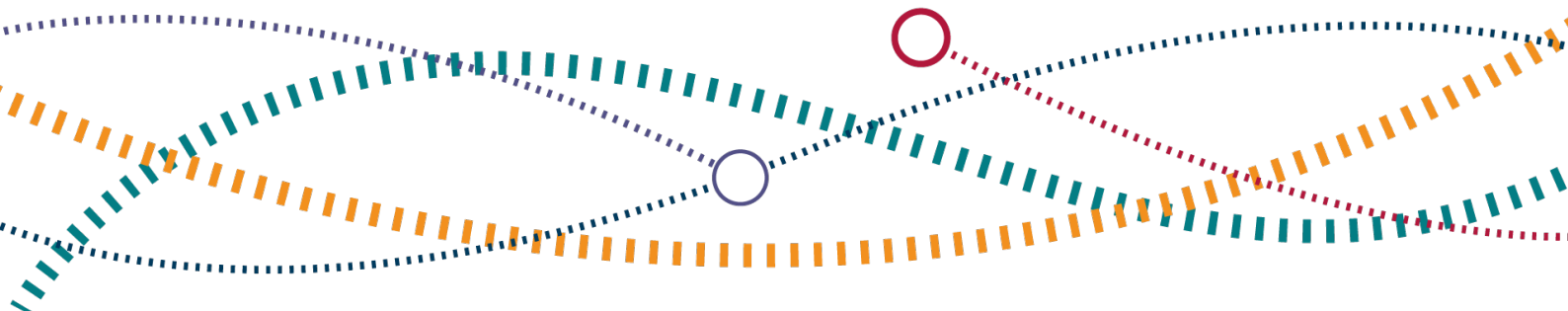




# Climate Change Adaptation at the Office of Rail and Road

29 November 2024



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# Executive summary

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- 1.1 The impacts of climate change are already becoming apparent across the UK's transport networks. The Climate Change Committee's 2023 adapting to climate change progress report outlined:

**“Climate change can influence extreme weather events by making them more frequent, more intense, or larger in area impacted.”**

*Source: Climate Change Committee's progress in adapting to climate change 2023 report to Parliament*

- 1.2 Transport networks are under pressure to cope with the immediate short-term effects of adverse and extreme weather as well as the more longer-term effects of a changing climate.
- 1.3 At ORR we understand the challenges of climate change for those we regulate. We recognise that they are having to adapt in order to maintain a safe and reliable service.
- 1.4 This report provides an overview of what we consider the main climate change risks, impacts and barriers for the rail sector and the strategic road network (SRN) in England as well as providing an overview of our regulatory work on resilience and adaptation.
- 1.5 Our report focuses on three key themes:
- our risk-based, proportionate and prioritised approach to our regulatory role for climate change adaptation;
  - the importance of collaboration to share best practice for mitigating climate change; and
  - recognition that regulated bodies need to continue to build capacity and capability to mitigate the risks of climate change while considering economic, environmental, operational and safety factors.

## 2. Introduction: our role as regulator

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- 2.1 The Office of Rail and Road (ORR) is the independent economic and health and safety regulator for Britain's railways. We have regulatory powers to hold National Highways to account for the management, performance and efficiency of England's strategic road network (SRN).
- 2.2 Our [website](#) contains information on our approach to environment and sustainable development for rail and road. Our [sustainable development policy statement](#) explains our policy, its aims and how we put it into practice.

### Rail

- 2.3 Our duties are set out in Section 4 of the Railways Act 1993. These include a duty to 'contribute to the achievement of sustainable development' and in exercising our functions to 'have regard to the effect on the environment of activities connected with the provision of railway services'.
- 2.4 We regulate health and safety for the entire mainline rail network in Great Britain, as well as London Underground, light rail, trams and the heritage sector. We require the rail sector to have suitable safety management systems which must demonstrate that there are processes in place to evaluate and mitigate risks including those associated with adverse weather and climate change.
- 2.5 We are the economic regulator for Network Rail and other rail networks including High Speed 1 (HS1). We assess their efficiency and value for money, and set outputs for delivery, and as part of this ensure that they are adequately considering the impacts of climate change.
- 2.6 We license the companies that operate trains, stations, light maintenance depots and networks holding them to account against those licences. Licences require holders to comply with industry standards.

### Roads

- 2.7 Our regulatory and enforcement powers are set out in the Infrastructure Act 2015. We hold National Highways to account to ensure that it manages, operates and improves the SRN in England efficiently and effectively on behalf of road users, taxpayers and the public. The Act requires us to have regard to the environmental impact of the way in which National Highways achieves its objectives.

## 3. Climate change risks, impacts and barriers

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3.1 We recognise that there are many climate change risks, impacts and barriers that affect the bodies we regulate. More information on risks and mitigations are available in the Adaptation Reporting Power reports (ARP3 and ARP4) of those who we regulate.

### Rail

3.2 Rail is considered one of the safest modes of transport but can be susceptible to severe weather events. The frequency of these events has been increasing and the impact and location has become more unpredictable. Much of the railway was designed and built in the Victorian era making it impossible to make the railway fully resilient, unless it is completely replaced with new assets, which would be unrealistic.

3.3 Adverse or extreme weather and climate change impacts can lead to delayed or cancelled services whilst damaged infrastructure is repaired or if there is a safety risk to passengers and rail workers. For example:

- High winds can bring down overhead line equipment on the electrified parts of the network and blow debris, trees or heavy leaf-fall on to the tracks. There is a risk of passengers in trains being stranded without power.
- An increase in higher intensity rainfall events can create wetter ground conditions resulting in weaker support of foundations or a greater likelihood of scour to structures which can wash away or undermine parts of the track.
- Warmer weather for longer and more frequent periods can cause several issues. Rails expand in hot weather, causing a greater risk of 'track buckles' where the tracks shift out of alignment. The ground under the track may also dry out and shrink, which can cause track alignment issues. Additionally, trees may keep their leaves longer, which can present challenges for managing rail adhesion.

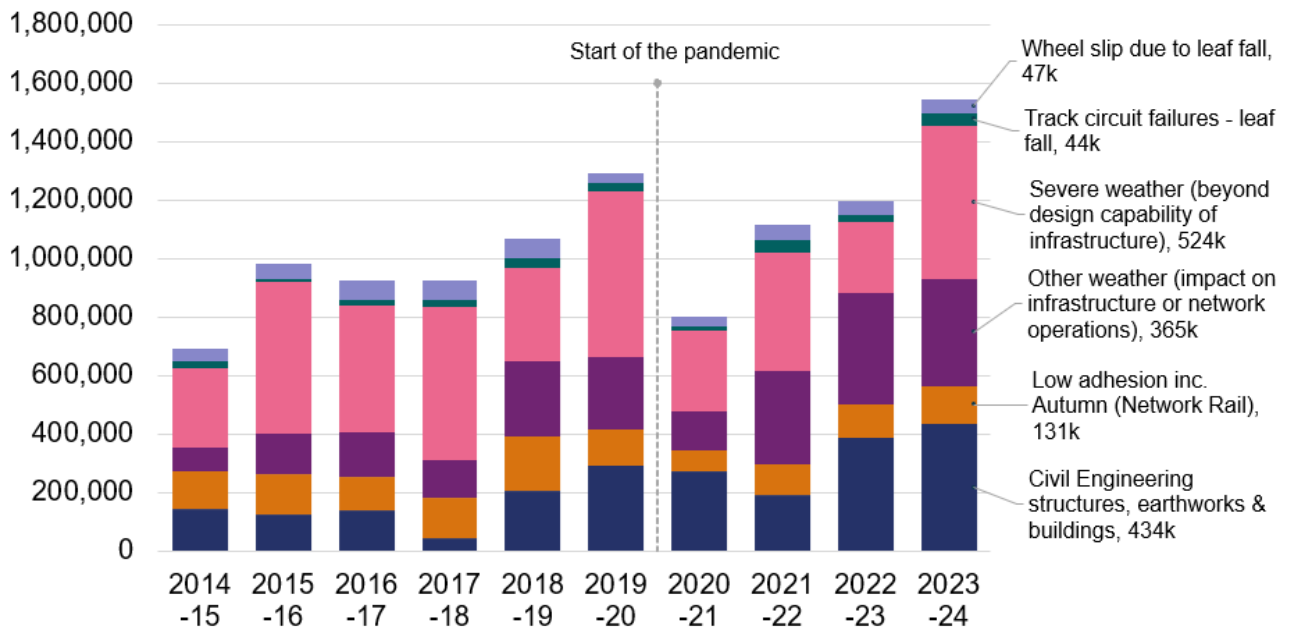
3.4 Rail operators and Network Rail have emergency plans in place to try to keep disruption during extreme weather events to a minimum. Network Rail work alongside the Met Office to continually monitor the weather and send crews and equipment to at-risk areas, so they are in a position to act quickly. Its National

Operations Centre (NOC) monitors the whole network including high-risk sites for debris caused by adverse or extreme weather as well as reporting to teams in all routes when weather will likely affect specific areas of the network.

3.5 A range of operational, maintenance and longer-term structural solutions are used by the rail industry – such as speed restrictions, removing fallen trees or leaves and building flood defence systems. We support and challenge Network Rail with the management of its risk assessments.

3.6 The rail industry currently monitors the prime cause of delays to rail services through the established “delay attribution” process, which includes a category for “severe weather, autumn and structures”. This category reflects delays associated with; the impact of weather on assets (such as bridges and earthworks), low adhesion between wheels and track, weather impacting network operations, severe weather beyond design capability of infrastructure, track circuit failures due to leaf fall and wheel slip due to leaf fall. It includes some non-weather causes, it does not reflect cancellations, nor the number of train miles (which dipped during the pandemic). However, this category can be used to give an indication of the effect that more adverse and extreme weather can have on rail (see Figure 3.1 below) with some increases over time particularly in the “other weather” category.

**Figure 3.1 Train delay minutes due to severe weather, autumn and structures**



Source: ORR analysis of Network Rail data

## Roads

- 3.7 The majority of the SRN was designed and built before the effects of climate change were apparent. Failure to mitigate both the impacts of existing adverse weather due to climate change, and future changes to our climate can lead to impacts on services and disruption for road users who may have to find alternative routes to travel.
- 3.8 SRN infrastructure such as pavement, bridges, earthworks and drainage assets can be affected by an increase in river, surface water, coastal or groundwater flooding. This can cause erosion, embankment failures, and subsidence, compromising safety or causing delays while damage is being repaired. Excess water on the SRN can result in an increased likelihood of vehicles aquaplaning due to surface water flooding. Extreme temperatures or an increase in wind speeds can affect infrastructure on the network. This has the potential to create safety risks with high-sided vehicles susceptible to blowing over as well as important travel messages being unable to be displayed to road users.
- 3.9 National Highways has severe weather plans, including emergency plans, to try to keep disruption during extreme weather events to a minimum. It provides advice to road users on what to do in a range of different weather scenarios.
- 3.10 National Highways uses weather stations across its network, and in winter a specific weather forecast team, to monitor conditions. It regularly monitors its network for debris caused by extreme weather to try to keep disruption to a minimum. It informs road users of potential risks via roadside signals and may close some roads for safety reasons. Culverts, gulleys and drains are checked to ensure rainwater can drain off the road surface to avoid flooding and the safety risk to road users from aquaplaning.
- 3.11 Capital investment such as enhancement schemes or renewal of existing assets provide the opportunity to improve resilience of individual assets to modern standards that account for climate change, however the expectations for resilience of the whole SRN system are not clear.

## 4. Our approach

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- 4.1 In this chapter we outline how we ensure the main industry bodies we regulate are considering climate change adaptation and are effectively managing climate risk through the monitoring of safety and operational performance.

### Network Rail

#### Our role

- 4.2 We hold Network Rail to account against its network licence, the Railways Act 1993 (as amended) as well as various health and safety legislation. We look at climate change adaptation from three perspectives: Network Rail's proposals and use of funding through the 5-yearly periodic review; its overall performance against its Network Management Duty and its safety duties – specifically its management of climate change risks and mitigations.

#### Network Rail's funding and the periodic review

- 4.3 Last year we set Network Rail's funding for five years from 2024 to 2029 through the periodic review 2023 (PR23). The UK and Scottish governments respectively set out requirements for resilience and adaptation in their High-Level Output Specification (HLOS) which Network Rail factored into its plans.
- 4.4 We assessed Network Rail's proposed plans and spend for resilience and adaptation. Our draft determination had highlighted that Network Rail had not sufficiently prioritised funding for some core assets, including assets vulnerable to the effects of climate change. In response, Network Rail committed to increase core renewals by around £540 million.
- 4.5 Our decisions are set out in our [final determination](#). With respect to resilience and adaptation:
- We identified opportunities for Network Rail to increase its risk fund to approximately £1.5 billion which may be spent on unexpected risks such as those linked to the effects of climate change.
  - We approved a new supporting measure (tier 2 metric) for Network Rail on weather resilience, as part of its asset sustainability measures to provide a more holistic view of performance. This metric is how Network Rail will report against delivery of actions in the regional Weather Resilience and Climate Change Adaptation (WRCCA) plans. It provided the first report at the end of



October 2024. We continue to work on this report with Network Rail and hold it to account for delivery of CP7 weather resilience commitments.

- We approved funding for Network Rail to develop its [Adaptation Pathways Approach](#) in CP7 ahead of implementation in CP8. This good practice initiative could support other organisations developing their own risk assessments as it supports strategic, flexible and structured decision-making for climate change.
- We identified an opportunity for Network Rail to collaborate more with third parties to undertake further work on nature-based solutions. We will monitor Network Rail's developments on delivering this work and capturing the benefits throughout CP7.
- We set asset management output measures and environment measures that we will use to hold Network Rail to account during the control period to ensure it delivers on its commitments.

### Network Rail's Weather Resilience Climate Change Adaptation plans

- 4.6 Since 2013, we have required Network Rail to produce region specific WRCCA plans. These identify the risks to assets caused by adverse and extreme weather associated with climate change as well as outlining interventions that will minimise the impacts. We consider these to be an example of good practice in the rail sector. As discussed in the previous section, we have approved a new measure to monitor the delivery of WRCCA actions and we expect Network Rail to formally report on the progress.
- 4.7 Prior to CP7 we commissioned a specialist consultant to review existing CP6 WRCCA plans. The 2021 [report](#) highlighted best practice, an assessment of the plans' maturity and recommendations for CP7 WRCCA planning and long-term resilience. In summer 2024, we reviewed Network Rail's regional CP7 WRCCA plans to evidence the consideration of these recommendations. For long-term resilience, Network Rail intends to address the recommendations through its Adaptation Pathways Programme, which we will continue to monitor.
- 4.8 We continue to hold Network Rail to account on the delivery of the effective asset management of track, off track, earthworks, structures and buildings considering the increased risk of their failure and the consequences of such failures.

## Recommendations from the Carmont derailment

- 4.9 In 2024 and 2025 we are supporting a Fatal Accident Inquiry led by the Procurator Fiscal examining the circumstances surrounding the tragic deaths and injuries caused by the derailment of a train at Carmont, Aberdeenshire in 2020 due to a landslide following heavy rain. We attend Network Rail's Weather Risk Task Force Steering Group (WRTF) which supports delivery of recommendations laid out in reports by independent experts, Lord Robert Mair and Dame Julia Slingo, to ensure there is a focus on safety improvement.
- 4.10 We continue to oversee improvements to asset inventory and drainage management for all drainage assets on Network Rail's network, as laid out as recommendations in the Mair and Slingo reports. We request evidence to demonstrate that required improvements are being implemented and where we don't see effective progress, we can take enforcement action.

## Routine holding to account and safety inspections

- 4.11 Where there is a safety risk, we have statutory powers under the Health and Safety at Work etc. Act 1974 to take action. For example, if we had evidence that the risk of earthwork failures was not being appropriately managed, we could take enforcement action to require industry to put appropriate measures in place. Our inspectors undertake proactive, on-site inspections on Network Rail's infrastructure on priority topics that are determined via a risk profiling exercise. This includes extreme weather management and drainage management.
- 4.12 Our Civil Engineers are working closely with our Railway Inspectors on the development of a multi-year strategic intervention project which assesses the capability of the mainline rail industry to respond safely to extreme weather events. We will review Network Rail processes for mitigatory measures and consider communication interfaces with train operating companies (TOCs) as well as Network Rail's work in developing digital tools for decision making. If necessary, we will make recommendations for improvements, and take appropriate action in line with our published [Enforcement Policy Statement](#).
- 4.13 Our planned inspection activities are aimed at checking Network Rail's management arrangements for adverse and extreme weather, and the effectiveness of its drainage management arrangements. They aim to identify whether Network Rail is doing all that is reasonably practicable to comply with its legal duties as defined under the Health & Safety at Work etc. Act 1974. Where necessary, appropriate action will be taken, in line with our published Enforcement Policy Statement.

- 4.14 We carry out routine holding to account work including: reviewing regional drainage asset registers, reviewing Network Rail's management plans, challenging Network Rail on its Asset Policies and Regional Strategic plans, as well as gathering data and analysis to provide evidence to supplement our directions.

## High Speed 1 (HS1)

### Our role

- 4.15 We hold HS1 to account against the measures set out in the 30-year concession agreement and station leases to operate and manage the railway between St Pancras and the Channel Tunnel. The newer infrastructure has thus far appeared resilient to weather incidents, but we are encouraging HS1 to take greater account of the impacts of climate change when making whole-life decisions based on a 40-year horizon.

### HS1's funding and the periodic review

- 4.16 We are currently in the process of reviewing HS1's plans for its control period 4 (CP4) (2025 to 2030) through the periodic review 2024 (PR24). We are assessing its proposed strategy for climate resilience and adaptation outlined in its corporate environmental strategy, and associated CP4 civils and environment asset management strategy submissions.
- 4.17 Our September 2024 [draft determination](#) outlined that we would like HS1 to work with its stakeholders on measures such as moving to zero emissions vehicles; biodiversity; increased use of renewable energy and circular economies. Once CP4 is underway, we will hold HS1 to account against our findings, including our recommendation on environmental measures to ensure our final determination directions are being followed.

### Regular Monitoring

- 4.18 HS1's concession agreement requires it to carry out operation, maintenance, renewal and upgrade of its network in accordance with best practice. This includes consideration of current environmental sustainability targets and HS1 has included it as a component of its business model in the last few years.
- 4.19 We reviewed HS1's resilience and adaptation plans in our most recent [annual report](#). We acknowledged its Sustainability Strategy 2020 aims to set targets by 2030 in priority areas, such as climate change and adaptation and reviewed its plans to deliver on these targets. We continue to review delivery of this by tracking progress in HS1's annual detailed Environmental, Social, Governance (ESG)

updates each June. We expect further work to be undertaken in this area by HS1 to develop agreed metrics to track performance, and to capture ‘cascading risks’ and ‘residual risks’ after investment to improve resilience.

## Train operating companies (TOCs) and freight operating companies (FOCs)

### Our role

4.20 Our role with TOCs and FOCs is different to infrastructure managers such as Network Rail and HS1. We hold them to account against their licences (including on consumer and accessibility issues) and regulate health and safety compliance.

### Track access applications

4.21 When we review applications from TOCs and FOCs to run services on the rail network, we recognise that rail is a lower carbon, lower emission form of transport compared with road and air. When there are competing demands for network capacity, we conduct Cost Benefit Analysis as well as consider non-user benefits such as air quality and other environmental factors.

4.22 A recent example of this is our assessment for the Wrexham to Bidston case. Our [decision letter](#) reflected the desire of a cement works operator to shift to rail to support its net zero targets. In October 2024, we [consulted](#) on adopting a routine approach to monetising the costs and benefits with open access applications, which included environmental factors. We have now

### Rail environment statistics

4.23 Recognising that responding to climate change includes a focus on reducing harmful emissions, we publish annual rail environment statistics for mainline passenger and freight operators, including estimates of their associated CO<sub>2</sub>e emissions at both operator and aggregate level. We expanded the [latest publication](#) to include additional data on other environmental measures for the first time. We led the cross-industry Rail Environment Statistics Working Group in 2024 where we work with the wider rail sector to improve the quality and transparency of environmental data reporting.

## Whole rail industry

4.24 Within our current remit we also look at whole-system issues.

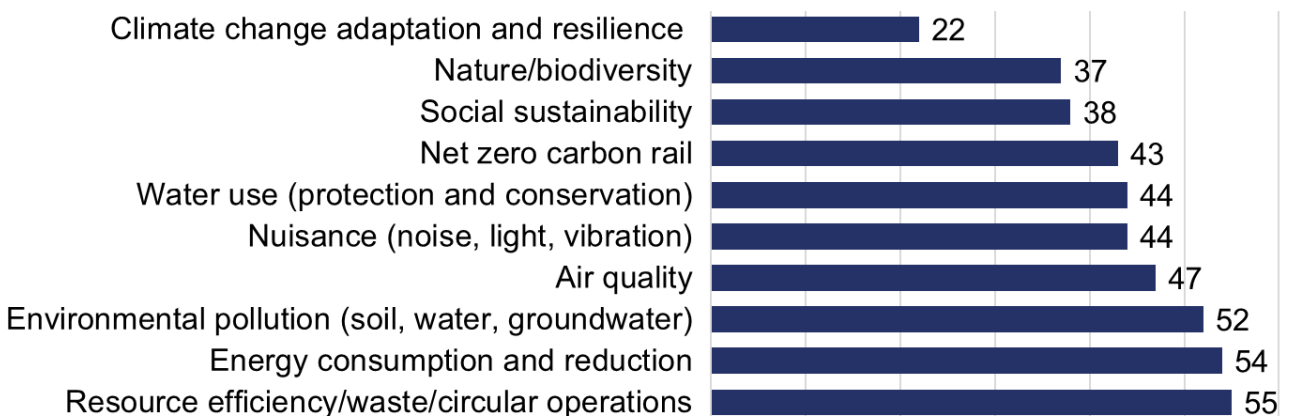
### Passenger experience of stranded trains

- 4.25 In 2023, we commissioned a review with Transport Focus on the experience of passengers on stranded trains, where risks are increased in extreme weather events. Our [2024-25 business plan](#) includes a commitment to work with industry to embed learning and actions from the review. Our March 2024 [report](#) conducted by Steer set out the need for rail sector plans to have greater focus on the safety and welfare of the passengers when extreme weather events damage assets and cause passenger trains to be stranded.
- 4.26 We are following up on the industry response to such incidents and the management of stranded trains, seeking assurance that simulation exercises form part of emergency planning arrangements. ORR, with Transport Focus, will bring together rail operators and Network Rail in early 2025 to follow up on the implementation of recommendations to drive forward consistent improvements.

### Environmental arrangements in licences

- 4.27 We have published [guidance](#) to support licence holders with fulfilling their environmental obligations. Licence holders can opt to reflect climate change adaptation and resilience issues in their arrangements.
- 4.28 In 2023 we reviewed 60 licence holders’ environmental arrangements (EAs) to better understand the environmental impacts, priorities and progress of the rail industry. The review was carried out on ORR’s behalf by AECOM, which outlined its findings in an April 2024 [report](#). Figure 4.1 outlines the different environment and sustainability topics that were referenced in licence holders’ environmental arrangements (there are not fixed criteria on what they should include).

**Figure 4.1 Environment and sustainability topics in licence holders’ EAs**



Source: ORR review of railway licence holders’ environmental arrangements 2023 to 2024

4.29 Climate change adaptation and resilience were referenced the least in licence holders' EAs. Licence holders should consider improving these environmental arrangements by leveraging industry initiatives. Examples include those referenced in the Rail Safety and Standards Board's (RSSB) [Sustainable Rail Blueprint](#), taking part in its annual Climate Change Adaptation Maturity Assessment or producing a WRCCA strategy following RSSB and Department for Transport (DfT) guidance due in February 2025. We also encourage licence holders to share environmental sustainability best practices through attendance at industry wide forums such as RSSB's Climate Change Adaptation Working Group (CCAWG).

### Wider engagement

4.30 We actively engage as an observer at weather resilience and climate change adaptation industry forums. This includes listening in to industry discussions that share good practice, supporting industry by highlighting guidance and challenging ideas that might intersect with the safe operations of the railways or SRN. (see Annex A for more information).

4.31 Recognising interdependencies with a number of other regulators and different environmental legislation in Wales and Scotland, we engage with organisations such as the Environment Agency (EA), National Resources Wales (NRW), the Scottish Environment Protection Agency (SEPA) the Health and Safety Executive (HSE) and collective forums for regulators such as the UK Regulators Network (UKRN). This joined-up approach is useful in determining what metrics may be required in the future whilst also considering risk, funding and long-term outcomes. We recently engaged with NRW and Network Rail to highlight interface issues around scour management and species licensing associated with lineside vegetation management. The EA have also enabled us to have a better awareness of best practice in setting infrastructure carbon targets and applying tools to quantify whole life carbon.

### Other rail bodies

- 4.32 We have a limited climate change adaptation role in relation to other rail bodies:
- **Channel Tunnel:** We provide UK delegates to the bi-national Intergovernmental Commission (IGC) and Channel Tunnel Safety Authority (CTSA) which monitor matters relating to the operation of the Channel Tunnel. This includes environmental matters particularly where there are safety implications. Eurotunnel is looking at sustainability projects, and we

see there being an opportunity for Eurotunnel to focus on climate change mitigations or adaptation strategies.

- **Transport for London (TfL):** We assess TfL's management maturity based on evidence we gather from inspections and other regulatory work and provide health and safety scrutiny through proactive and reactive inspection activities. We see there being an opportunity for there to be a greater focus on resilience or climate change adaptation. In 2024, TfL led a road and rail sector wide project to co-develop an understanding of existing interdependencies, climate hazards and potential actions to reduce climate interdependency risks for London's land-based transport. Publication of this report is due on the [TfL adapting to climate change website](#) by the end of the year. We see an opportunity for others to learn from the outcomes of this initiative when considering interdependencies for climate change adaptation.
- **High Speed 2:** Currently we focus on safety and integration into the UK rail network; however once HS2 is operational we will have more of a role, including for resilience and adaptation. HS2 has sustainability initiatives in place such as reducing carbon emissions and investing in nature recovery.

## National Highways

### Our role

4.33 We have statutory enforcement powers to ensure that National Highways delivers the road investment strategy (RIS) set by government and is compliant with its licence. We provide detailed advice to government for the setting of each RIS – this is our assessment of whether plans and performance requirements for the next road period, including those related to the environment, are challenging and deliverable within the resources available.

### Current road period (RP2, 2020-25)

4.34 National Highways will deliver the second road investment strategy (RIS2) in the current road period (RP2, 2020 to 2025). We hold the company to account for its performance against the key performance indicators (KPIs) of corporate carbon emissions, air quality, biodiversity and noise. Our [annual assessment](#) of the company's performance from April 2023 to March 2024 provides further information.

4.35 In line with its licence, we require National Highways to demonstrate that it is adapting its network to operate in a changing climate, including assessing, managing and mitigating the potential risks posed by climate change to operation,

maintenance and improvement of the SRN (such as winter resilience preparedness).

### RIS3

4.36 We are currently working with National Highways on its preparations as it transitions from road period 2 into the next. We are paying particular attention to how it is considering weather resilience and climate change adaptation in the formulation of its asset management plans. During the next RIS development process, we will provide advice to the DfT Secretary of State to ensure that environmental duties and requirements that government have asked for can be delivered in an effective and efficient manner within the resources available.

### National Highways' licence

4.37 National Highways' licence contains a number of conditions pertinent to climate adaptation with the impacts and requirement to deal with climate change explicit in two of the conditions. These include providing for sufficient flexibility and futureproofing in planning the long-term development of the network taking into account long-term trends in climate and weather conditions and adapting the network to operate in a changing climate through assessing, managing and mitigating the potential risks posed by climate change.

4.38 The licence was devised and agreed almost ten years ago and some of the definitions and requirements while still functional are not reflective of the current priorities in these areas, given legislative and other developments since then including for climate change and adaptation. We are working with DfT, Transport Focus and National Highways to review the licence, in part to better reflect these changes.

### Routine holding to account

4.39 Environment and climate technology has developed since the start of the first road period (RP1, 2015 to 2020). Our focus is on holding National Highways to account to maintain and improve its primary asset, the SRN. This includes the need for assets to be resilient to adverse weather and to be adapted with renewals or enhancements designed and constructed with the future climate in mind. We take a holistic approach to the company's performance on climate adaptability, including its licence conditions, delivery plan commitments and the performance indicators (PIs) set by government in the RIS.

4.40 National Highways has a well-established method of responding to severe weather events. These are covered under its Crisis Management Manual and its Severe



Weather Plans. Both plans are regionally focused and highlight areas prone to adverse and extreme weather with agreed responses. The plans include resilience measures such as a reserve winter fleet, reserve salt stocks and additional drivers. These plans are updated annually. ORR is engaged in obtaining assurances that the company's procedures and processes are in place to deal with all extreme weather and not just those associated in winter. Our focus is on the company's performance and delivery in terms of severe weather planning and drainage resilience.

### **Severe weather planning**

4.41 We engage on an annual basis with National Highways to understand its approach to severe weather planning, management and service (SWPS). Our 2023 to 24 annual assessment reported that it is a mature severe weather operator that provides a quality service with a high-level of compliance with its policies, processes and procedures.

### **Drainage resilience**

4.42 National Highways manages the safety risk of surface water through understanding its drainage resilience, with a PI that measures the percentage of drainage catchments that have high risk flood hotspots. This provides an indication of the susceptibility of the SRN to flooding.

4.43 For the past two years we have reported that National Highways' drainage resilience performance had declined year-on-year. As at March 2024, 36% of the SRN had an observed significant susceptibility to flooding. That is, 36% of the SRN has drainage catchments that include high risk flood hotspots. This is five percentage points worse than the previous year. The company estimates that approximately 1 to 2% of flooding on the SRN was attributed to rainfall exceeding its drainage asset design capacity.

4.44 National Highways recognises that its drainage asset information is one of its least mature asset datasets and it is important that it prioritises improvement in this area so it can effectively and efficiently manage surface flooding on the network. We are continuing to engage with the company to ascertain its level of confidence and quality of asset data held and will hold it to account to improve drainage resilience.

## Annex A: Rail Industry Forums

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A.1 We attend RSSB's Sustainable Rail Executive (SRE) forum and the Sustainability Rail Leadership Group (SRLG). The purpose of these forums is to identify opportunities for the rail industry to efficiently and effectively deliver a more sustainable railway through adoption of the Sustainable Rail Blueprint.

A.2 We also attend these SRLG subgroups:

- Climate Change Adaptation Working Group (CCAWG) – which facilitates cross-industry networks, aiming to solve challenges and ensuring climate change adaptation is considered in rail projects and operations.
- Infrastructure Carbon Working Group (ICWG) – which provides an expert forum to discuss and advise on key issues concerning rail industry infrastructure decarbonisation.
- Our Railway Inspectors attend the Rail Resilience Safety Group (RRSG) where we support the production of a code of practice on whole rail resilience.

A.3 We attend the Seasonal Challenge Steering Group (SCSG) which allows us to observe how Network Rail is working collaboratively to achieve high levels of performance across all seasons.

A.4 We are a member of the Infrastructure Operators Adaptation Forum (IOAF). This forum promotes collaboration to increase preparedness for climate change across geographical and organisational boundaries. Discussions aim to tackle interconnected risks across infrastructure systems.

A.5 We attend the Permanent Way Institution (PWI)'s Environmental Sustainability Committee which brings together institution members from across industry to provide advice and guidance to the PWI Board.

A.6 We attend TfL's Transport Adaptation Steering Group (TASG) which brings together representatives from London's road and rail sectors to share knowledge, best practice and report on progress about the likely impacts of climate change on London's transport.



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