,000	↓	
Buses and coaches	3	241,000	214,000	↓	
<b>Total</b>	<b>N/A</b>	<b>29,849,000</b>	<b>27,828,000</b>	↓	<b>207,054</b>
<b>Carbon removals</b>	<b>N/A</b>	<b>-15,000</b>	<b>-15,000</b>	—	<b>N/A</b>
<b>Grand Total</b>	<b>N/A</b>	<b>30,524,218</b>	<b>28,383,495</b>	↓	<b>N/A</b>



**MAINTENANCE & CONSTRUCTION EMISSIONS**  
Net zero by 2040



**ROAD USER EMISSIONS**  
Net zero by 2050

## PROGRESS ON OUR THREE ACTION AREAS

### Corporate emissions

Corporate emissions have fallen from 110,352 tCO<sub>2</sub>e in our baseline to 42,663 tCO<sub>2</sub>e in 2023, representing an overall reduction of around 61%. The main change is because we now buy our electricity from net zero sources. Vehicle emissions have also decreased due to more miles being driven by plug-in hybrid electric vehicles (PHEVs). A slight increase in the use of natural gas to heat and cool buildings has occurred in the reporting year, as has an increase in salt usage for gritting. There was also a slight increase in vehicle procurement.

We now separate out our emissions data for leased assets, which were previously reported under corporate purchases, as they represent a larger share of our financial spend data. For more information on the progress against our corporate KPI under the Greening Government Commitment, please see our Annual Report and Accounts document.

### Maintenance and construction emissions

Maintenance and construction emissions have fallen from 579,866 tCO<sub>2</sub>e in our baseline to 527,832 tCO<sub>2</sub>e in 2022-23, a decrease of around 9%. The decreases in all our material categories are representative of emission reductions across our major projects and maintenance activities. This is partially driven by a change in the number and scale of schemes under construction in 2022-23. We recognise that further reductions are also required per unit to achieve our targets.

### Road user emissions

Road user emissions are modelled to have fallen from 29,849,000 tCO<sub>2</sub>e in our baseline to 27,828,000 tCO<sub>2</sub>e during 2022-23, a decrease of around 6%. This is due to the uptake of electric vehicles (EVs) and the improved efficiency of all vehicles. For more detail on how our road user data is modelled, please see our method statement, available [online](#).



# Our progress to date

- Against our **corporate ambitions**, we have installed energy efficient measures across 32 of our depots and have now converted 67% of our vehicle fleet to plug-in hybrid electric vehicles (PHEVs). Over 28% of our network is now lit by low energy LED lighting. We also launched a green car salary-sacrifice scheme and have already received 73 orders.
- Against our **maintenance and construction ambitions**, we launched our PAS2080 certified Carbon Management System (CMS) and became the world's first roads organisation to achieve the PAS2080:2016 Carbon Management in Infrastructure standard. We also published our net zero roadmaps for concrete, steel, and asphalt, our three most carbon intensive materials.
- Against our **road user ambitions**, we've invested around £42.3m in active travel schemes to support expanding travel choice, and we are working hard to increase the provision of EV charging infrastructure at our motorway service areas to further support the EV transition.

We're very proud of the progress we've made so far, but we recognise that there is still a long way to go, and much more work to do. We're working harder than ever to share our knowledge and help our suppliers make the transition to a net zero future, too. We're doing this by investing in net zero innovation, supporting market-readiness for low carbon materials, and sharing our knowledge and lessons learned with the industry. Together, we will get to net zero roads.

The remaining sections of this report provide an update on the actions in our [Net Zero Plan](#).



M5 Exe Estuary



# Making the journey together

It's essential that we work with our suppliers, customers and delivery partners if we are to reach net zero by 2050. That's why we're continuing to focus on collaboration, working closely with our stakeholders and communities to deliver opportunities for innovation, improve our processes, and strengthen our collective carbon knowledge. In 2022-23, our collaboration efforts included:

**01** Hosted over 70 webinars, talks, and drop-in sessions attended by our staff and suppliers

**02** Collating a library of carbon resources for our Net Zero Knowledge Zone, accessible to all our supply chain partners

**03** Reviewing our procurement and delivery processes to support our supply chain in meeting their net zero requirements

**04** Launching the Carbon Hub, a place for our colleagues and suppliers to access best practice techniques, tools and training

**05** Launching our Innovation Accelerator Programme to support trials and faster adoption of innovative net zero solutions, worth £1.7m

**06** Hosting discussions with other transport bodies to share our progress, resources and lessons learned

**07** Speaking to industry experts and our customers about trends for expanding travel choice and net zero HGVs

## Getting the supply chain involved

We're supporting our suppliers to:



**Gain PAS2080 certification**



**Set a science-based target for GHG emissions reduction**



**Tell us about their great ideas**



Office meeting



## ACTION AREA 1

# Cutting our direct carbon emissions

### Our non-traffic officer vehicles will be 100% electric by 2027, with traffic officer vehicles to be 100% electric by 2030

To date, we have successfully upgraded 67% of our fleet to plug-in hybrid vehicles, including 66 vehicles delivered in March 2023, and are well on track to achieve our target by 2030. To support the roll out of EV vehicles across our fleet, we currently have 213 chargers across our corporate estate, with funding for a further 228.

### We will buy 100% of our electricity via a certified renewable tariff by 2020

We completed this action and between 2020 and 2022, we purchased our electricity from verified renewable sources with a Renewable Energy Guarantee of Origin certificate. Since 2023, we have purchased our electricity from a zero carbon for business (nuclear) agreement and as part of our long-term plan around a Power Purchase Agreement for future purchasing.

### We will replace 70% of our road lighting with LEDs by 2027

We are working through a programme of LED upgrades for the road lighting on our SRN, to get to our target of 70% to be LED by 2027. To date, 28% of our road lighting is LED. The delivery is aligned with our other maintenance and renewals activity so that the lights are replaced in the most cost effective and efficient way whilst minimising disruption to our customers.

### We will aim to reduce the overall size of our estate by one third by 2027

We have developed an approach to increase flexible working patterns for staff so that more sites can be reduced, and are on track to reduce our estate by one third. To date, we have reduced our estate by 9%.

### 100% of our business mileage will be by electric vehicles (hire or personal)

We launched our green car salary sacrifice scheme in 2022, and so far, 73 EVs have been ordered by our people. We're also working on an update to our travel policy, which will incentivise improved ways of working remotely and shift business travel to sustainable modes. This includes adoption of a travel hierarchy, improving our monitoring and reporting, promoting digital tools, reducing our flights, and transitioning to EV use as availability improves. Limited market availability of EV vehicles for hire means we are reviewing our timescales for completing this action, but we are committed to supporting low carbon business travel and will be continually monitoring our progress in this area, updating our travel policy accordingly.



## CASE STUDY Greening our fleet

We have purchased 10 EVs to advance our trials for electric traffic officer vehicles to support our learning and establish what would be fit for purchase for EV operations. Martin Edgecox, our National Fleet Manager, said:

“ This decarbonisation journey is very important to us because it links into the organisation’s overall carbon strategy. However, it’s also a chance for us to show how we are always improving what we do. Our fleet are the unsung heroes of the strategic road network, and we work extremely hard to make sure they can work efficiently, safely and reliably. Since we switched to hybrids we have definitely had a more resilient fleet, and that translates to better service. ”



## ACTION AREA 1

# Cutting our direct carbon emissions

### ➤ Develop a plan for micro-generation of power on our land to meet a part of our energy needs

Since our initial pilot scheme on the A14 was considered unsuitable for renewables, we've been working hard to identify suitable land for renewable energy installations, taking into account biodiversity, land quality and social value opportunities.

### ➤ Plant at least an extra 3 million trees by 2030

We continue to progress this within the three key areas of 1) securing a sustainable supply of seeds, 2) identifying suitable land, and 3) planting and aftercare. In the last year we have procured seeds and a nursery for our saplings and are investigating three options for where and how these will be planted. This may include a mix of onsite, offsite, and third sector options, delivered through partnerships. The first batch of trees is set to be planted in 2024/25.

### ➤ Use 100% electric or hydrogen heavy vehicles by 2040

This action covers our winter gritter fleet. We are exploring the feasibility and provenance of hydrotreated vegetable oil (HVO) – a next generation biofuel. Initial findings suggest HVO could cut carbon emissions from fuel by 90%. This has benefits for HGV maintenance when compared to traditional diesel fuel by keeping engines cleaner and prolonging the life of emissions control systems. At present, there are no zero-emission HGV models viable, but we are exploring all options for lowering the HGVs' carbon footprint, including possible transitional options such as biofuels.



Seeds growing

## CASE STUDY

### Visiting our tree nurseries

As part of our commitment to plant at least 3 million trees by 2030, we're working closely with award-winning Greenwood Plants, a wholesale nursery that specialises in growing and supplying plants, shrubs, and trees. They're growing our saplings ready for the first batch of tree planting. On 2nd June, Greig Burt (Head of Category Management), Stephen Elderkin (Director of Environment and Sustainability), Tom Clancy (Group Leader of Environmental Delivery Support) and Malcom Dare (Executive Director of Commercial and Procurement) visited Greenwood's Arundel nursery to check on their progress.



Staff gathered around seeds



## ACTION AREA 1

# Cutting our direct carbon emissions

### ➤ Aim to agree zero carbon memoranda with our landlords by end of 2022

By the end of 2022 we had sent letters to our landlords and held initial discussions to agree our zero carbon memoranda. One of our large site offices, Calder View House in Wakefield, is seeking to replicate the memorandum with other occupiers and demonstrate the co-benefits to other landlords.

### ➤ Increase the energy efficiency of our sites and use of low carbon heating in our buildings

We have undertaken 12 more projects to improve the energy efficiency of our depots this year, bringing our total to 32 depots enhanced to date. We're taking steps to upgrade heating and lighting systems, installing solar panels, and insulating old buildings to improve their energy efficiency. Depending on the individual site, upgrading our heating systems to electric radiators or including heat pumps can result in deemed savings of up to 215tCO<sub>2</sub>e.



We were delighted when National Highways approached us to discuss a Net Zero Carbon Memorandum for their sites. As landlords, we are acutely aware that we need to work closely with our occupiers and the memorandum provides a clear framework and set of principles for engagement and an alignment of interests between us. Looking forward, we hope to replicate this approach with other occupiers and would like to thank National Highways for their progressive approach to sustainability and a shared ambition of achieving net zero.



- Chris Moulden

Director at Waypoint Asset Management,  
National highways Calder View House

## CASE STUDY Greening our depots



Hindhead principle tunnel service building



Hindhead principle tunnel service building

Air Source Heat Pumps at Almondsbury Depot



Hindhead STSB

Lighting upgrade to LEDs at Hindhead Principal and Secondary Tunnel Service Buildings



EV charging points at Carrville and Kneeton Traffic Officer Outstations

Carrville Traffic Officer outstation



Kneeton outstation



## ACTION AREA 2

# Cutting emissions from maintenance and construction

### ▶ We will build the first net zero major road enhancement scheme, starting by 2030 and opening for traffic by 2035

We remain on track to deliver our first net zero major scheme by 2035. Our strategy for achieving this has matured to involve the development and delivery of a series of exemplar projects. These are major roads schemes that will lead the way in making significant reductions in a particular asset class or discipline, signposting the way to reduce carbon emissions across our portfolio. These schemes will move to construction in road period 2, and will lead into our first net zero major project starting construction by 2030.

### ▶ In each road period, we will identify which low/zero carbon products we will use in construction and maintenance

Following the work to collate and identify products and technology, in February 2023 we launched our low carbon opportunities register, which includes a wide range of carbon reduction opportunities relating to the design, construction and maintenance of our assets. The register includes an innovation maturity indicator to show market readiness, along with information on applicability of these interventions within National Highways' current standards. This register can be accessed by our supply chain via our *Carbon Hub*.

### ▶ 100% electric or hydrogen heavy vehicles deliver to our sites by 2040

Since our last update, we are collaboratively developing a timeline to zero emission deliveries by 2040 with our supply chain to understand the technological readiness, funding dependencies and the enabling infrastructure requirements for electric and hydrogen HGVs. We are now working together to undertake an analysis of sample data on the number of truck movements, average trip lengths and other metrics to inform our next steps.

### ▶ Implement and certify a construction carbon management system by the end of 2022 (and require our Tier 1 and Tier 2 suppliers to have their own)

We successfully rolled out our construction carbon management system and achieved certification to PAS2080:2016 in December 2022, making us the first roads organisation in the world to do so. We've agreed requirements for Tier 1 and Tier 2 suppliers to have their own certified carbon management systems, and to date we have communicated this to members of our supply chain through webinars, press releases and publications.

## CASE STUDY

### WJ Group Re-texturing Technology

Some of our central carbon team visited WJ Group's manufacturing depot near Milton Keynes in August 2022 to learn about the steps they are taking to reduce their carbon footprint. WJ Group are using 'retexturing' instead of traditional road resurfacing methods to save time and carbon while improving road safety. Retexturing can be performed multiple times on the same stretch of road, in some cases without the need for road closures, considerably extending the life of the asset and reducing the impact on road users during maintenance periods. This is a great example of circular economy principles being put into practice.



Sustainability team



### What is retexturing?

The mechanical reworking or hydro blasting of a sound asphalt or concrete surface to restore either skid resistance, texture depth or both.



## ACTION AREA 2

# Cutting emissions from maintenance and construction

### Develop a near-zero plan for each of our buying categories by 2022

We finalised our near zero plan for seven buying categories in December 2022, which can be found on the *Supply Chain Sustainability School*. We are now working to embed these requirements in procurement contracts and communicate this out to our supply chain partners.

### Develop a zero carbon 2040 roadmap for steel, cement, concrete, and asphalt

We published our *net zero roadmaps* in December 2022, which set out steps that we and our supply chain will need to take to achieve net zero emissions for concrete, asphalt and steel. We're working closely with the supply chain to trial innovative materials on our network and accelerate the rollout of scalable solutions.

### Launch a zero-carbon construction innovation programme

We launched our £1.7m Innovation Accelerator programme in March 2023 to support SMEs who are working to scale up net zero solutions. Competition categories include: alternative materials, decision-making enablers for asset management and whole-life value of assets, and enablers for the circular economy in the construction and maintenance of highway assets. The programme seeks to take low maturity, new materials and solutions and drive them through a consistent, standardised process of prioritisation, feasibility, and initial trialling, with the aim of assessing viability for wider testing and adoption.

### 100% electric vehicle site cars and vans by 2030, and all compounds run on renewable electricity by 2030

We have developed our data collection approach and are currently in the process of identifying the emissions reduction trajectory for our site compounds and site vehicles. With the agreement of our new procurement policy, we can now embed these requirements in future contracts.

### 100% zero-carbon plant used on sites and site cabins by 2030

We've now developed a temporary accommodation strategy to decarbonise our site cabins. This has been approved, and we have created a working group with our supply chain to support us with the delivery of this strategy. We are also in the process of conducting a feasibility study to assess alternative fuel solutions for plant.



Construction trials on the A30

## CASE STUDY

### Low carbon materials on the A30

An innovative low carbon asphalt is being used for the first time to resurface the A30 Cutteridge to Alphington near Exeter in Devon. The work is being carried out as part of Hanson Contracting's pavement framework agreement with National Highways. It is the first time Hanson has trialled its CarbonLock asphalt, which contains polymer-modified bitumen (PMB) bio-binders, on the strategic road network. PMB contains a natural biogenic material that absorbs and stores CO<sub>2</sub>, which is then 'locked' into the bio-binders and is not released back into the atmosphere, even when the asphalt is recycled. In addition, the PMB binder used in both trials is expected to improve durability and extend the life of the asphalt. We are now working to standardise the approach to resurfacing across our network.



## ACTION AREA 2

# Cutting emissions from maintenance and construction

- **Make Digital Roads an integral part of our current road period and build this into the next road period strategy and beyond from 2023**  
Carbon and digital roads are a key part of our work today and our ongoing planning for the next road investment period.

### CASE STUDY

## Energy Management Systems

We have challenged our supply chain to help reduce the carbon impact of our construction. John Graham Construction Ltd are using an energy management system at the site compound for our M2 Junction 5 improvement scheme. It switches off non-essential assets when energy demand spikes, delivering a carbon saving of over 24tCO<sub>2</sub>e so far.



Construction staff at the site

### CASE STUDY

## Reducing maintenance and construction emissions

Across our supply chain, our partners are already reducing maintenance and construction related emissions. Balfour Beatty have replaced diesel with their first green hydrogen power unit on National Highways' A63 Castle Street Improvement Scheme, saving up to 164tCO<sub>2</sub>e in operational emissions.

Meanwhile, Kier Highways are halfway through their small plant transition project, whereby all suitable small plant will be swapped for electric alternatives. Around 200 of the initial 452 suitable items have already been switched. Savings of approx. 373tCO<sub>2</sub>e emissions per year are expected once the project is completed.



Green hydrogen power unit, Balfour Beatty





### ACTION AREA 3

## Net zero carbon travel on our roads

#### Explore the potential to work with partners to practically demonstrate the electric vehicle charging services blueprint

We have collated customer insights to understand behaviours and preferences regarding electric vehicle provision, including consultation with DfT, Transport Focus, and other industry stakeholders. We are now conducting a demand-mapping exercise to identify the optimum EV charging requirements on our roads.

#### Support the Rapid Charging Fund, which will future proof connections at strategic locations in England to prepare for a fully electric car and van fleet

We are working closely with stakeholders, alongside OZEV, who are in the process of developing the fund.

#### Launch an electric vehicle charging demonstrator lounge to provide comfortable rapid charging at MSAs in 2025

We have been working with providers to identify preferred location(s) for a demonstrator lounge.



We are excited to be working with National Highways installing energy storage systems across the UK's motorways for the roll-out of high-speed EV chargers. These systems will facilitate the uptake of EVs by creating the infrastructure needed for people to switch with confidence.



- Mark Apsey  
Director, Ameresco Ltd.

### WE'RE LISTENING

## Consumer experiences of electric vehicle charging

We're working with Transport Focus, the independent watchdog for transport users, to conduct a pilot survey collecting consumer insights into the experience of charging an EV on England's motorways and major A-roads. The aim is to benchmark the experience from site to site, and between different charge point providers, to help improve the user experience.

Findings from the initial research indicate that sufficient availability, reliability of the facilities, and clear information about pricing are just some of the concerns of EV users.



Electric vehicle charging





### ACTION AREA 3

## Net zero carbon travel on our roads

- **By 2025 we will have spent £11million supporting MSA operators develop energy storage solutions to enable charger roll out**  
We are installing Energy Storage Systems (ESS) across seven priority sites on our strategic road network. The infrastructure draws energy from the grid at quiet periods, stores it, and then makes it available for ultra-rapid or high-power charging at busy times. All seven ESSs will be up and running by the end of 2023.
- **Traffic officers ready for electric vehicle breakdowns by end 2022**  
We have successfully developed and deployed an electric vehicle/hybrid vehicle awareness learning package to 100% of our traffic officers and have now embedded this into our induction training.
- **We will publish our proposed approach to zero carbon HGV trials by the end of 2022, and by the end of the road period explore options for further freight demonstrators**  
We published our early thinking on the proposed approach to HGV trials in December 2022. We are a key stakeholder in the Zero Emission Road Freight Demonstrator Programme and have provided advice on implications of the different technologies on the operation and maintenance of our network.
- **Recommend a preferred solution for HGVs and investment plan for implementation in the fourth road period**  
National Highways were a key partner in the HelmUK HGV platooning project and on-road trials were completed in 2022. The technological maturity of platooning, and the low fuel savings from real-world operation, mean that there is not a short-term case for operators to invest in platooning. We are continuing to explore alternative solutions through our role on the Zero Emission Road Freight Demonstrator Programme.
- **Report in 2023 how we can help reduce empty lorry movements**  
We are working closely with Department for Transport and the wider industry to understand what options may be feasible for further development.
- **Integrate net zero into our statutory consultee responses to planning applications from 2022**  
We've updated our guidance for statutory consultee responses to planning applications, and this is now business as usual.



#### CASE STUDY

### User insights: Collecting consumer views on net zero innovation

We conducted research in 2022 in partnership with our supply chain to better understand consumer attitudes towards net zero, biodiversity and environmental sustainability. Our research showed us that participants' hopes for the future were founded on the potential of technological innovation, such as the UK developing more sustainable road surfaces or the mass roll-out of electric charging points. They also believed that National Highways had an opportunity to 'lead by example' with our own operations, through greening our fleet of vehicles or generating power on our estates.



### ACTION AREA 3

## Net zero carbon travel on our roads

#### ➤ Publish a plan to improve public transport on the SRN in 2023 and implement through the third road period

We have established a Bus and Coach Forum with significant support from major operators. This means we can work collaboratively to improve our services to operators, drivers, and passengers. We are using insight from the Transport Focus Logistics and Coach survey to inform opportunities around information for operators including the operation of diversion routes, the impact of closures on key routes, and forthcoming regional works. We have a programme of cycling scheme investment of £103M over the second road period, of which approx. £42.3M has been invested so far.

#### ➤ Develop and test a comprehensive programme to expand travel choice in the second road period and integrate into the third road period

We have undertaken customer experience surveys to better understand evidence of what type of journeys interventions to expand travel choice should focus on, who our target customers are, which customers are most and least likely to be open to changing travel behaviours, and what modes of transport are most likely to encourage changing travel choice. Next, we will use this evidence to create a framework to analyse which journey types, customer types, network type and mode will be most effective for our customers to consider shifting travel choices. Once complete the framework will be tested with stakeholders from the Bus and Coach Forum and with targeted customer focus groups.



Children riding a bike

#### WE'RE LISTENING

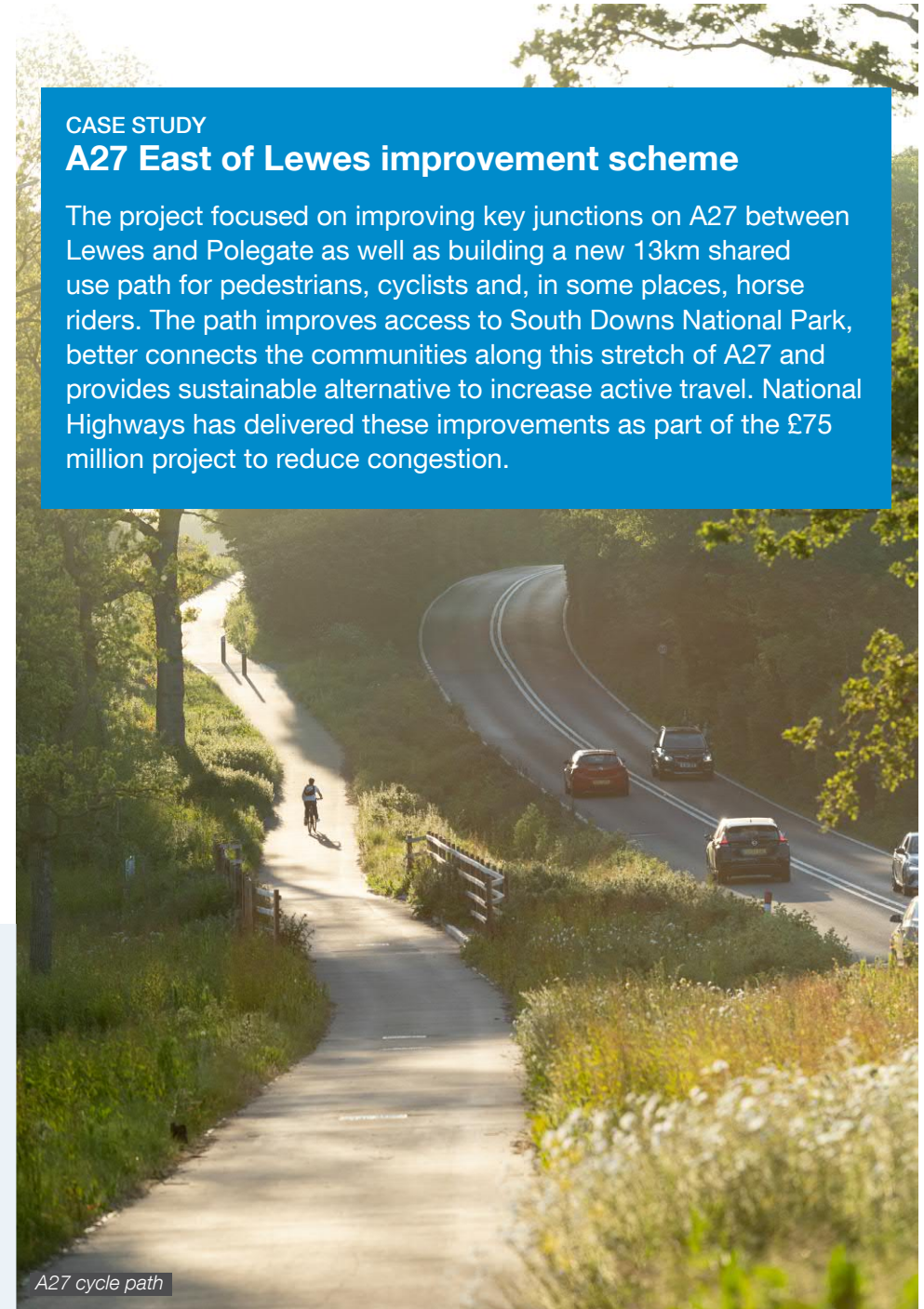
### Living Streets pilot project

We have partnered with Living Streets to undertake a pilot project of route audits and incentivisation at 15 schools in the Yorkshire Northeast region. The pilot looks to encourage pupils to travel to school using more active modes of transport as well as understand barriers and detractors that could inform future active travel schemes for National Highways.

#### CASE STUDY

### A27 East of Lewes improvement scheme

The project focused on improving key junctions on A27 between Lewes and Polegate as well as building a new 13km shared use path for pedestrians, cyclists and, in some places, horse riders. The path improves access to South Downs National Park, better connects the communities along this stretch of A27 and provides sustainable alternative to increase active travel. National Highways has delivered these improvements as part of the £75 million project to reduce congestion.



A27 cycle path

## ENABLERS

### Progress on the enablers for our plan

- **Establish and maintain clear governance, from a carbon team to clear roles agreed for delivery and execution – we will also appoint an Executive Board member to have responsibility for delivery of our net zero plan**

We have now established a number of internal and external groups to govern the implementation of our net zero plan. This includes our Net Zero Steering Group, our Contracting for Carbon Working Group, and our Quarterly Knowledge Shares with other arms-length bodies. We also report on progress against our key actions to our Executive Board monthly and report our progress to the Department for Transport.

- **We have carried out a review of current data systems and will develop a plan to upgrade our processes, systems and assurance, which will be complete for the end of 2024**

We now developed a comprehensive Data Improvement Plan, and we are working across our directorates and with our suppliers to establish better data reporting mechanisms and improve our data assurance process.

- **Communicate our net zero plan effectively through the company and keep all our teams up to date**

In the last year, we've attended numerous site visits, hosted internal and external webinars, and participated in industry knowledge sharing events, such as Supply Chain Engagement Councils and Highways UK. We communicate monthly with our internal colleagues via lunch-and-learns, net zero drop-in sessions, and contributions to our Green Room intranet blog. We also established our 'Green Network' of net zero champions who support carbon reduction initiatives across the company.



## ENABLERS

### Progress on the enablers for our plan

- ▶ **Conduct a skills needs assessment and launch a zero carbon skills programme in 2022. Give our leaders the knowledge and confidence to talk and exemplify low carbon leadership, and place carbon as an integral part of people and performance management**

We completed a skills needs assessment in 2022 and launched our carbon literacy e-learning to give all our people the basics of carbon literacy. We are now preparing to launch a more comprehensive, in-person carbon literacy training programme later in 2023.

We also developed and launched our Net Zero Knowledge Zone summarising readily available carbon learning content, available via our *Carbon Hub*.

- ▶ **We will work closely with our supply chain and other UK and global infrastructure providers, to deliver faster net zero action, share progress and develop common standards. To deliver on our road user ambitions, we will work with the Department for Transport and local transport authorities, to support the uptake of zero carbon vehicles, facilitate expanding travel choice, and efficiently manage traffic**

We're meeting regularly with other transport and arms-length bodies to share our lessons learned and our progress so far. We know that there is a long way to go, and we all need to work together to get there as fast as we can.



Staff visiting Severn Bridge

# Appendix A

**Table A-1:** Change control log

NZP COMMITMENT	STATUS	NEW CONTEXT	REASON FOR UPDATE
<b>GENERAL</b>	Amended	Baseline scenario for emissions data has been updated from a 2020 calendar year to a 2019/20 financial year	This year we have conducted a re-baselining of the carbon emissions that serves as the foundation for our Net Zero Plan. This involved moving from a calendar year basis of 2020 to a financial year of 2019/2020. This initiative is in line with our commitment to continuously evaluate our data systems and identify opportunities to enhance data collection and utilisation, as outlined in our Net Zero Plan.
<b>CORPORATE</b>			
100% of our business mileage will be by electric vehicles (hire or personal) by 2026	<b>Amended</b>	100% of our business mileage will be by electric vehicles (hire or personal)	Following engagement with car hire firms they have indicated there is limited market availability of EV options, due to this we are unable complete the action to only expense EV cars from 2026. We will continue to engage with our suppliers to develop a plan with realistic time frames to gradually transition to EV travel.  We continue to stay committed to achieving our 2030 net zero targets for corporate by supporting low carbon emission business travel and will be continually monitoring our ways of working and updating our travel policies accordingly to support sustainable travel.
We will buy 100% of our electricity via a certified renewable tariff by 2020	<b>Amended</b>	We will buy 100% of our electricity via zero carbon tariffs	We completed this action and between 2020 and 2022, we purchased our electricity from verified renewable sources with a Renewable Energy Guarantee of Origin certificate. Since 2023, we have purchased our electricity from a zero carbon for business (nuclear) agreement and as part of our long-term plan around a Power Purchase Agreement for future purchasing.
<b>MAINTENANCE AND CONSTRUCTION</b>			
Make Digital Roads an integral part of our current Road Period and build this into the next Road Period strategy and beyond from 2023	<b>Completed</b>		Digital Roads is delivering across multiple areas across National Highways with net zero outcomes intrinsic within the deliveries, alongside wide outcomes including efficiencies and customer service. Digital Roads is also being embedded in RIS3 and the future strategy to 2050 so will be monitored separate to the Net Zero Plan.
<b>ROAD USER</b>			
Traffic officers ready for electric vehicle breakdowns by end 2022	<b>Completed</b>		All our traffic officers including any new starts have been trained and this is business as usual as it forms part of the traffic officer new starter training.
Integrate net zero into our statutory consultee responses to planning applications from 2022	<b>Completed</b>		We've updated our guidance for statutory consultee responses to planning applications, and this has been rolled out as business as usual.

# Appendix B

**Table B-1:** Differences between GGC approach and GHG Protocol approach

Approach	National Highways Annual Report (RIS 2 KPI following GGC approach)	Net Zero Annual Progress Update (GHG Protocol approach)
<b>Guidance</b>	Factors from Department for Energy Security and Net Zero (DESNZ)	Science Based Target Initiative Net Zero for Corporations guidance and GHG protocol guidance
<b>Building and network electricity</b>	DESNZ factors to kWh consumption	Market-based approach that accounts for green tariffs (incl. Power Purchase Agreements and Energy Attribute certificates that track electricity back to source)
<b>NH fleet</b>	DESNZ factors applied to mileage	DESNZ factors applied to mileage
<b>Corporate indirect emissions (scope 3)**</b>	Only business travel and T&D losses	Covers full corporate scope 3*
<b>Emission factors</b>	DESNZ	Same basis
<b>Baseline year</b>	2017/18 baseline	2019/20 baseline

\* There are a number of other emissions related to business travel, staff commuting and Scope 3 corporate supplies (e.g., grit salt, leased assets, IT services, corporate purchases, office waste disposal).

\*\* For definition of scopes, see [GHG protocol](#).



A30, dual carriageway

# Appendix C

## Global Reporting Initiative (GRI) alignment

**Table C-1:** Alignment with GRI Disclosure Requirements

National Highways has reported the information cited in this GRI content index for the period April 1, 2022 to March 31, 2023 with reference to the GRI Standards. The *GRI 305 Emissions 2016* standard was used to prepare the report.

GRI STANDARD	DISCLOSURE	LOCATION
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	Our 2023 Emissions; Progress on our 3 action areas
	305-2 Energy indirect (Scope 2) GHG emissions	Our 2023 Emissions; Progress on our 3 action areas
	305-3 Other indirect (Scope 3) GHG emissions	Our 2023 Emissions; Progress on our 3 action areas
	305-4 GHG emissions intensity	Our 2023 Emissions; Progress on our 3 action areas
	305-5 GHG emissions reduction	Our 2023 Emissions; Progress on our 3 action areas



A12 flower field

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Wild flowers on the A30, Cornwall, South West

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