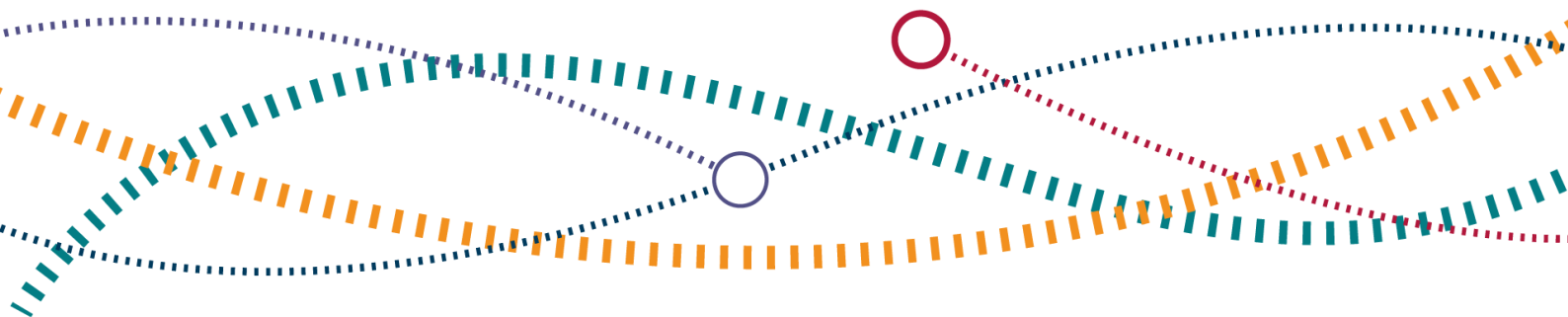




# Interim advice on National Highways' draft strategic business plan for road period 3

28 June 2024



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# Executive summary

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## Review of National Highways' emerging plans for Road Period 3

The third road investment strategy (RIS3) will establish the requirements that National Highways must deliver during the third road period (RP3, April 2025 to March 2030). This includes the investments and projects the company should deliver and the levels of performance the company should achieve. ORR's role is to advise the Secretary of State on whether the emerging plans and requirements for RIS3 are challenging and achievable within the available funding.

One of our key responsibilities is to undertake an 'Efficiency Review' of National Highways' draft strategic business plan (draft SBP). The draft SBP details the company's plans for delivering the requirements set out in DfT's draft road investment strategy (draft RIS).

The Department for Transport (DfT) is yet to finalise the draft RIS. However, to ensure that planning for RIS3 continues to progress, DfT instructed National Highways to prepare an interim version of its draft SBP based on an agreed set of assumptions and requirements and invited ORR to review those plans.

This report sets out the findings of our review of the interim draft SBP. We will update our findings and complete the Efficiency Review once the draft SBP has been finalised. For brevity, in the remainder of this report we refer to the interim submission as the 'draft SBP'.

## National Highways' plans for Road Period 3

### RIS3 Requirements

DfT's requirement for RIS3 is to maintain RIS2 targeted levels of performance in RP3 except in areas where ongoing improvements are expected, such as carbon emissions and safety.

National Highways is also tasked with delivering the existing programme of enhancements commitments that commenced during the first road period (RP1, April 2015 to March 2020) or second road period (RP2, April 2020 to March 2025) but have not yet been completed. However, given fiscal constraints, and recent increases in the forecast cost of these projects, DfT asked the company to prepare the draft SBP based on an amended version of this programme that assumes the deferral or cancellation of several schemes. Ministerial decisions on these cancellations and deferrals during our review resulted in an

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increase in the cost of enhancements. The costs set out in Table 1.1 reflect the final position.

The RIS3 initial statement of funds available (SoFA) has been set at £24 billion in nominal or 'cash' terms. At this stage in the process, the SoFA excludes the cost of the A303 Amesbury to Berwick Down (A303 Stonehenge), the construction phase of Lower Thames Crossing, and any new commitments related to the Network North strategy. DfT intends to adjust the SoFA when there is greater certainty over the cost and timescales of these projects.

RIS3 also includes a new fund for small scale enhancements schemes and three new 'National Programmes' intended to complement the existing Designated Funds and to target the delivery of specific objectives. The most significant of these is a £275 million programme of safety improvements.

### National Highways' interim plans

In its draft SBP, National Highways estimates the cost of delivering the RIS3 requirements at £25.4 billion. Therefore, despite the assumed deferral and cancellation of several enhancements schemes, there is a funding gap of £1.4 billion.

**Table 1.1 Funding breakdown (£ million, nominal)**

	National Highways' draft SBP
Operations, maintenance and renewals	14,095
New and existing enhancements commitments and future RIS development	5,200
National Programmes and Designated Funds	1,225
Central risk reserve	703
Corporate support, corporate technology, estates and protocols	3,407
Lower Thames Crossing	750
<b>Total</b>	<b>25,380</b>
SoFA	24,000
<b>Funding gap</b>	<b>1,380</b>

## Our assessment

We have reviewed the draft SBP and undertaken a programme of workshops with National Highways. We also commissioned consultants to provide advice on key topics.

We have considered whether the plans put forward by National Highways are aligned with the emerging requirements for RIS3 and form a challenging and deliverable proposition. Given the funding gap, we have placed particular emphasis on whether the plans and performance requirements are affordable within a SoFA of £24 billion.

### Overview

In several areas, National Highways' plans are not closely linked to performance levels. The original submission lacked indicative targets for five of the ten proposed key performance indicators (KPIs), including the safety performance KPI. Whilst the company has subsequently put forward proposals for all KPIs, it remains the case that plans in these areas were developed without reference to targeted levels of performance. However, for the most part, plans are broadly aligned with the requirement to maintain performance at currently targeted levels. Where this is not the case, for example road surface condition, we have proposed changes to align the plans with DfT's requirements.

Similarly, National Highways has proposed a safety target that assumes no reduction in people killed or seriously injured (KSI) during RP3. We consider this to be overly pessimistic. Evidence suggests a more ambitious target, assuming a reduction in KSI rates consistent with longer-term trends is achievable. The company has not provided convincing evidence to justify why the long-term trend of gradually reducing KSIs cannot be sustained in RP3.

During our review, we identified areas where we consider costs should be adjusted. As set out in Table 1.2, the net impact of our recommendations is a saving of approximately £0.8 billion. The most significant potential saving stems from adjustments to inflation allowances.

Table 1.2 Cost savings from ORR's recommendations (£ million, nominal)

	Cost savings (approx. Rounded to nearest £10m)
<b>Cost savings</b>	
Most likely inflation allowances	1,020
Revised plans for roadside / operational technology renewals	270
Increased efficiency in enhancement project delivery	80
Increased efficiency in corporate support services	70
Recommended adjustments to corporate carbon initiatives	50
<b>Cost increases</b>	
Maintain road surface condition performance	(340)
Re-instate preventative structures renewals programme	(300)
Maintain planned levels of investment in renewals	(80)
<b>Total net savings (rounded)</b>	<b>770</b>
Draft SBP funding gap	1,380
Current revised funding gap (subject to expected revisions to enhancement cost estimates)	610

Note: We are recommending a review of roadside / operational technology renewals at the end of year 2. This could affect the balance of funding across asset types but not the overall net savings.

Even with these savings, a funding gap of £0.6 billion remains. However, **this is likely to understate the true size of the funding gap**. National Highways' most recent estimates suggest that enhancements costs have already increased by around £0.4 billion since its draft SBP submission. There is also a shortfall in funding of around £0.3 billion at the end of RP2 that may require a deferral of enhancements spending into RP3. We also conclude that centrally held risk funding earmarked for enhancements projects, at just 3% of project-level cost estimates, is unlikely to be sufficient given the experience of RP2 and the

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current stage of development of these projects. Once these factors are taken into account the funding gap will widen.

**In overview, unless additional funding is made available, National Highways' plans cannot be delivered in their current form and will need to be revised.**

Fundamentally, government has a choice to prioritise funding for enhancements schemes, at the expense of maintenance and renewals funding, or make further revisions to the enhancements portfolio to maintain performance and address increasing asset need.

We recommend that DfT maintain the overall level of investment in maintenance and renewals to maintain performance in line with DfT's requirements and users' priorities. However, we propose an alternative balance of funding across the various asset types to better address growing asset need. Consequentially, closing the funding gap is likely to necessitate further changes to the enhancements portfolio.

We have concerns about National Highways' readiness to deliver aspects of RIS3. Under current plans, RP3 will see a shift in focus from developing major enhancements projects to delivering more capital renewals and smaller targeted capital investments. The company has provided limited details on how it will align its resources and develop its capabilities to deliver these changing requirements. This needs considerable focus and prioritisation ahead of the start of RP3 ensure that the company can successfully deliver its plans.

The remainder of this summary sets out our findings under the key headings of cost, efficiency and affordability, performance, and readiness to deliver.

## Cost, efficiency and affordability

### Key message

National Highways' current plans are not affordable within a SoFA of £24 billion. Whilst we have identified areas where costs can be reduced, a substantial funding gap remains. Therefore, unless additional funding is made available the plans cannot be delivered in their current form and will need to be revised. If funding for maintaining the performance and reliability of the network for users is prioritised by DfT, this is likely to necessitate further adjustments to the enhancements portfolio.

### Inflation

Inflation has fallen more quickly than expected since the draft SBP was prepared. We also find that National Highways' inflation assumptions are unjustifiably high due to its inclusion of additional allowances for inflation risk. We recommend the adoption of lower inflation allowances, consistent with the 'most likely' path of future inflation. Should DfT wish to make provision for inflation risk beyond this 'most likely' level, this should be considered as part of the company's wider risk funding and not embedded within 'core' funding as this reduces transparency and is inconsistent with the approach National Highways takes to risk more generally.

In isolation, adopting our inflation assumptions, in combination with latest forecasts from the Office of Budget Responsibility (OBR), reduces costs by around £1 billion. However, as described in the following section, we recommend that some of these savings are used to meet the cost of identified shortfalls in renewals funding.

### Operations, maintenance, renewals

National Highways' plans for operating and maintaining the network are broadly in line with DfT's performance requirements. Efficiencies in operations are based on maintaining current resource levels (except for those allocated to roads previously operated via Design Build Finance and Operate (DBFO) contracts) whilst servicing growing demands, such as an anticipated increase in the number of incidents on the network. While we acknowledge growing demands, we expected the company to provide a more comprehensive analysis demonstrating how it anticipates these challenges will affect performance and detailing the actions it intends to take to increase efficiency.

Renewals requirements are increasing due to the age profile of the network. National Highways plans to increase investment in renewals by around one third in real terms in RP3. We expect a further increase in the fourth road period (RP4, April 2030 to March

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2035) in part due to growing requirements for structures renewals and the need to replace the ageing stock of concrete roads.

Overall, National Highways' planned expenditure strikes a reasonable balance between affordability, deliverability and the need to address growing renewals requirements. Options to reduce the overall renewals cost would likely exacerbate affordability and deliverability challenges in RP4 and beyond, including greater disruption for users.

National Highways has not provided sufficient evidence to justify its proposed balance of expenditure across different asset types. We have set out alternative proposals and recommend that savings from lower inflation assumptions are used to fund activities that will help to ensure that the company addresses growing asset need in a sustainable manner, maintaining currently planned levels of investment.

To improve affordability, National Highways has adopted a lower cost scenario for pavement (road surface) renewals that its modelling suggests will result in a deterioration in condition during the RP3. This scenario is inconsistent with DfT's requirement that the company maintain performance and it will necessitate a substantial increase in renewals in RP4 to recover condition, increasing cost and disruption. We recommend that pavement renewals are sustained at broadly their current rate. This approach would prevent deterioration during RP3 ensuring that users' experience of the network does not worsen, whilst avoiding creating, or adding to, the bow wave of need in RP4. Adopting our recommendation will increase cost by around £340 million.

We also recommend that National Highways reinstates its plans for a programme of preventative structures renewals. These activities were removed from the plans set out in the draft SBP to improve affordability. However, cancelling this programme will result in faster deterioration of some structures that will need to be managed in future road periods. We therefore conclude that this programme should be included. Doing so will increase cost by around £300 million.

In contrast, National Highways is proposing to increase investment in roadside technology renewals, via a combination of the renewals programme and a proposed new 'Operational Technology National Programme', from circa £300 million in RP2 to £900 million in RP3. It then expects costs to fall by around one-third in real terms in RP4. In our view, the modelling that underpins the company's estimate is not sufficiently robust to support an increase in investment of this scale. Further, the company's estimates of the level of performance that would be achieved from this spend have fluctuated as its planning has progressed.

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We support the need for increased investment in roadside technology renewals. We recommend that a budget of around £600 million, around twice that allocated in RP2, would provide for a manageable ramp up in renewals; achieve a smoother profile of investment across RP3 and RP4; and likely maintain the availability of technology in line with DfT's requirements. Once adjusted to take account of our recommendations on inflation, this approach would save around £270 million.

National Highways has not presented any specific plans for smart motorways, either in respect of how the funding will be used for technology on these roads, or the levels of performance that the company is seeking to achieve. We recommend that the company provides more detailed and targeted proposals for roadside technology renewals as it finalises its plans for RIS3. We would expect its plans to better articulate the expected benefits for users and to safety; provide greater assurance that it can deliver the increase in funding in an efficient manner; and provide clarity on the level of performance that it will achieve disaggregated by road and asset type. In addition, DfT should consider, whether the importance of this area, particularly in respect of smart motorways, is adequately reflected in the performance specification.

Should DfT choose to invest more in roadside technology to achieve higher levels of performance, based on the current limitations of the details of the plans that National Highways has put forward, a review point could be proposed at the end of the second year of RP3. At this point we would expect the company to have better evidence of its ability to deliver its plan and achieve the related performance.

### Corporate support

We expect National Highways to continuously improve efficiency. For the most part, the efficiencies built into the company's plans are of the scale we would expect when compared with benchmark evidence from other regulated sectors. In several areas, the starting point for the company's 'pre-efficient' cost estimates are higher than the costs it has faced in RP2. While it has justified the need for more investment in most areas, it has not provided sufficient evidence to support its proposed increase in the cost of corporate services functions. Consequently, we propose an efficiency challenge, in line with improvements achieved in other regulated sectors, that would result in an overall reduction in expenditure on corporate services compared with current levels. This would save around £70 million across RP3.

National Highways' plans to reduce corporate carbon emissions also contribute to higher costs. The costs of these activities in RP3 depend, in part, on the speed with which DfT expects the company to reduce emissions. However, we have identified opportunities to reduce the cost of these plans. We are concerned that some aspects of the carbon reduction plan may not be deliverable. For example, the company's own feasibility analysis

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suggests that its plans to generate some of its own electricity from renewable sources may not be achievable within RP3. We recommend that funding for these activities is removed, saving around £50 million.

### Enhancements

Most of the planned enhancements expenditure relates to the delivery of existing enhancements commitments. During RP2, due to a range of factors including delays and inflation, the anticipated cost of these commitments has risen substantially.

National Highways claims that it will deliver £209 million of efficiencies by virtue of the fact that an efficiency challenge was applied to the original cost estimates for these projects established at the start of RP2. However, given that costs have increased so substantially in RP2 we do not consider this to be credible and there is insufficient evidence to justify this position. Furthermore, assuming that efficiencies are already 'baked-in' creates no incentive for the company to seek to identify new efficiencies.

We recommend an efficiency challenge of around £80 million is applied based on the findings of a study jointly commissioned by ORR and National Highways. This considered the scope for the company to achieve efficiencies on enhancements projects based on improvements that it has or will implement. This target takes account of the more limited scope for the company to achieve efficiencies on projects that are already at a relatively mature stage of development. The ultimate size of the additional efficiency challenge will depend on the final make-up of the enhancements portfolio for RP3.

Even with a more stretching, but achievable, efficiency challenge, enhancements costs are likely to increase substantially on the level that National Highways put forward in its draft SBP. We have already observed factors that are likely to result in a further increase in enhancements costs. Firstly, project cost estimates have continued to rise after the submission of the draft SBP. Furthermore, a shortfall in funding at the end of RP2 may require a deferral of enhancements spending into RP3. We also conclude that the current provision for the development stage of Lower Thames Crossing (LTC) is unlikely to cover the full cost if the project proceeds along planned timescales.

Given these issues, the amount of risk funding, included in the central risk reserve (CRR), that National Highways has notionally apportioned to enhancements is likely to be inadequate at just 3% of the cost of the portfolio. It would likely need to be allocated to projects to meet rising project costs before the start of RP3.

During RP1 and RP2, unplanned delays to enhancements projects have helped to alleviate affordability issues by deferring cost to subsequent road periods. However, given that most expenditure on existing enhancements falls in the first two years of RP3, a

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similar process is much less likely to occur in RP3, and delays are more likely to exacerbate affordability challenges during the road period.

### Overall funding requirement

The net financial impact of our recommendations would reduce the funding gap from £1.4 billion to £0.6 billion. However, we are concerned that this understates the true size of the funding gap given upward revisions to enhancements costs since National Highways submitted the draft SBP; under-funding in the final year of RP2 that could lead to cost slipping into RP3; and the currently low level of risk provision.

DfT will need to make further revisions to the requirements for RIS3 to reduce costs to £24 billion or provide additional funding. If performance is to be maintained, and growing renewals requirements addressed in a sustainable fashion, adjustments to the RIS3 requirements will likely need to include changes to the enhancements portfolio.

National Highways will need to provide updated estimates of enhancements project costs taking account of recent cost changes and our conclusions on inflation, efficiency and the adequacy of risk allowances. This should inform options to reduce the funding gap that the company can put to DfT, to inform its decisions.

### Performance

For the most part the performance targets put forward by National Highways are aligned with DfT's requirement to maintain performance at currently targeted levels. However, we propose more stretching but achievable targets in some areas, including safety performance.

In several areas, National Highways' plans are not closely linked to intended or required levels of performance. Its draft SBP submission lacked indicative targets for five of the ten KPIs, including the safety performance KPI. While the company has subsequently put forward proposals for all KPIs, it remains the case that it developed plans in these areas without reference to target levels of performance.

The requirements for RIS3 are that National Highways maintains performance at RIS2 targeted levels except in areas where ongoing improvements are expected. As described above, to improve affordability, the company has put forward a plan that would result in a deteriorating pavement (road surface) condition. We recommend that the company use the savings we have identified, including those related to lower inflation allowances, to increase planned spending on pavement renewals so that the KPI target can be continued at its current level.

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National Highways has proposed a safety target that assumes no reduction in people killed or seriously injured (KSI) on the network during RP3. Whilst the company forecasts a modest reduction in the rate of KSIs on the network, it expects this to be offset by an increase in traffic levels.

National Highways has not provided convincing evidence to justify why the long-term trend of gradually reducing KSI rates, derived from improvements to road infrastructure and vehicle design, despite rising traffic levels, cannot be sustained in RP3. The company's estimates of the impact of its own planned investment in safety improvements are also pessimistic compared with other research we have seen.

We propose that the target assumes a reduction in KSI rates broadly consistent with long-term trends. Under the DfT's 'core' traffic growth assumptions, this would support a conclusion that an absolute reduction in casualties is achievable.

The performance specification for RP3 should be appropriate, proportionate and commensurate for us to effectively hold National Highways to account for the complex and extensive portfolio of activity it is required to deliver. As well as the specific recommendations for the KPI targets for road surface condition and safety described above, we have put forward proposals for additional measures such as an asset health metric, and lead indicators of safety performance. These are intended to incentivise continuous improvement, provide DfT with assurance that the company is delivering in accordance with its requirements, and ultimately achieve better value for money in the long term.

### Readiness to deliver

Whilst some aspects of National Highways' approach to planning have improved since the RIS2 process, there are several areas where its plans had insufficient detail to support the level of need and investment that it proposed. The challenges facing the company are evolving. Further, more detailed planning is required to demonstrate that the company has robust plans in place to meet these challenges in a way that represents an efficient use of public funds.

National Highways must set out appropriately comprehensive plans so we can effectively hold it to account to deliver the proposals it put forward in its draft SBP. In some areas, plans are less well specified than we would expect at this stage in the RIS3 planning process. For example, the company was unable to clearly articulate how it will use its Designated Funds to achieve environmental and safety objectives. Despite delivering

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similar activities in RP2, there is limited evidence of a pipeline of projects to enable it to proceed quickly at the start of RP3.

Designated Funds are specifically designed to respond to stakeholder priorities in areas not directly covered by operations, maintenance, renewals or enhancements. They intended to provide National Highways with a degree of flexibility to respond to requirements as they emerge during the road period. However, the company has tended to underspend these funds in RP1 and RP2. In our view, the benefits of having more detailed plans would outweigh the risk of any perceived loss of flexibility.

During the review, National Highways recognised the need for more central planning to guide the use of Designated Funds but did not provide detailed proposals for how it would achieve this in practice in RP3.

National Highways has improved its approach to assessing renewals requirements, although the company's level of confidence in its plans continues to vary widely across the different asset types. Because renewals schemes typically address more than one asset type at the same time, the company has been unable to report how much it is spending in RP2 on each asset and therefore evidence that its RIS3 renewals costs are efficient. The company must address this issue ahead of the RIS4 process so it can demonstrate it is making efficient use of public funds.

Under current plans, RP3 will see a significant change of emphasis away from developing major enhancements projects and towards the delivery of more capital renewals and smaller targeted capital investments including safety and congestion schemes. National Highways provided limited detail of how it proposes to align its resources and processes and develop its capabilities to deliver these changing requirements. This needs considerable focus and prioritisation ahead of the start of RP3 to allow the company to deliver the commitments it has set out.

Much of National Highways' proposed increase in renewals spending in RP3 relates to an expanded programme of large renewals projects, including seven schemes over £100 million. Given their scale and complexity, appropriate reporting and effective holding to account arrangements for these projects need to be strengthened for RP3.

## Next steps

We will continue to work closely with DfT and National Highways as plans for RIS3 are further developed. Following the publication of the draft RIS, we will undertake a further review of National Highways' final draft SBP, updating our advice to take account of any changes in requirements or other circumstances.

# 1. Introduction

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## RIS3 Efficiency Review

- 1.1 The road investment strategy (RIS) is the government's long-term strategy for the management and improvement of the strategic road network (SRN) – the motorways and major 'A' roads in England.
- 1.2 The third road investment strategy (RIS3) will establish the requirements that National Highways' must deliver during the third road period (RP3, April 2025 to March 2030). This includes the investments and projects that the company should deliver, and the levels of performance the company should achieve.
- 1.3 ORR's role is to provide advice to the Secretary of State on the extent to which the proposed requirements are challenging and deliverable within the financial resources to be provided. One of our duties is to undertake an 'Efficiency Review' of National Highways' draft strategic business plan (draft SBP). The draft SBP details the company's plans for delivering the requirements set out in the draft road investment strategy (draft RIS).
- 1.4 The Department for Transport (DfT) is yet to finalise the draft RIS. However, to ensure that planning for RIS3 continues to progress, DfT instructed National Highways to prepare an interim version of its draft SBP based on an agreed set of assumptions and requirements and asked ORR to review those plans.
- 1.5 This report sets out the findings of our review of the interim draft SBP. We will update our findings and finalise the Efficiency Review once the draft SBP has been finalised. For brevity, in the remainder of this report we refer to the interim submission as the 'draft SBP'.

## Our approach

- 1.6 In May 2022, following a period of consultation, we published our [RIS3 Approach Document](#). This describes our role in the RIS setting process in more detail. It also sets out how we intended to conduct our activities and the evidence we intended to use to inform our assessments. We identified the following key themes for our approach to RIS3:
  - a systematic approach to the Efficiency Review with a focus on ensuring cost estimates are robustly derived:

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- a focus on the quality of National Highways' plans in respect of maintenance and renewals:
- using the knowledge gained from the past two road periods to bolster the evidence base for RIS3;
- a stretching but realistic efficiency challenge rooted in National Highways' capabilities;
- an in-depth approach to assessing risks to delivery; and
- ensuring the plans and performance requirements provide a clear and agreed baseline for future monitoring.

### Preparing for and undertaking the review

- 1.7 We have engaged closely with National Highways as it has developed its RIS3 plans. In 2023, we set out our expectations of the draft SBP. This document provided high-level guidelines on the approach that the company should take to prepare its draft SBP and the evidence we expected it to include to allow us to carry out our review.
- 1.8 Engagement with National Highways in the run up to this review has particularly focused on the company's approach to renewals planning and we have undertaken assessments of the company's approach at various stages of the process.
- 1.9 To inform our advice on an appropriately stretching and deliverable efficiency challenge for RP3, we jointly commissioned with National Highways two 'capability reviews' in the areas of asset management and project management. These reviews considered the scope for the company to achieve efficiencies during RP3 based on improvements in its capabilities and maturity. Building on these studies, we commissioned research on productivity growth and efficiency in capital intensive sectors with similarities to the roads sector.
- 1.10 During this review, we have completed a detailed review of the draft SBP covering all aspects of National Highways' plans. We also conducted a series of workshops with National Highways' teams on key topics and submitted requests to the company for further supporting information and evidence. We also draw upon the findings of consultant-led reviews on the following topics:
- OMR (operations, maintenance and renewals) and digital;

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- enhancements (case study review);
- safety;
- environment;
- financial risk; and
- inflation.

1.11 The reports of each of these reviews is published alongside this document.

## Acknowledgements

1.12 This review required National Highways to deploy significant resources to help manage the process, provide us with the information we needed, and to organise workshops and meetings. We thank the company for its assistance and its positive approach to engaging with us during the process.

## Structure of this document

1.13 The remainder of this document is structured as follows:

- section 2 – National Highways draft SBP
- section 3 – Operating and maintaining the SRN
- section 4 – Renewals
- section 5 – Enhancements
- section 6 – Designated Funds and National Programmes
- section 7 – Corporate Support, digital and protocols
- section 8 – Inflation, efficiency and risk
- section 9 – Performance
- section 10 – Summary of our financial proposals
- section 11 – Next steps
- annex A – Further advice on the RIS3 performance framework

## 2. National Highways' draft SBP

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### RIS3 requirements

- 2.1 The Department for Transport (DfT) set out draft requirements for the third road investment strategy (RIS3) in a letter to National Highways of 16 January 2024. It updated these requirements in a letter of 20 March 2024. We have assessed National Highways' plans against the updated requirements.
- 2.2 DfT requires National Highways to maintain the second road investment strategy (RIS2) targeted levels of performance within RIS3 and, as far as possible, maintain existing performance trajectories. We interpret this as meaning National Highways should maintaining performance, throughout the third road period (RP3, April 2025 to March 2030), at the levels indicated by the targets set for end of the second road period (RP2, April 2020 to March 2025), except in areas where ongoing improvements are expected such as carbon emissions and safety.
- 2.3 DfT also set out the investments it expects National Highways to deliver, including the portfolio of enhancements schemes. Under the draft requirements, the company is tasked with delivering the existing programme of enhancements projects. However, given fiscal constraints and recent increases in the forecast cost of these projects, DfT asked the company to prepare its draft strategic business plan (SBP) based on an amended version of this programme that assumes the deferral or cancellation of several schemes. Ministerial decisions on these cancellations and deferrals during our review resulted in a change in these assumptions that was reflected in DfT's 20 March 2024 letter. Specifically, the updated requirements took account of a decision not to defer the A46 Newark scheme.
- 2.4 RIS3 also includes a new fund for small scale enhancements schemes and three new 'National Programmes' intended to complement the existing Designated Funds and to target the delivery of specific objectives.
- 2.5 The statement of funds available (SoFA) sets out the public funds available to National Highways to deliver the government's requirements and objectives. For RIS3, the initial SoFA has been set at £24 billion (nominal).
- 2.6 Currently the SoFA excludes the cost of schemes announced as part of the government's 'Network North' proposals. The SoFA also excludes the cost of the A303 Amesbury to Berwick Down (A303 Stonehenge) and the construction phase

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of the Lower Thames Crossing (LTC). Development stage costs for LTC have been included. DfT will review and update the RIS3 SoFA to account for the full costs of these schemes at a later stage, when their costs and delivery profile are better understood. We will review the cost, efficiency and deliverability of these schemes ahead of their inclusion, either before the start of RP3, or, if introduced during the road period, via the change control process.

## National Highways' draft strategic business plan

### Financial proposals

- 2.7 The SoFA is set in nominal or 'cash' terms. Accordingly, in Table 2.1 and elsewhere in this report, National Highways' cost estimates are also set out in nominal terms. However, in cases where we compare costs or funding levels between road periods, we do so in 'real' terms to control for the effects of inflation.
- 2.8 National Highways submitted its interim draft SBP in response to the requirements set out in DfT's letter of 16 January 2024. On this basis, the company estimated that the RIS3 requirements would cost £24.9 billion. However, following the decision not to defer the A46 Newark (set out in the letter of 20 March 2024), costs increased to £25.4 billion. Therefore, despite the assumed deferral and cancellation of several enhancements schemes, there is a funding gap of £1.4 billion.
- 2.9 Given the funding gap, we have placed particular emphasis on whether the plans and performance requirements are affordable within a SoFA of £24 billion. We based our assessment on the updated requirements.

**Table 2.1 National Highways' financial proposal (£ million, nominal)**

	Draft SBP initial draft requirements (16 January 2024)	Updated draft requirements (20 March 2024)
Operating and maintaining the network	7,013	7,013
Capital renewals	7,082	7,082
Existing enhancements commitments	4,155	4,615
New enhancements commitments	300	300

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	Draft SBP initial draft requirements (16 January 2024)	Updated draft requirements (20 March 2024)
National Programmes	820	820
Designated Funds	405	405
Future RIS and scheme development	285	285
Central risk reserve	703	703
Digital and corporate services	2,906	2,906
Protocols	501	501
LTC	750	750
<b>TOTAL</b>	<b>24,921</b>	<b>25,380</b>
SoFA	24,000	24,000
'Underfunding'	921	1,380

### Primary spending lines

2.10 Starting in section 3, we set out in detail the findings our review of National Highways' plans and cost estimates. The remainder of this section provides an overview of the primary expenditure lines included in the company's financial model.

#### Operating and maintaining the network

2.11 'Operations' comprises teams responsible for asset management, as well as the company's on-road services and control centres. 'Maintenance' relates to the cost of maintenance contracts. Maintenance works are distinct from renewals and include smaller scale works to keep the network safe and serviceable on an ongoing basis.

2.12 Also captured under 'operating and maintaining the network' are the costs of operational technology (data, digital and technology services to support the operation of the strategic road network (SRN), such as the sharing of data between roadside equipment, control rooms and traffic officers, but excluding

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roadside equipment itself), network electricity costs, and payments to Design Build Finance and Operate (DBFO) companies.

- 2.13 Private finance initiatives (PFIs) have been used to procure and build new road assets and operate parts of the SRN. Between 1996 and 2009, the then Highways Agency entered into 11 highways PFI contracts. Under these contracts, sections of the network are operated and maintained by DBFO companies. At present these sections account for 16% (1,097 route kilometres) of the SRN, including the M25 and connecting routes.
- 2.14 During RP3, eight sections of DBFO roads will be handed back to National Highways to directly manage in-house. Following hand back, the company will incur higher direct operating and maintenance costs for these sections but will no longer have to make payments to the DBFO companies.
- 2.15 Overall, under National Highways' plans, operating and maintenance costs would remain broadly flat in real terms when comparing between the second road period (RP2, April 2020 to March 2025) and RP3.

### Enhancements

- 2.16 Most of the cost of enhancements relates to 'existing' enhancements projects that commenced development or construction in the first road period (RP1, April 2015 to March 2020) or RP2 and will carry over into RP3. The total cost of existing enhancements projects is estimated by National Highways to be £4.6 billion.
- 2.17 New enhancements commitments planned for RIS3 include a £200 million programme of smaller scale schemes with budgets typically between £2 million and £25 million, and the proposed A14 Junction 10 improvement scheme. In line with DfT's requirements, National Highways has not included any provision for the continued retrofit of additional emergency areas on smart motorways in its plans.
- 2.18 National Highways will also incur costs related to the design and development of 'pipeline' projects that may be brought forward to construction in future road periods (beyond 2030).

### Lower Thames Crossing (LTC)

- 2.19 LTC is a proposed all-purpose trunk road (APTR) connecting Kent, Thurrock, and Essex by a tunnel beneath the River Thames. Its current estimated cost is approximately £9 billion. Given its scale and complexity, this project is overseen by a dedicated directorate within National Highways. Given the differences in delivery arrangements, the company treats LTC as a stand-alone scheme in its draft SBP.

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It has only included in the draft SBP development costs that it expects to incur in the first two years of the road period. Although allocated to a separate spending line, our findings in relation to LTC are set out in section 5.

### National Programmes and Designated Funds

- 2.20 Designated Funds are ringfenced budgets to fund projects intended to address issues over and above the traditional focus of road investment. It has been a component of the RIS in both RP1 and RP2. National Programmes are a new portfolio concept proposed by National Highways for RP3. They are intended to deliver against core requirements or statutory obligations not funded from other areas of expenditure. The company envisages that National Programmes for RIS3 will have fixed, identified outputs and deliverables, and less flexibility than Designated Funds.
- 2.21 Both types of fund must achieve the right balance between providing flexibility for National Highways to respond to emerging requirements during the road period and ensuring that plans are sufficiently detailed to give DfT the confidence that the company will deliver the outcomes that the funds are intended to achieve. The various funds and the amounts allocated to each are listed in Table 2.2. These amounts have been proposed by DfT based on analysis undertaken to inform the development of the draft RIS.

**Table 2.2 Designated Funds and National Programmes proposed funds (£ million, nominal)**

	RP3 proposed funds
<b>Designated Funds</b>	
Safety	100
Environment	135
Customers and communities	100
Innovation	70
<b>National Programmes</b>	
Safety	275
Environment	245
Operational technology	300

## **Corporate support and digital**

2.22 This expenditure line includes:

- the cost of National Highways' corporate services divisions (the staff and business costs associated with running the company);
- expenditure on corporate technology (IT services that underpin corporate functions such as devices used by its staff, software and cyber security services); and
- the capital and operating costs of the company's corporate and operational estate.

2.23 In overall terms, National Highways' costs relating to corporate support and digital will increase by 24% in real terms between RP2 and RP3. This is partly explained by the inclusion of costs related to activities intended to reduce the company's corporate carbon emissions, such as accelerated deployment for LED lighting on the SRN.

## **Protocols**

2.24 Protocols are activities that are not directly related to National Highways' role as the strategic highways company as provided for under the Infrastructure Act 2015. Protocols are separate to the requirements set out in the RIS. For RP3 DfT has proposed that all protocols are funded from the SoFA, where during RP2 Operation Brock and the Historic Rail Estate have been funded separately. There are eight protocols for RP3 although most of the cost relates to four protocols: Dartford Crossing, Severn River Crossings, Operation Brock (a traffic management system in Kent used in the event of cross Channel transport disruption), and Historic Rail Estate management.

## **Financial risk**

2.25 The cost estimates for RP3 and the funding gap of £1.4 billion should be understood in the context of National Highways' assessment of financial risk. Financial risks are managed, in part, via a central risk reserve (CRR). In line with best practice, this approach was introduced in RP2 to centrally manage and balance risk across the company's enhancements and renewals programmes. We support its continuation in RP3.

2.26 The CRR has not been determined based on a bottom-up assessment of risk. Instead, National Highways has adopted an assumption that the CRR would be constrained to £703 million This amount was based on an assumption adopted by

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DfT which in turn derived from analysis undertaken in spring 2023 to inform the setting of the initial SoFA.

- 2.27 National Highways has undertaken quantified risk analysis to estimate the level of confidence associated with the funding position. Its analysis assumes there is no funding gap (in effect a SoFA of £25.4 billion).
- 2.28 National Highways has considered whether funding, including the CRR, would be sufficient to achieve a 'P50' level of confidence. In theory, at P50, there is an equal chance that the outturn costs will be above or below that level of funding.
- 2.29 National Highways concludes that, at £703 million, the CRR would be insufficient to achieve a P50 confidence level. It estimates that additional risk funding of £1.2 billion would be required to achieve the P50 benchmark. Because its analysis assumes the funding gap is closed, this shortfall in risk funding is additional to the funding gap of £1.4 billion set out in Table 2.1. For the reasons described in section 8, we do not agree with the company's conclusions on financial risk.

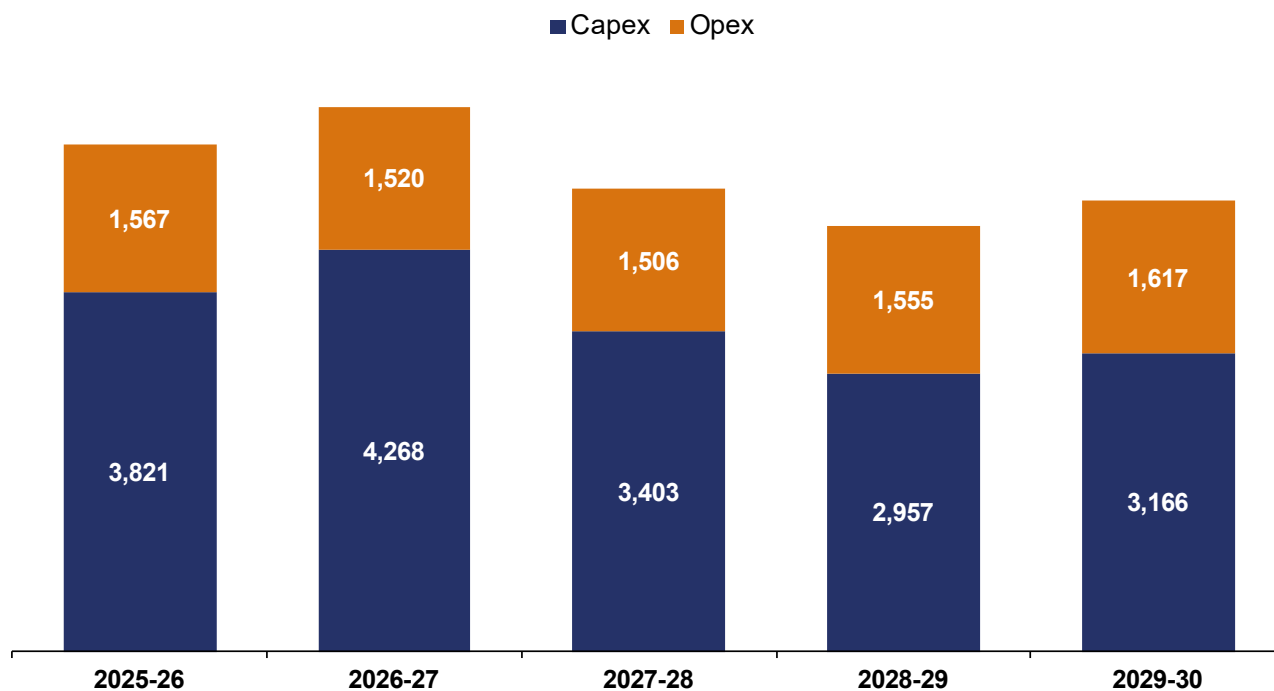
### Efficiency

- 2.30 For the most part, National Highways' funding is set at a 'post-efficient' level. This means that it builds in an assumed level of efficiency improvement. Its RIS3 financial model sets out cost estimates in:
- 'pre-efficient' terms – that is, before adjustment for efficiencies it intends to achieve during RP3; and
  - 'post-efficient' terms – that is, after adjusting for efficiencies.
- 2.31 With some exceptions, the cost estimates in Table 2.1 and throughout this report, are set out in post-efficient terms.
- 2.32 The activities that National Highways is required to deliver change over time, so greater efficiency does not necessarily mean a net reduction in the level of government funding. It is an important principal that efficiency is not achieved at the expense of quality or long-term value for money.
- 2.33 National Highways is proposing an overall efficiency key performance indicator (KPI) target of £1.7 billion. One of the core parts of our review is to ensure that the level of efficiencies that the company is proposing to achieve is challenging and deliverable.

## Expenditure profile

2.34 Figure 2.1 shows National Highways' proposed RP3 annual expenditure profile. Funding is imbalanced, with higher capital expenditure during the first three years of the road period. This is because of the timing of existing enhancements commitments that are scheduled to be completed during first three years of the road period. This may be problematic given the government's intention to maintain departmental expenditure in cash terms until 2027-28 (Autumn Statement 2023) – that is, until the end of the third year of RP3. If a flat capital spending profile is to be a constraint during RP3, then the company and DfT need to consider this is any future alterations to the portfolio. Similarly, the expenditure profile would be significantly altered if A303 Stonehenge and/or LTC are subsequently added to the RP3 enhancements portfolio. So this must be considered as part of the decisions on funding for those schemes.

**Figure 2.1 RP3 annual expenditure (£ million, nominal)**



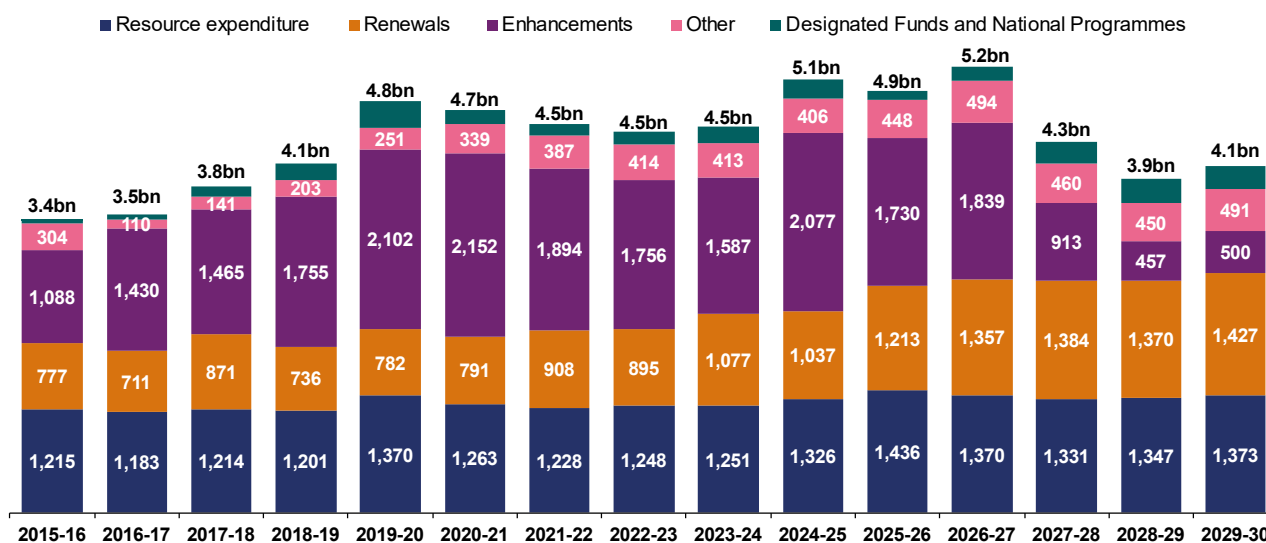
## Comparing costs with past road periods

2.35 When comparing between road periods, we express costs in real terms (2022-23 prices), adjusting for the effects of inflation. We adjust for inflation using the consumer prices index (CPI), a measure of general inflation. Forecasts for CPI for RP3 are based on those published by the Office of Budget Responsibility (OBR) in March 2024.

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- 2.36 When comparing costs, it is important to consider two factors:
- (a) due to higher-than-anticipated inflation, RP2 funding has declined in real terms; and
  - (b) the inflation adjustments applied in National Highways' cost estimates are different to CPI.
- 2.37 Over the long term, the prices of goods and services (for example, construction materials) purchased by National Highways tend to increase at a faster rate than general inflation. Therefore, in isolation, the effect of the company's inflation assumptions is a slight increase in cost in real terms over time. As we set out in section 8, we do not agree with all aspects of the company's approach to adjusting its costs for inflation.
- 2.38 Figure 2.2 shows how National Highways' costs have changed since its creation in 2015 and are expected to change in RP3 based on the company's estimates. It should be noted that changes in the way cost have been categorised in different road periods may affect the comparison. For the purposes of comparison, we have notionally apportioned the CRR between renewals and enhancements based on assumptions developed by the company. This is further described in section 8.
- 2.39 Overall spending on the SRN increased significantly between the start of RP1 (2015-16) and the start of RP2 (2020-21). Expenditure on renewals has been steadily increasing and will continue to increase during RP3. Resource expenditure, primarily associated with operations, maintenance and corporate services, is expected to remain broadly at current levels. Enhancements expenditure tends to fluctuate more than other expenditure areas. Under National Highways' plans for RP3, falling enhancements expenditure from year 3 results in overall expected drop in spending in these years. This is related to the timescales of the existing enhancements projects that are predominantly either in construction or at the latter stage of development. Therefore, many of these projects will complete during the first three years of the road period.
- 2.40 In overall terms, based on National Highways' estimate of £25.4 billion, expenditure would be lower than RP2 in real terms by around 6%.

Figure 2.2 Expenditure across road periods (£ million, 2022-23 prices\*)



\* Figures atop the stacked chart are cumulative and do not correspond to Designated Funds and National Programmes.

## Performance

2.41 The performance specification forms a key part of the RIS. We hold National Highways to account to deliver the RIS. This includes its performance against targets for a range of KPIs. The KPIs do not provide measures of all aspects of National Highways' performance. Therefore, in assessing whether the company's plans are in line with the government's requirements, we apply the principle of 'maintaining performance' more broadly.

2.42 National Highways' performance targets must be challenging and deliverable. Whilst the overarching requirement is to maintain performance, we also identify where there are opportunities to improve performance with existing resources where there is potential to improve outcomes on behalf of road users.

2.43 Although National Highways has proposed some changes there is a significant degree of continuity between the RIS2 and emerging RIS3 performance specification. National Highways has put forward proposals for 10 KPIs across the six outcome areas (unchanged from RIS2) of:

- improving safety for all;
- fast and reliable journeys;  
a well maintained and resilient network;
- being environmentally responsible;

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- meeting the needs of all users; and
- achieving efficient delivery.

2.44 We set our advice on the RIS3 performance specification, and the performance targets proposed by National Highways, in section 9.

### Supporting evidence

2.45 We expect the quality of National Highways' plans to reflect its maturity as an arms-length company entering its third road period. It should provide sufficient detail to enable us to assure DfT that the company can deliver RIS3 and do so in an efficient manner. It must also provide a robust basis against which we can hold the company to account for its performance, delivery and efficiency during the road period.

2.46 In several areas, the plans that National Highways put forward in the draft SBP were less detailed than we expected and, in many places, lacked supporting quantitative evidence and modelling. The company's initial submission lacked crucial information, such as an equivalent breakdown of actual and forecast costs in RP2, an estimate of investment requirements in the fourth road investment strategy (RIS4), and key details relating to its cost estimates for enhancements projects. We identified each of these as core evidence requirements in our guidance document, shared with the company in draft in August 2022 and formally issued to the company in August 2023.

### Cost estimation and financial modelling

2.47 The draft SBP includes a range of documents prepared by National Highways outlining its plans, detailing how it intends to meet the requirements of RIS3, and explaining the methodologies it used to develop its plans and cost estimates. Much of the information included in the documents is relatively high level and the assumptions used by the company to underpin its plans and cost estimates are not always set out in a transparent manner.

2.48 Many, but not all, of these gaps were filled during the review, following additional information requests. However, this took time and resource that should not have been required. For RIS4 National Highways must provide copies of supporting modelling as part of its draft SBP submission.

2.49 National Highways provided a 'financial model' setting out costs at different levels of disaggregation. In practice the financial model is a spreadsheet that includes no underlying calculations. This means that the company's application of inflation

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assumptions is not fully transparent. For RIS4, it must provide costs in its original price base to show transparently how it has applied inflation assumptions to translate into nominal costs.

- 2.50 In annex A we set out a proposal that DfT includes a requirement in the RIS3 performance framework that National Highways improves its capability in this, as well as other areas.

### Renewals plans

- 2.51 We placed considerable emphasis on the quality of National Highways' renewals plans in the run up to, and during, this review. This is explored in more depth in section 4. Overall, the company has made significant progress improving how it assesses renewals requirements and volumes, although its capabilities vary greatly by asset class.

- 2.52 Assessing whether costs estimates are set at an efficient and deliverable level is challenging. This is partly because National Highways has been unable to disaggregate its RP2 expenditure at a level that is consistent with the breakdown of asset types it uses to develop its plans. In turn, this is because, in practice, the company delivers renewals schemes that address more than one asset. Nevertheless, it must develop analytical methods to improve its capability to compare costs across road periods.

### Designated Funds and National Programmes

- 2.53 The draft SBP contains separate sections describing, in overview terms, the proposed contents of National Highways' National Programmes and Designated Funds. However, much of the information included in the documents is relatively high level. The detail of the assumptions that the company has used to underpin its plans, spending allocations and cost estimates is variable in terms of quality and depth and, for some categories, not evidenced.

### Performance targets and supporting analysis

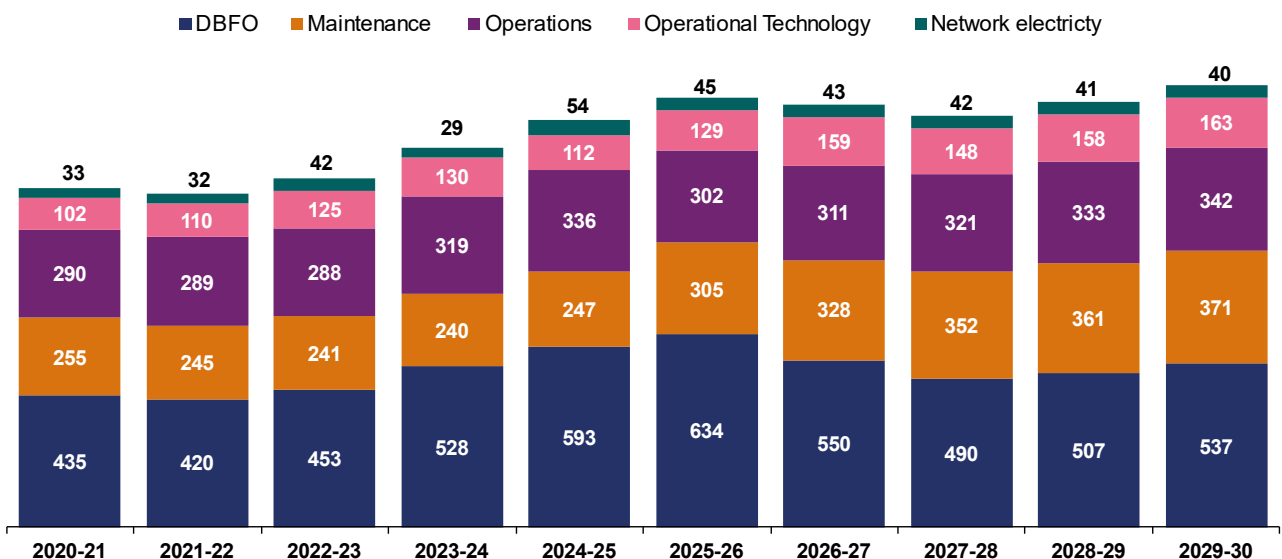
- 2.54 One of our primary concerns with the draft SBP is the disconnect between National Highways' proposed plans and required or proposed levels of performance. The company's original submission lacked indicative targets for five of the ten KPIs it had proposed, including the safety performance KPI. While the company has subsequently put forward proposals for all KPIs, it remains the case that plans in these areas were developed without reference to target levels of performance. We discuss this further in section 9.

# 3. Operating and maintaining the SRN

## National Highways' proposals

- 3.1 In overall terms, the costs of operating and maintaining the strategic road network (SRN) are expected to remain broadly flat in real terms between the second road period (RP2, April 2020 to March 2025) and the third road period (RP3, April 2025 to March 2030). National Highways has proposed an increase in maintenance expenditure in its third road investment strategy (RIS3) plans in response to increasing asset need. However, this is partly offset by a reduction in operating costs.
- 3.2 This expenditure line includes the cost of payments made to Design Build Finance and Operate (DBFO) companies responsible for maintaining and operating parts of the SRN. Eight sections of road that are currently maintained via DBFO contracts will be 'handed back' to National Highways as some DBFO contracts will expire during RP3. As a result, DBFO payments fall in real terms in years 2 and 3 of the road period.
- 3.3 Figure 3.1 shows how costs the annual profile of cost across RP2 and RP3 in nominal terms, whilst Table 3.1 compares cost levels between RP2 and RP3 in real terms.

**Figure 3.1 Expenditure across road periods (£ million, nominal)**



**Table 3.1 Operating and maintaining the network (£ million)**

	RP3 (Nominal)	RP3 (Real – 2022-23 prices)	RP2 (Real – 2022-23 prices)	% Difference in real terms
DBFO payments	2,718	2,405	2,464	-2%
Maintenance	1,717	1,514	1,259	20%
Operations	1,610	1,412	1,553	-9%
Operational technology	757	667	591	13%
Network electricity	211	186	193	-4%
<b>Total</b>	<b>7,013</b>	<b>6,193</b>	<b>6,081</b>	<b>2%</b>

## Our assessment

### DBFO payments

- 3.4 DBFO contract payments are tied to pre-existing contracts. National Highways has very limited flexibility to influence their cost. Payment mechanisms vary by contract and are linked to factors including traffic levels and safety performance. Although payments will end for eight DBFO contracts, the cost of remaining contracts is expected to rise due to factors such as traffic growth. Overall, DBFO contract payment costs will decrease by only about 2% between RP2 and RP3.
- 3.5 DBFO contract payments are indexed to the Retail Prices Index (RPI). This is expected to rise faster than consumer prices index (CPI). This contributes to the real-term increase in contract costs. National Highways has included a 0.25% a year risk allowance in its inflation forecasts for DBFO contract payments. Although this has a minor impact on costs, for the reasons set out in section 8, we recommend that this risk adjustment is removed.

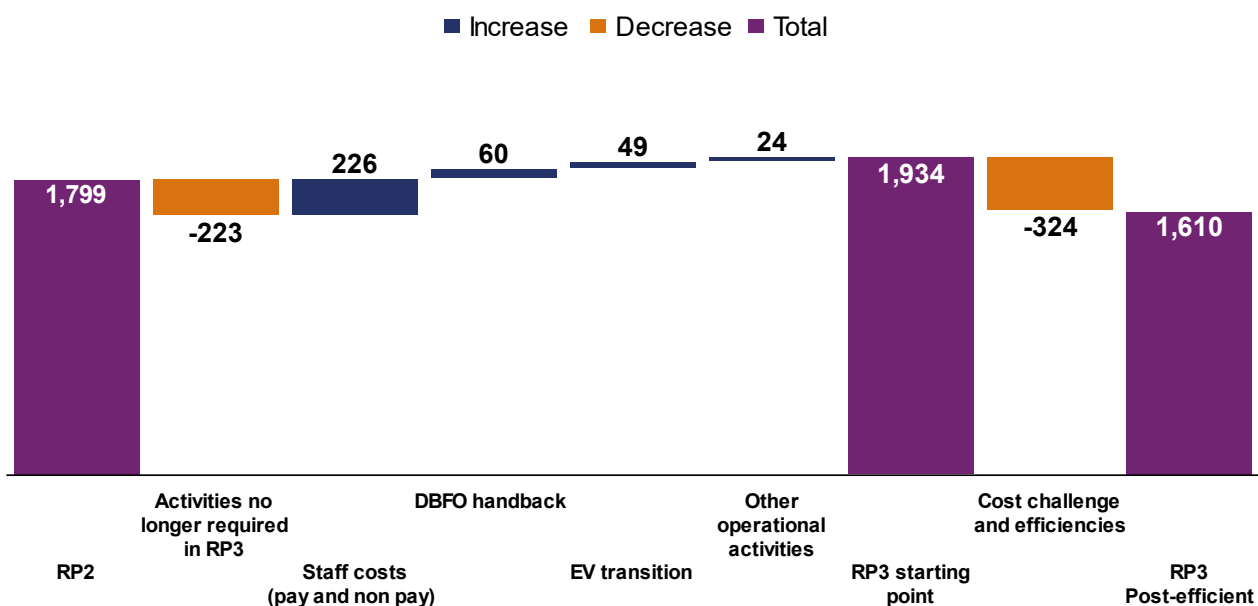
### Operations

- 3.6 Operations covers both asset management and network management functions. National Highways plans to maintain current performance levels while ensuring sufficient resources for an expanded maintenance and renewals programme. The company does not plan any major operational changes during RP3.

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- 3.7 National Highways' approach to cost estimation follows the overall structure we set out in our guidance. It takes as its starting point the costs it faces in RP2. It has adjusted this to take account of costs that it will no longer incur during RP3, and costs that it has re-categorised and included in other expenditure lines. This includes costs associated with the roll out of the company's Asset Delivery approach to asset management (that was completed in RP2) and the cost of a programme to replace its winter fleet.
- 3.8 National Highways has then adjusted its costs upwards to account for 'headwinds' (factors that will increase costs in RP3) and challenged its cost estimates to identify changes in the scope of its activities to reduce costs. Finally, it has applied an efficiency challenge. The various cost adjustments are illustrated in Figure 3.2. The figure uses the company's inflation assumptions to compare costs between RP2 and RP3. In contrast, Table 3.1 uses CPI, affecting the relative cost differences between RP2 and RP3.

**Figure 3.2 Operational planning expenditure across road periods (£ million, nominal)**



- 3.9 National Highways has made reasonable adjustments for DBFO hand-back. In total, 2,942 lane kilometres of the DBFO network will return at different points during years 1 and 2 of RP3. This will result in a 10% increase in the effective size of the network directly operated and maintained by the company.

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- 3.10 DBFO companies inspect assets, plan and manage renewals, operate depots, maintain fleets, and provide winter service. National Highways will need to deliver these functions directly once the DBFO contracts end. As well as ongoing operations costs, the company will incur one-off set up costs such as fleet purchase and depot refurbishment.
- 3.11 National Highways estimated through a bottom-up assessment the increase in staff it will require to manage these sections of the SRN. This increase is broadly proportional to the change in network size and the activities currently undertaken by DBFO companies. In line with the recommendations we made during the development of the draft RIS, the company has considered potential economies of scale following the hand-back.
- 3.12 "EV transition" refers to the cost to National Highways of installing electric vehicle (EV) charge points and purchasing vehicles to convert its entire fleet of operational vehicles to EVs by 2030. This is part of the company's "Net Zero Plan" and will contribute to the proposed corporate carbon key performance indicator (KPI). Other initiatives related to the Net Zero Plan are discussed in section 7.
- 3.13 National Highways regularly replaces its vehicles due to heavy use. It has planned the introduction of EVs to align with its existing replacement cycle. Whilst there may be savings in the long term from switching away from internal combustion engine vehicles (ICE vehicles). This programme significantly increases operating costs in RP3 due to vehicle purchase costs. We expected the company to provide analysis to demonstrate that the programme is cost effective. While the company has provided details of its bottom-up cost estimate, the assumed cost per EV, adjusted for inflation, seems high compared to many EVs on the market. Before finalising the draft strategic business plan (SBP), the company must provide evidence demonstrating that the cost of this programme has been thoroughly challenged, that it reflects the net cost of purchasing EVs rather than ICE vehicles, and its benefits quantified.
- 3.14 In annex A, we set out our expectation that requirements such as the EV roll out – if retained for the final RIS – are included in the company's Delivery Plan and subsequent annual updates so we can effectively hold the company to account for delivering in line with its plans.
- 3.15 In other areas, National Highways' cost challenge process appears to have been comprehensive and well thought through. The primary uncertainty in National Highways' operations plans relates to staffing requirements and expected efficiencies. The company identifies two main headwinds for RP3:

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- asset management: the Operations Directorate will need to manage a significantly larger renewals programme; and
- network management: National Highways predicts, in one scenario, a 35% increase in incidents between RP2 and RP3, putting additional pressure on traffic officer and control centre resources. As we further describe in section 9, the company has not provided robust evidence to support this forecast.

- 3.16 Before accounting for efficiencies, National Highways estimates that these headwinds require a 16% headcount increase (excluding any increase in staff required to cater for the returning DBFO roads). This estimate relies on broad assumptions applied at a national level, such as a 1% increase in incident numbers requiring a 0.5% increase in headcount. Given the expected rise in incidents, we expected a more detailed analysis, identifying regional and functional pressures and demonstrating how increased incidents affect staffing needs in various roles.
- 3.17 The RIS3 efficiency challenge for National Highways' asset and network management is based on maintaining performance with existing staffing levels, except for staff required for the returning DBFO roads. Therefore, in the post-efficiency scenario, the 16% increase in headcount is entirely removed.
- 3.18 In the absence of bottom-up evidence from National Highways, it is difficult to assess the significance of any risks to performance or the validity of the company's claimed level of efficiency.
- 3.19 National Highways has consistently met its incident clearance KPI target. In 2022-23, the company cleared 87.2% of motorway incidents in less than one hour, surpassing its target of 86.0%. It has not provided evidence to suggest that this target is at risk, despite the increase in incidents. Section 9 provides further details of our view on the RIS3 incident clearance target.
- 3.20 Therefore, pending further evidence, we do not propose any adjustment to planned resource levels for network management. However, National Highways must provide further evidence of how it expects incident numbers to increase in RP3, and how this increase will impact network management performance, including but not limited to the incidence clearance KPI. During RP3, the company must step up its monitoring and reporting to ensure that it is managing the risks associated with the expected increase in incidents. For the fourth road investment strategy (RIS4), it must provide more detailed analysis of its future resource requirements.

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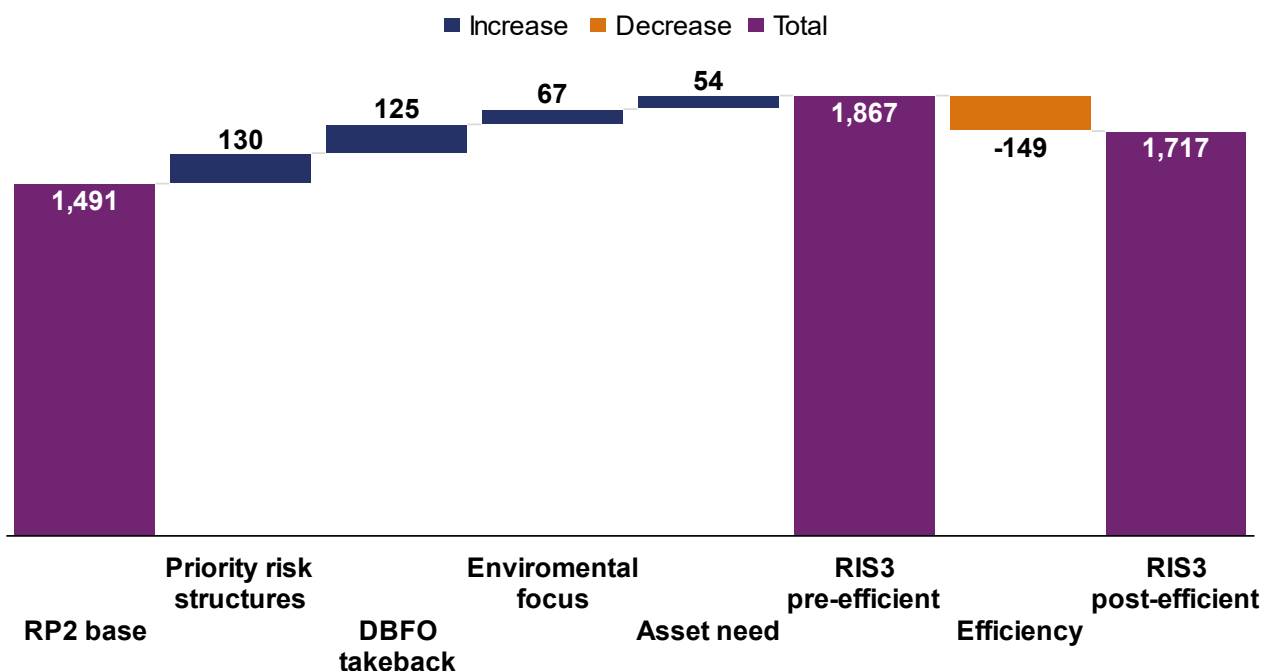
3.21 During RP2, the headcount of National Highways' Operations Directorate has increased, primarily due to the roll-out of the Asset Delivery model. This model has brought more asset management functions in-house. The directorate is now fully resourced against its plan. While the forecast increase in maintenance and renewals in RP3 poses a significant challenge, it would be reasonable to maintain current asset management staffing levels until the Asset Delivery model has been embedded and established for a longer period of time. This would ensure that the Asset Delivery model is delivered in a consistent manner across the regions and its impact better understood.

### Maintenance

3.22 National Highways has adopted a similar approach for estimating maintenance costs as it has for operations. The adjustments it has made to cost levels in RP3 are illustrated in Figure 3.3. Several factors contribute to higher costs in RP3:

- management of high priority structures: this involves National Highways proactively managing aging structure assets on the SRN. It covers activities such as risk assessments, inspections, testing and monitoring, and risk management plans.
- DBFO handback: costs associated with maintenance works previously undertaken by DBFO companies.
- environmental focus: funding allocated to support National Highways' proposed biodiversity KPI target, aimed at halting the assumed 1% annual rate of biodiversity loss across its network.
- increasing asset need: a rise in costs to support National Highways' delivery of more effective and comprehensive cyclical maintenance programmes in response to increasing asset maintenance need.

Figure 3.3 Maintenance cost escalation across road periods (£ million, nominal)



3.23 National Highways has provided evidence of the bottom-up approach it has taken to modelling its costs. The overall approach is sound, with justifications provided for the magnitude of various cost adjustments. Cyclical maintenance requirements for both the existing network and the returning DBFO roads are aligned with the company's standards. Forecasts for reactive maintenance are based on predicted defect rates linked to asset age. However, for DBFO roads, the company currently lacks a detailed understanding of asset condition, so it has assumed that assets will be in a comparable condition to the rest of the network in that region of the SRN. As described in section 4, work is ongoing within the company to ensure that DBFO companies return the network in accordance with the terms of their contracts and to better understand risks relating to the condition of these roads.

3.24 Due to the factors listed above, maintenance costs will increase during RP3. Under the plans put forward by National Highways, costs are projected to rise by 24% (in nominal terms) from year 5 of RP2 to year 1 of RP3. This represents a substantial increase, and a more gradual ramp-up may be more realistic. The company must review this profile and confirm its feasibility before finalising its plans.

3.25 Unlike operations, National Highways has not conducted a separate cost challenge process for maintenance. However, the company has identified specific actions and potential areas where it could realise efficiencies. Although not all

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efficiencies are supported by quantitative analysis, as explained in section 8, the overall savings proposed by the company align with our broad expectations of the level of efficiencies the company should achieve in RP3.

- 3.26 National Highways has not quantified how its maintenance plans will impact its performance. However, the company's plans assume that it will meet its current performance target to complete 90% of cyclical and reactive maintenance works within required timescales. Performance in these areas varied across the company's regions during RP2. Additionally, in its draft SBP the company commits to using additional funding to further improve the balance of proactive and reactive renewals. In RP3, the company's reporting and monitoring of maintenance efficiencies should be tied to its achievement of these performance objectives in addition to delivering planned volumes of cyclical maintenance. This would feed into the company's reporting to us and help to ensure that we can effectively hold the company to account.

### Operational technology

- 3.27 National Highways has prepared plans for operational technology alongside those for corporate technology as part of an overall 'digital' plan. Corporate technology costs are included within the 'digital and corporate support' spending line, whereas operational technology is included under 'operating and maintaining the network'. Operational technology relates to data, digital and technology services to support the operation of the SRN. It does not include the cost of maintaining and renewing 'on-road' technology assets.
- 3.28 National Highways' stated aims for both corporate and operational technology for RIS3 are as follows:
- running a minimal viable service to maintain a RIS2 exit position;
  - ensuring legislative compliance (for example, GDPR and Security of Networks & Information Systems regulations);
  - safeguarding critical services ('essential cyber security'); and
  - keeping an eye on the future and acting proportionately (for example, connected services to create capacity on the network).
- 3.29 We are satisfied that the plans National Highways put forward in its draft SBP are broadly aligned with these aims.

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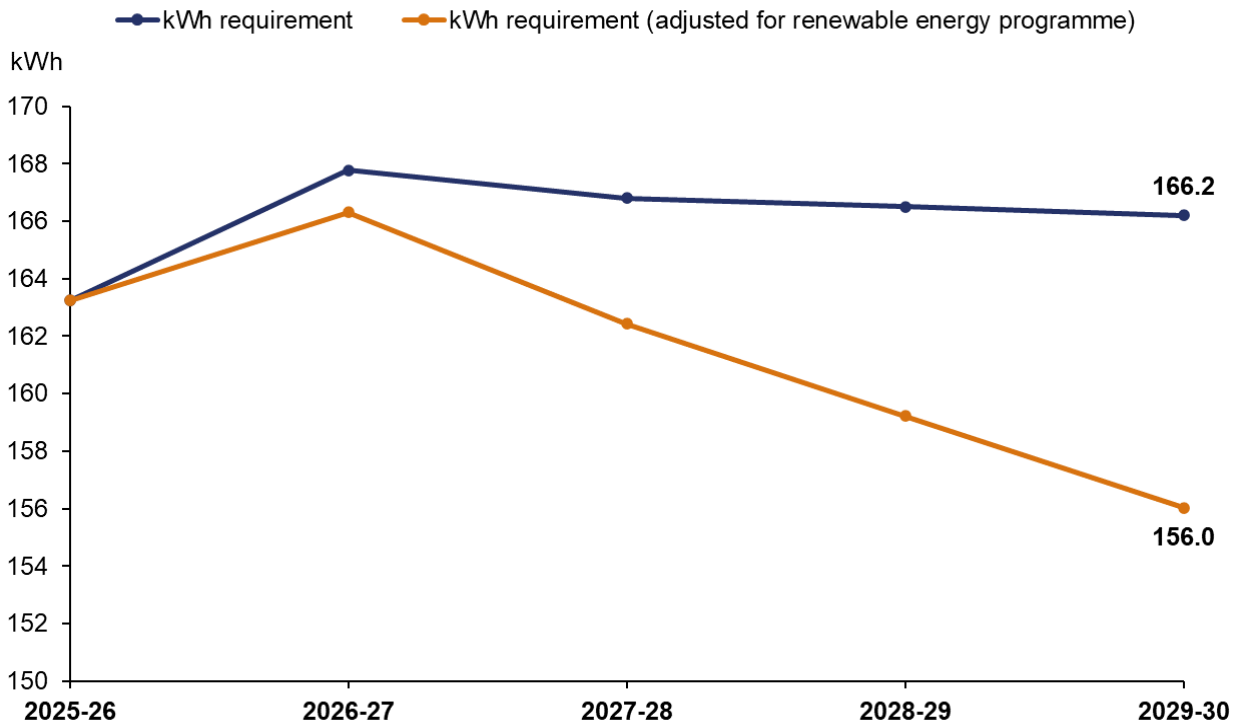
- 3.30 Overall, costs will increase in real terms by 13% between RP2 and RP3. However, National Highways provided evidence to show that RP3 costs will be broadly equivalent to costs incurred in 2023-24, once adjusted for inflation and changes in the way that it has categorised some costs.
- 3.31 National Highways identified several headwinds that will increase costs in RP3 before efficiencies are considered. The company put forward a credible explanation to show why these are likely to increase cost. However, from the evidence provided, we are unable to see the net financial impact of each headwind. For RIS4, the company must provide more details of the calculations it has performed to estimate its costs.
- 3.32 National Highways has applied an 8% efficiency challenge to corporate and operational technology. This is in line with other areas of its draft SBP. Efficiencies are based on specifically identified initiatives, such as consolidating existing contracts into a single contract to reduce costs.

### Network electricity

- 3.33 National Highways has considered how its electricity consumption will change in RP3 due to factors such as the return of the DBFO roads, and increased use of LED lighting.
- 3.34 The primary factor driving a reduction in electricity consumption is National Highways' assumption that it will generate some of its own renewable energy. To account for the expected impact of its renewable energy generation programme, the company's modelling for the draft SBP assumes a 7% reduction in consumption. This is inconsistent with the company's expectation that it will generate 10% of its own power. It has indicated its intention to update its modelling to assume a 10% reduction for the final SBP. We expect it to do so. The company's forecast for energy consumption with and without the renewable energy generation programme is shown in Figure 3.4.
- 3.35 Section 7 examines National Highways' renewable energy generation plans in more detail. Based on the findings of the feasibility analysis commissioned by the company, we consider there to be a high level of uncertainty attached to its renewable energy generation plans. We therefore recommend that the assumed reduction in consumption is removed. We estimate that this will increase the company's forecast electricity cost by around £6 million. However, this would be outweighed by the cost savings if, in line with the recommendation set out in Section 7, the Department for Transport (DfT) chooses not to pursue this programme in RP3.

3.36 We examine the basis for National Highways' electricity price assumptions in section 8.

Figure 3.4 Forecast network electricity consumption (kWh)



### Key proposals

National Highways must provide further evidence of how it expects incident numbers to increase, and how this increase will impact network management performance, including but not limited to the incidence clearance KPI.

National Highways must review the assumptions underpinning its estimates of the cost of electric vehicle roll-out for its fleet.

During RP3, National Highways must provide evidence that it is improving the balance between proactive and reactive maintenance.

National Highways should assume no reduction in electricity consumption based on plans to generate its own renewable.

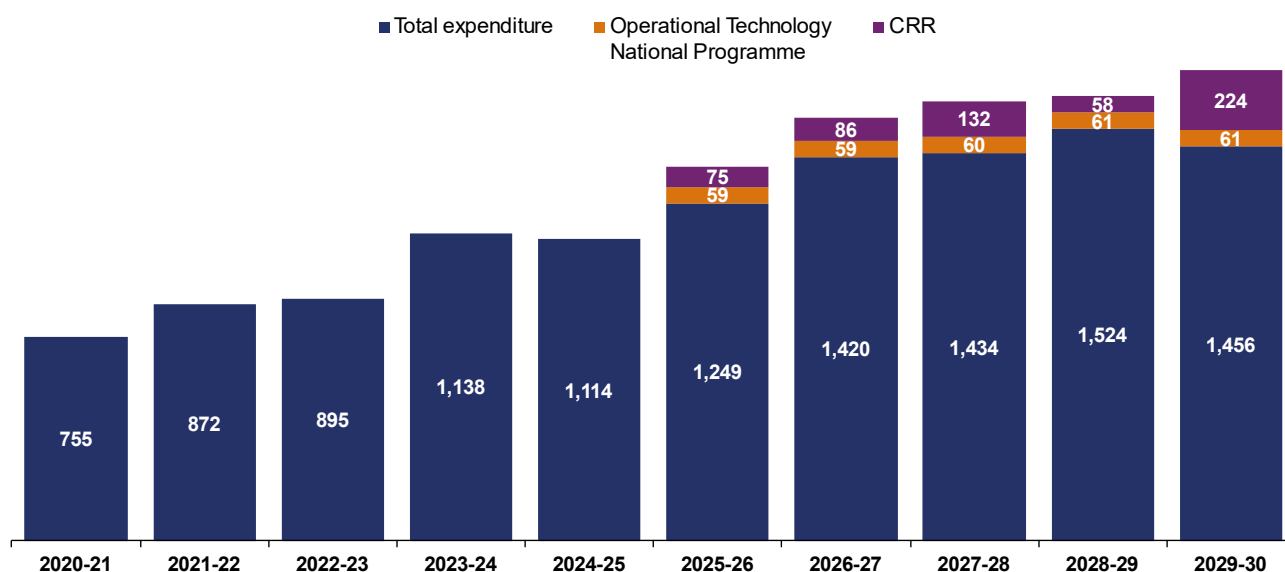
## 4. Renewals

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### National Highways' proposals

- 4.1 Spending on renewals has steadily increased since the creation of National Highways in 2015. The company is proposing a further increase in the third road period (RP3, April 2025 to March 2030) in response to growing asset need.
- 4.2 Figure 4.1 illustrates how renewals costs will change between the second road period (RP2, April 2020 to March 2025) and RP3, in nominal terms, under National Highways' plans. The renewals expenditure line shows a post-efficient cost of £7,082 million (nominal). However, as described later in this section, we consider the 'Operational Technology National Programme' to be an extension of roadside technology renewals. Therefore, the overall renewals cost increases to £7,382 million.
- 4.3 For RP3, Figure 4.1 also includes the amount of the Central Risk Reserve (CRR) notionally apportioned to renewals. In RP2, any CRR that National Highways has so far drawn down for renewals is embedded within total expenditure. However, the amount drawn down could increase by the end of RP2. In RP3, whilst the CRR represents additional funding earmarked for renewals, in practice it could be used to fund risks other than those relating to renewals.
- 4.4 Table 4.1 compares costs in RP2 and RP3 in real terms, adjusted using the consumer prices index (CPI). If the relevant portion of the CRR and the Operational Technology National Programme are included, expenditure on renewals will increase by 45% in real terms between RP2 and RP3. This increase is partly explained by the fact that prices for goods and services (for example, construction materials) typically purchased by National Highways tend to rise at a faster rate than CPI. Nonetheless, National Highways' plans imply a substantial increase in the volume of renewals that it will deliver in RP3 as compared with past road periods.

Figure 4.1 Renewals expenditure across road periods (£ million, nominal)



\* CRR for renewals has been profiled based on figures provided in the draft SBP financial model for the CRR as a whole and is therefore influenced by the requirements of the enhancements portfolio. This will need to be re-profiled for the purposes of the final SBP.

4.5 Table 4.1 provides a comparison of costs between RP2 and RP3 for each asset type. In practice, renewals projects typically address more than one asset type. National Highways records the cost of each project but does not attribute the costs to individual asset types. As a result, while the company can report the total amount it has spent on renewals during the period, it is unable to provide an accurate disaggregated estimate of spend by asset type. This makes it difficult to assess whether the company has been spending renewals funding in line with its original plans, or to assess whether cost estimates for future road periods are set at an efficient level. The company must address this issue from the start of RP3 to enable us to effectively hold it to account in RP3 and to inform the development of its fourth road investment strategy (RIS4) plans.

4.6 Given the lack of disaggregated outturn cost data, the breakdown shown in Table 4.1 is based on the RIS2 draft strategic business plan (SBP). Therefore, the asset level comparisons are provided for indicative purposes only. However, they show that the amount of funding allocated by National Highways increases between RP2 and RP3 in real terms for all asset types except for flexible (asphalt) pavements and vehicle restraint systems that show lower costs in RP3. The reasons for this are explored later in this section.

**Table 4.1 Renewals (£ million)**

	RP3 (Nominal)	RP3 (Real – 2022-23 prices)	RP2 (Real – 2022-23 prices)	% Difference in real terms
Flexible pavements	1,383	1,221	1,475	-17%
Structures	2,474	2,181	1,478	48%
Rigid pavements	823	725	415	75%
Roadside technology	606	536	304	76%
Vehicle restraint systems	303	268	472	-43%
Drainage	401	354	222	59%
Geotechnics	234	207	119	74%
Ancillaries	306	270	199	36%
Lighting	275	243	99	147%
Soft estate	165	146	0	-
Tunnels	111	98	50	96%
<b>Total</b>	<b>7,082</b>	<b>6,247</b>	<b>4,832</b>	<b>29%</b>
Op tech NP	300	265	NA	NA
CRR (notional allocation)	575	503	NA	NA
<b>Adjusted Total</b>	<b>7,957</b>	<b>7,015</b>	<b>4,832</b>	<b>45%</b>

## Our assessment

### National Highways' approach to renewals investment planning

#### Process

4.7 Renewals requirements and costs have and continue to increase. Therefore, ahead of, and during this review, we have placed considerable focus on the maturity of National Highways' approach to strategic renewals investment planning.

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- 4.8 National Highways undertook an iterative process of developing its plans organised around five 'investment cycles' with increasing levels of detail applied at each cycle. We undertook reviews of its approach to investment planning at an interim stage (investment cycle 3) and once complete (investment cycle 5).
- 4.9 At the start of the third road investment strategy (RIS3) development process, National Highways established a framework for assessing the maturity of its approach to investment planning for each asset type. The framework comprises five stages, each reflecting an increasing level of sophistication and confidence in the analysis underpinning its renewals plans. Each asset type was expected to progress through the framework at different speeds. For assets where the company's renewals planning capability is more mature (for example, flexible pavements), its objective was to achieve Stage 5 ('service value driven') at investment cycle 5. For assets where its renewals planning is less mature (for example, soft estate) it only expected to achieve Stage 2 (a 'condition based' approach) by investment cycle 5.
- 4.10 Overall, this was an effective process. It demonstrated National Highways' ambition to improve its approach to investment planning. We observed a high level of engagement in the process from each of its asset-level teams. However, the originally planned timescales for achieving each investment cycle were not always achieved and there was a high degree of instability in the plans.

### Overall maturity

- 4.11 National Highways has made significant progress improving its approach to renewals investment planning. While it did not achieve the originally expected maturity level for many of the different asset classes, the objectives it set were notably ambitious. Our investment cycle 5 review concluded that the company has a good qualitative understanding of the issues across assets, and in some cases a good quantitative understanding of need. It provides a robust basis on which to develop the renewals element of the draft SBP.
- 4.12 Nevertheless, there remains considerable variation in the robustness of National Highways' estimates of its renewals requirements across different asset classes. For example, for flexible pavements the company has been tracking condition in a broadly consistent manner over a sustained period of time and has well established models for predicting the impact of alternative investment scenarios on asset condition and performance. In other areas, such as vehicle restraint systems, asset condition data is incomplete. For assets such as soft estate and roadside technology renewals, the company has very little previous experience of

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producing investment plans and has developed new approaches that are inevitably subject to a higher level of uncertainty.

- 4.13 In annex A we include a recommendation that DfT requires National Highways to develop an asset data improvement plan to improve the robustness of renewals plans for ahead of the RIS4 development process.
- 4.14 The assessments we undertook at investment cycles 3 and 5 focused primarily on the process driving estimated *volumes* of renewals. During this review, we have reviewed National Highways' approach to both volumes and cost estimates. We have observed that the level of uncertainty increases when unit rates and other cost assumptions are applied. These issues are described in more detailed later in this section.

### Climate change

- 4.15 National Highways has considered climate change effects in its planning to varying degrees across asset types. The draft SBP mentions climate change impacts frequently, but drainage is the only asset where the company had accounted for changing weather patterns in any practical sense. For some assets climate change is unlikely to be a significant factor. However, for other assets – such as flexible pavements – extreme weather is affecting the performance and deterioration of assets. For these assets we would expect climate change resilience to be factored into plans in a more meaningful way for the RIS4 process.

### Long-term planning and choices

- 4.16 With asset need increasing it is important that National Highways demonstrates the impact of different scenarios on long-term asset condition and renewals requirements in future road periods.
- 4.17 The existing suite of asset condition metrics provides only a snapshot of condition. In the short-term, National Highways could maintain these metrics at their current level at a much lower cost than it is currently proposing. However, this would have a detrimental impact on future performance and would increase renewals requirements in future road periods. At present, the company lacks the capability or quantitative tools to show how its renewals affect the sustainability of its assets.
- 4.18 As for overall maturity, National Highways' ability to consider the long-term impacts of its plans varies by asset type. For example, for flexible pavements the company was able to predict the impact of higher and lower levels of investment on its pavement condition key performance indicator (KPI) and identify the scenarios that offered the best value for money in the long run. For other assets,

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the company has only taken initial steps to understand its renewals requirements in future road periods.

- 4.19 As outlined in section 9, we recommend the Department for Transport (DfT) makes it a requirement of RIS3 that National Highways develops and implements performance indicators to measure asset health on the strategic road network (SRN). These are intended to provide a measures of the long term sustainability of assets based on their age and condition. We expect these to play an important role in renewals planning for RIS4 and beyond.

### Delivery

- 4.20 Under current plans, RP3 will see a significant change in emphasis in the overall portfolio. The dominance of major enhancements projects development will reduce, and it will move instead towards the delivery of more capital renewals. There remains some uncertainty as to the final requirements for RIS3. However, National Highways provided only limited detail of how it proposes to align its resources and processes, and develop its capabilities, to deliver these changing requirements. This needs considerable focus and prioritisation from the company ahead of the start of RP3 to allow it to deliver the plan it has set out.

### Renewals plans and choices

- 4.21 DfT asked National Highways to develop a renewals portfolio based on optimising asset performance and to continue to make progress to deliver its long-term multi-road period renewals plans within an overall funding envelope of £7 billion.
- 4.22 National Highways developed two iterations of its renewals plans:
- it developed a 'preferred plan' amounting to £10.1 billion. Although labelled 'preferred' National Highways made clear that not all aspects of the plan could be delivered in practice due to capacity constraints (either within the company or its supply chain) and the level of disruption for users that would result; then
  - National Highways undertook a process to challenge this plan to reflect these constraints and to improve affordability. The result was the 'proposed plan' on which the draft SBP is based.

National Highways followed a broadly similar process for RIS2. Including the Operational Technology National Programme, the company's proposed plan for RIS3 is slightly in excess of DfT's assumption of £7 billion.

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- 4.23 The reductions in cost between the 'preferred' and 'proposed' scenarios are shown in Table 4.1. National Highways reduced the scope of renewals for all assets except for drainage, geotechnical assets, tunnels and roadside technology. Funding was also removed for renewals of Design Build Finance and Operate (DBFO) roads that will be handed back to the company during RP3 (paragraphs 4.80 to 4.82).
- 4.24 In response to our request, National Highways set out the decision-making process that it followed and the factors influencing its decisions. We recognise that this process inevitably involves a degree of professional judgement. However, it did not appear that the company had applied consistent criteria to guide these decisions. As such it was not clear why some assets were protected whilst funding for others was cut. In RIS3, DfT should require the company to apply a more systematic approach in its planning for RIS4, and set out the criteria it has used during the prioritisation process.

**Table 4.2 Renewals costs pre- and post- cost and deliverability change (£ million, nominal)**

	National Highways' 'Proposed plan'	National Highways' 'Preferred plan'	Difference (%)
Flexible pavement	1,383	1,742	-21%
Structures	2,474	3,216	-23%
Rigid pavement	823	1,228	-33%
Roadside technology (including the Operational Technology National Programme)	906	906	-
Vehicle restraint systems	303	700	-57%
Drainage	401	401	-
Geotech	234	234	-
Road Ancillary	306	614	-50%
Lighting	275	591	-53%
Soft estate	165	467	-65%

	National Highways' 'Proposed plan'	National Highways' 'Preferred plan'	Difference (%)
Tunnels	111	111	-
Renewals on returning DBFO roads	0	232	NA
<b>Total</b>	<b>7,382</b>	<b>10,442</b>	<b>-29%</b>

## Overall funding levels

- 4.25 National Highways' proposed increase in spend on renewals is attributed, in part, to an increase in requirements linked to the age profile of its network, as well as the proliferation of technology assets on the SRN in recent decades. In addition, for RIS3 the company has developed more comprehensive plans for assets that have received limited investment in the past and for which the company has previously had a limited understanding of renewals requirements. A prime example of this is soft estate for which no provision was made in the SBP for RP2. This also has the result of increasing costs.
- 4.26 In the context of increasing asset need, it is challenging for National Highways to define a strategy to maintain or optimise performance. Due to their age, many assets will require more significant intervention than has been the case in the past. For some assets there is a bow wave of renewals requirements that will need to be tackled over multiple road periods. Therefore, the company's plans need to strike a balance between maintaining performance and managing risks in the short term, and making progress in addressing longer term renewals requirements.
- 4.27 It would be possible for National Highways to pursue a strategy that seeks to maintain current levels of safety and serviceability during RP3, while postponing some major renewals intended to preserve the performance and condition of the network for the longer term. However, this approach would exacerbate issues of affordability and deliverability that may be more acute in the fourth road period (RP4, April 2030 to March 2035) than in RP3. It could result in more costly reactive repairs and disruptive unplanned closures.
- 4.28 National Highways estimates that renewals requirements could increase to £12 billion (nominal) in RP4. Whilst this estimate needs to be treated with a high degree of caution, there are factors that point to a further increase in cost in RP4. These include a further increase in renewals requirements for ageing structures on

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the SRN, the need to make further progress in replacing life expired concrete roads, and the effective increase in the size of the network following the return of roads currently maintained via DBFO contracts.

- 4.29 Taking these factors into account, we support an increase in spending on renewals in RP3. In broad terms, we conclude that National Highways' planned expenditure strikes a reasonable balance between affordability, deliverability and the need to address growing renewals requirements. However, we recommend alterations to the company's plans in some key areas to better align them to DfT's requirements. There are options to reduce cost beyond those we have identified in this report. But in most cases, the primary effect would be to defer renewals to RP4 and beyond. Therefore, our conclusions are focused on the balance of funding across the various asset types.
- 4.30 As we set out in section 8, we recommend that National Highways employs alternative inflation assumptions that would reduce inflation allowances and therefore cost. However, in the case of renewals, we recommend that savings from lower inflation assumptions are used to fund additional outputs to help ensure that the company addresses growing asset needs in a sustainable manner.

### Asset level plans

- 4.31 We have reviewed National Highways' plans set out in its draft SBP for all assets. We also commissioned consultants, CEPA, to undertake in-depth reviews of the company's plans for five assets: flexible pavements, structures, vehicle restraint systems, roadside technology and drainage. Together, these assets account for 73% of the total renewal costs. Here we set out our findings across a selection of asset types, including the five listed above.

#### Flexible pavements

- 4.32 National Highways' renewals planning approach for flexible pavement is more mature than for other assets and the company was able to provide analysis of the impact of alternative investment scenarios for RIS3.
- 4.33 Under its 'preferred plan', National Highways would invest £1.7 billion to renew around 10,000 lane kilometres of pavement. However, to improve overall affordability, the company ultimately adopted a cost constrained plan that would reduce costs to £1.4 billion by reducing volumes to around 8,000 lane kilometres.
- 4.34 In our view, pursuing the lower cost approach is unlikely to offer good value for money in the longer term. National Highways' flexible pavement team provided compelling evidence of the benefits of regular replacement of the topmost layers of

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the pavement asset to protect the condition of foundation layers, thereby limiting the need for deeper treatments that are more costly.

- 4.35 Based on the results of National Highways' modelling, the plans it put forward in the draft SBP would result in a deterioration of condition during RP3 that would necessitate a reduction in the pavement condition KPI target from its current level of 96.2% to 94.7% by the end of RP3. Adopting this scenario is inconsistent with DfT's requirement to maintain performance. The deterioration in performance would continue into RP4 and would necessitate a substantial increase in renewals in RP4 to recover condition. Whilst the company's estimates need to be treated with a high degree of caution, the company indicates that pavement renewal costs would be 65% higher in RP4 as a result of pursuing the lower cost strategy in RP3.
- 4.36 We recommend that National Highways pursues its 'preferred plan'. This approach would prevent deterioration during RP3, ensuring that users' experience of the network does not worsen, whilst avoiding creating, or adding to, the bow wave of need in RP4.
- 4.37 In developing its cost estimates for RP3, National Highways uses unit rates for various modelled renewals interventions based on contractual rates. The company has used a simple average of unit rates for each of its regions. This approach results in higher unit rates than if weighted averages are used, since regions with longer networks have lower unit rates. CEPA estimates that this approach increases costs by around 6%. In our view, using a weighted average approach would be more appropriate. Under the company's preferred plan, there may also be efficiencies from delivering a higher volume of renewals. It should review this calculation before finalising its plans.

### Structures

- 4.38 National Highways faces a long-term challenge to maintain ageing structures on the SRN. It estimates that 66% of bridges and large culverts were constructed before 1980 and as such renewals requirements are increasing. This is reflected in the company's RIS3 plans that would result in an overall increase in spending of 48%.
- 4.39 Structures covers a diverse set of assets with complex and varying needs. National Highway's plans are sub-divided into four main programmes:
- predictive renewals: condition-driven renewals of structures components;
  - preventative renewals: actions that can extend the life of identified structures and delay more costly and significant interventions;

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- priority risk structures: a range of activities to investigate, manage and resolve risks related to critical structural elements that are susceptible to deterioration and, in many cases, cannot be readily inspected; and
- significant structures renewals: high cost (typically over £10 million) or complex schemes to renew assets with high priority risks identified by National Highways' regional teams.

4.40 National Highways has identified the renewal of the Avonmouth viaduct as a standalone scheme. Although a large and complex project, its cost is no greater than that of many projects included in the significant structures programme and therefore there is no need for it to be specified separately in the final SBP and Delivery Plan.

4.41 A key theme of National Highways' structures plans is the need to manage the risks of:

- ageing structures that have suffered from underinvestment in the past (before RP2); and
- the need for unplanned maintenance or measures such as lane closures or weights and speed restrictions, each of which can be costly and disruptive.

4.42 National Highways must balance the need to address these risks with the requirement to develop a plan that is both affordable and deliverable.

4.43 National Highways' initial 'preferred plan' had a cost of £3.2 billion. Once adjusted to take account of affordability and deliverability constraints, this was revised down to £2.4 billion. While reducing cost was a key factor, the company acknowledged that internally and in its supply chain there would likely be insufficient capacity to deliver the volume of renewals and the number of projects included in the 'preferred plan'.

4.44 In moving to its 'proposed plan', National Highways has removed all funding for a programme of preventative structural renewals. It has not properly justified this decision. These renewals are used to slow deterioration of structures, thereby avoiding larger and more costly renewals in the future. Deferring these activities will result in faster deterioration of some structures that will need to be managed in future road periods. Although the company was not able to provide any quantitative analysis of the impact of cutting this programme, preventative renewals can offer good value for money and can help to mitigate pressures on affordability and deliverability in future road periods. Therefore, we propose that

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the company reinstates funding allocated to the preventative structures programme.

4.45 National Highways has committed to completing 57 significant structures projects in RP3. This accounts for around 60% of total structures renewals costs in RP3. An increase in the size of this programme is a key contributor to the overall increase in cost between RP2 and RP3. To identify the significant structures projects that it will undertake in RP3, the company has prioritised its projects based on:

- an assessment of safety risk;
- functionality (the degree to which the project is critical to maintaining serviceability, that is, keeping the network running); and
- value for money.

4.46 In RP3, National Highways proposes to renew only the significant structures in the highest priority category. Although, as noted, there may be capacity and deliverability constraints that would prevent the company from delivering additional projects even if funding were available.

4.47 Our primary concern with the significant structures programme is the level of uncertainty attached to the cost estimates of the projects identified for RP3. The experience of the first road period (RP1, April 2015 to March 2020), and RP2 suggests that the scope of the works required for a mid-life renewal of large and complex structures can escalate once more detailed investigation has been undertaken, thereby increasing cost. For many projects planned for RP3, design and development is at a relatively early stage and therefore there is a high degree of uncertainty associated with the programme.

4.48 A notable feature of National Highways' RIS3 plans is the number of high cost renewals projects. Of the structures and other large renewals projects the company has earmarked for delivery in RP3, 30 are costed at £20 million or above, of which seven are £100 million or above. Given their scale and complexity, reporting and monitoring arrangements for these projects needs to be strengthened and formalised for RP3. Whilst we accept that the programme will be subject to a degree of change during the road period, we intend to monitor the delivery of named schemes against individual cost baselines and schedule milestones.

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4.49 As set out in annex A, to ensure we can hold the company to account for delving these schemes, very high cost projects should form part of the RIS3 investment requirements and National Highways must report to us, on a quarterly basis, how schemes are progressing against planned schedule milestones and cost estimates. DfT must ensure that these are transparently change controlled into the RIS. This will give road users and taxpayers assurance that the company is delivering in line with its plans and managing its ageing structures assets in an effective manner.

### Roadside technology

4.50 National Highways' RIS2 plans allowed £200 million for roadside technology renewals. Additionally, during RP2 the company has been provided with a further £105 million to fund an operational technology modernisation and refresh programme focused specifically on renewals of four key operational technology assets on all lane running (ALR) smart motorways.

4.51 For RIS3, National Highways is proposing to increase spend to around £900 million in RP3. This is through a combination of its renewals programme and a proposed new 'Operational Technology National Programme'. In contrast to its flexible pavement plans, the company predicts that renewals costs and volumes for roadside technology would be lower in RP4 than RP3.

4.52 We found no evidence of any practical distinction between the National Programme and roadside technology renewals either in respect of the assets that would be addressed, or the way renewals would be delivered. Therefore, we see no rationale for creating a new National Programme.

4.53 National Highways' estimated funding requirement derives from the outputs of a new modelling approach used for RIS3. The model is intended to provide an estimate of the renewals required to achieve a given level of performance as measured by the technology availability performance indicator (PI). At the time at which the model was developed (2022-23), actual performance against the PI stood at 95.3% availability. Subsequently, the company identified errors in how it classifies faults relating to the availability of some technology assets. It made changes to better identify those faults that affect the service of the asset and improve how fault resolution is prioritised. This resulted in both the reported and modelled level of condition falling by around 2.5%. The company expects to end 2023-24 at around 91.4% availability. Given this, our interpretation of a scenario that seeks to maintain performance is one that seeks to achieve approximately 92.5% availability.

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- 4.54 The modelling for on road technology is new and untested. National Highways has acknowledged that it lacks a full understanding of the model used to develop the plans set out in the draft SBP. Additionally, because it was developed by the company's consultants, we have been unable to interrogate the model itself. It is a strategic model intended to establish the overall level of investment that may be required. The company considers that the model is unsuitable to determine how funding should be prioritised and is therefore developing a separate approach for determining the assets it would renew in practice. A further issue with the company's modelling approach is that it took no account of the impact of the additional RP2 funding for ALR roads. We might expect that these extra renewals in RP2 would reduce renewals requirements in RP3, however the company has not provided any analysis of its impact.
- 4.55 In our view, it would be highly speculative to allocate such a large increase in funding based on the outputs of the model. Moreover, by focusing only on the Technology Availability PI, National Highways has failed to put forward a comprehensive plan that shows how it intends to prioritise funding to maintain or maximise performance in respect of safety, reliability, and road user satisfaction. The company has presented no specific plans for smart motorways, either in respect of how it will spend funding for technology on these roads, or the levels of performance the company is seeking to achieve.
- 4.56 National Highways does not discuss in any detail in the draft SBP the practicality of undertaking such a large-scale replacement programme, in terms of either its own in-house capacity or its supply chain capacity. During the engagement process, the company accepted that delivering the programme would be a significant challenge. It suggests that new procurement approaches may be desirable but acknowledged that no new frameworks would be in place by the start of RP3.
- 4.57 Roadside technology assets have proliferated in recent decades. An increase in renewals of these assets is required in RP3 given many are ageing, and they are important to support the safe and efficient operation of the network. However, National Highways has not provided sufficient justification for the scale of the proposed increase or assurance that it could be delivered in an efficient manner.
- 4.58 Based on the evidence put forward, assessing what the 'right' level of investment is for RIS3 is difficult and requires us to apply a degree of judgement. The levels of availability that National Highways considers it could achieve have changed during the planning process. In the draft SBP originally submitted, the company suggested that £906 million would fund the replacement of 14,000 assets (out of a

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total of 40,000) and achieve 92.5% availability. However, based on its updated analysis, the company considers that, with £906 million, it could replace 19,000 assets and deliver overall availability of around 95% (that is, an improvement on current performance). The company considers that around £600 million would result in performance of 'no more than 92%-93% at any point in RIS3' and would therefore be more closely aligned to DfT's requirement to maintain performance.

4.59 We recommend that a budget of around £600 million, around twice that allocated in RP2, would:

- provide for a manageable ramp up in renewals;
- achieve a smoother profile of investment across RP3 and RP4; and
- likely maintain performance in line with DfT's requirements, although the picture remains uncertain.

4.60 National Highways must provide more detailed and targeted proposals as it finalises its plans for RIS3. Plans must better articulate:

- the expected benefits for users and safety;
- provide greater assurance that the increase in funding can be delivered in an efficient manner; and
- provide clarity on related performance, disaggregated by road and asset type.

4.61 In addition, as we set out in Section 9, DfT should consider whether the importance of this area, particularly in respect of smart motorways, is adequately reflected in the performance specification.

4.62 Should DfT choose to invest more in roadside technology to achieve higher levels of performance, a review point could be included at the end of year 2. This is based on the current limitations of the details of the plans put forward by National Highways. At this point we would expect the company to have better evidence in its ability to deliver its plan and achieve the related performance.

### Drainage

4.63 National Highways has proposed a significant increase in investment in drainage renewals. Its plans are based on addressing identified flooding hotspots. Incidents of flooding are increasing due to climate change and therefore renewals requirements are increasing. The company chose to protect funding for drainage

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during its cost challenge process and hence its 'proposed plan' is unchanged from its 'preferred plan'.

- 4.64 National Highways has limited drainage asset condition data. Therefore, it must make assumptions about the type of interventions that will be required and their associated cost. Costs remain uncertain until site specific surveys and design development have been undertaken.
- 4.65 Notwithstanding these uncertainties, we recognise the need to increase investment in drainage assets. We will hold National Highways to account to address flooding hotspots during RP3 in line with its plans. During the road period, and ahead of the RIS4 development process, the company must improve the coverage of its asset inventory and condition data to provide greater certainty in respect of future renewals investment plans.

### Vehicle restraint systems

- 4.66 Vehicle restraint systems (VRS) comprise safety barriers at roadsides and central reserves. National Highways has significantly reduced the scope of VRS renewals to improve affordability. This has been achieved by assuming that a higher proportion of barriers be subject to 'do minimum interventions' (that is, repairs and replacement of component parts) rather than full replacement.
- 4.67 In general, although National Highways assures us that the safety performance of barriers is maintained in either case, the company considers that full replacement is a better whole life cost solution than repairs that extend the life of the asset for a limited period of time. Therefore, its 'preferred plan' may offer better value for money in the long term. However, by adopting the 'proposed plan', the company has taken a pragmatic approach to reduce cost.

### Rigid (concrete) pavements

- 4.68 National Highways has established a centrally co-ordinated programme for addressing issues with ageing concrete roads. Concrete roads require little maintenance in their operational phase. However, as they reach their end of life they deteriorate quickly and eventually need to be completely replaced.
- 4.69 National Highways aims to replace all ageing rigid pavements on its network by the end of the sixth road period (2045). The company considered that this timescale achieves a reasonable balance between the need to improve performance and reduce the risk of failure, and to ensure that its programme is affordable and deliverable within each road period.

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- 4.70 Investment in rigid pavements needs to increase if National Highways is to achieve its longer-term objective and reduce the risk of sudden failures and associated unplanned disruption. The company's draft SBP puts forward plans for 167 lane km of reconstruction works and 387 lane km of life extension works. Funding allocated to these assets would increase by around 75% in real terms. However, the company has faced difficulties delivering its renewals plans in RP2. Both life extension works, and reconstruction schemes have taken longer to reach the construction phase than it originally planned. This will result in the deferral of some RP2 schemes to RP3. Due to these issues, the assumptions on which the draft SBP were based are no longer valid. The company has advised that it will need to review and revise its plans.
- 4.71 These issues present difficulties for RIS3 planning. Further, they imply that National Highways is currently unable to demonstrate how it will achieve its longer-term objective of addressing all ageing concrete roads by the end of RP6.
- 4.72 National Highways must submit new short- and long-term proposals for rigid pavements ahead of developing its final SBP. The company will need to update its long-term plan during RP3 to take account of the condition of rigid pavements on sections of returning DBFO roads. During RP3, the company must also report progress against planned reconstruction schemes to provide assurance that it is delivering in line with its plans. We will hold the company to account to ensure that it does so.

### Soft estate

- 4.73 Soft estate refers to grassland, woodland and other natural features that line the SRN within the highway boundary. As noted, in its RIS2 draft SBP, National Highways did not include any plans for soft estate renewals and no funding was specifically allocated for these activities. In practice, National Highways has undertaken some soft estate renewals during RP2 although it has been unable to provide an accurate estimate of the amount it has spent.
- 4.74 In RP3 the company is proposing to invest £165 million to address plots of land that have deteriorated beyond the point that maintenance activities can be carried out effectively. An example of this is where heavy machinery is required to remove trees from grassland plots. In such cases capital renewals are required to bring the assets back to a 'maintainable' state. It estimates that around 20% of the soft estate has deteriorated to this extent and is proposing to renew around half of this (10% of the entire soft estate) in RP3.

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- 4.75 Every plot along the SRN has a purpose, designated through the planning process as mitigation for the construction of the road. Examples include integration within the surrounding landscape, visual screening, or provision of habitats. Due to past underinvestment in maintenance, soft estate assets can deteriorate to the point where they are unable to fulfil their original purpose. The intention of each renewal scheme would be to improve condition such that the plots in question can once again fulfil their intended purpose.
- 4.76 The two overarching objectives for soft estate renewals are to maintain and improve safety and biodiversity. Poorly maintained soft estate can also present a safety issue where, for example, overgrown vegetation encroaches on road signs or if trees are at risk of falling onto the carriageway.
- 4.77 Under the Environment Act 2021, National Highways is required to 'enhance' as well as conserve habitats on the SRN. For RP3, the company's soft estate plans are closely linked to proposals for the biodiversity KPI. The KPI is measured in biodiversity units. As further described in Section 9, National Highways has assumed that the portion of its soft estate at condition grade 5 suffers a 1% per annum loss of biodiversity. It aims to deliver sufficient biodiversity units to offset this loss. Thus, by restoring the condition of grade 5 plots, the renewals programme reduces the number of offsetting units the company needs to deliver.
- 4.78 National Highways has significantly improved its understanding of the needs of the soft estate to inform planning for RIS3. Nevertheless, the cost and impact of the plans remain highly uncertainty for three main reasons:
- National Highways' condition dataset is incomplete and its assessment that around 20% of the network requires renewal is a broad estimate based on the condition of a sub-set of the network. Ahead of and during RP3, the company plans to improve its condition data by moving from an inspection led programme, to using satellite data and Artificial Intelligence, supplemented by ground-based inspections. This change in approach will inevitably lead to an adjustment in its estimate of renewals requirements.
  - Cost estimates are derived from the projected volumes of work required in four of National Highways' six regions. The two remaining regions have not developed any soft estate renewals plans and therefore renewals needs are largely unknown. In any case, to improve affordability, the company arbitrarily constrained the amount allocated to the soft estate. Revised estimates of achievable outputs at this cost level have not been provided.

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- It is unclear clear how National Highways expects its regions to balance safety and biodiversity objectives and what controls it will put in place to ensure this funding will be used in accordance with its intended purpose.

4.79 We recommend that DfT requires National Highways to produce an updated assessment of the renewals volumes it expects to deliver at the level of funding currently allocated and produce a revised estimate of the impact this will have on condition. It should also set out more detailed proposals for how it will work with its regions to improve data collection and monitor progress during the road period.

### DBFO hand back

4.80 National Highways has established a process to ensure that the DBFO companies fulfil their contractual obligations to return assets in an appropriate condition. This process appears to be comprehensive and well managed.

4.81 There are two main reasons to suggest that some renewals will be required on former DBFO roads in RP3. Firstly, notwithstanding the process put in place, the risk remains that the DBFO companies may not fulfil their requirements in full. Secondly, the DBFO contracts allow 15% of pavement assets to be returned to National Highways with a residual life of zero to ten years. Therefore, a proportion of pavements may require intervention during RP3.

4.82 Under National Highways' 'proposed plan', it has not allocated any funding for renewals of assets on the sections of DBFO roads that will be handed back during RP3. The company will not fully understand renewals requirements until the hand back process has been completed, although there should be an opportunity for it to use data from road condition surveys to gain a better understanding of the condition of pavement assets in advance of hand back. Nevertheless, given these uncertainties, in our view it is appropriate to treat this as a financial risk, rather than make specific provision at this time.

### Unit rates, risk and efficiency

#### Costs and unit rates

4.83 National Highways contends that there is a £1.2 billion shortfall in risk funding for renewals (paragraph 2.25). Our assessment of this claim and the supporting analysis is detailed later in this section. However, the question of whether there is a shortfall in risk funding depends, in part, on whether the unit cost assumptions used in the 'core' funding estimates are considered under-priced. Given this, we are addressing this question first.

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- 4.84 Initial cost estimates were calculated on unit rates based on notional projects provided by National Highways' Commercial and Procurement Team. In most cases, these were based on contracted rates with adjustment for design, supervision, other costs (for example, statutory undertakers) and risk. However, during the investment planning process, the company removed the risk allowance for most assets. It is unclear to us why this is.
- 4.85 For some assets, National Highways undertook benchmarking that showed the RIS3 unit rates to be similar to those for a sample of comparable schemes delivered in RP2. Crucially, this benchmarking was undertaken based on the unit rates including risk allowances. Therefore, because the risk allowances were subsequently removed, the company contends that the final unit rates are significantly below the RP2 benchmarks.
- 4.86 As further described from paragraph 4.93, National Highways' case is that funding included in the CRR is insufficient to offset the lack of risk funding included within its 'core' renewals costs. This implies that the company does not consider that it can deliver the plans it has put forward. However, there are a range of issues that need to be considered before making this judgement.
- 4.87 The rates National Highways has used date from 2020 or 2021. For predictive structures renewals, the source used to generate cost estimates is 2015. As noted, the company has benchmarked some of the rates against the outturn cost of a sample of historic schemes. Although it has not provided specific dates, this benchmarking was undertaken in February 2021. This means that the benchmarking uses schemes complete in the first year of RP2 at the latest. As such, the benchmark rates are not up to date. They do not fully take account of efficiencies that the company is delivering in the current road period that, all things being equal, will result in lower unit rates by the end of RP2.
- 4.88 Comparing unit rates against schemes delivered in the past is complicated by the fact that National Highways typically undertakes works on multiple asset types at the same time. As such, whilst its draft SBP costs are built-up from 'pure' unit rates (rates based on hypothetical schemes involving the renewal of a single asset type), the benchmarks may be sourced from 'hybrid' schemes (actual projects that involved works on multiple asset types). In selecting the sample of projects used in the benchmarking analysis, the company has controlled for this to some extent. However, by applying 'pure' unit rates in its estimates, it is likely that the company is understating the efficiencies in 'overheads' (such as the cost of design, development, project management and traffic management) that come from

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delivering hybrid schemes. This is because, in practice, overheads will be shared across multiple assets.

- 4.89 After submitting its draft SBP, National Highways provided further benchmark evidence. This compares RIS3 unit rates used for pavements and VRS against rates for a much broader sample of projects delivered during the first four years of RP2. Although there is a very wide variation in the rates recorded for completed schemes, this analysis suggests that RIS3 unit rates applied for flexible pavements are 25% lower than average outturn rates in RP2. The company contends that this is because, as described above, it removed risk allowances from its cost estimates. The analysis also suggests that RIS3 unit rates for VRS are 4% higher than RP2 outturn rates, although this result may be influenced by the higher proportion of 'do minimum interventions' proposed for RP3.
- 4.90 While the benchmark evidence is informative, there are reasons to suggest that it overstates any gap between RP3 and RP2 rates. The reasons are as follows:
- (a) the benchmark rates include hybrid schemes and therefore include the cost of works performed on non-pavement assets;
  - (b) RIS3 unit rates are calculated based on National Highways' plan to deliver a higher proportion of shallower pavement renewals. As such the average unit rate in RP3 will be lower than the average unit rate in RP2; and
  - (c) the benchmark rates are averages for projects delivered during the first four years of RP2. They do not fully account for efficiencies that National Highways expects to achieve by the end of the road period.
- 4.91 We have undertaken our own analysis comparing the unit rates that National Highways used to inform the RIS2 draft SBP with those it used in the RIS3 draft SBP. Comparing RIS3 plans against the RIS2 draft SBP is relevant because the company is on track to deliver its planned volume of pavement renewals in RP2, and the associated efficiency improvements. Our analysis suggests that, following adjustment for inflation, 'post-efficient' RIS2 rates for the last year of RP2 are broadly comparable to the RIS3 'pre-efficient' rates for the first year of RP3 (with risk uplifts excluded).
- 4.92 In summary, taking account of the various analyses, we do not consider that there is sufficient evidence to conclude that National Highways' RIS3 renewals costs are systematically understated. Therefore, we will hold the company to account to deliver the renewals outputs implied by its plans.

**Centrally held risk funding for renewals**

- 4.93 National Highways did not undertake risk analysis for renewals for RIS2. We therefore welcome the company's efforts to introduce a more quantitative approach for RIS3. However, its analysis remains relatively immature and therefore a high degree of caution is required when interpreting the results.
- 4.94 Using the process described in section 8, National Highways has notionally apportioned £575 million of the CRR for renewals. The company considers this sufficient to cover risks relating to its programme of major structural renewals. However, it estimates that a further £1.2 billion would be required to achieve a P50 level of confidence across all asset classes. The implication being that it requires a total of £1.8 billion of renewals risk funding, an uplift of around 25% on 'core' renewals funding.
- 4.95 National Highways' risk analysis that underpins this finding is heavily influenced by the application of substantial risk uplifts applied to the unit costs of most renewals asset classes. These risk uplifts are high-level estimates based largely on the company's qualitative judgement rather than quantitative evidence of risks that have occurred in the past. Overall, we conclude that the company's analysis is insufficiently robust to support its conclusion that a further £1.2 billion of risk funding is required.

**Determining the right level of risk funding**

- 4.96 As set out above, we do not consider that National Highways' quantitative analysis, in isolation, provides a reliable basis to determine the confidence level attached to its plans or how much risk funding should be allowed for in the CRR. Therefore, we need to make a considered judgement based on a range of factors.
- 4.97 At £575 million, centrally held risk funding for renewals would be 8% of core funding. At the start of RP2, the amount of the CRR notionally earmarked for renewals was set at 4% of total 'core' renewals funding. At the time of writing, National Highways has used around 40% of the £159 million of CRR earmarked for renewals in RP2.
- 4.98 This needs to be weighed against the fact that risks are likely to be greater in RP3:
- National Highways will need to undertake more renewals than planned as its assets age;
  - National Highways considers that around £550 million of CRR would be required to cater for the risks associated with its significant structures

programme, although, as described above, this finding is based on high-level assumptions; and

- while the return of DBFO roads should have a limited impact on renewals requirements in RP3, there are residual risks that are not funded via the core renewals budget.

4.99 On balance, for the renewals programme National Highways has put forward, we conclude that a risk fund for renewals of around £500 million would provide reasonable and practical provision for RP3. We recommend that DfT requires the company to ring-fence a proportion of the CRR for renewals ahead of, and in the early part of, RP3. This will ensure that the CRR is not exhausted by cost escalation on enhancements projects, as was the case in RP2.

### **Efficiency**

4.100 National Highways has applied an 8% efficiency challenge for renewals. The efficiency challenge is similar across the various asset types. It would be achieved through progressive improvements in productivity during the road period.

4.101 National Highways has identified three primary efficiency levers that will enable it to achieve this target:

- better end-to-end planning and better design to reduce cost, delays and increase innovation (for example, grouping renewals interventions to reduce traffic management and design costs);
- improving and standardising processes using technology, data and innovation; and
- initiatives to reduce procurement costs and improve productivity of activities delivered through these frameworks.

4.102 National Highways has provided some examples of specific actions under each of these levers. However, the evidence it provided to support the deliverability of efficiencies is weaker than for some other aspects of the draft SBP. Overall, as set out in section 8, the level of efficiency the company is proposing to achieve is in line with our expectations, based on benchmark evidence and the findings of the capability reviews.

### **Our proposals**

4.103 We consider that the proposed level of funding strikes a reasonable balance between affordability, deliverability and addressing growing renewals

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requirements. We have set out alternative proposals for the balance of funding across the various assets. Our recommendations are as follows:

- National Highways' 'preferred plan' for flexible pavement renewals should be funded in full. This would avoid deterioration of condition in RP3, and avoid creating, or adding to, a bow-wave of need in RP4. The pavement condition KPI should be maintained at approximately its current level (96.2% of the network in good condition);
- National Highways should re-instate its preventative structures renewals programme. This saves money in the long-term; and
- funding for the Operational Technology National Programme should be removed, leaving around £600 million for these assets. This would provide a more manageable ramp up in renewals, a smoother profile of investment across RP3 and RP4, and would be better aligned to DfT's requirements.

4.104 We suggest that the cash envelope of around £7.4 billion is retained and the savings from lower inflation forecasts are used, in part, to fund the proposals set out above. This is illustrated in Table 4.3. The table uses our estimates of the savings from applying our recommended inflation assumptions. Although these estimates are similar to those provided by National Highways, we identified minor irregularities in its figures and have therefore continued to use our own estimates.

4.105 Based on current estimates, this would leave around £79 million of funding not currently allocated to any specific asset. If this remains unallocated at the start of the road period, DfT could identify an appropriate point during RP3 to review how this funding, as well as any remaining CRR, could be most effectively deployed to achieve its objectives.

**Table 4.3 ORR proposals**

	National Highways' proposed plan (draft SBP inflation assumptions)	National Highways' proposed plan (ORR inflation assumptions)	ORR proposals (ORR inflation assumptions)
Flexible pavement	1,383	1,296	<u>1,632</u>
Structures	2,474	2,316	<u>2,619</u>
Rigid pavement	823	770	770

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	National Highways' proposed plan (draft SBP inflation assumptions)	National Highways' proposed plan (ORR inflation assumptions)	ORR proposals (ORR inflation assumptions)
Roadside technology	606	568	<u>600</u>
Vehicle restraint systems	303	284	284
Drainage	401	375	375
Geotech	234	220	220
Road Ancillary	306	287	287
Lighting	275	258	258
Soft estate	165	155	155
Tunnels	111	104	104
Operational Technology National Programme	300	300	<u>0</u>
Unallocated	-	-	79
<b>Total</b>	<b>£7,382</b>	<b>£6,932</b>	<b>£7,382</b>

### Key proposals

The proposed overall level of funding for renewals should be maintained but rebalanced to better reflect DfT's requirements, avoid deteriorating asset condition, and avoid storing up issues of affordability and deliverability in RP4.

National Highways must submit revised plans for roadside technology renewals specifying the level of performance it intends to achieve, including on smart motorways.

National Highways must undertake a mid-period review of its progress delivering roadside technology renewals and how its activities are affecting the reliability and availability of tech assets.

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National Highways must provide revised plans for how it intends to use funding for rigid pavement renewals. These would form part of an updated longer-term plan for replacing all ageing concrete road surfaces.

National Highways should provide an updated assessment of the soft estate renewals it expects to deliver in RP3 based on the current funding allocation.

National Highways must bring forward more detailed proposals for how it will align its resources and capabilities to deliver growing renewals requirements. This should include consideration of governance and reporting arrangements for large renewals projects.

National Highways must periodically update and report its assessment of risks relating to the return of DBFO roads.

## 5. Enhancements

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### National Highways' proposals

5.1 National Highways' plans for enhancements focus on the completion of projects begun during the first road period (RP1, April 2015 to March 2020) and the second road period (RP2, April 2020 to March 2025) and planning for projects that could be delivered in the fourth road period (RP4, April 2030 to March 2035). This is consistent with the Written Ministerial Statement (WMS) of 9 March 2023. The company's plans cover four broad areas for enhancements to the strategic road network (SRN). The associated funding is set out in table 5.1:

- existing enhancements – comprising the 'RIS2 tail' of 26 "committed enhancements" from the second Road Investment Strategy (RIS2) – excluding the A303 Amesbury to Berwick Down (A303 Stonehenge) and Lower Thames Crossing (LTC) projects – and legacy costs, mainly relating to land issues and close-out of completed schemes;
- new enhancements – in line with the WMS, this focuses on a £200 million fund of small enhancements to deliver localised safety and decongestion benefits;
- Lower Thames Crossing – funding for continued development and pre-construction activity while the project continues through the planning process; and
- future RIS and scheme development – to develop the existing pipeline of potential RP4 projects alongside the wider strategic planning for the fourth road investment strategy (RIS4) and beyond.

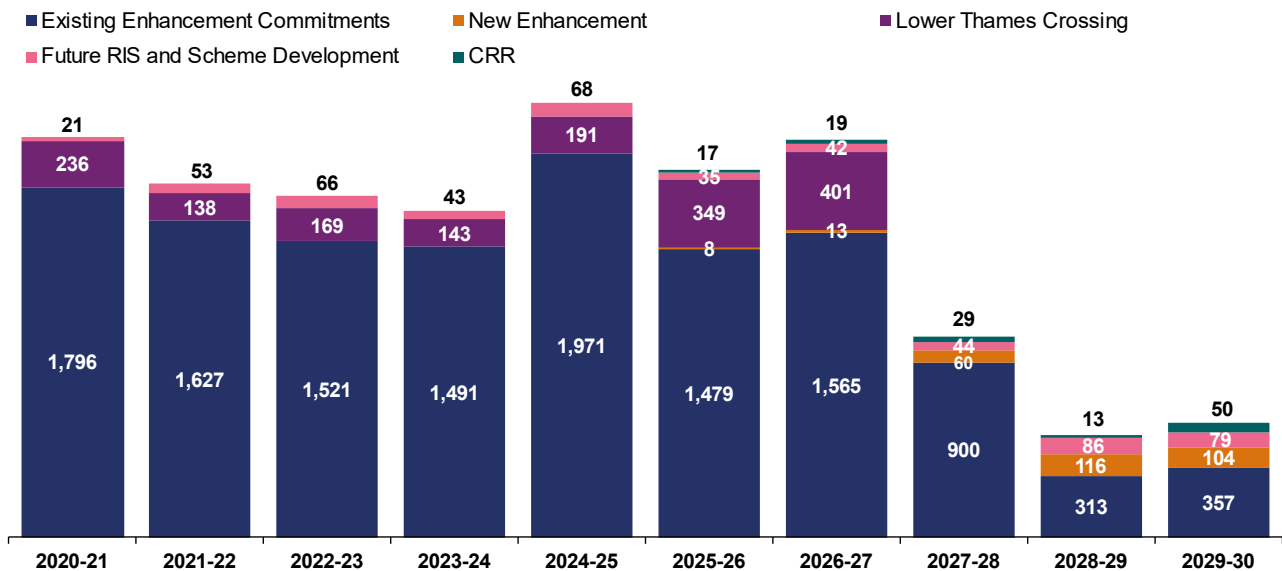
5.2 In its assumptions for third road investment strategy (RIS3), the Department for Transport (DfT) stated that the £24 billion funding in the statement of funds available (SoFA) did not cover the A303 Stonehenge project, the construction costs of LTC, or the development or construction of any enhancements that form part of the Network North strategy, due to uncertainty around their timescales. As such, and in line with DfT's assumptions for RIS3, the costs discussed here do not cover these projects in the expectation that additional funding will be made available when the government makes the relevant decisions regarding these projects.

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5.3 Because of the constraints imposed by the £24 billion SoFA and DfT's requirement to broadly maintain performance, National Highways undertook a prioritisation process to reduce the cost of its committed enhancements from an initial forecast of £6.4 billion during the third road period (RP3, April 2025 to March 2030). Based on an assessment of current delivery status, value for money, deliverability and strategic importance, the company proposed deferring or re-phasing four projects and effectively cancelling six, resulting in a portfolio of 20 committed enhancements (excluding A303 Stonehenge and LTC). Following a ministerial decision and updated RIS3 assumptions communicated by DfT on 18 March 2024, the company revised its proposal. It would now defer three projects, with the A46 Newark Bypass instead proceeding "to plan". Overall, the deferrals and cancellations resulted in a cost reduction for the committed enhancements of £1.9 billion and a total RP3 cost for existing enhancements (including £139 million of legacy costs) of £4.6 billion.

5.4 Figure 5.1 shows that enhancements spend is expected to increase in the final year of RP2 and to stay at a relatively high level, above £1.5 billion per year, in the first two years of RP3. It then drops off substantially in the second half of the road period. We discuss the implications of this planned spend profile in our assessment below.

**Figure 5.1 Enhancements expenditure across road periods (£ million, nominal)**



5.5 Table 5.1 sets out the enhancements costs that National Highways provided in the draft SBP and compares them in real terms (using CPI inflation) to the equivalent costs in RP2. This comparison is complicated by the RP2 costs including allocations from the central risk reserve (CRR). Including the £128 million allocation of RP3 CRR funding implied by the company's quantified cost risk

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analysis (QCRA), this shows a 44% decrease in real terms enhancements spending in RP3.

**Table 5.1 Enhancements (£ million)**

	RP3 (Nominal)	RP3 (Real – 2022-23 prices)	RP2 (Real – 2022-23 prices)	% Difference in real terms
Existing enhancements commitments	4,615	4,136	8,612	-52%
New enhancements	300	260	0	-
LTC	750	681	904	-25%
Future RIS and scheme development	285	250	252	-1%
<b>Total</b>	<b>5,950</b>	<b>5,327</b>	<b>9,769</b>	<b>-45%</b>
Central risk reserve (notional allocation)	128	115	NA	NA
<b>Adjusted Total</b>	<b>6,078</b>	<b>5,441</b>	<b>9,769</b>	<b>-44%</b>

## Our assessment

### Existing enhancements

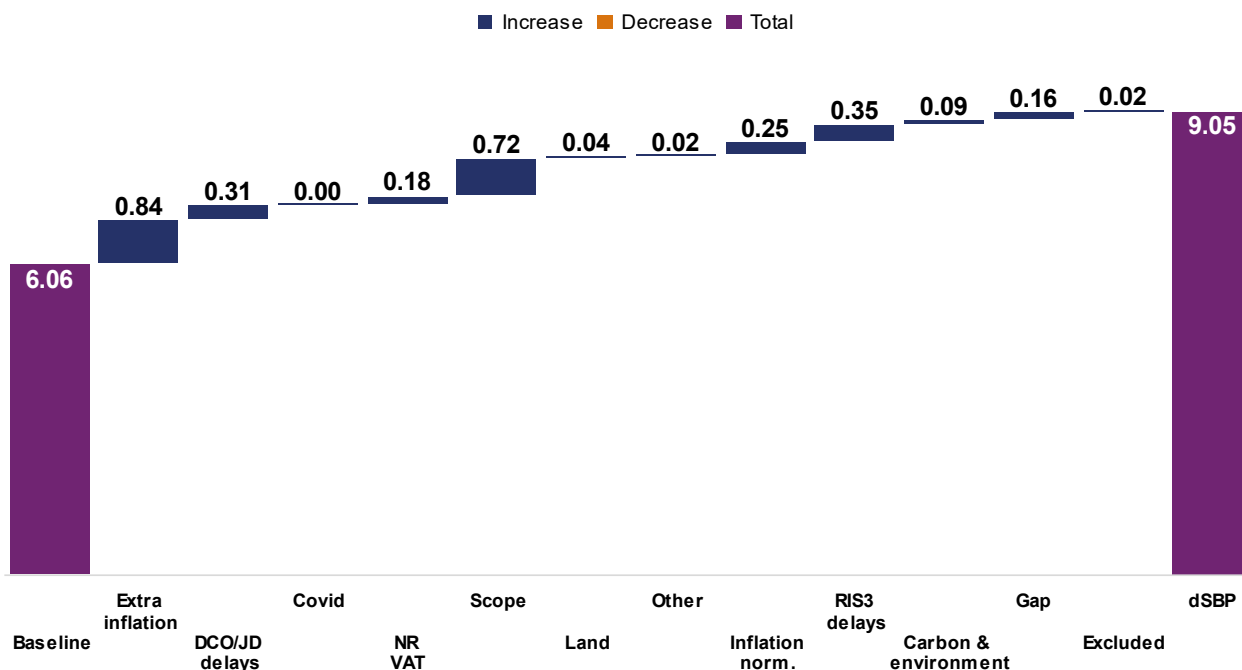
#### Overall affordability and deliverability

5.6 National Highways' prioritisation process has reduced the funding gap between the company's plans and the SoFA but is not sufficient to eliminate it. The company's risk analysis in the draft Strategic Business Plan (SBP) indicates a 0% probability of delivering the committed enhancements for the available funding, if spending in other areas is held constant and the funding gap and inclusion of the £460 million cost for the A46 Newark Bypass are taken into account. It is therefore unclear why the company's overarching narrative in its draft SBP presented the plans as challenging and deliverable.

**Cost estimation, cost escalation and embedded efficiency**

- 5.7 As described above, the vast majority of cost in existing enhancements relates to 20 committed enhancements (reduced from an initial list of 26 by National Highways in its prioritisation process). Our consultants, CEPA, undertook detailed case study reviews of six of these enhancements (including the development and pre-construction costs for LTC that we cover separately below) to complement our portfolio-level assessment.
- 5.8 The share of the cost of the 20 committed enhancements that National Highways expects to incur in RP3 is £4.5 billion. However, the forecast total outturn cost for the portfolio has increased from £6.1 billion (at their RIS2 baseline level, following the 2021 Spending Review) to £9 billion in the draft SBP submission. Figure 5.2 shows the company's analysis of the causes of this cost escalation. The high levels of inflation during RP2 have been responsible for around a third of this increase, exacerbated by delays to the committed enhancements, either in gaining planning consent or to ease affordability challenges (the "RIS3 delays" block in the chart below).
- 5.9 However, other factors have been responsible for over £1 billion of the cost increase. Some of these, like the impact of the COVID-19 pandemic and changes to the treatment of non-recoverable VAT, can be considered as headwinds over which National Highways had little control. While other categories – "other", "gap" and "excluded" – are not well defined and represent areas where the company has not been able to clearly identify the cause. At a project-level, CEPA's deep-dive case studies found a variety of factors behind the cost change categories. These included "scope" (substantial at over £700 million), and the catch-all or unexplained "gap" category.

Figure 5.2 RIS3 enhancements cost escalation (£ billion, nominal)



5.10 This general picture of cost escalation in the portfolio as a whole was reflected in the deep dive case studies. CEPA concluded that National Highways' cost estimation is procedurally sound but that the most likely cost estimate for a project tends to increase over its life – a pattern that has been commonly seen historically across the company's enhancements projects. These conclusions are similar to those from previous work we have commissioned in this area, such as [Nichols' review of the company's cost estimation](#) that supported our RIS2 Efficiency Review.

5.11 National Highways has applied cost uplifts for carbon reduction and biodiversity gain totalling £89 million across the portfolio. However, only a proportion of this would fall in RP3, with some falling in RP4 or beyond. The company has not applied these uplifts uniformly to all projects. Rather it has attempted to recognise where designs and costs already include these environmental measures. However, our case study review found instances, such as the A417 Air Balloon project, where a carbon cost overlay has been applied despite the design, and therefore the cost estimate, already reflecting a 35% carbon reduction.

5.12 In the next iteration of its plans, National Highways' updated project estimates must include the costs of carbon and biodiversity measures, so that overlays are no longer required. The risks of additional costs for further improvements in carbon

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or biodiversity beyond the level already included in designs and cost estimates should be considered as part of the risk provision.

- 5.13 National Highways' draft SBP states that the RIS2 baseline cost of the 20 committed enhancements includes £209 million of embedded efficiency across RP3. It argues that this embedded efficiency – originally applied to the £6.1 billion baseline cost – should still apply to the increased £9 billion as all of the cost increases are essentially the result of external factors.
- 5.14 We recognise that some of the cost increase, such as from high inflation, is from headwinds outside of National Highways' control. However, cost changes in categories such as “scope” would be considered as inefficiency (or improved efficiency, if costs come down) for embedded efficiency reporting.
- 5.15 Furthermore, in its draft efficiency report for 2023-24, National Highways is reporting negative embedded efficiency for enhancements for the first four years of RP2. The company is forecasting that it will be around £200 million below the embedded efficiency enhancements element of its KPI target for the road period as a whole.
- 5.16 This suggests that, under National Highways' proposed approach, there is a risk that projects that are reporting as inefficient (or below target) in RP2 (after adjustment for headwinds), could switch to reporting as meeting their efficiency target in RP3, simply by virtue of having their costs re-baselined to a higher level. We do not believe that this would be a credible way for the company to report efficiency, either at a project or portfolio level, in RP3.
- 5.17 This is particularly the case for schemes that have been operating under the embedded efficiency process during RP2, as efficiency for these projects has been assessed against the lower RIS2 baseline costs. We recognise the differences in the measured efficiency process that applies to earlier stage schemes when costs and scope are less established.
- 5.18 As such, we recommend that the higher, re-baselined costs for RP3 are treated as pre-efficient for schemes that have been operating under the embedded efficiency process during RP2. This would be similar to other areas of spend, where pre-efficient costs are reset at the beginning of a road period so that National Highways is appropriately incentivised (and reports on) continual efficiency improvement. This is important for transparency and to allow funders and taxpayers to see whether it is delivering schemes in an efficient manner. We would be open to further discussions with the company to enable it to establish baseline

pre- and post-efficient costs for the smaller set of schemes that have operated under the measured efficiency system during RP2.

5.19 A further implication of National Highways' proposed approach to efficiency for enhancements is that it suggests there is no scope for further efficiency improvements to be made during RP3. The procurement and project management capability review that we jointly commissioned with the company in preparation for the Efficiency Review recognised that the scope for efficiencies is likely to become more limited as a project progresses. However, it concluded that there is still scope for limited improvements to be made at these late stages. As such, we recommend that a modest additional embedded efficiency challenge should be applied to the portfolio of committed enhancements. This is shown in table 5.2. More detail is given in the section on efficiency. It should be noted that the £80m of additional efficiency will depend on the final composition of the portfolio and is therefore subject to change.

**Table 5.2 RIS3 enhancements efficiency capability**

PCF stage	PCF stage efficiency scenarios	Annual efficiency
PCF Stage 2	After options (mid-range)	2.2%
PCF Stage 3	After development (mid-range)	0.9%
PCF Stage 4	After development (mid-range)	0.9%
PCF Stage 5	After development (mid-range)	0.9%
PCF Stage 6	After development (low-range)	0.7%

**Risk allowances in enhancements cost estimates**

5.20 CEPA's review found that National Highways' most likely project cost estimates have tended to increase over a project's lifecycle (paragraph 5.10). It also found that these increasing most likely cost estimates have tended to stay within the range of the project's minimum and maximum estimated costs.

5.21 High inflation and planning delay have doubtless played a significant role in driving increasing costs in National Highways' enhancements projects over recent years. However, this also reflects longer-term trends in the tendency for project costs to escalate over time. The conclusion from Nichols' earlier work (for RP2) was that the company places too much emphasis on point estimates at an early stage of

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project development. This historical tendency for costs to move up in the range over time also raises the question of whether there is sufficient allowance for risk in the most likely project cost estimate.

- 5.22 During RP3, National Highways should review its approach to enhancements cost and risk estimation to ensure it continually takes account of empirical data from past delivery. This should form part of a wider cost and estimation improvement plan that we recommend should be required in RIS3. Further detail is given in annex A.
- 5.23 We have observed that National Highways' inflation assumptions are above the most likely level as they include additional allowances for inflation risk. This is discussed in more detail in the section on inflation. These assumptions tend to understate the level of delivery confidence associated with a given level of funding – that is, all else being equal, a “P50” cost constructed with above P50 inflation assumptions would in practice have a higher p-value.
- 5.24 Putting aside National Highways' treatment of inflation risk, we are additionally concerned about the adequacy of its overall enhancements risk provision because:
- (a) the case study review found that project-level risk provision is generally lower than the rates that would be expected from benchmarks (primarily DfT's [Transport analysis guidance on cost estimation](#));
  - (b) the company's QCRA – based on the ranges in its cost estimates – suggests that a relatively small amount of CRR funding (£128 million, or 3% of the project-level costs) would be needed to achieve a P50 level of delivery confidence (if there were no funding gap); and
  - (c) cost estimates and risks are based on projects progressing “to plan” through the planning process – where during RP2 delay in achieving development consent order (DCO) planning consent, and legal challenges to it, has been a large driver of cost escalation and delay.
- 5.25 Since National Highways submitted its draft SBP, we understand that the cost of the portfolio has been revised further upwards by around £400 million. We also understand that funding reductions in RP2 mean that the company is facing under-funding of circa £300 million in 2024-25. This could lead to further slippage of cost into RP3.

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- 5.26 In the financial model accompanying its draft SBP, National Highways included £423 million of CRR provision for enhancements as a provisional allocation based on the outcome of the initial SoFA-setting process in spring 2023. However, the company's more recent QCRA indicated that £128 million would be sufficient for a P50 level of delivery confidence (if there was no funding gap). This, more recent, modelling is used to indicatively apportion the CRR between enhancements and renewals and we base our assessment on this estimate.
- 5.27 In light of the recent cost escalation and risk of further slippage highlighted in paragraph 5.25, we are concerned about the adequacy of risk provision and that National Highways' planned CRR could be exhausted by the start of RP3.
- 5.28 In addressing the overall affordability of the portfolio, National Highways and DfT must consider the right size of the CRR within the £24 billion SoFA. This should include consideration of the risk provision required for renewals, as well as the committed enhancements.

### Schedule deliverability and the implications of delay

- 5.29 Compared with the equivalent stage of RIS2 development, National Highways' portfolio contains fewer enhancements schemes, they are more developed and there has been greater opportunity for collaboration with the supply chain. The company's approach to scheduling is broadly sensible. However, there are two key points to note:
- Before considering the A303 Stonehenge and LTC, the portfolio contains three projects of a similar scale to the A14 Cambridge to Huntingdon scheme (the largest that National Highways has delivered). The schedules for these projects appear deliverable but, given their scale and complexity, if risks materialise and they fall behind, it could be harder to recover and deliver the projects to schedule.
  - In its scheduling, National Highways assumes that the DCO process will run to standard timescales, with decisions made in line with the statutory timescales and a 12-month gap between a decision and the start of works, to allow for mobilisation. These are appropriate standard assumptions but do not account for the risk that has materialised during RP2 where decisions are either delayed or legally challenged. These risks may have reduced with the implementation of the company's DCO action plan and courts upholding DCO decisions in several instances during RP2, but they still remain. There are similar risks arising from the timing of the general election that has seen

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the scheduled DCO decision on LTC put back from June to October 2024 and could affect the progress of other projects.

- 5.30 During RP2, delay, often resulting from the DCO process, has led to National Highways' costs and activity slipping into RP3. This has offset the cost escalation from higher inflation and largely avoided affordability challenges during RP2. However, the profile of start of works dates and spend that the company has proposed for RIS3 means that this form of "natural slippage" is unlikely to be an effective way to manage overprogramming and reduce the funding gap during RP3.
- 5.31 Figure 5.1 shows National Highways' enhancements spending increasing significantly in the final year of RP2. We understand that there is a shortfall of funding in 2024-25 that could see more of that cost move into RP3. Given that the majority of committed enhancements spend is forecast to fall in the first two years of RP3, slippage is unlikely to reduce costs during RP3.
- 5.32 Table 5.3 illustrates this, by shifting costs to the right by 12 and 24 months:
- in scenario one, for schemes scheduled to start work in 2024-25; and
  - in scenario two, additionally delaying schemes for which the proposed start of works date could be considered "at risk" from a delayed DCO decision or legal challenge (even if that challenge were ultimately unsuccessful).
- 5.33 This analysis is crude as it does not take account of any additional costs, either incurred during the period of delay or from, for example, higher inflation as a result of a later start date. As such it is not intended to capture the potential financial implications of these risks (that are not included in National Highways' QCRA) but it demonstrates the limited scope for unplanned delay to projects to manage the funding gap between the SoFA and the company's plans.

**Table 5.3 Enhancements delay funding implications (£ million)**

Delay	Scenario 1	Difference from baseline	Scenario 2	Difference from baseline
12-month delay	4,475	-2.0	4,419	-58.1
24-month delay	4,471	-5.9	4,198	-278.8

## New enhancements

5.34 In contrast to the first road investment strategy (RIS1) and RIS2, National Highways' proposals for new enhancements in RIS3 focus primarily on small schemes. In its draft SBP, the company proposed a £200 million fund to deliver these small enhancements and has a £100 million provision for the A14 J10a project – the only new major enhancement proposed to start construction during RP3.

## Small schemes

5.35 National Highways' objectives for its small schemes programme are to:

- reduce congestion;
- improve safety;
- improve provision for active travel; and
- contribute to the levelling-up agenda.

5.36 National Highways generated an initial long list of potential sites for improvement from a wide range of sources, including its route strategies. From this, its draft SBP lists 70 potential locations spread across its operational regions. The company plans to prioritise this further to produce a short list of five schemes in each of its regions. This process is already underway and the draft SBP detailed the current front runners across four regions.

5.37 National Highways' plans for identifying, prioritising and developing interventions over the first three years of RP3 appear sound. There is a clear focus on value for money and deliverability in its prioritisation. The process should generate sufficient projects to effectively utilise the fund and deliver the projects in the final two years of the road period. The company expects to 'over-programme' its small schemes. Over-programming is important in that it allows the company to manage the risk that some prospective schemes drop out of the programme – for example, the company's analysis of the early front runners shows that some could exceed the planned £25 million cost ceiling – and should provide an initial pipeline if there are similar programmes in future road periods.

## A14 J10a scheme

5.38 In line with DfT's requirements for RIS3, National Highways' proposals include provision for the A14 J10a project to begin construction during RP3. The draft SBP

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includes £100 million of funding and the profile of spend implies a start of works in the final two years of the road period.

- 5.39 The scheme is required to facilitate a related housing development near Kettering. National Highways and the developer have each agreed to meet 50% of the options phase costs. The funding and delivery model for the development and construction phases are still to be agreed but the company is assuming that these will also be shared with the developer.
- 5.40 The scheme is at an early stage. National Highways is considering a wide range of options, and therefore costs and timescales. At one end of the scale are smaller-scale interventions that could potentially be completed within RP3 with a <£100 million contribution from the company. At the other end are larger interventions that would not begin construction until RP4 and would require >£100 million funding from the company, but likely not during RP3. Ultimately, the required or preferred intervention and timescales for delivery are likely to be driven by the pace of the related development.
- 5.41 Given the uncertainty around the required solution and the timescales for the project, it is difficult to assess the adequacy of the proposed RP3 funding. However, given the range of options we have seen, it seems more likely that the funding will be more than is needed, rather being insufficient. At the appropriate stage, National Highways should make clearer commitments for the expected cost and timescales for the project. In the meantime, it is important for the company to have a contingency plan for how it could use the funding elsewhere, for example to scale up its small schemes programme.

### RIS4 development and pipeline

- 5.42 National Highways' draft SBP sets out a £285 million funding requirement for future RIS and pipeline development. This is split £223 million for the future enhancements pipeline and £62 million for RIS development. In real terms, this would be a 1% reduction on the forecast equivalent spending during RP2.

### Pipeline

- 5.43 Consistent with DfT's expectations and assumptions for RIS3, National Highways plans to stop work on 26 of the current pipeline schemes and pause one more. This leaves a current pipeline of 11 schemes that the company will develop during RP3, including six Network North projects, and a twelfth scheme that is currently paused. DfT has indicated to the company that funding for the development of the six Network North projects will be additional to the £24 billion SoFA.

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- 5.44 National Highways' approach to developing the pipeline is split into two phases. By 2027-28, the company plans to complete the options phase (up to PCF2) on 16 projects – the six non-Network North existing pipeline schemes and ten projects that it will develop from PCF0. The costs, £84 million for the 16 projects, are based on the company's experience developing projects during RP2.
- 5.45 In the final two years of the road period, National Highways has made provision for £139 million to take viable projects through the development phase of the PCF process, for delivery in RIS4. These costs are not based on assumptions about specific, or a number of, projects that it will take forward. Rather, the company is planning a flexible approach that will respond to how the prospective projects are performing and emerging plans for RIS4. Given the level of uncertainty around the projects, this appears to be a reasonable approach.

### RIS4 development

- 5.46 National Highways' plans include £62 million for RIS strategic planning and investment case development. The RIS strategic planning costs cover the whole RIS development process, including:
- route strategies;
  - strategic studies;
  - the SRN initial report;
  - strategic business plan; and
  - RIS4 delivery plan.
- 5.47 Within this, the costs include traffic modelling and economic analysis, and developing the cases for renewals and digital investment. The scope and costs of the work are based on equivalent activities during RP2, with additional funding of £5 million for more focused development of the digital case.
- 5.48 National Highways is also proposing £11 million for its investment case development. This is intended to provide a more integrated and responsive approach to investment planning that would bring together the various levels of the company's plans (for example, [Connecting the Country](#) and [route strategies](#)) and look across multiple road periods. Given the scale of spending in each road period, investing in National Highways' planning capability appears worthwhile. The company needs to set out in more detail (for example, in its Delivery Plan) what it expects to deliver, by when, and the expected benefits.

## Lower Thames Crossing

- 5.49 National Highways' plans for the LTC project in the draft SBP are based on starting construction in August 2026, in line with the Written Ministerial Statement of 9 March 2023 that delayed the project by two years. DfT's expectations and assumptions for RIS3 state that the £24 billion SoFA excludes funding for LTC construction. As such, the draft SBP focuses on the development and pre-construction (referred to hereafter as 'development') costs.
- 5.50 National Highways' draft SBP includes £750 million of funding for LTC development costs during RP3, out of total estimated development costs during RP3 of £1.1 billion, and a forecast most likely total outturn cost of £8.9 billion. The company envisages that £750 million would be sufficient for the period before the scheduled start of works, in August 2026. The shortfall of around £340 million relates to development activity that would continue after the start of works.
- 5.51 There is a risk that National Highways' proposed £750 million funding would be insufficient if development and pre-construction activity were to continue beyond summer 2026, without a final decision on the project's future and funding (although in such a scenario the pace of pre-construction activity might slow). And there is a related risk that the majority of the development and pre-construction costs (except potentially around £160 million on land acquisition) would be unrecoverable if the project were not to proceed.
- 5.52 The risks of the £750 million being potentially insufficient and/or unrecoverable reflect the wider challenge in allocating funding from the RIS3 SoFA to such a large project, when its schedule – and, therefore, its costs within RP3 – are so uncertain. The Secretary of State's decision to delay the project's DCO decision (from June to October 2024) following the calling of the general election heightens this uncertainty. It increases the risk around the contractual 'go/no go' point in summer 2025 and the current August 2026 start of works milestone.
- 5.53 Ultimately, the necessity and/or sufficiency of the £750 million funding depend on decisions about how the project will proceed. DfT is committed to LTC but, to ensure it progresses efficiently, decisions about how the additional funding will be approached should be made as a matter of urgency. This would ensure that the development and pre-construction activity can continue, and that any spend is not wasted if, for example, there is a post-election spending review that would otherwise lead to further delays.
- 5.54 The urgency of the need to decide on LTC's wider funding can be illustrated by the shortfall of £340 million between the proposed funding and estimated total cost of

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the development activity in RP3. This is around half the size of the proposed CRR and exceeds the £128 million that National Highways estimates it would need from that reserve to achieve a P50 level of confidence for its committed enhancements. If the company had to meet the full development costs for LTC without additional funding, it would significantly disrupt the wider portfolio and network performance (if renewals funding was affected).

- 5.55 This demonstrates the scale of the risks associated with LTC relative to the enhancements portfolio as a whole. And this would be magnified were the full costs of LTC – likely to be in the region of an additional £4.5 billion during RP3 based on current plans and an August 2026 start of works – included in the SoFA. Therefore, as part of the wider decisions about the project, it will be important for government and National Highways to agree an approach to risk that does not expose the rest of the portfolio to risks around LTC.

### Key proposals

National Highways' proposed enhancements portfolio is not affordable within the £24 billion SoFA, given DfT's wider RIS3 requirements. In the absence of alternative levers to manage the underfunding, DfT and the company need to look again at options for further cancellation and deferral of enhancements.

In doing so, National Highways should prepare options that take account of our recommendations on inflation, efficiency and consider the adequacy of the central risk reserve (for both enhancements and renewals).

As project costs and designs mature, National Highways must no longer apply cost overlays for carbon and biodiversity improvements. If the full costs are not covered in designs or estimates, this needs to be included in the consideration of risk funding.

National Highways must not roll-over previous embedded efficiencies. The higher, re-baselined costs for those projects should be treated as pre-efficient for RP3. We will engage further with the company on the appropriate pre- and post-efficient baselines for schemes operating under the measured efficiency system in RP2.

Decisions about how the LTC will proceed are required to fully assess the sufficiency and/or necessity of the proposed development and pre-construction funding in RP3. Those decisions should include agreeing an approach to risk that does not expose the rest of National Highways' portfolio to LTC risks.

## 6. National Programmes and Designated Funds

### National Programmes

6.1 National Programmes form a new part of National Highways' portfolio. Distinct from Designated Funds, they have been established to respond to legal requirements, mandatory obligations or government objectives. National Programmes are proposed to have a more developed forward pipeline of activities and be subject to more centralised control to provide a 'guiding mind', again in contrast to Designated Funds. We consider this to be a positive proposal. The company has proposed three National Programme funding lines:

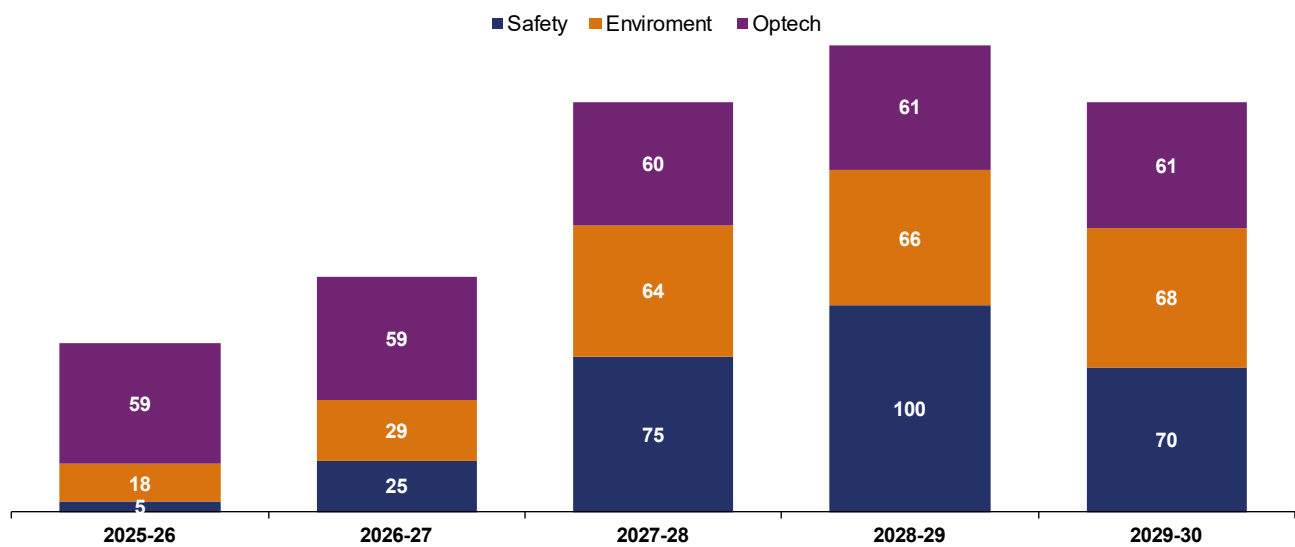
- Safety;
- Environment; and
- Roadside (operational) Technology.

6.2 In total, National Highways has allocated £820 million to National Programmes. Roadside Technology has the largest allocation. Table 6.1 shows the breakdown between programmes. The total spend profile, shown in figure 6.1, is backend loaded, building gradually in years one and two before ramping up in years three and four, before decreasing slightly in year 5. Funding for the Roadside Technology National Programme is more evenly divided across the road period. The backend loaded profile for the Safety and Environment National Programmes may increase the risk of missed programme commitments pushing delivery into the next road period.

**Table 6.1 National Programmes financial breakdown (£ million, nominal)**

	RP3
Safety	275
Environment	245
Roadside (operational) Technology	300
<b>Total</b>	<b>820</b>

Figure 6.1 National Programmes RP3 expenditure (£ million, nominal)



### Safety National Programme

6.3 National Highways has allocated £275 million to the Safety National Programme. It intends that it will directly contribute to achieving its Road Safety key performance indicator (KPI) target. It is focused on 18 priority corridors with current poor safety performance and a low International Road Assessment Programme (iRAP) star rating, divided across the company's operational regions. The company has carried out relatively detailed studies for nine and will assess the remaining nine. It also intends to prepare some reserve schemes. The year by year spend shows a backend loaded profile of expenditure, with a modest spend in Year 1 of the road period.

6.4 It is plausible that a programme of improvements on these roads may make a material reduction to National Highways' safety KPI. The company estimates that the 18 schemes will produce a reduction of around 17 killed or seriously injured (KSIs) people per year. This appears to be a conservative estimate and does not include the benefits of any speed management measures. Speed management measures are a particularly cost-effective method for reducing collisions and the number and severity of casualties. In addition, because of the profile of the delivery programme, the company estimates that the benefits will only begin to occur in the last year of the third road period (RP3, April 2025 to March 2030). As the company further refines its Safety National Programme it needs to provide more detailed plans for the next iteration of the SBP, demonstrating its readiness to start delivering from the start of RP3.

## Environment National Programme

- 6.5 National Highways has allocated £245 million to the Environment National Programme. The company intends to use the programme to deliver activities that meet environmental legal requirements or government commitments that would not otherwise be achieved through enhancements, OMR or Corporate Services initiatives. These obligations include a number of provisions related to improving water quality, improving the status of Sites of Special Scientific Interest (SSSIs), improving the cultural heritage of sites on the strategic road network (SRN) noise reduction for communities adjacent to the SRN and enhancing biodiversity. The company's spending profile for the Environment National Programme funds is backend loaded. This may increase the risk of missed programme commitments pushing delivery into the next road period.
- 6.6 The Environment National Programme is divided into the following elements:
- Water quality
  - Noise
  - Cultural and heritage assets
  - Biodiversity – SSSIs
  - Biodiversity – no net loss

### Water quality

- 6.7 National Highways has allocated £127.5 million for improving water quality. The company has a legal duty under the Water Regulations (2017) and Environment Permitting Regulations (2016) to not pollute water courses. In order to meet this obligation and improve water quality, National Highways will mitigate confirmed high-risk outfalls from which run-off polluted water enters into watercourses near the SRN. It has committed to do this by 2030 in its Environmental Sustainability Strategy. The company's plans for improving water quality are at an early stage. It is currently undertaking verification of outfalls to understand how many high-risk outfalls it needs to address. This, in turn will inform the feasibility and early design work that it has procured an external technical adviser to carry out and help accelerate the programme. It has a rough expectation of the number of outfalls it will seek to mitigate in RP3 (approximately 260) and a high-level cost estimate. The company expects its RIS3 water quality programme to be considerably larger than in previous road periods. As such, its plans need to be developed further and at pace given the anticipated large step up in delivery.

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- 6.8 In our view, the step up in volume and the current lack of preparedness indicate that the company may not be ready to deliver on schedule. As the expected delivery profile is backend loaded, any delay could risk delivery, pushing it into the next road period. As the company makes further progress with its verification work and feasibility designs it needs to provide more detailed plans for the next iteration of the SBP, demonstrating its readiness to start delivering from the beginning of RP3.

### Noise

- 6.9 National Highways has allocated £45 million for noise mitigation. The company now has considerable experience delivering noise mitigation. It is on track to deliver the RP2 target of mitigating 7,500 households: 31% of the target needs to be mitigated in the final 12 months of RP2, with plans in place to achieve that. Cost estimation relies on a top-down figure of £7,200 per household. This is built on experience from RP1 and RP2. National Highways has noted that the programme will be limited by the budget allocation, resulting in a proposed RIS3 target of 6,250 households. In our view, there is scope to apply a modest 0.5% annual efficiency challenge to the programme. This would support the company to deliver a higher target of around 6,430.
- 6.10 The company should, at this stage, understand the risks and challenges to its programme, but it has not yet developed a detailed plan for RIS3. Given the company's experience in noise reduction, it should plan a continuous programme (as opposed to treating each five-year period in isolation), and evidence this in the next iteration of the SBP. Its current approach could result in backend loading of the RIS3 programme with a risk that it will be unable to complete work on time, as is currently the case in RP2.

### Cultural and heritage assets

- 6.11 National Highways has allocated £11.5 million. The company is responsible for a range of cultural heritage assets, such as those on the National Heritage List for England, that are on or adjacent to its network. The requirement to improve the condition of cultural heritage assets stems from the Protocol for the Care of the Government Historic Estate 2017, which requires government departments to protect heritage assets. It has set a target of delivering approximately 900 Cultural Heritage Units (CHUs) over RIS3 to bring all assets up to an 'adequate' condition. This is a significant increase to the CHUs that the company has delivered to date during RP2. The company has created Cultural Heritage Asset Management Plans (CHAMPS) for these assets that detail the condition of the assets and provide recommendations for maintenance and repair. These plans do not provide

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information on the number of CHUs assigned to each asset and this means that there is no line of sight from the CHAMPS to performance.

- 6.12 Despite making very limited progress against this performance indicator (PI) in RIS2, National Highways has proposed a large scaling up of work. We have been unable to assess whether this is reasonable given the limited information that the company has provided. We recommend that National Highways needs to provide more detailed plans for the next iteration of the SBP, demonstrating its readiness to start delivering from the start of RP3.

### **Biodiversity – SSSIs**

- 6.13 National Highways has allocated £22 million. This is a new area of focus for National Highways. Section 102 of the Environment Act 2021 amended the existing general duty under the Natural Environment and Rural Communities Act (2006), which was focussed on conservation of biodiversity. The amendment extended the existing requirements on public authorities to include 'enhancement' of biodiversity. The company has responded to this by proposing to ensure that all of its SSSIs are in 'favourable' condition within RIS3.
- 6.14 There are 102 SSSI in total owned by the company in full or partially. The company has identified 68 sites requiring intervention to reclassify them from an 'unfavourable' to 'favourable' condition status. Favourable condition means that the SSSI's habitats and features are in a healthy state and are being conserved by appropriate management. We would expect the work undertaken as part of ensuring all sites are in 'favourable' condition to have material overlap with other environmental outcomes, for example, biodiversity and water quality. We expect the company to undertake significant stakeholder engagement as part of its plan to address the sites. More broadly, the company's plans are not yet well formed and appear ambitious given the complexity of enhancing SSSIs. We are also concerned that its cost estimates, based on work in RIS1, maybe overly simplistic given the range of activities that can be involved in addressing a SSSI. The company could offset the risk in these estimates by aligning works with those in other outcome areas. It recognises, but it does not appear to have systematically considered the potential for synergies in its draft SBP. This needs to be addressed in its next iteration of its plan.

### **Biodiversity – no net loss**

- 6.15 National Highways has allocated £40 million to fund initiatives to deliver no net loss on the company's estate. From January 2023, the Environment Act 2021 extended the biodiversity duty on public authorities, originally introduced in the

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National Environment and Rural Communities Act 2006 section 40, to provide for the enhancement and improvement of biodiversity. The company's RIS3 ambition is to be 'Net Positive for Nature'. It defines this as improvements in biodiversity delivered by the company that exceed the loss incurred through construction interventions, renewals and natural degradation of habitats. The company did not provide detailed evidence of the type of programme activities that this would fund. As described in paragraph 6.51, National Programmes are intended to deliver activities that meet obligations that would not otherwise be provided through other budgets, such as OMR. However, it is not clear what additionality this budget seeks to deliver above and beyond the OMR spend on the soft estate. National Highways must set out a clearer plan, ahead of the next iteration of the SBP, for expenditure on biodiversity, clearly delineating between funding included in OMR, National Programmes and Designated Funds.

### Roadside Technology National Programme

6.16 National Highways' proposed Roadside Technology National Programme totals £300 million. This programme is outlined in 'Section A: OMR – Renewing the Network' of the draft SBP. It is reviewed in paragraph 4.50, in section 4 ('Renewals') of our interim advice.

### Designated Funds

6.17 Designated Funds is a dedicated funding stream for improvements, or mitigations to issues, valued by SRN users and local communities that are beyond the traditional focus of roads investment. It is a funding stream that National Highways has designed to be reactive, rather than having a five-year pipeline. There are four Designated Funds funding lines:

- Safety;
- Customer and Communities;
- Research and Innovation; and
- Environment.

6.18 National Highways has allocated £405 million to Designated Funds in RP3. Environment has the largest allocation. Table 6.2 shows the breakdown between funds. The total spend profile, shown in figure 6.2, is backend loaded, ramping up gradually from year 1 through to year 5. The backend loaded profile may increase

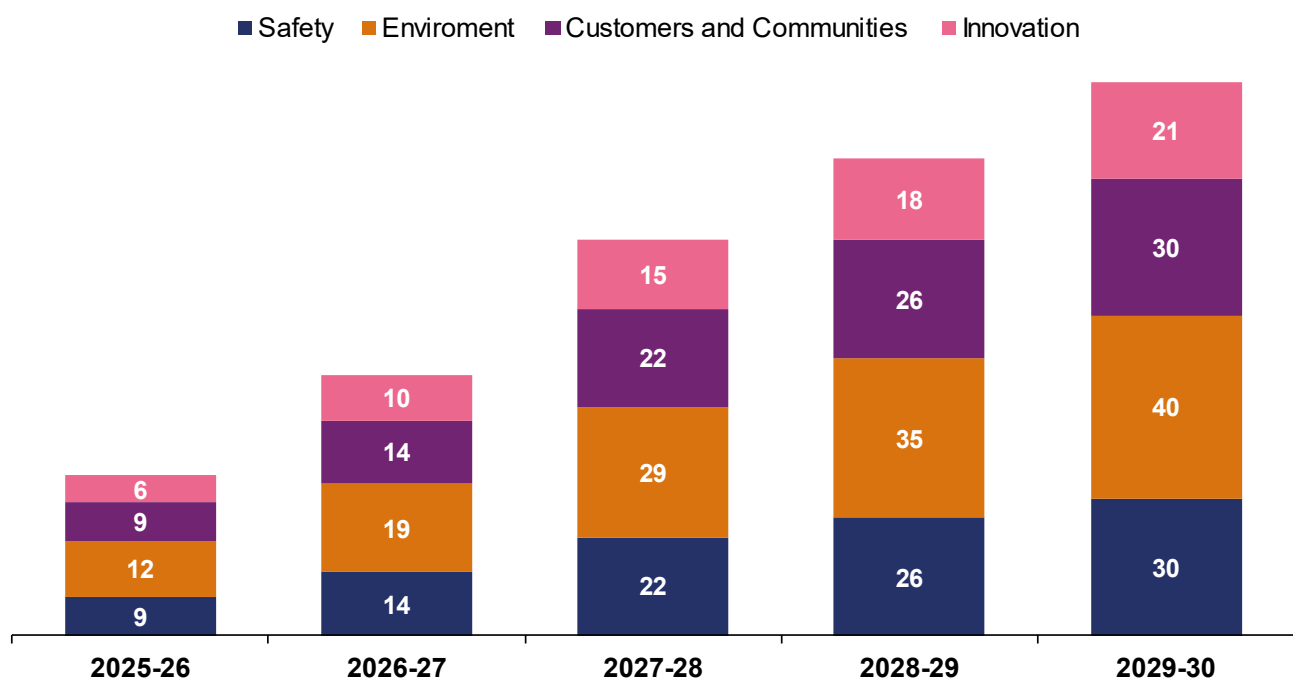
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the risk to delivery. This may increase the risk of missed programme commitments pushing delivery into the next road period.

**Table 6.2 Designated Funds RP3 (£ million, nominal)**

Fund	RP3
Safety	100
Environment	135
Customers and Communities	100
Innovation	70
<b>Total</b>	<b>405</b>

**Figure 6.2 Designated Funds spend by RP3 theme (£ million, nominal)**



### Safety Designated Fund

6.19 National Highways has allocated £100 million to the Safety Designated Fund. The company expects it to directly contribute to it achieving its Road Safety KPI target. The funding profile is backend loaded, with three times the spending planned in later years than the early years. It is focused on the following four themes:

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- suicide prevention – targeting frequently used locations, in addition to what is delivered within renewals and enhancements projects;
- road based user compliance – implementing safety compliance methods, for example, speed enforcement cameras;
- effective action – interventions to improve safety following collision investigation; and
- segregation – initiatives to protect vulnerable road users such as people walking, cycling or horse riding.

6.20 National Highways told us that it could not specify its RIS3 programme until it had completed an assessment of the actions it is currently taking in the second road investment strategy (RIS2). Consequently, the company was unable to provide us with a notional pipeline of spending into RIS3 on the basis of what it is currently spending. The company estimates that Designated Funds will produce a saving of around 10 KSIs per year that will begin to materialise in the last four years of RP3. This estimate appears to be conservative and is unevidenced.

6.21 We acknowledge Designated Funds are specifically designed to respond to stakeholder priorities in areas not directly covered by OMR or enhancements, and intended to provide the company with a degree of flexibility to respond to requirements as they emerge during the road period. However, in our view, the benefits of having more detailed plans would outweigh the risk of any perceived loss of flexibility. Despite delivering similar activities in RP2, there is limited evidence of a pipeline of projects to enable it to proceed quickly at the start of RP3.

### Environment Designated Fund

6.22 National Highways has allocated £135 million to its Environment Designated Fund. The funding profile is backend loaded. It is focused on the following main categories of activities:

- mitigating pollution: air quality (£11 million) – National Highways has not clearly defined its objective for the air quality funding. This is important given the company's ability to deliver meaningful progress towards the UK's emissions targets is limited. It does not describe a programme of work in its draft SBP and it does not have an overarching approach to cost estimation for air quality initiatives. Its plan will be reactive to, as yet, unidentified opportunities as they arise;

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- soft estate (£6 million) – National Highways has not provided any detail for this proposed budget item or whether and how it overlaps with its proposed renewals spend on the soft estate;
- landscape scale connectivity (£65.5 million) – National Highways is proposing to spend £25 million on urban initiatives and areas of high landscape and recreational value. It has allocated £40.5 million to ‘scaling up nature-based solutions and natural flood management, three million trees and some biodiversity improvements’;
- climate resilience ‘off-network’ (£48 million) – National Highways has not provided any detail for this proposed budget item; and
- National Highways has made relatively smaller allocations for the circular economy (£2 million), responsible sourcing (£1.5 million) and enabling activities (£4 million). It has not provided any detail for these proposed budget items.

6.23 National Highways’ draft SBP provides no explanation as to how it has determined the cost allocations within the Fund. There is a lack of specificity concerning what will be delivered, and the benefits that will arise. In addition, its proposed funding lines do not have a clear and direct link to the Performance Specification (section 9). Similarly to the Safety Designated, in our view, the benefits of having more detailed plans would outweigh the risk of any perceived loss of flexibility. National Highways should set out a clearer plan, ahead of the next iteration of the SBP, for expenditure for the Environment Designated Fund.

6.24 There also appears to be some overlap between other funds in the draft SBP. For example, National Highways has given a commitment to plant three million trees in its Net Zero Highways plan. However, the company has not provided evidence in the draft SBP to justify delivering this commitment in the RIS, or a costed plan for its delivery. Tree planting appears to be funded by the Corporate Service carbon budget and the Environment Designated Fund. Neither budget line provides detail on the proportion of planting (of the three million total) that each seeks to achieve. We recommend that the Department for Transport (DfT) considers whether this is a RIS requirement or not and make this clear to the company so that it can appropriately allocate budget lines. If it remains a requirement, the company must set out a plan, ahead of its final draft SBP, for expenditure on its three million trees commitment. It should clearly delineate between delivery funded by OMR, National Programmes, Designated Funds and any other sources.

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- 6.25 A similar issue occurs with biodiversity. There appears to be an overlap between National Highways' Environment Designated Fund and its OMR activities in relation to managing biodiversity on the company's soft estate. The company must set out a clearer plan, ahead of its final draft SBP, for expenditure on biodiversity. It should clearly delineate between funding included in OMR, National Programmes and Designated Funds.

### Customers and Communities Designated Fund

- 6.26 National Highways has allocated £100 million to its Customers and Communities Designated Fund. It has identified five themes for investment:

- access and inclusion;
- freight and roadside facilities;
- community investment;
- active travel; and
- integration.

- 6.27 This range of activities may impact on National Highways' user satisfaction KPI, but it is very difficult to estimate the extent of this. The company has provided no information on its priorities between the themes and the proposed funding allocation, even at a broad level. Given that four of the themes are broadly a continuation of those from RIS2 we would expect the company to have an indicative pipeline of planned investment. The company must develop detailed plans, containing a programme, costs, benefits and a timeline, for the next iteration of the SBP. We have concerns about the company's readiness to deliver this fund. It risks repeating the problem of the first road period (RP1, April 2015 to March 2020)- and RP2 of underspending compared to the agreed programme and failing to deliver defined benefits.

### Innovation Designated Fund

- 6.28 National Highways has allocated £70 million to its Innovation Designated Fund. Its draft SBP describes the broad range of activities funded in RIS2. It has identified nine research themes for RIS3. These appear, based on the limited descriptions given, to be a comprehensive and appropriate range of research topics. The nine themes are:

- growth and levelling up;

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- safety;
- customer experience;
- car travel;
- digital;
- sustainable network development;
- freight and logistics;
- decarbonisation; and
- asset resilience.

6.29 National Highways has provided no information on its priorities between themes or its proposed funding allocation, even at a broad level. It is unclear if there is potential overlap with the Low Carbon Innovation Fund.

### Key proposals

Overall, National Highways' plans for National Programmes and Designated Funds contain a lack of detail as to what will be delivered, for what budget and to deliver what benefit. The company must develop and provide more detailed plans for its next iteration of the SBP, including the measurable benefits that it will deliver, justification for the spending allocations and cost estimates that it has put forward, and time bound programmes to ensure commitments are delivered and remain aligned with RIS requirements.

National Highways must provide further evidence to support its estimates for casualty reductions resulting from the Safety National Programme and Safety Designated Fund.

National Highways must set out a clearer plan, ahead of the next iteration of the SBP, for expenditure on biodiversity, clearly delineating between funding included in OMR, National Programmes and Designated Funds.

DfT should consider whether National Highways' proposed programmes are in line with its priorities and requirements for RIS3. DfT should also consider whether the company's commitment to plant three million trees is a RIS requirement. DfT should make its decision clear to the company as soon as possible so that it can work up full plans for the next iteration

of the SBP. This plan must clearly delineate between delivery funded by OMR, National Programmes, Designated Funds or other sources.

## 7. Digital, corporate services and protocols

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### National Highways' proposals

- 7.1 National Highways has a forecast cost for its digital and corporate support activities of £2.9 billion in the third road period (RP3, April 2025 to March 2030). This represents around 11% of total cost. Costs will increase by around 24% in real terms between the second road period (RP2, April 2020 to March 2025) and RP3.
- 7.2 As illustrated in Figure 7.1 and Table 7.1, costs increase in each of three main areas that make up this expenditure line: corporate services, corporate technology and estates. Furthermore, National Highways' the third road investment strategy (RIS3) plans also include £215 million to meet the cost of a range of activities relating to the company's Net Zero Highways plan. Specifically, the company's objective is to achieve 'net zero' on corporate carbon emissions (that is, excluding emissions from its supply chain) by 2030.
- 7.3 'Protocols' cover the services that are over and above National Highways' core purpose of operating, maintaining, and enhancing the strategic road network (SRN). Protocols represent a separate area of the company's delivery and the cost of these is shown separately in Table 7.1. In RP3, protocols are expected to cost £501 million, an increase from RP2 of 16% in real terms.

Figure 7.1 Digital and corporate services expenditure (£ million, nominal)

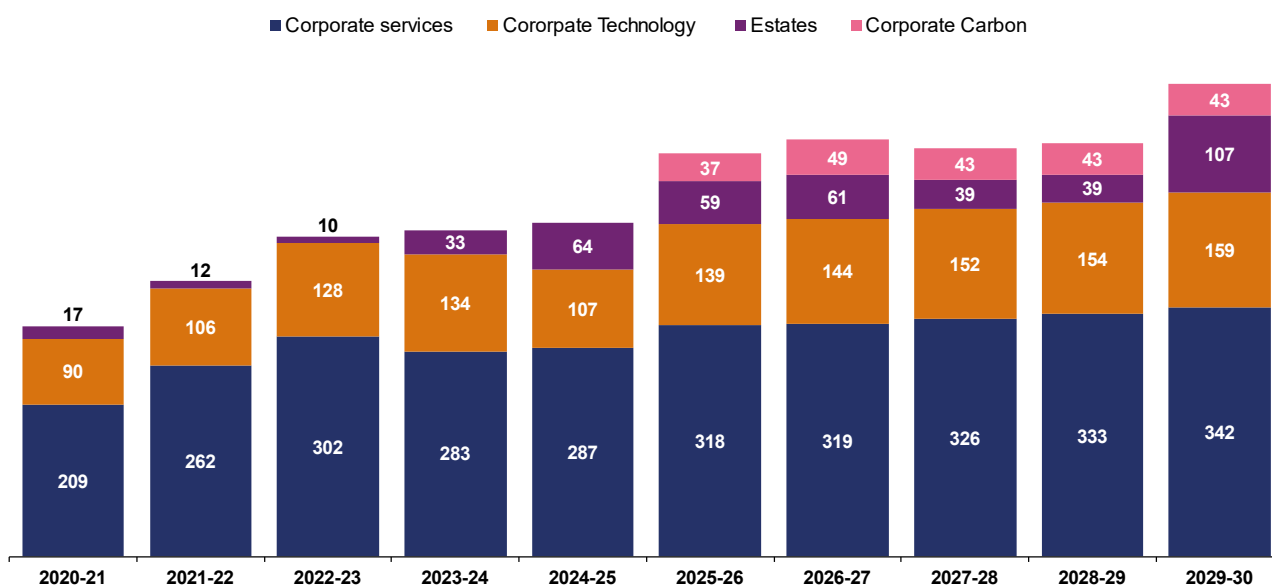


Table 7.1 Digital and corporate services financial breakdown (£ million)

	RP3 (Nominal)	RP3 (Real – 2022-23 prices)	RP2 (Real – 2022-23 prices)	% Difference in real terms
Corporate services	1,639	1,447	1,365	6%
Corporate technology	748	660	574	15%
Estates	304	268	133	102%
Corporate carbon	215	190	0	-
<b>Total</b>	<b>2,906</b>	<b>2,564</b>	<b>2,072</b>	<b>24%</b>
Protocols	501	443	381	16%

## Our assessment

### Corporate services

7.4 Corporate services includes the staff and business costs related to the following National Highways directorates:

- Commercial and procurement;

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- Customer, strategy and communications;
- Finance and business services;
- Human resources;
- Legal services;
- Major projects; and
- Safety, engineering and standards.

7.5 Before adjusting for efficiencies, National Highways based its RP3 staffing requirements in these directorates on business planning dating from January 2023. At that time, the company planned to expand from 2,756 full-time equivalents (FTEs) in March 2024 to 3,065 FTEs by the end of RP2, an increase of 11%. However, due to affordability pressures in RP2, the company revised its staffing plans in July 2023 through an 'FTE challenge' process. The new plan aims for 2,822 staff by the end of the road period, 243 fewer than originally planned but 66 more than in March 2024. The company has not provided any indication that it cannot continue to deliver its RP2 requirements under this revised plan.

7.6 The result of National Highways' FTE challenge process is shown in Table 7.2. The extent of the challenge varies by division. The company shared the decision-making process in each case. While the revised plan results in 66 more FTEs by the end of RP2 (an increase of 2%), this includes an increase of 94 in 'early talent' Consequently, the number of staff at other grades is expected to decrease by 28 (approximately 1%) in 2024-25.

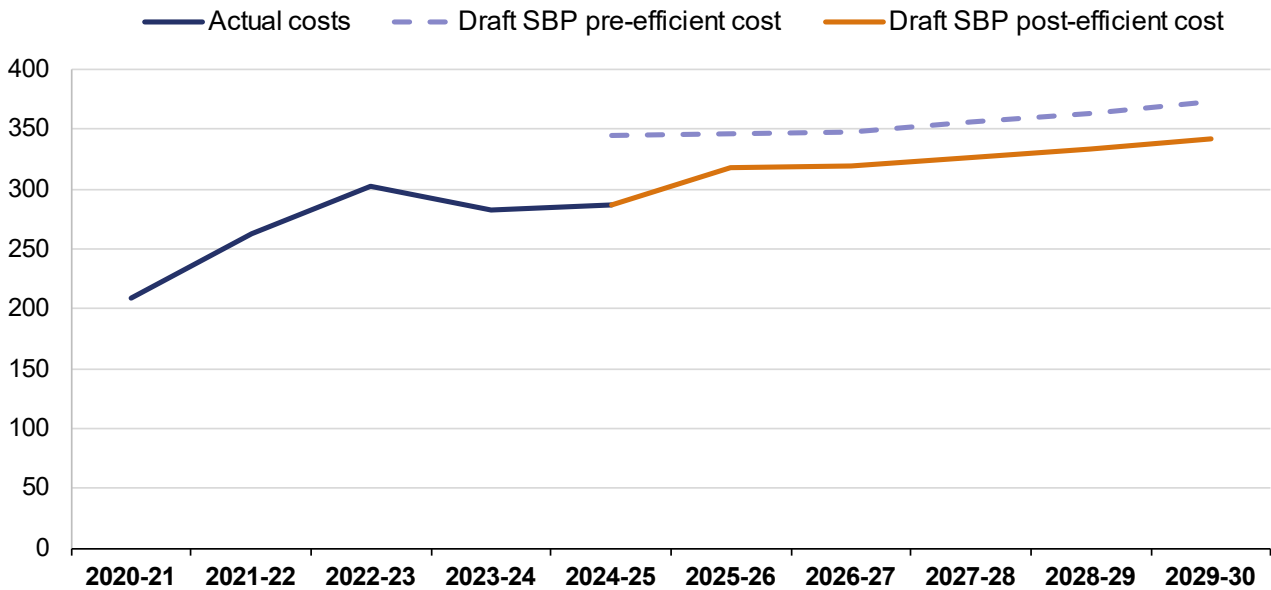
7.7 National Highways is proposing to maintain the same number of staff throughout RP3 as it expects to have at the end of RP2. The company is not proposing any change in the balance of its staffing levels across its divisions for RP3. This is despite the changing balance of investment towards maintenance and renewals expenditure. The company suggests it will align its resources to meet changing requirements ahead of, and during RP3. As we set out in section 4, in our view such proposals should have been included in the draft SBP and we expect the company to consider this in more detail before plans are finalised.

**Table 7.2 Corporate services and the FTE challenge process (£ million, nominal)**

Directorate	A: Actual FTE in March 2024	B: Originally planned FTE at end RP2 (RIS3 pre- efficient)	C: Revised planned FTEs at end RP2 (RIS3 post- efficient)
Commercial and procurement	447	488	444
Customer, strategy & comms	375	422	396
Finance & business services	399	381	352
Human resources: core	147	161	145
Human resources: early talent	231	325	325
Legal services	60	65	59
Major projects	723	845	761
Safety, engineering and standards	374	378	340
<b>Total</b>	<b>2,756</b>	<b>3,065</b>	<b>2,822</b>
<b>Percentage change on current FTEs</b>	<b>-</b>	<b>+2%</b>	<b>+11%</b>

7.8 National Highways based its 'pre-efficient' cost estimates for RP3 on its 'original' plan (that is, an 11% increase in staffing levels) and its 'post-efficient' cost estimates on its revised plan (that is, a 2% increase). In other words, the company's efficiency challenge is predicated, in part, on avoiding an increase in future cost, rather than generating overall cost savings. This is illustrated by the pre- and post-efficient cost profiles are shown in Figure 7.2.

**Figure 7.2 Pre- and post-efficiency spend on corporate services (£ million, nominal)**



7.9 In our view, National Highways pre-efficient cost estimates should be based on their costs at the end of RP2 except where the company is being asked to deliver more or if there are external factors that contribute to higher costs (typically referred to as financial ‘headwinds’). However, the draft strategic business plan (SBP) fails to provide convincing evidence that either of these circumstances apply. Therefore, in our view, the company’s ‘pre-efficient’ cost estimate is artificially high.

7.10 National Highways has undertaken a benchmarking exercise to compare the cost of its corporate support functions with those of other, similar organisations, as a proportion of total expenditure. This evidence, it concludes, supports its view that its corporate services divisions remain ‘right sized’ to deliver the RIS3 requirements. However, while external benchmarking provides useful context, in our view, the results are not sufficiently detailed to determine if corporate costs are set at an efficient level. In any case, because total expenditure is expected to fall from year 2, under the company’s current plans, corporate services will increase as a proportion of total costs during RP3. If other enhancements commitments, such as A303 Amesbury to Berwick Down (A303 Stonehenge’) and Lower Thames Crossing (LTC), are added to the programme this may change. However, we would expect the company to set out what it needs to deliver the programme as currently specified and then identify the additional resources it would need to deliver additional commitments should they be added to the requirements.

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- 7.11 Because National Highways' has inflated its pre-efficient cost estimates, we conclude that the plans for RP3 are less efficient than would be expected. As further described in section 8, the company is entering its third road period and as such is still at a relatively early stage in its efficiency journey. In our view there is scope for the company to improve its efficiency by developing its capabilities and adopting good practice. These are termed 'catch up' efficiencies. In line with regulators in other sectors, we also expect the company to achieve the ongoing improvements in efficiency that would be expected for an already efficient organisation (that is, an organisation at the efficiency 'frontier'). These are termed 'frontier shift' or 'ongoing' efficiencies.
- 7.12 To inform its efficiency offer for RP3, National Highways has gathered evidence on the efficiency challenges set by other regulators in comparable sectors, for companies at a similar level of maturity. These benchmarks take account of both 'catch up' and 'ongoing'. For 'business costs', which is analogous to corporate services, the company identifies an efficiency range of between 0% and 3% per annum, with a mid-range of 1.5% per annum.
- 7.13 We recommend that National Highways' pre-efficient costs for corporate services are based on current costs levels – before the addition of the newly proposed business improvement programme (described below) – adjusted for inflation. In line with the efficiency benchmarking, we also recommend that a 1.5% per annum efficiency challenge is applied. This is less than the efficiency challenge applied in other areas of the business plan such as operations, maintenance and renewals. As a result, the company's corporate services costs would be around 7% lower, in real terms, at the end of RP3 than at the end of RP2. Compared with the company's proposals, this would save around £70 million in RP3, a reduction of around 4%. In practice, this efficiency saving could be achieved by reducing expenditure, not necessarily reducing staffing levels.

### Business improvement programme

- 7.14 For RIS3, National Highways' corporate services budget includes £85 million (nominal) for consultancy support for a new business improvement programme. In RP2, the company's business change initiatives were funded through multiple lines, including operations. Starting in April 2025, the company plans to manage improvements centrally through a single programme to improve efficiency and ensure improvements are spread across the whole organisation. It will procure a new Strategic Delivery Partner in Autumn 2024.
- 7.15 National Highways' draft SBP sets out the six key themes that will guide the development of the programme. However, the company plans to address issues

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and opportunities as they arise, and therefore has not set out any specific activities or projects that it plans to fund.

- 7.16 We are concerned that this more reactive approach reduces the transparency of investment benefits. During our workshops, none of National Highways' teams responsible for developing plans in the areas of operations, maintenance, renewals, and enhancements specifically cited the business improvement programme as being integral to the achievement of their proposed efficiency measures. Its role in achieving the RP3 efficiency target is unclear. Additionally, the company has not evidenced to us how it determined that £85 million is the appropriate funding amount for this programme.
- 7.17 We support the principle of National Highways investing to improve its capabilities and efficiency. However, the company must undertake further development work ahead of the start of the road period to demonstrate how this funding will be used and the benefits it will deliver. During RP3 we will hold the company to account to ensure that it is capturing the benefits of the programme and that it has evidence to show how it is contributing to better outcomes and improved efficiency.

### Corporate technology

- 7.18 Corporate technology encompasses the digital, data and technology services needed for communication, collaboration and information sharing within National Highways. This is distinct from operational technology (technology services to support the operation of the SRN). However, the company has developed in parallel its plans for both corporate technology and operational technology.
- 7.19 Assessing whether National Highways' corporate technology costs are set at an efficient level is challenging as IT requirements vary greatly depending on their applications within different organisations. Because corporate technology has a facilitating role, it is also difficult to directly assess whether recent increases in investment has had its intended impact. However, as for operational technology, we are broadly satisfied that the company has developed its plans based on its stated aim of maintaining current service levels.
- 7.20 The increase in cost of National Highways' corporate technology between RP2 and RP3 is primarily explained by the fact that the cost of these services has increased during the course of RP2. The company's expenditure on corporate technology increased by 22% in real terms between years 1 and 4 of RP2. This was driven by the expansion in the number of staff in the company as a whole, an increase in demand for IT services, and the fact that some services previously delivered by suppliers have been brought in-house.

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7.21 After efficiencies, National Highways' corporate technology costs will remain at broadly the same level as in 2023-24. The company has provided credible evidence of the headwinds that it expects will contribute to higher costs in RP3. This includes higher software costs and the need to invest more in cyber security. The company provided good evidence to show that it has identified specific areas where it intends to achieve efficiencies and that it has put in place adequate processes to track its progress on an ongoing basis.

### Estates

7.22 National Highways is forecasting that its estates costs will be around double the RP2 level in real terms. This is attributed to addressing gaps in network coverage, preparing for the return of the Design Build Finance and Operate (DBFO) roads, and upgrading depots and outstations reaching the end of their useful life. The company's plans include a major development in Bedford to replace a leased office with a new combined office and regional control centre (RCC) building. Given that these projects contribute to the substantial increase in cost in RP3, these projects need to be included in the company's Delivery Plan so we can hold the company to account to deliver these projects in RP3.

7.23 National Highways' costs will also increase due to the introduction of a new accounting standard (IFRS 16). As a result, the company's major leases are recognised on its balance sheet and the present value of all future lease payments is realised at the time of the lease event. This leads to a spike in costs in 2026-27 and 2029-30.

7.24 We are satisfied that National Highways is considering how it can rationalise its estates to reduce cost. For example, its plans for RIS3 take account of the potential to reduce the size of the company's corporate office estate by 30% by 2030.

### Corporate carbon

7.25 Under its Net Zero Highways Plan, National Highways aims to achieve 'net zero' on its own operations by 2030, ahead of the government's overarching aim to achieve 'net zero' by 2050. Plans are linked to the corporate carbon key performance indicator (KPI).

7.26 In RP3, the company is proposing to spend £215 million on activities aimed primarily at reducing corporate carbon emissions. This is in addition to £49 million to facilitate the shift to a fully electric traffic officer and operational vehicle fleet

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described in section 3. A breakdown of the company's proposed activities and their cost is provided in table 7.3.

- 7.27 Overall, National Highways' corporate carbon plans are relatively immature, and its cost estimates are highly uncertain. Given the significant investment sought, the company must bring forward better evidence to demonstrate that its proposed activities offer value for money. For example, the company has shared evidence that, all things being equal, LED lighting (due to its lower electricity consumption and greater durability) offers better value for money than conventional lighting. But it has not provided evidence demonstrating that an accelerated programme of conversion offers better value for money than a more gradual approach that prioritises older assets in the short-term and achieves full conversion over two or more road periods.
- 7.28 The amount of funding that should be allocated to these initiatives depends, in part, on the speed with which the government requires National Highways to reduce emissions. It should make this clear to the company ahead of the final draft SBP. However, we set out our most significant concerns regarding the cost and deliverability of the company's current plans in the remainder of this section.

**Table 7.3 Corporate carbon activities and costs (£ million, nominal)**

Activity	Description	RP3
LED lighting	Completion of a programme to retrofit 70% of road lights from traditional incandescent bulbs to greener, more efficient LED lights.	£90m
Renewable energy generation	Plans to generate 10% of National Highways electricity from renewables deployed on the company's estate.	£48m
Tree planting	Costs of National Highways' plan to plant three million trees – achieved at least in part through tree planting on third-party land.	£5m
Depot low carbon technology	Improving energy efficiency of National Highways' operational buildings.	£18m
Electric and hydrogen heavy goods vehicles (HGVs)	Installation of ultra-rapid chargers for electric HGVs at 40 maintenance depots and conversion of a proportion of its HGV fleet to electric or low emissions vehicles.	£25m

Activity	Description	RP3
Low Carbon Innovation Fund	A zero-carbon construction innovation programme.	£20m
Zero carbon HGV trial	Indicative cost of support provided to the Department for Transport and Innovate UK's Zero Emission HGV and Infrastructure Demonstrator (ZEHID) programme.	£3m
Consultancy	Use of consultants to support National Highways in achieving its Environmental Sustainability Strategy (ESS).	£5m
<b>TOTAL</b>	-	<b>£215m</b>

### Corporate carbon plans and the KPI

- 7.29 For some of the initiatives listed above, their impact on the KPI depends on the way in which CO2e emissions from electricity consumption are recorded. The company procures its electricity on a 'green' tariff. As further explained in section 9, under the company's preferred methodology – the Science Based Target Initiative (SBTI) – electricity purchased on a green tariff would be recorded as having zero emissions. If electricity supply is already assumed to be zero carbon, initiatives that reduce consumption from external sources – most notably the LED lighting programme, and the renewable energy generation programme – would have no impact on the KPI.
- 7.30 However, as we set out in more detail in section 9, National Highways' inclusion of 'green' electricity tariffs is not consistent with the Greening Government Commitments (GGC) reporting requirements. If the company follows the GCC reporting requirements its electricity supply would be recorded using the forecast average grid mix. In this scenario, because the company's electricity consumption would be recorded as having an adverse carbon impact (contributing carbon emissions), corporate initiatives that reduce electricity consumption would directly contribute to the KPI.
- 7.31 Irrespective of the way in which National Highways procures electricity and records its carbon impact, we accept that reducing both the carbon intensity of energy and energy consumption may be a prudent approach both from an environmental and economic perspective.

### Renewable energy generation

- 7.32 National Highways has set itself an objective of producing 10% of its electricity from its own renewable energy sources by the end of RP3. The company's plans are centred on the deployment of large-scale solar arrays on its non-operational estate. In contrast to the LED lighting programme, this is not an area in which the company has any previous experience. A feasibility study commissioned by the company identifies four sites with the potential to be used for solar power. However, the study also concludes that *“beyond the normal issues around planning consent, grid connections are the most significant issue and the costs/delays for connection may prevent any of the sites being developed by 2030 (if ever)”*.
- 7.33 National Highways' cost estimates in its draft SBP are calculated on the basis that the company bears the capital cost and associated risk of deploying the solar arrays. If successful, this approach offers the potential to secure energy at the lowest cost. Alternatively, the company could invite a third-party developer to invest in the renewable energy project. This approach avoids upfront capital investment but comes with higher long-term costs via power purchase agreements (PPAs).
- 7.34 We recommend that National Highways remove funding for this programme, given the attendant level of uncertainty. The company should undertake further feasibility analysis and pursue a partnership arrangement with a third-party developer if the feasibility of any of the sites is proven.
- 7.35 National Highways has explored four other renewable energy options which, if realised, could contribute just 14% to the 10% objective. However, it is unclear if these costs are included in the company's draft SBP plans. Regardless, we do not consider these plans to be sufficiently robust to warrant inclusion in the plans at this time.

### Tree planting

- 7.36 Net Zero Highways sets out National Highways' intent to plant three million trees by 2030. The company's draft SBP includes £5 million to achieve this. It would use third-party land to deliver some of this activity. The company has not quantified the impact on its corporate carbon KPI due to uncertainties about the types of trees to be planted, species and growth rates, all of which influence their ability to sequester carbon.
- 7.37 As described in section 6, National Highways has not provided any costed proposals for tree planting. It is unclear how the £5 million included in its corporate

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carbon budget relates to funding for biodiversity included in the environment Designated Fund.

- 7.38 If National Highways is intending to meet the cost of planting three million trees solely from its corporate carbon budget, £5 million appears insufficient based on benchmark evidence. Data collected by CEPA during its review of the company's emerging carbon reduction plans, suggests that tree planting schemes typically attract a cost of between £6,000 and £10,000 per hectare. Based on standard planting densities of 1,100 to 2,500 trees per hectare, this would suggest a cost in the region of £7 million to £27 million. National Highways suggests that it would use third parties to undertake tree planting on its behalf and that this approach would reduce cost. However, it has provided no evidence to support this.
- 7.39 More broadly, it is unclear what outcomes National Highways' tree planting programme is intended to achieve, why it is required over and above the substantial environmental funding included elsewhere in the plans for RIS3, or whether it represents an efficient approach to reducing net emissions. Therefore, based on current evidence, we recommend that this funding is removed.

### Depot low carbon technology

- 7.40 National Highways' costings assume the installation of 145 air source heat pumps (ASHP) and 12 ground source heat pumps (GSHPs) to reduce the carbon footprint of its operational properties. We are concerned that the company has not yet established the feasibility of installing these systems for any of its sites. The company states that it plans to undertake 'energy audits' during 2024-25, and throughout RP3, to assess feasibility. Whilst these systems may offer good value for money, at this stage, the plans are subject to a high degree of uncertainty. We recommend that DfT requires the company to put forward cost estimates based on at least a sample of site specific feasibility studies before it allocates funding to this activity.

### Zero emissions HGVs

- 7.41 National Highways has allocated a further £25 million to support the roll out of zero emission heavy goods vehicles (HGVs). This is linked to the company's intention to move to a heavy vehicle fleet of 100% electric or hydrogen by 2040. The company could play a key role in demonstrating zero emission vehicle feasibility to its supply chain. The company's budgeted costs allow for the purchase of 40 electric and ten hydrogen vehicles, as well as charging points at 40 depots. The company would replace existing vehicles only when they reach the end of their usable life.

7.42 National Highways' plans and cost estimates are highly uncertain as they are based on a plan to purchase vehicles that are not currently available. There is a long lead time for sourcing electric vehicles given manufacturing issues caused by a global shortage of semi-conductors. There are no hydrogen powered vehicles currently available in the UK and their future availability depends on the outcome of trials. The company is exploring all options for lowering the carbon footprint of its heavy fleet, including possible transitional options such as biofuels. These options are also speculative at this stage. Given these uncertainties, and the fact that the company's stated objective is to move to an electric fleet by 2040, DfT could defer this activity to the fourth road period (RP4, April 2030 to March 2035) to reduce costs.

### **Low carbon innovation fund**

7.43 National Highways launched a low carbon innovation fund in 2022. It is proposing to spend £20 million on its successor in RP3. The low-carbon innovation fund is focused on reducing carbon emissions from construction and maintenance activities delivered via the company's supply chain, rather than National Highway's corporate emissions.

7.44 National Highways intends to create a pipeline of low carbon 'challenges' (or themes) that support achieving net zero on construction and maintenance activities by 2040, prioritising low carbon materials. Third parties (such as suppliers) will bid for funding for their innovation ideas relating to these challenges. At present, the company is currently unable to identify a pipeline of projects that would be delivered. Given the nature of the fund, the amount of funding allocated to it is likely to be scalable and therefore DfT should consider how much it wishes to allocate for this activity.

7.45 In RP2, funding for this programme was provided by the Innovation and Modernisation Designated Fund. One of the nine research themes in RP2 is decarbonisation. National Highways is also proposing a £70 million innovation Designated Fund for RP3. To reduce cost, DfT could ask the company to take a similar approach in RP3 as it has taken in RP2, and allocate funding from the Designated Fund to meet the cost of the low carbon innovation fund. This would reduce the amount of funding available to spend on other innovation projects. However, as described in section 6, the company does not have a clearly specified pipeline of projects that it plans to deliver from the Designated Fund.

**Environmental Sustainability Strategy (ESS) consultancy**

- 7.46 National Highways expects to use consultants to provide expert advice, act as a form of contingent resource to its environmental sustainability team, and help it achieve the aims set out in its ESS. The company states that engaging consultants is essential to leverage specialised expertise, achieve efficiencies, manage risks, and facilitate knowledge transfer.
- 7.47 National Highways states that the scope of consultant input – expected to cover carbon, water quality, biodiversity, noise and air quality – will be determined later in 2024. During this review, the company was unable to identify any specific projects it intends to commission. As such it is difficult to assess whether £5 million is required or what benefits this will deliver. In RP2, the company has used Designated Funds to cover the cost of technical support. To reduce cost, DfT should consider requiring the company to continue to use the National Programmes and Designated Funds to meet the cost of consultants who will support delivery in those areas.

**Overview**

- 7.48 The cost and benefits of National Highways' corporate carbon plans are highly uncertain. In the alternative financial proposals we put forward in section 11, we assume that the company removes funding for the renewable energy generation programme as its feasibility is in doubt. We have also assumed that it removes funding for tree planting because of the lack of clarity as to the purpose of this initiative and what it will deliver. However, there are additional options to reduce cost depending on the speed with which DfT wants the company to reduce emissions and energy consumption, as well as its appetite to pursue more speculative initiatives. Ahead of RP3, the company must set out clearer, time bound, commitments for the activities it will deliver. This will support us to hold the company to account to ensure it spends public money efficiently and effectively in accordance with its plans.

**Protocols**

- 7.49 Protocols are defined as activities or functions not core to National Highways' role as a strategic highways company that it must carry out. They are specified by the Secretary of State for Transport. Consequently, protocols are not part of the road investment strategy (RIS) and are not monitored by ORR. However, the definition of a protocol is not clear-cut. Given the scale of investment, it may be appropriate for DfT to reconsider how this definition is applied in practice and how these activities are financed and the company held to account for their delivery. This includes the extent of ring-fencing of protocol funding and how risks would be

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handled, particularly with all protocols being funded from the statement of funds available (SoFA) for the first time.

7.50 Government has identified eight protocols for RP3. The vast majority of costs are associated with four protocols: Dartford Crossing, Severn River Crossings, Operation Brock (a traffic management system in Kent for cross-Channel transport disruption), and management of the Historic Railways Estate. Our review focused on these areas. The remaining four protocols account for just 5% of costs.

**Table 7.4 Protocols RP3 cost (£ million, nominal)**

Protocol cost category	RP3
Dartford crossing charge	183
Severn River crossing	157
Historic railways estate	103
Operation brock	31
Other protocols: technical requirements	12
Other protocols: abnormal loads	10
Other protocols: strategic salt	5
Other protocols: M6 toll	0.3
<b>Total</b>	<b>501</b>

7.51 In summary, we found a good basis for the cost estimates that National Highways presented. Although the DfT has not set specific requirements for protocols, the company has based its plans on a balanced assessment of needs. Most of the cost increase from RP2 to RP3 stems from higher proposed spending on the Historic Railways Estate and the Severn River Crossings. The company provided evidence of a backlog of needs due to past underinvestment in both cases. However, for the Severn River Crossings, the company provided limited evidence that it had challenged its initial cost estimates to find opportunities for improved affordability.

7.52 National Highways has applied an efficiency challenge to its protocols costs. It expects efficiencies on protocols to contribute £30 million to its efficiency KPI. We do not hold the company to account for delivering its protocols as, by definition, they do not form a core part of its role as a strategic highways company. We would

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not be able to verify whether it is achieving these efficiencies without substantial additional reporting. Therefore, while we welcome the fact that the company has applied an efficiency challenge to its protocols costs, we do not believe this should be included in the KPI target and therefore recommend it is removed.

### Key proposals

We recommend that an efficiency challenge of 1.5% per annum is applied to National Highways' corporate services costs. We recommend that the 'pre-efficient' costs to which this is applied are based on current cost and resource levels.

National Highways must provide more detailed proposals for its Business Improvement Programme, the benefits it will deliver, how its impact will be monitored, and justification for the cost estimates put forward.

The funding that National Highways has allocated to its corporate carbon initiatives should be reviewed. We recommend that the costs of the renewable energy generation programme and tree planting are removed. DfT should consider whether other aspects of the programme are in line with their requirements for RIS3. Ahead of RP3, the company should set out clearer, time bound commitments for each initiative.

Ahead of RP3, DfT should consider how the definition of protocols is being applied and how these activities should be financed and monitored in future, including whether and how National Highways should be held to account for their delivery.

## 8. Inflation, efficiency and financial risk

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8.1 This section of our advice considers efficiency, inflation and risk. These topics are closely related. For example, inflation is a risk for National Highways, particularly as the company is funded in nominal terms. Similarly, an overly optimistic efficiency challenge would increase its risk around delivery and performance.

### Inflation

8.2 The statement of funds available (SoFA) is set in cash terms. Therefore, National Highways must allow for the effect of future inflation when preparing its plans. If insufficient allowance for inflation is made, the company will face affordability challenges during the road period, making it more difficult to deliver its programme of investment and to maintain required levels of performance. Equally, if inflation allowances are overstated this could result in government unnecessarily diverting funding away from other priorities.

8.3 Inflation is inherently uncertain, and it is unrealistic to expect that inflation can be accurately forecast over a 6-year period. In the first road period (RP1, April 2015 to March 2020), outturn inflation was lower than forecast. This resulted in plans being over funded by circa £400 million. In the second road period (RP2, April 2020 to March 2025) the opposite has been the case and the inflationary spike of 2022 and 2023 has greatly increased the costs that National Highways has faced. In its efficiency reporting for 2023-24, the company has reported the impact of high inflation as around £520 million across the first four years of RP2. It is forecasting an impact of around £1 billion for RP2 as a whole.

8.4 In reviewing National Highways' inflation proposals, we have sought to establish inflation allowances based on the 'most likely' path of inflation. Our advice on inflation draws on a review commissioned jointly by ORR's road and rail teams. The review considered the approaches taken by both National Highways – for the purposes of the third road investment strategy (RIS3) – and Network Rail – for the purposes of Periodic Review 23.

### Real price effects

8.5 Official measures of general inflation (for example, the Consumer Prices Index, CPI) are calculated on a basket of goods and services that differs from the inputs used by National Highways. In the long-term, it may be the case that the price of

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some of the company's inputs (for example, construction materials) tend to increase at a different rate than prices in the general economy. These are termed 'real price effects' (RPEs).

- 8.6 For the second road investment strategy (RIS2), National Highways applied a bespoke inflation index provided by the Building Cost Information Service (BCIS). For RIS3, for most of its expenditure, the company has adopted inflation forecasts linked to CPI with adjustment for RPEs. We support this decision. In our view, the bespoke forecasts reduce transparency without necessarily improving accuracy.
- 8.7 National Highways' inflation forecasts are derived from the Office of Budget Responsibility's (OBR) November 2023 forecast for CPI that were current at the time of submission. Subsequently the OBR's March 2024 forecast has resulted in a downward revision of inflation.

### Construction and maintenance costs

- 8.8 National Highways has used a seven-step procedure to calculate the RPE adjustments that it then applies to its cost estimates for enhancements, renewals and maintenance. The adjustments applied in each step are set out in Table 8.1.

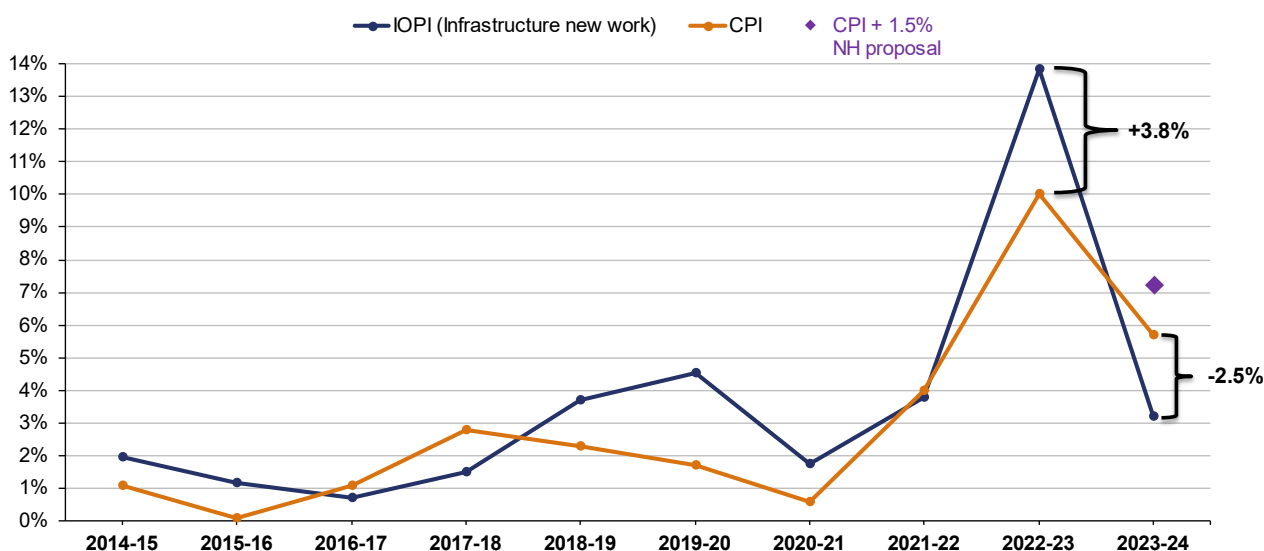
**Table 8.1 Real price effect adjustment methodology**

	Enhancements	Capital renewals	Maintenance
Step 1: Trend analysis	CPI + 0.75%	CPI + 1.25%	CPI + 0.25%
Step 2: Swimlane alignment	No Adjustment	- 0.50%	No Adjustment
Step 3: Consideration of future trends	No Adjustment	No Adjustment	No Adjustment
Step 4: Consideration of a lag factor	No Adjustment	No Adjustment	No Adjustment
Step 5: Existing inflation commitments	+ 0.25%	+ 0.25%	No Adjustment
Step 6: Deviation uncertainty	+ 0.25%	+ 0.25%	+ 0.25%
Step 7a: Forecast risk		+ 0.25%	
Step 7b: Baseline cost risk	No adjustment		
<b>Overall</b>	<b>CPI + 1.50%</b>	<b>CPI + 1.50%</b>	<b>CPI + 0.75%</b>

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- 8.9 Steps 1 and 2 involve analysing historical data to identify the relationship between CPI and cost indices that act as proxies for National Highways' costs in each of these areas. Because construction inflation tends to increase at a faster rate than general inflation this results in the addition of a positive 'wedge'. This method is broadly aligned to our recommended approach.
- 8.10 In steps 3 to 7, National Highways makes additional adjustments for risk and uncertainty. The company has not made any adjustments as a result of the analysis performed in step 3 ('consideration of future trends') and 4 ('consideration of a lag factor'). However, in step 5 ('existing inflation commitments'), it argues that a +0.25% adjustment is required because the gap between CPI and actual construction inflation widened during the recent period of high inflation. In step 6 ('deviation uncertainty'), the company builds in a further +0.25% adjustment on the basis that the gap between CPI and construction inflation may have permanently widened.
- 8.11 In our view, steps 5 and 6 double count the same risk – the risk that the gap between CPI and construction inflation will be wider in RP3 than has been the case historically. However, recent evidence does not support this assumption.
- 8.12 Figure 8.1 shows the path of the 'Implied output price indicator (IOPI)', a construction inflation index used in some of National Highways' contracts. The gap between CPI and IOPI has fluctuated. In 2022-23 the gap widened to 3.8%. However, in 2023-24, CPI exceeded IOPI by 2.5%. Over the longer term, the gap between IOPI and CPI has averaged 0.7%, similar to the company's finding in 'step 1'. Therefore, we continue to conclude that RPEs should be calculated based on long-term trends.
- 8.13 In step 7, National Highways adds 0.25% per annum to account for the risk of CPI inflation exceeding the OBR's forecast. This adjustment lacks quantitative justification. The OBR's forecast already has a P50 confidence level. Adding this uplift sets inflation funding significantly above P50. This is inconsistent with the company's approach to other financial risks.
- 8.14 In summary, while we support National Highways' overall approach, the additional adjustments raise inflation allowances above the 'most likely' scenario. This results in inefficiently high costs and does little to help the company to manage inflation spikes such as those in RP2.

Figure 8.1 Inflation indices (percentage growth)



### Inflation risk

- 8.15 As described, each of the adjustments performed in steps 5, 6 and 7 are attempts to build-in contingency in case outturn inflation in RP3 is higher than forecast, either because of CPI being higher than forecast or the RPEs being higher than the historical average.
- 8.16 In our view, inflation forecasts that align with a ‘most likely’ scenario are those that use the OBR’s central, ‘P50’, forecasts for CPI, adjusted for RPEs that are calculated based on long-term averages. By including additional inflation allowances, National Highways is suggesting that it should be funded beyond to a P-value beyond a ‘most likely’ scenario and substantially above P50 in terms of inflation risk. This is inconsistent with the company’s approach to assessing the confidence level attached to overall funding levels that considers whether funding is equivalent to a P50 level.
- 8.17 By building inflation risk into the RPE, National Highways has embedded inflation risk into project budgets and ‘core’ expenditure lines. In our view, inflation risk should be accounted for in the central risk reserve (CRR). Inflation is a portfolio-level risk because it is largely outside the company’s control and tends to affect the cost of a range activities. This is distinct from a project-level risk that is specific to an individual project or expenditure line. Including inflation consistent with the company’s overall approach, inflation risk should be accounted for in the CRR. Embedding inflation risk within core funding is a less transparent approach. Doing so results in more money being allocated than is required to deliver the level of output the company is expecting to deliver. Moreover, the inflation risk

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adjustments included by the company would do little to enable it to handle large spikes in inflation such as those seen during RP2.

8.18 Should the Department for Transport (DfT) wish to make provision for inflation risk beyond this 'most likely' level, this should be considered as part of National Highways' wider risk funding and not embedded within 'core' funding.

### Other costs

8.19 National Highways has applied a range of alternative inflation assumptions for activities other than construction and maintenance. These are as follows:

- National Highways' staff costs are inflated at a constant 3% per annum that it considers to be aligned with average earnings forecasts produced by HM Treasury in November 2023 and as a range of other independent forecasts;
- electricity costs are inflated using a Crown Commercial Services (CCS) forecast for 2025-26 with forecasts for subsequent years built up by using Department for Energy Security and Net Zero forecasts for energy costs, and assuming CCS non-energy costs increase in line with the CPI;
- for non-staff operating costs, National Highways has applied an operating cost index that uses CPI with an inflation risk adjustment of 0.25% per annum; and
- Design Build Finance and Operate (DBFO) payments are inflated using OBR's forecast for the Retail Price Index (RPI). This is consistent with contractual inflation adjustments. However, an inflation risk allowance of 0.25% per annum has been added.

8.20 Our conclusion that inflation risk allowances should not be embedded within 'core' expenditure lines equally applies to the risk adjustments included in non-staff operating cost and DBFO indices.

8.21 The cost of National Programmes, Designated Funds and new enhancements commitments are fixed in cash terms, so no inflation adjustments are performed. During RP3, higher or lower than expected inflation will result in National Highways adjusting the level of outputs it can achieve from its fixed nominal funding envelope. This is a reasonable approach for these funds given that the outputs are much less clearly defined at this stage.

8.22 National Highways uses a bespoke approach to inflation for the Lower Thames Crossing (LTC). Given that the company's draft strategic business plan (SBP)

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provides only an indicative funding envelope for the development stage of the project, we have not reviewed the approach to inflation forecasting it has used for this project. We will review its approach to inflation in detail at the point at which LTC is added to the programme.

### Recommended inflation assumptions

- 8.23 Europe Economics reviewed National Highways' approach to inflation and recommended alternatives where they disagreed with the company's approach.
- 8.24 Europe Economics has provided recommendations for the RPEs for enhancements, renewals and maintenance. It has used similar historic inflation data to that used by National Highways to estimate RPEs based on long-term trends. The resultant RPEs are similar to those derived by the company in steps 1 and 2 of the process described in Table 8.2, before it applies its further adjustments for inflation risk.
- 8.25 Europe Economics also recommends that National Highways bases its forecasts for staff costs on the OBR's forecasts for average earnings as this would be more consistent with its general approach. Moreover, it finds no evidence that HM Treasury's wage forecasts are more accurate than those produced by OBR.
- 8.26 Finally, Europe Economics recommends that National Highways adopts forecasts for retail energy prices published by BEIS, rather than wholesale prices published by DESNZ, as the company is a retail customer.
- 8.27 We agree with Europe Economics' recommendations except in two areas. First, Europe Economics recommended no CPI adjustment for renewals. However, we believe there is insufficient evidence to apply different inflation rates to enhancements and renewals, so we recommend CPI+0.75% for both. Second, given the high labour content in maintenance costs, we advise using a weighted average of CPI and OBR's average earnings forecasts.
- 8.28 Our recommendations are summarised in Table 8.2, alongside those from National Highways and Europe Economics.

**Table 8.2 Recommended inflation assumptions**

	National Highways assumption	Europe Economics recommendation	ORR recommendation
Enhancements	CPI+1.5%	CPI+0.75%	CPI+0.75%
Renewals	CPI+1.5%	CPI+0%	CPI+0.75%
Maintenance	CPI+0.75%	CPI+0%	Non-labour share: CPI+0% Labour share: OBR average earnings forecast
Non-staff operating costs	CPI+0.25%	Not directly assessed	CPI+0%
National Highways' staff	3% per annum	OBR average earnings	OBR average earnings forecast
DBFO payments	RPI+0.25%	RPI+0%	RPI+0%
Electricity costs	Bespoke index linked to CCS and DESNZ wholesale electricity price forecasts	Bespoke index linked to CCS and BEIS	Bespoke index linked to CCS and BEIS forecasts

**Recommended approach to inflation risk**

8.29 As noted, National Highways' should capture inflation risk in its wider risk modelling, rather than being embedded into its inflation forecasts. Currently, the company's risk analysis to assess the adequacy of the CRR takes no account of inflation risk. If time allows, it should adapt its risk analysis to inform the development of RIS3. However, we consider that our inflation recommendations are already broadly aligned with a P50 level of confidence and therefore we would not expect this to have a significant impact on the risk analysis.

**Financial impact of our advice on inflation**

8.30 We asked National Highways to provide an estimate of the financial impact of adopting our recommended inflation assumptions and the latest OBR forecasts. The outcome of this exercise is shown in Table 8.3.

8.31 The figures provided in Table 8.3 are estimates at this stage and will need to be refined as part of a wider update of National Highways' financial model to inform

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the final SBP. Any updates to the financial model should be undertaken based on the latest forecast of CPI inflation.

- 8.32 National Highways did not provide a direct comparison of enhancements costs using the different inflation assumptions. Therefore, the estimated impact of our inflation recommendations on enhancements costs is uncertain.
- 8.33 The results are based on the cost estimates put forward by National Highways in its draft SBP and are not constrained to the initial SoFA. They show the impact of changing the inflation assumptions in isolation and do not consider any other aspects of our advice. However, as detailed in section 4, we recommend that savings from lower inflation realised in renewals are recycled back to address funding shortfalls in outputs and performance.
- 8.34 Adopting our inflation assumptions, in combination with latest forecasts from the OBR, reduces costs by around £1 billion. However, as described in section 4, we recommend that the savings from lower inflation assumptions for renewals are used to meet the cost of identified shortfalls.

**Table 8.3 ORR inflation recommendation financial impact (£ million, nominal)**

	National Highways inflation assumptions (OBR November 2023)	ORR inflation assumptions (OBR March 2022)	Change
Operating and maintaining the network	7,013	6,780	-233
Renewals (excluding the Operational Technology National Programme)	7,082	6,632	-450
Existing enhancements commitments	4,615	4,348	-266
Digital and corporate services	2,906	2,844	-62
Protocols	501	488	-13
<b>Total</b>	<b>22,117</b>	<b>21,093</b>	<b>-1,024</b>

## Efficiency

### Key principles

- 8.35 For the most part, National Highways' funding is set at a 'post-efficient' level. This means that it builds in an assumed level of efficiency improvement. Our role is to ensure that the level of efficiencies that the company is proposing to achieve is challenging and deliverable.
- 8.36 We measure National Highways' efficiency with reference to a 'pre-efficient' baseline cost for the activities the company is required to deliver. This is defined as the cost we would expect it to incur if it were to continue to deliver at its current level of efficiency.
- 8.37 The activities that National Highways is required to deliver change over time, so greater efficiency does not necessarily mean a net reduction in the level of government funding. It is an important principle that efficiency is not achieved at the expense of quality or long-term value for money.
- 8.38 When setting efficiency targets, regulators often distinguish between two theoretical concepts – 'ongoing' and 'catch-up' efficiencies:
- 'ongoing' efficiencies relates to the ongoing productivity gains that we would expect an already efficient organisation to achieve through technological change and changing management practices; and
  - 'catch-up' efficiencies apply to an organisation operating at a sub-optimal level of efficiency. They are the efficiencies we could reasonably expect an organisation to achieve by improving the way it operates.
- 8.39 In practice, improving efficiency is a long-term process of organisational change, adaption and technological progress. Typically, regulated infrastructure companies have achieved substantial catch-up efficiencies following privatisation. As they mature, the scope for efficiencies might reduce as opportunities for catch-up efficiencies are exhausted.
- 8.40 During RP2, National Highways is tasked with delivering efficiencies amounting to £2.1 billion. The target was revised down from £2.3 billion at the start of the road period due to changes in funding and requirements made in the intervening period.
- 8.41 As a company entering its third road period, National Highways is still at a relatively early stage in its efficiency journey. Since 2015, the company has introduced many changes to the way it operates. This includes changes to its

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approach to managing its assets, and changes in the way it procures and manages projects. The company is rolling out or bedding-in many of these changes during RP2. The full benefits of these changes will take time to realise. Moreover, the company's approach to delivery continues to evolve.

8.42 National Highways distinguishes between two types of efficiency. 'Embedded efficiencies' result in a lower funding requirement for RP3. 'Measured efficiency' is a concept applied to areas of expenditure for which the scope of activities is less well defined. Measured efficiencies do not reduce the funding requirement but, if realised, would enable the company to deliver more outputs.

### National Highways' efficiency proposals

8.43 Based on the plans set out in its draft SBP, National Highways is proposing an overall efficiency key performance indicator (KPI) target of £1.7 billion. This is based on its assumption that funding is provided to meet the full cost of its plans at £25.4 billion.

8.44 Of National Highways' overall efficiency target, £1.6 billion is 'embedded efficiency' and £0.1 billion relates to 'measured efficiency'. Overall its efficiency target represents around 7% of total funding. However, whether this represents a challenging and deliverable target needs to be understood by reviewing the efficiency proposals for each expenditure line individually.

8.45 The contribution of each expenditure line to the total efficiency target is set out in Table 8.4.

**Table 8.4 Total efficiency contribution by swim lane (£ million, nominal)**

	Measured efficiency	Embedded efficiency	Total Expected efficiency	% of pre-efficient budget
Renewals	-	632	632	8.2%
Digital and corporate services	30	223	253	8.1%
Operating and maintaining the network	23	489	512	10.7%
Existing enhancements commitments	-	209	209	NA

	Measured efficiency	Embedded efficiency	Total Expected efficiency	% of pre-efficient budget
Protocols	8	22	30	5.7%
New enhancements	15	-	15	5.0%
National Programmes	44	-	44	5.2%
Designated Funds	14	-	14	3.5%
Future RIS funding	10	-	10	3.5%
<b>Total</b>	<b>144</b>	<b>1,557</b>	<b>1,719</b>	

## Our approach

8.46 There are four main considerations that guide our assessment of National Highways' efficiency proposals:

- whether National Highways has robustly estimated its 'pre-efficient costs' and taken account of its expected efficiency position at the end of RP2;
- whether National Highways has applied an appropriate cost challenge to identify potential opportunities to reduce costs, and has accounted for potential 'headwinds' and 'tailwinds' in a fair and balanced manner drawing on appropriate evidence;
- the evidence that National Highways has provided to demonstrate how it will achieve its proposed efficiencies (often termed efficiency 'levers'); and
- whether National Highways' efficiency challenge is in line with appropriate benchmark evidence.

## Benchmarking the efficiency challenge

8.47 We have established benchmark ranges for each major area of National Highways' activity. The ranges take account of both 'ongoing' and 'catch-up' efficiencies. These are set out in Table 8.5.

8.48 We commissioned CEPA to provide advice on an appropriate level of frontier shift (or ongoing) efficiency based on a review of trends in productivity growth in capital intensive sectors, and secondary evidence from other regulatory settlements.

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- 8.49 Recent regulatory determinations have set an ongoing efficiency challenge of around 1% per annum. However, analysis of recent trends in productivity growth in a selection of comparable sectors suggests this may be optimistic. On balance, we have based our RIS3 benchmarking on an assumption of 0.5% per annum for ongoing efficiencies.
- 8.50 Benchmark ranges for catch-up efficiencies are based on the findings of two 'capability reviews' that we jointly commissioned with National Highways. The capability reviews were intended to determine the scope for efficiencies that could be reasonably expected from improvements in the company's capability. The Asset Management capability review was focused primarily on the efficiencies that can be achieved in maintenance and renewals, whereas the Procurement and Project Management review was focused on major enhancements projects.
- 8.51 For enhancements, the scope to achieve efficiencies is highly dependent on the stage of development of the project in question. For projects at an early stage (options development) there is much greater scope for National Highways to apply innovative methods and to embed efficiency in the delivery of the project. For projects at an advanced stage of development, or for those in construction, there is less scope to influence project design and cost.

**Table 8.5 Benchmark efficiency ranges (percentage per annum)**

	Catch-up efficiency	Ongoing efficiency	Total efficiency range
Operations and maintenance	1.0% to 2.8%	0.5%	1.5% to 3.3%
Renewals	1.0% to 2.8%	0.5%	1.5% to 3.3%
Enhancements (during options stage)	1.7% to 3.0%	0.5%	2.2% to 3.5%
Enhancements (during development stage)	1.2% to 2.1%	0.5%	1.7% to 2.6%
Enhancements (after development stage)	0.2% to 0.6%	0.5%	0.7% to 1.1%

- 8.52 National Highways measures its efficiency offer by comparing pre- and post-efficient costs for the road period as a whole. Therefore, the ranges in Table 8.5

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have been converted to road period totals assuming a constant expenditure profile.

8.53 Table 8.6 compares the benchmark ranges against National Highways' efficiency offer for operations, maintenance and renewals. We take a different approach for enhancements because of the complexity related to the development stage of projects. This shows that efficiency challenge applied by the company for renewals lies within the range indicated by the benchmark evidence. The efficiency challenge for operating and maintaining the network lies above the benchmark range, although the difference between the efficiency challenge and the upper end of the benchmark range is relatively slight.

8.54 In summary, we conclude that National Highways' efficiency challenge is broadly in line with our benchmark evidence.

**Table 8.6 Benchmarking National Highways' efficiency offer**

	National Highways' efficiency	Benchmark range
Operating and maintaining the network	10.7%	4.4% to 9.5%
Renewals	8.2%	4.4% to 9.5%

## Conclusions and recommendations

8.55 We are proposing some adjustments that will make National Highways' efficiency challenge more stretching but, because of the way efficiency is measured, will result in a slight reduction in the overall financial value of the efficiency KPI. Our key conclusions on efficiency for major areas of expenditure are set out below.

### Operations and maintenance

8.56 There is a reasonable basis for National Highways' assumption that, without improvements in efficiency, costs of operations and maintenance activities will increase in real terms. For operations, the quantification of pre-efficient costs, and therefore the effective scale of the efficiency challenge is uncertain. For maintenance, efficiencies are, in part, predicated on achieving improvements in performance including a better overall balance between proactive and reactive maintenance. During RP3 the company must provide evidence to show that it is achieving these improvements as part of its efficiency reporting.

## **Renewals**

8.57 In overall terms, National Highways' proposed efficiency challenge lies within the expected range. As noted in section 4, whilst the company has provided some examples of specific actions under each of these levers, the evidence it provided to support the deliverability of efficiencies is weaker than for some other aspects of its draft SBP.

## **Operational and corporate technology**

8.58 National Highways has provided good evidence to support the deliverability of efficiencies in operational and corporate technology. The company has undertaken its own benchmarking to ensure that the efficiency challenge is appropriately sized.

8.59 Some of National Highways' efficiencies in this area are 'measured efficiencies' that do not result in a reduction in funding but will be evidenced during RP3 using case studies. There is a risk that these measures will result in double counting embedded efficiencies. Given this, before finalising its SBP the company should set out how this can be avoided. However, we support this approach in principle as it will increase incentives for the company to create efficiencies through the use of digital technology.

## **Corporate services**

8.60 In several areas, the pre-efficient costs put forward by National Highways are higher than costs incurred during RP2. However, the company has provided insufficient evidence to justify higher corporate services costs. Therefore, we conclude that the efficiency challenge should be set against current cost levels.

8.61 As set out in detail in section 7, we recommend an embedded efficiency challenge of 1.5% per annum. This is in line with benchmark evidence that National Highways provided. When measured over the road period, the resulting efficiency challenge is around £70m or 4% of total cost. This is proportionately lower than the efficiency challenge applied to operations, maintenance and renewals. Therefore, we are satisfied that this would represent a challenging and deliverable level of efficiency.

8.62 National Highways will need to demonstrate that it has delivered planned projects, such as those relating to its corporate carbon plans, and planned investments, such as those related to its estates plans, if it is to demonstrate that it is achieving its efficiency target.

**Existing enhancements**

- 8.63 As described in section 5, for existing enhancements projects, National Highways claims that it will deliver £209 million of embedded efficiencies by virtue of the fact that an efficiency challenge was applied to the original cost estimates for these projects established at the start of RP2. Therefore, the company has not applied any new efficiency challenge.
- 8.64 As set out in section 5, the forecast cost of National Highways' committed enhancements projects has increased by over £3.0 billion during RP2 and therefore we no longer consider £209 million to be a credible estimate of efficiency. As such, we recommend that the re-baselined costs for RP3 are treated as pre-efficient, in the same way as the pre-efficient costs are reset for other spending lines at the beginning of a road period. We propose that a new efficiency target is set for enhancements projects based on the findings of the procurement and project management capability review.
- 8.65 The scope for National Highways to achieve efficiencies on enhancements projects is heavily influenced by the stage of development of the project in question. The existing enhancements portfolio comprises mostly schemes at the latter stages of development or those already in construction. For these schemes, the company will have less ability to influence costs. Nevertheless, the capability review concluded that there remains scope for the company to achieve efficiencies.
- 8.66 We have applied the mid-point of the efficiency ranges for development and construction stage projects shown in table 5.2. This results in an overall efficiency challenge of around £80 million, less than 2% of the total cost estimate of the enhancements portfolio. However, this target will need to be revised, ahead of the start of RP3, when the portfolio is finalised and project cost estimates are updated.

## **Financial risk**

**Content**

- 8.67 This section considers whether centrally held risk funding has been set at an appropriate level. It draws on a review of National Highways' approach to financial risk undertaken by Europe Economics and our experience of the last two road periods. It summarises our findings on risk set out in sections 4 (renewals) and 5 (enhancements).
- 8.68 National Highways is exposed to risk at the project and portfolio level. Portfolio-level risks are those common across a programme or portfolio. Project-level risk

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funding is held within the budgets for individual spending lines or projects within them. The central risk reserve (CRR) provides for risks that are outside of the control of the projects/programme and that impact the portfolio as a whole. In RP3, as for RP2, the CRR is intended to provide for risks relating to the company's existing enhancements portfolio, and its programme of capital renewals. During the road period, the company has internal governance processes to manage the allocation and drawdown of risk allowances from the CRR.

8.69 National Highways has developed its capabilities in this area considerably since its creation in 2015. In RP1, it made a limited assessment or provision for cost and schedule risk across the capital portfolio. For RP2, the concept of the CRR was introduced and, during the RIS2 development process, the company undertook quantitative cost risk analysis (QCRA) to estimate the risk requirement for enhancements projects. For RP3, the company has extended its QCRA to renewals. Whilst we set out concerns relating to the robustness of this analysis and the conclusions drawn from it, we welcome the company's efforts to adopt a more mature approach.

### National Highways' overall approach

8.70 National Highways' draft SBP presents an assumption that the CRR will be set at £703 million based on the outcome of the review in spring 2023 that informed the setting of the SoFA. The company has subsequently undertaken QCRA to assess the statistical level of confidence associated with that level of funding. Its analysis assumes that its plans are fully funded and not constrained to the £24 billion SoFA.

8.71 Ordinarily, we would expect National Highways' risk modelling to more directly determine or inform the size of the CRR. We understand that the company has limited the CRR in response to funding constraints. However, given that the cost of the plans that it has put forward exceeds the SoFA, this has not necessarily served its intended purpose.

8.72 National Highways has indicatively apportioned the £703 million CRR between enhancements and renewals based on its risk analysis. Apportioning the CRR was intended only to inform its assessment of the adequacy of risk funding. The company is not proposing any formal division of the CRR between renewals and enhancements once RP3 is underway. However, as described in paragraph 8.85, we consider that some degree of ring-fencing could serve a useful purpose by ensuring that there is sufficient risk funding for renewals.

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- 8.73 In the first instance, National Highways has apportioned a share of the CRR to enhancements such that overall funding is set at a 'P50' level of confidence. The company employs 'Monte-Carlo' modelling, a technique that uses random sampling to simulate various possible outcomes. From this, a probability distribution for different outcomes can be established. In theory, at P50, there is an equal chance that the outturn costs will be above or below that level of funding. On this basis the company has apportioned £128 million to enhancements.
- 8.74 The remaining £575 million is notionally apportioned to renewals. However, National Highways believes that this is insufficient to achieve a P50 level of confidence across its renewals portfolio as a whole. The company estimates that risk funding of £553 million would be required to provide for the programme of significant structures renewals at a P50 level, leaving very little CRR remaining to cover risks associated with other assets. It concludes that an additional £1.2 billion would be required, to provide sufficient risk funding for remaining assets. Its analysis infers that the confidence level attached to renewals funding in the draft SBP, including the CRR, is effectively P0 (that is to say a 0% chance that the portfolio can be delivered at that level of funding).
- 8.75 This would mean that, in National Highways' view, because the CRR has been constrained to £703 million, the company would be unable to deliver its plans for the costs it puts forward (that is to say with the plan fully funded to £25.4 billion) if risks emerge as expected. National Highways' conclusion on risk is contradictory, as the company has presented its plans on the basis that, if fully funded, they represent a challenging and deliverable proposal.
- 8.76 For the reasons set out in section 4 (paragraphs 4.83 to 4.99) and further discussed in the remainder of this section, we do not consider the analysis to be sufficiently robust to support National Highways' conclusion that £1.2bn of additional risk funding is required.

### Our assessment – enhancements

- 8.77 National Highways' risk analysis is more mature for enhancements than renewals. Europe Economics concludes that several aspects of the company's approach to financial risk appear reasonable. However, it also highlights the value of project-specific investigations, such as those undertaken by CEPA to support our review, in informing our overall assessment of the adequacy of the CRR. The company's Monte-Carlo modelling takes as its inputs the minimum, most likely and maximum cost ranges for each project. It therefore relies on the robustness of the risk assessment of each project and the realism of the resultant ranges. As described in section 5, CEPA's case study review highlighted that project-level risk provision

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in the most likely estimates is lower than would ordinarily be expected for projects at an equivalent stage of development.

- 8.78 The amount of CRR apportioned to enhancements is, at £128 million, just 3% of total project-level costs. In contrast, at an equivalent stage in the RP2 process, the CRR was 11% of project costs. During RP2, the CRR was drawn down more quickly than expected due to rising enhancements costs. The enhancements portfolio for RP3 includes more schemes at a more mature stage of development. This might indicate that a lower level of risk funding is required for RP3. However, there is still a significant number of large and complex projects currently progressing through the development stage. Furthermore, because the RP3 expenditure profile is front loaded – with the majority of enhancements costs incurred in the first three years of the road period – delays to projects will result in activity shifting to later years of RP2. Delays are much less likely to result in activity shifting to RP4 and therefore are unlikely to substantially reduce the funding needed in RP3.
- 8.79 As set out in section 5, National Highways' most recent estimates suggest that enhancements costs have already increased by around £0.4 billion since the draft SBP submission. There is also a shortfall in funding of around £0.3 billion at the end of RP2 that may require a deferral of enhancements spending into RP3.
- 8.80 Taking these factors into account, the CRR notionally apportioned to enhancements is likely to be inadequate and would likely need to be allocated to meet rising project costs before the start of RP3.

### Our assessment – renewals

- 8.81 National Highways' approach to the quantitative assessment of risk for renewals is less robust than that for enhancements. Europe Economics' review highlights the lack of clarity as to the type and extent of risk that is already reflected in the cost estimates used to determine 'core' funding. It also concludes that the significant shortfall in funding to reach the P50 level indicated by the company is due, in large part, to the application of substantial risk uplifts. As discussed in section 4, we do not consider that National Highways' analysis provides a sufficiently robust basis on which to directly determine the amount of CRR required for renewals:
- because of the approach it has taken to estimating renewals unit costs for RP3, National Highways cannot comprehensively show the equivalence of its estimated RP3 costs with outturn RP2 costs;
  - National Highways' benchmarking does not demonstrate that the estimated RP3 unit costs are consistently under-priced (before risk allowances are

added) compared to RP2 outturn costs. This is particularly the case when the efficiencies expected to be delivered (and being reported) during RP2 are taken into account;

- for most assets, National Highways has justified the risk uplifts primarily on the basis of the volume of renewals required, rather than unit costs. Therefore, the uplifts are based on judgement of need, rather than evidence of variation in historical unit costs. In the absence of targeted outcome measures for most asset types, our focus in RP3 will be on ensuring that the company delivers the planned volumes, for the expected costs, and understanding any variations from those plans; and
- the risk uplifts that National Highways has applied to renewals projects – that in most instances are relatively small-scale and repeated activities – exceed the project-level risk allowances that we identified in our case study deep dives of committed enhancements projects.

8.82 Given these concerns with the evidence and analysis presented by National Highways, a large degree of judgement is required when considering the appropriate level of risk provision for renewals in RP3. The company's drawdown of CRR funding for renewals has been relatively modest during RP2. However, renewals funding has increased during RP2 to meet inflationary pressures (that in other circumstances could have been drawn from the CRR). There is a need to make appropriate risk provision for the expanded programme of large, more complex structures renewals. In this context, we recommend CRR provision of around £500 million for the renewals portfolio would be proportionate based on the evidence provided.

8.83 We recognise that risk analysis for renewals is a developing area. National Highways will need to develop a new approach for RIS4 and we will work closely with the company during this process. Our priority is to ensure that there is a clear distinction between the types of risk provided for in the company's 'core' funding and the risks provided for by the CRR. As far as possible, risk analysis should be based on empirical evidence from the company's delivery of renewals in the past.

## **Overview**

8.84 Overall, considering our conclusions in respect of enhancements and renewals, based on the planned programme of investment, the CRR is unlikely to be adequate at its current level of £703 million. Taking our recommendations into account, National Highways must update its risk assessment ahead of finalising its

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SBP and the RIS. The final value of the CRR should be based on its analysis and not constrained to a previously determined level.

8.85 In RP2 National Highways drew down the CRR more quickly than expected due to escalation in the cost of enhancements. We are concerned that, should a similar process take place in RP3, this could erode a significant proportion of risk funding earmarked for renewals, ultimately putting asset condition and performance at risk. Ring-fencing the renewals element of the CRR would deal with this risk. However, the company's view is that it needs flexibility to use the CRR to respond to risks as they emerge, irrespective of whether those risks occur on enhancements or renewals. On balance, we recommend that DfT requires the company to ring-fence a proportion of the CRR during the early part of RP3 (for example, up to the end of year 2) to ensure that the CRR is not exhausted by cost escalation on enhancements projects.

### Key proposals

National Highways must update its inflation assumptions so that they are based on a most likely scenario. Should DfT wish to make provision for inflation risk beyond this 'most likely' level, this should be considered as part of the company's wider risk funding and not embedded within 'core' funding.

National Highways must re-estimate its efficiency KPI target considering the following recommendations:

- the efficiency challenge for corporate services should be set against current cost levels;
- cost estimates for existing enhancements, once updated, should be treated as 'pre-efficient' costs and an efficiency challenge applied drawing on the findings of the procurement and project management capability review; and
- efficiencies on protocols should be removed from the efficiency KPI.

National Highways must update its risk assessment ahead of the final SBP. The CRR should be set based on this analysis, not constrained to an arbitrary value.

Ahead of the RIS4 development process, National Highways must set out proposals for how it intends to estimate costs and assess financial risks for renewals. These should make clear how the company will apply quantitative evidence from previous road periods and provide a clear distinction between risks covered by 'core' funding and the CRR.

## 9. RIS3 performance specification

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### Introduction

- 9.1 The performance specification forms a key part of the road investment strategy (RIS). It is shaped by a combination of the Department for Transport's (DfT) requirements, users' priorities and National Highways' ambition. The specification must reconcile these matters where there is tension and also be aligned as far as possible with the company's broader statutory directions and guidance in its licence. A clear and consistent framework enables us to effectively hold the company to account to deliver the RIS for government and road users.
- 9.2 The development of the performance specification for RIS3 has been a process, agreed by National Highways and DfT, of evolving the one used in RIS2. We recognise there is merit in providing some continuity between consecutive road periods, but we have recommended important modifications which reflect changes in DfT policy priorities or improvements in methodology.
- 9.3 The size and form of National Highways' performance specification should:
- be commensurate with National Highways' extensive and complex portfolio of activities;
  - match the desired outcomes of the RIS;
  - represent what is important for users;
  - be understandable for stakeholders; and
  - drive the right behaviours in National Highways.
- 9.4 This section describes our assessment of, and recommendations for, National Highways' performance specification for RIS3. Six outcome areas / themes, set by DfT, provide the framework for the performance specification. The six outcome areas are:
- Improving safety for all:
  - Providing fast and reliable journeys:
  - A well maintained and resilient network

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- Being environmentally responsible:
- Meeting the needs of all road users: and
- Achieving efficient delivery.

9.5 For each of the outcomes there are a set of key performance indicator (KPIs) and performance indicators (PIs). The first section of the chapter provides an overview of issues related to performance specification monitoring. The rest of the chapter provides details, for the six outcome areas, of the proposals, our advice and recommendations, for KPIs and PIs. Our detailed set of proposals, for improvements in evidence, data and capabilities, is contained in annex A.

### RIS3 performance specification monitoring

- 9.6 National Highways has adopted a working principle that its performance specification should comprise no more than ten KPIs. In our view this is an arbitrary cap that the company was unable to satisfactorily explain. We have taken a wider view, based on the information gathered as part of our review. Based on this, we recommend a set of 14 KPIs that is appropriate and proportionate for the company's extensive and complex portfolio of activities.
- 9.7 We have reviewed National Highways' plans and its proposals for the performance specification, including targets for KPIs. In our view, there is an apparent disconnect between the company's proposed plans and performance throughout its draft strategic business plan (SBP). The company does not appear to have developed the targets in a manner that is integrated with its plans as set out in its draft SBP.
- 9.8 National Highways provided to us its proposed targets in early April 2024, six weeks after we received its draft SBP. In addition, it has not set specific targets for the Road User Satisfaction KPI and the Road Works Information Timeliness and Accuracy KPI. Instead, for Road User Satisfaction the company's forecasted trajectory is for '*a year on year improvement, based on previous year's outturn position*', and for Road Works Information a '*year-on year increase from the RP2 outturn*'. In our view, this is not an appropriate approach. It can lead to short-term thinking, with the risk that the company is not incentivised to take a longer-term view to achieve a desired outcome. In addition, it is not clear to road users or government what they are getting in return for the money spent.
- 9.9 National Highways, DfT, Transport Focus and ORR have been developing the performance specification for the third road period (RP3, April 2025 to March

2030) for over two years. Late in the process, in March 2024, the company proposed a specific approach for how ORR should hold the company to account to achieve its KPIs. ORR's powers are set out in statute and our approach to holding the company to account is for us to decide. However, we acknowledge that the company was attempting to be constructive with its proposed approach, by proposing upper and lower 'monitoring limits' around targets to support accountability where there is variable performance around a target. We will work with the company to understand how the performance specification can be designed to effectively support a culture of accountability.

- 9.10 National Highways also proposed '*replacing absolute targets with performance ranges for safety and average delay*'. Again, we welcome the company's willingness to think innovatively about how performance can be effectively measured and its proposed approach for its own internal governance in relation to how it monitors its own delivery of the RIS. However, our concern with this proposal is that the trigger points of these ranges become the de facto target. This is borne out with experience in the rail industry, regulating the performance of Network Rail in Control Period 6. Consequently, for Control Period 7 ORR is regulating Network Rail performance against baseline trajectories.
- 9.11 National Highways has also proposed that it should produce supporting delivery plans for certain KPIs. ORR would hold the company to account to deliver the outputs contained in the plans. The company indicated that a delivery plan would be in lieu of a target for average delay. In the case of the safety target, the company proposes that if performance is worse than the upper limit of the target, ORR will assess whether the company has achieved, or done everything reasonable to achieve, the monitored list of deliverables. For the road user satisfaction KPI, where it also believes that it has a more limited direct influence to achieve the target, the company proposes that if performance is worse than the previous year, ORR should assess whether the company has done everything reasonable to achieve the deliverable in the customer service plan. ORR supports, in principle, the company's intention to produce a supporting delivery plan. However, ORR will hold the company to account for achieving the KPI target and the deliverables in the supporting plan. Furthermore, in practice, we have not seen, but will need to see, the detail and quality of those plans. As a minimum they must contain clearly defined timebound outputs, outcomes and associated costs.

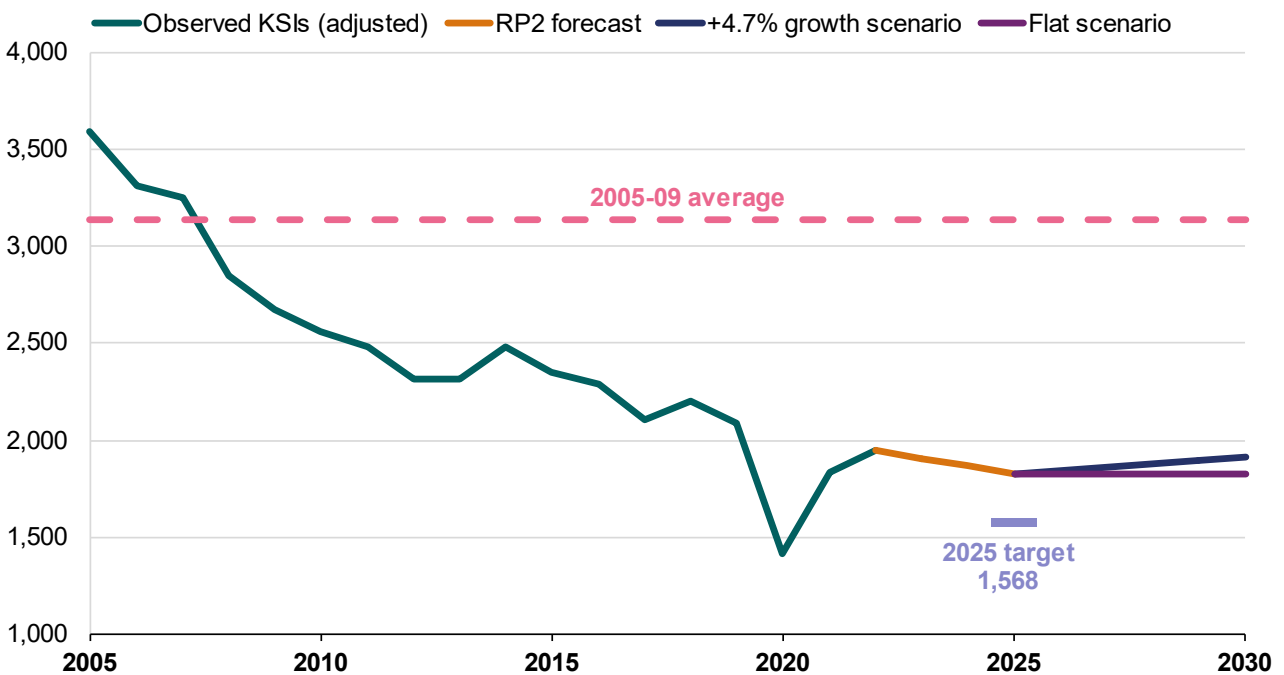
## Improving safety for all

### KPI – Number of people killed or seriously injured on the SRN

9.12 The road user safety KPI is measured by the annual number of people killed or seriously injured (KSI) on the SRN. This is unchanged from RIS2. ORR supports the continued use of this KPI.

9.13 National Highways proposed that its RIS3 road safety for the end of RP3 be no worse than the outturn of the second road period (RP2, April 2020 to March 2025) with a 5% tolerance to 'reflect forecast uncertainty'. In comparison, the current RP2 target, shown in figure 9.1, is for a 50% reduction in KSIs compared to the 2005-09 annual average baseline, with a 5% tolerance for variability. This equates to a target of 1,568 KSIs in 2025. In addition, the company proposes that ORR holds it to account to deliver a supporting safety plan. This plan would contain a two-year rolling programme of road safety initiatives.

**Figure 9.1 KSIs (adjusted) on the SRN and National Highways' proposed road safety target**

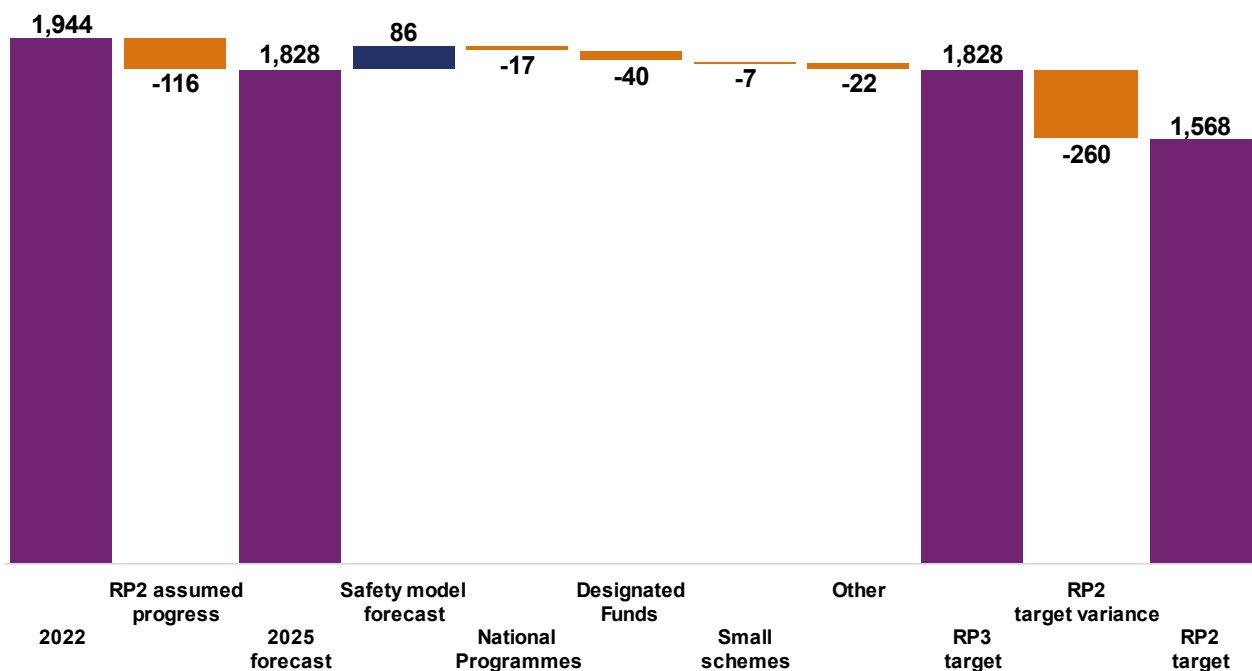


9.14 National Highways estimates that the RP2 outturn for the road safety KPI will be in the order of 1,830 KSIs (rounded to the nearest 10). This is around 260 above its RIS2 target. To derive its target for KSIs at the end of RP3, National Highways has used its safety model to project the change in KSIs that would occur with the Core traffic forecast and no safety investment by the company. In this scenario, the

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model estimates a growth of 4.7% in the number of KSIs by the end of RP3. The model has not been used to provide a forecast for the absolute number of KSIs. Instead, the forecast growth in KSIs has been applied to the projected RP2 outturn to estimate the number of KSIs at the end of RP3, 'without action'. The 'without action' figure is 1,910 KSIs (rounded to the nearest 10). The 'without action' estimate of 1,910 KSIs has then been adjusted, downwards, to take account of the potential impact of specific safety funding lines in the draft SBP to give an end of RP3 estimate of 1,850. The remaining gap of approximately 20 KSIs would be closed by currently unspecified initiatives. An overview of the target and the interventions proposed to achieve it is shown in figure 9.2.

**Figure 9.2 National Highways' proposed road safety target for RP3 (KSI)**

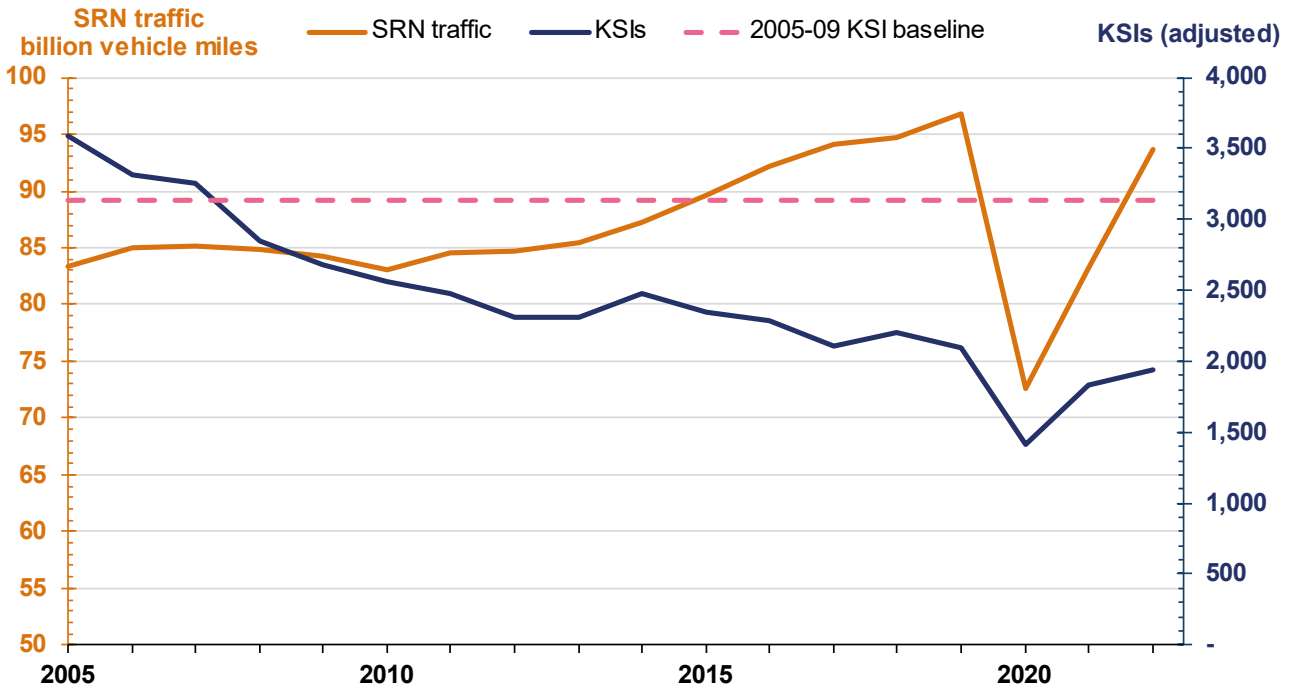


- 9.15 As described above, the methodology for setting the RIS2 safety target calculated an estimated reduction compared to a baseline derived from the average of five years (2005-09) of KSI data. Five years of data was used to ensure that anomalies relating to a particular year do not distort the assessment of performance in future years. In proposing to use the RP2 outturn, National Highways might, inadvertently, be selecting an atypical year. Pivoting a target from one year's (2025 forecast) worth of data, rather than a five-year baseline, is not best practice.
- 9.16 The number of KSIs (adjusted to take account of changes in the reporting of injury severity by some police forces) has reduced on the SRN over the last 20 years, despite rising traffic levels as shown in figure 9.3. The number of KSIs (right hand

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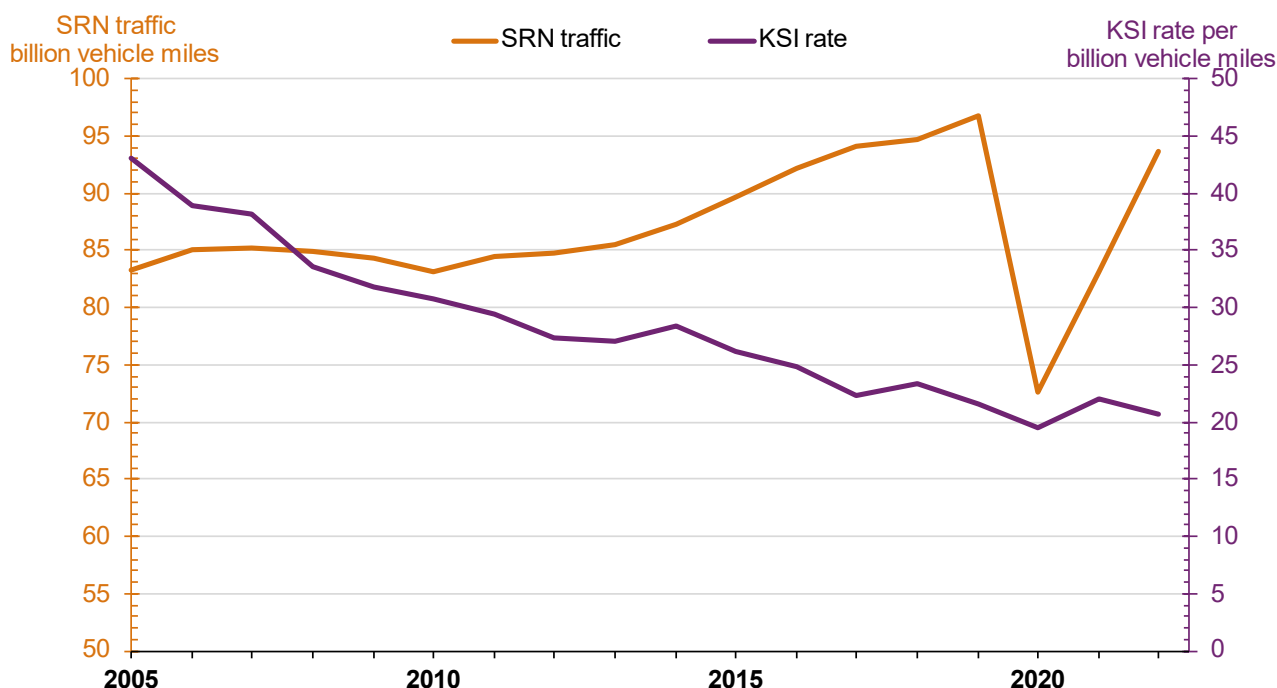
axis) in 2022, the last year of reported data, was 38% lower than the 2005-09 annual average baseline. Between 2009 and 2022 the level of traffic on the SRN (left hand axis) has increased from 84.3 billion vehicle miles to 93.7 billion vehicle miles (an 11% increase). Consequently, there has been a long-term trend in the reduction of the KSI rate (KSIs per billion vehicle miles), despite the increase in traffic.

**Figure 9.3 SRN KSIs and traffic levels 2005 – 2022**



9.17 Figure 9.4 shows that, between 2009 and 2019, the KSI rate per billion vehicle miles (right hand axis) fell from 31.7 KSIs per billion vehicle miles (a reduction of 32%). This reduction has been caused by improvements in vehicle safety, spreading across the national vehicle fleet, and the safety of the SRN itself, despite rising traffic. Between 2009 and 2019 the annual average reduction in the KSI rate was 3.8% a year (We have excluded 2020 and 2021 data due to the impact of the pandemic on traffic levels and patterns, which is not representative of long-term trends).

Figure 9.4 SRN KSI rates and traffic levels 2005-2022



- 9.18 Although this decline in the KSI rate per billion vehicle miles has been flattening over recent time, National Highways has not provided any evidence to show why RP3 should be different and why the rate suddenly drops to 2% per year from 2025. Particularly in the context that the company has proposed a significant targeted budget for safety schemes in the draft SBP. We acknowledge there are other headwinds that can increase risk on the network outside of the company's direct control, for example the increased potential for driver distraction, the trend of new cars being larger/heavier, with more powerful engines/motors and higher acceleration rates. However, we are not aware of evidence to suggest that improvements in vehicle safety (including driver assisted braking, blind spot warning, stability control and lane keeping assist), and their diffusion across the vehicle fleet, is significantly weakening.
- 9.19 Our view is that National Highways' proposed safety target, held flat at the RP2 outturn, is unambitious and not sufficiently challenging. Our analysis indicates that the company appears to have taken a pessimistic view of the continuation of the historic trend in the reduction in KSI rates. In addition, as noted in section 6, in our view the company's estimate of the impact of safety interventions, funded by National Programmes and Designated Funds, appears to be a conservative one. Furthermore, the company did not include the benefits of speed management measures.

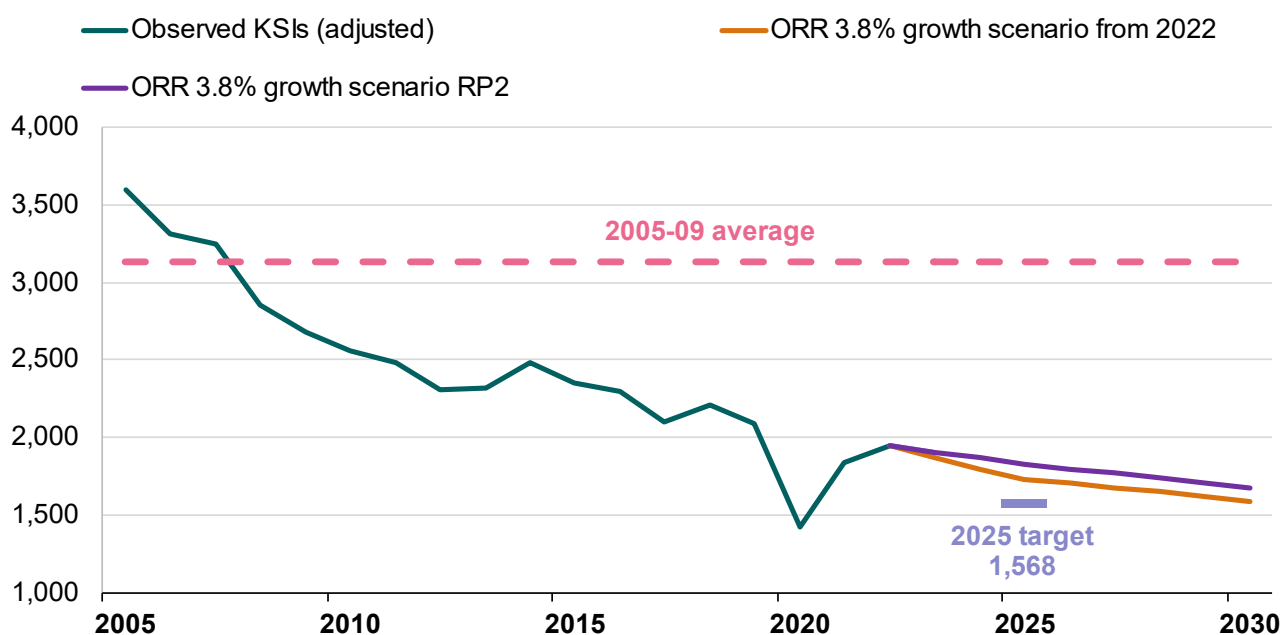
9.20 Targeted speed reduction measures and speed enforcement are likely to be highly cost-effective measures for reducing KSIs, and casualties and collisions more generally. National Highways included limited information on speed management measures in its plans. Where there are clear benefits in doing so, the company should focus on speed management measures to try to maximise KSI and casualty reduction. If DfT wishes to set a stretching safety target, the company should be afforded the freedom to identify and implement such measures.

9.21 We have assessed different scenarios for more challenging, but deliverable, targets for KSIs in RIS3 using the evidence and trends of KSI rates discussed above. However, we have not re-assessed the impact of National Highways' proposed safety measures, nor the impact of speed management measures.

9.22 The two scenarios are set out below. Based on the evidence available, we recommend that an improved road safety target, compared to that proposed by National Highways, is based on the **second** scenario. We believe this to be a more challenging, but deliverable KSI target for the company to deliver in RIS3. Furthermore, this scenario is consistent with the company's estimate for the outturn in KSIs at the end of RIS2:

- **scenario 1:** we have applied the medium-term annual 3.8% reduction trend to the KSI, per billion vehicle mile, rate from the last year of DfT observed KSI data, in 2022. We have used National Highways' core traffic projections for 2022 through to 2030 applied to DfT's observed SRN traffic level for 2022. This produces a forecast, shown in figure 9.5, of 1,590 KSIs (rounded to the nearest ten) in 2030. This would, effectively, extend the existing RP2 2025 target back to 2030; and
- **scenario 2:** we have applied the annual 3.8% reduction trend to the KSI, per billion vehicle mile rate, from National Highways' prediction of the RP2 outturn, of 1,830 KSIs (rounded to the nearest ten). We have also used the company's core traffic projections for 2022 through to 2030 applied to DfT's observed SRN traffic level for 2022. Using this approach produces a forecast of 1,680 KSIs (rounded to the nearest ten) in 2030, shown in figure 9.5. We note that even though this is a more challenging target than that proposed by company, it will still be unlikely that it will be able to support its ambition of Zero Harm by 2040.

Figure 9.5 Scenarios for SRN KSI forecasts



9.23 It will be important to update this analysis to incorporate the observed number of KSIs for 2023, due to be published by DfT in late summer 2024. This will provide additional and more timely data to observe any change in the KSI rate and also assist in re-baselining the target with more than one year’s worth of data.

### Performance indicators

9.24 We support three of the PIs that National Highways has proposed for the ‘Improving safety for all’ outcome:

- total number killed or injured on the SRN;
- number of non-motorised and motorcyclist users killed or injured on the SRN; and
- International Road Assessment Programme (iRAP star rating).

9.25 We recommend alternative indicators to two of the safety PIs that National Highways has proposed:

- Accident frequency rate (AFR) for National Highways’ staff: we propose replacing this PI with lost time incidents (LTI) for the company’s staff. LTI includes more types of incidents compared to the AFR. AFR only includes RIDDOR reports, the most serious workplace incidents. Having a higher

quantity of reported incidents will lead to a more responsive PI. The impact of a single RIDDOR currently has too large an impact on the AFR PI to provide a stable reporting value. For RP2, the company has reported and continues to report both LTI and AFR in its monthly board pack. Its *Home Safe and Well Strategy* contains a commitment to halve the number of lost-time incidents by 2025. Given this, our proposal will not impose additional reporting costs on the company; and

- Accident frequency rate (AFR) for supply chain staff: we propose replacing this PI with LTI for supply chain staff. As with AFR, National Highways already reports this separately for supply chain staff in RP2. Given this, and for the reasons set out above, our proposal will not impose additional reporting costs on the company.

9.26 We recommend additional safety PIs that National Highways should develop and introduce in RP3:

- leading safety PIs: these are pre-incident measures, as opposed to the current lagging indicators that are measurements collected after an incident occurs. Leading safety indicators are metrics that indicate safety performance before an incident occurs. They are pre-emptive measures used to indicate the level of safety performance. Their use is generally viewed as best practice in managing safety critical systems. Examples of potential measures include levels of driver distraction, locations of heavy braking or loss of grip and compliance with the speed limit; and
- active travel PI: this would be for walking, cycling, wheeling and horse riding. It has previously been a challenging issue for National Highways to address. Satisfaction survey and rate-based casualties metrics were deemed not practicable to develop in the first road investment strategy (RIS1) and RIS2. In our view, there is still a need to develop one or more PIs that assess provision for or the experience of active travel users on or crossing the SRN. One example may be 'CycleRAP' for walking and cycling infrastructure. It measures crash risk and safety issues. This is similar in approach to the iRAP tool that the company currently uses. In the interim we recommend that the company produces an active travel delivery plan with clear actions and time-bound deliverables. ORR would hold the company to account to deliver the plan in RP3.

## Providing fast and reliable journeys

9.27 National Highways proposes that its delivery of this outcome would primarily be measured through three KPIs:

- average delay;
- incident clearance; and
- network availability.

### KPI – Average delay (for year 1 of RP3)

9.28 The average delay KPI is measured by the difference between the observed average travel time and the travel time as if driven at the speed limit, and. It is reported in seconds of delay per vehicle per mile. This is unchanged from RIS2. Average delay will be reported as a KPI for the first year of RP3 and then replaced by a journey time reliability KPI in year 2 of RP3. After year 1 of RP3 the average delay KPI will be reported as a PI. We support this change journey time reliability and delay are important issues for users.

9.29 National Highways proposed that average delay should not be a targeted KPI. The company contends that many of the factors influencing delay on the SRN are outside of its control. For that reason, it proposes that the ORR holds it to account to deliver actions that should contribute to the KPI as set out in a supporting delay action plan.

9.30 Average delay was 10.6 seconds per vehicle per mile in Year 4 of RP2 and is expected to increase in Year 5 of RP2 because of traffic growth and the impact of enhancements work on the SRN. Transport Focus' research shows that journey time is one of the most important influences on satisfaction among drivers. It is particularly important for the logistics and passenger transport sectors. For this reason, we recommend that average delay should be a targeted KPI for year 1 of RP3, albeit some factors that affect delay are outside the company's control. We support the principle of National Highways producing a supporting delivery plan that we would hold it to account to deliver, subject to seeing the detail and quality of the plan.

### KPI – Journey time reliability (from year 2 of RP3)

9.31 This new KPI measures the percentage of journeys completed within a 'typical' journey time on the SRN. This is currently defined as journeys completed within 20% of the most common (mode) journey time. National Highways proposes that

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the KPI be in place from year 2 of RP3. Work continues to develop the metric and the modelling to inform target setting and advise government accordingly.

- 9.32 We support the introduction of this KPI. However, we have concerns that the current proposed tipping point of a 'fail' of average (mode) +20% is not responsive and will not incentivise National Highways to drive the right behaviours from the company. We recommend that the company undertake further work to assess alternative ranges, for example a boundary of average (mode) +10%. We also recommend that it commission research to better understand the value SRN users place on reliability, and the tipping points that influence behaviour and satisfaction.

### **KPI – Network availability (for year 1 of RP3)**

- 9.33 Network availability (running lane availability with respect to closures caused by roadworks) is measured by the percentage of lane-metre-days available. National Highways has proposed that this new KPI be used from year 1 of RP3 until a new delay from roadworks KPI is in place. After year 1 of RP3, or until the introduction of the delay from roadworks KPI, this KPI will be reported as a PI. We support this change because surveys of SRN users consistently report that delay from roadworks is an important issue and impacts on levels of satisfaction.
- 9.34 National Highways has proposed that the target be set at 97.5% for year 1 of RP3. We support this target.

### **KPI – Delay from roadworks (from year 2 of RP3)**

- 9.35 This new KPI measures the delay to SRN road users caused by roadworks on the SRN. National Highways proposes that this KPI be introduced from year 2 of RP3. The company is working to develop the metric and the modelling to inform target setting.
- 9.36 We support the development and introduction of this KPI because it is an important issue for SRN users.

### **KPI – Incident clearance**

- 9.37 The incident clearance KPI measures the proportion of motorway (including the A282 Dartford Crossing) incidents affecting traffic flow cleared in under an hour. The KPI is reported as a 12-month rolling average. The KPI is unchanged from RIS2. We support the continued use of this KPI for RIS3 because of its importance to users and it is largely within the company's control.

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- 9.38 National Highways proposes setting a target of 86% for this KPI. This is unchanged from RP2. The company estimates that traffic growth will increase between 3-9% over RP3, and that incident rates could increase by circa 35%.
- 9.39 In Year 4 of RP2 National Highways cleared 87.8% of incidents affecting traffic flow on its motorways within one hour. The company consistently exceeded the current target of 86% throughout the year. In addition, the number of incidents increased from 84,231 in Year 3 of RP2 to 93,796 in Year 4 of RP2, an increase of 10%. SRN traffic increased by 2% in 2023 compared to 2022.
- 9.40 National Highways contends that recent increases in incidents may have been due to an increase in breakdowns caused by reduced levels of vehicle maintenance owing to the sharp rise in the cost of living. A key question is whether this trend is likely to continue. We have not seen evidence to support the supposition that this is a longer-term trend, and that a circa 30% increase in incidents is likely to occur. However, the forecast traffic will lead to a higher occurrence of incidents. This will create an inherent stretch to achieving the proposed target. For this reason, we recommend adopting the company's proposed KPI target for incident clearance.

### Performance indicators

- 9.41 We support three of the PIs that National Highways has proposed for the 'providing fast and reliable journeys' outcome:
- delay on gateway routes – this uses a subset of the average delay data for the SRN serving the England's most economically important ports and airports;
  - delay from incidents – this measures the impact of incidents on SRN users. Incidents are defined as unplanned events on the SRN that have a discernible impact on SRN users. National Highways' research on the causes of delay on its network estimates that 8% is attributable to incidents; and
  - average speed – this measures the average speed of vehicles travelling on the SRN.
- 9.42 Average delay and network availability would become supporting PIs for the 'Providing fast and reliable journeys' outcome' from year 2 of RP3. We support this for the reasons set out above.

### Traffic officer response times

- 9.43 We note that DfT has not required and there is no proposal for National Highways that the company maintain, through RP3, that traffic officers attend incidents within 10 minutes. This was an action in DfT's *Smart Motorway Safety Evidence Stocktake and Action Plan* (2020). DfT should confirm whether it wants to maintain this requirement.

## A well maintained and resilient network

### KPI – Pavement condition

- 9.44 This KPI measures the percentage of the pavement (road surface) asset in good condition. The measurement of the KPI is unchanged from RIS2. The target is currently set at 96.2% and National Highways has achieved this at the end of each year of RP2.
- 9.45 National Highways has proposed an end of RP3 target of 94.7% of pavement in good condition. As described in section 4, forecast deterioration in condition is the result of the company adopting a lower cost strategy in response to affordability challenges. The proposed target is based on modelling of the company's lower cost strategy that suggests that the pavement KPI would begin to decline towards the end of RP3.
- 9.46 In our view, National Highways' proposal is not aligned with DfT's requirements to maintain performance at RP2 targeted levels. In section 4, we set out our recommendation that additional funding be provided for pavement renewals to enable the company to continue to achieve a target of 96.2%. We show how this could be funded through changes in expenditure on other assets and using the savings from lower inflation assumptions. Therefore, subject to DfT adopting our recommendations on renewals funding, we propose that the target for the pavement condition KPI is maintained at 96.2% throughout RP3.

### Minimum regional condition levels

- 9.47 The KPI is calculated as an average across National Highways' network. However, there are longstanding differences in performance across the company's regions. Most notably, the condition of pavements in the East region has been consistently below the national target. In 2022-23, the East region's pavement condition stood at 93.6%. This is partly due to the high proportion of A-roads and the presence of concrete roads in the region. However, our research [comparing road surface across the company's regions](#) suggests that these factors fail to fully explain the performance gap between the East region and the network-wide average.

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- 9.48 While some degree of regional variation is expected, there is a risk that poor condition in some of National Highways' regions is masked by better condition in others. To mitigate this, we propose the introduction of a minimum condition standard that all regions must achieve. This would be set at a lower level than the national target but should be sufficiently stretching to incentivise the company to achieve a good condition across all regions.
- 9.49 If DfT supports the inclusion of minimum condition levels in the RIS3 performance specification, we would work with National Highways to identify an appropriate level at which the regional minimum should be set.

### Treatment of returning DBFO roads

- 9.50 The current pavement condition KPI is calculated based on the network directly maintained by National Highways and excludes roads operated by Design Build Finance and Operate (DBFO) companies. As described in section 4, some parts of the network currently maintained by DBFO companies will be handed back to the company in years 1 and 2 of RP3. The company proposes that the KPI continues to exclude these roads and has stated that it will report their condition separately during the remainder of RP3.
- 9.51 There is a risk that road surfaces on the DBFO sections will return to National Highways at a lower average level of condition than the SRN as a whole. Under the terms of their contracts, the DBFO companies are required to achieve certain levels of pavement condition. These requirements are less stringent than the KPI target. Therefore, if included in the calculation, the company believes that the return of the DBFO roads could adversely affect its performance against the KPI. As noted in section 4, the company has not included any costs to undertake renewals of these roads during RP3.
- 9.52 National Highways has not yet undertaken any detailed assessment of the condition of pavements on the returning DBFO roads. Their impact on the KPI is therefore unknown. Unless the company provides compelling evidence that it cannot achieve the KPI target, we recommend that the RIS3 pavement condition KPI covers all the network directly maintained by the company, including returning DBFO roads.
- 9.53 If National Highways provides sufficient evidence to show that it cannot meet the target if the returning DBFO roads are included, the company needs to report the condition of the DBFO roads as a PI during RP3. In this instance, the company needs to set out plans for how it will bring the returning roads up the KPI standard.

### **Technology performance KPI**

9.54 Roadside technology plays a key role in National Highways' operational management of the SRN. It is also a focus of significant spend. We recommend that DfT consider adopting a new KPI for roadside technology performance. This could, for example, be a technology road services availability KPI, based on the PI that the company is developing (see below). It would group technology assets into services from a customer perspective (such as queue detection). A KPI would provide clarity on the level of performance that DfT expects the company to achieve. We recommend that DfT should also consider whether a KPI should be disaggregated by road and asset type, particularly in respect of smart motorways.

### **Performance indicators**

9.55 We support three PIs proposed by National Highways for the 'well maintained and resilient network' outcome:

- structures condition – average and critical condition of structure stock and percentage of structures with updated bands/descriptors. To continue dual reporting of ratings such as 'good', 'fair', and 'poor' by an inspector;
- drainage resilience – the percentage length of carriageway that does not have an observed significant susceptibility to flooding. To continue dual reporting of drainage resilience, including and excluding abnormal rain events; and
- geotechnical condition – percentage length of asset in good condition.

9.56 National Highways has proposed a PI for Technology Availability. This would measure the percentage of time technology is available and functioning. As stated above, we recommend that Technology Availability is reported as a targeted KPI and not as a PI. This is because of the importance of this asset to the operation of the network and the level of investment it received and is proposed to receive in RP3.

### **Asset health PI**

9.57 The evidence shows that there is a clear need to develop a measure of the sustainability and resilience of assets on the SRN ('asset health') to help National Highways fully understand the appropriate level of investment. In addition, it will provide evidence to help make the case for that investment. We recommend that the company develop a suite of PIs to measure the SRN's asset health. The indicator(s) should demonstrate the enduring impact of funding on the sustainability of the asset base to support the long-term stewardship of the

network. This type of measure would improve the company's understanding of its overall portfolio risk and, importantly, support a more outcomes focus to its renewals planning for future periods. In addition, it would be easier for policy makers to understand and assess the implications of investment decisions.

9.58 We recommend that National Highways complete the development of asset level indicators by end of year 1 of RP3. The company should begin reporting to ORR from year 2 of RP3. The company should also develop a composite measure during years 2 and 3 of RP3 to inform the early stages of planning and development of RIS4, and for consideration for inclusion in the performance specification for RP4.

## **Being environmentally responsible**

9.59 National Highways proposes that its delivery of this outcome would primarily be measured through two KPIs:

- biodiversity; and
- corporate carbon.

9.60 Our initial advice recommended that National Highways retain its RP2 KPIs on air quality and noise for RP3. These are important concerns for communities adjacent to the SRN. Retaining them as KPIs focuses the company on the need to deliver these outcomes.

### **KPI – Biodiversity**

9.61 This KPI measures the biodiversity of National Highways' soft estate. The KPI uses the Defra Biodiversity Metric v4.1, a revised methodology to that used in RP2. We support this KPI and the use of the updated metric.

9.62 National Highways proposed that the KPI target is set at 'no net loss' for biodiversity on its soft estate. The company intends to report the biodiversity impact of Nationally Important Infrastructure Project (NSIP) enhancements schemes separately, and not as part of the KPI. The company estimates that its soft estate accounts for 250,000 biodiversity units. It also estimates that 20% of its soft estate is classified as being in an unmaintainable condition. For this 20% proportion of the soft estate it has applied a 1% annual biodiversity loss. This results in an estimated loss of 2,500 units over RP3, some 500 units a year.

9.63 The KPI target measures 'no net loss' for part of National Highways' activities and does not measure achieving the draft SBP's overarching environmental aim of

being 'net positive for nature'. It is unclear how non-NSIP major enhancements schemes, small schemes, National Programme safety schemes and Designated Funds schemes will be accounted for in terms of their biodiversity impacts. The company also assumes that the 80% of its soft estate currently classified as being in a maintainable condition does not deteriorate to an unmaintainable degraded condition. As set out in section 4, the company's assessment, that 80% of the soft estate is in a maintainable condition, is a high level estimate based on surveys of only part of the estate. Moreover, we have not seen any evidence to support its assumption that maintainable plots do not suffer any ongoing biodiversity loss. We recommend that the company develops and implements a monitoring system to regularly assess the biodiversity condition of its whole soft estate by year 2 of RP3. This will help it to determine whether its approach to soft estate management is sustaining the 80% in a maintainable condition, and that it is not suffering degradation.

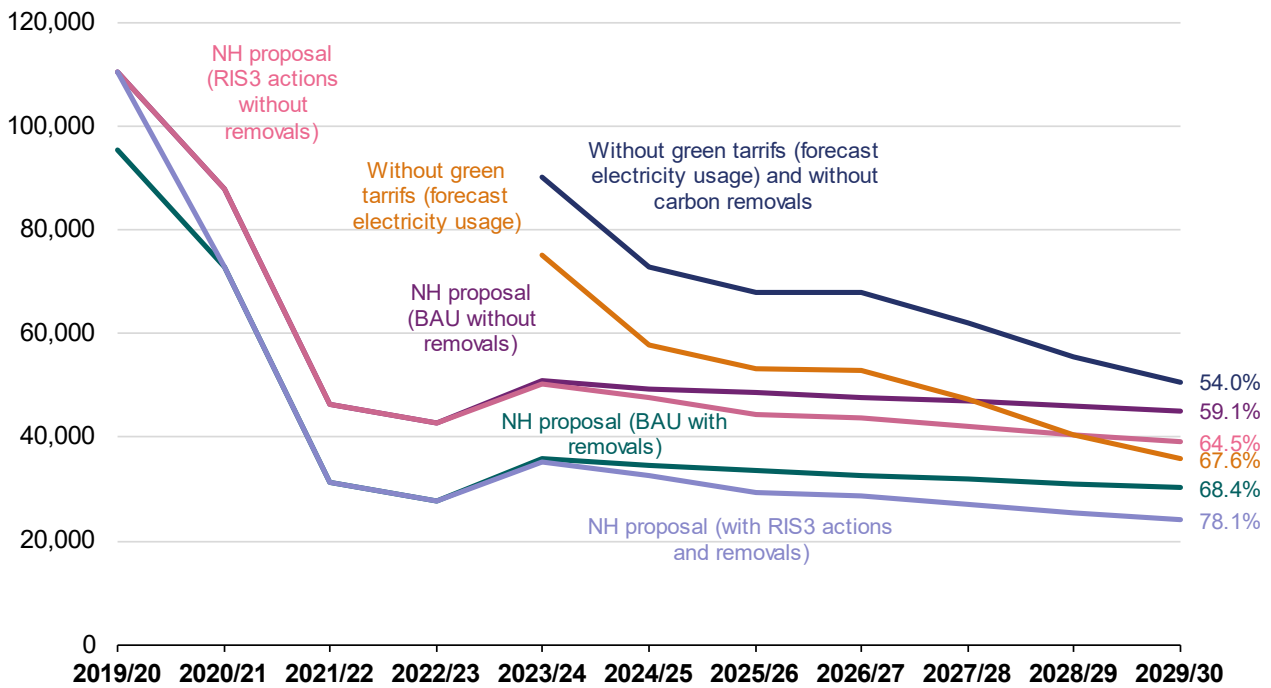
### KPI – Corporate carbon

- 9.64 This KPI measures National Highways' corporate carbon emissions. The metric includes carbon dioxide and other greenhouse gas emissions (CO<sub>2</sub>e). We support this KPI.
- 9.65 National Highways proposes to set a target aligned with its Net Zero Highways commitment for a 90% reduction from the 2019-20 baseline by March 2030. The company has adopted the Science Based Target Initiative (SBTI) methodology for CO<sub>2</sub>e emissions calculations.
- 9.66 National Highways identified that the evaluated measures in its draft SBP will lead to a reduction in its CO<sub>2</sub>e emissions of 78% by the end of RP3, a 12% shortfall in achieving the company's proposed RP3 target. The company has identified additional initiatives to potentially close the gap, but their impact has not been fully evaluated. The SBTI methodology, used by the company, does capture a broader set of corporate activity related emissions. However, the inclusion of 'green' electricity tariffs is not consistent with the *Greening Government Commitments Reporting Requirements for 2021 to 2025*. Emissions from electricity are the single largest source of the company's carbon emissions. The Greening Government Commitments Reporting requirements state that *Government policy is that organisations must account for electricity from green energy tariffs using the rolling grid average emission factor*'. If emissions from electricity are reported using the forecast average grid mix then the company will only achieve a 68% reduction in CO<sub>2</sub>e emissions by the end of RP3.

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9.67 National Highways is proposing to use its existing soft estate to offset/sequester 15,000 tonnes of CO<sub>2</sub>e emissions per year. This approach is not consistent with Defra’s environmental company reporting guidelines and the UK Woodland Carbon Code. Removing this offset, in addition to the green tariff described above equates to the company only achieving a 54% reduction in its emissions by the end of RP3. The different emissions scenarios are shown in 9.66.

**Figure 9.6 Scenarios for National Highways’ corporate carbon emissions (CO<sub>2</sub>e)**



9.68 We recommend that DfT considers whether National Highways’ corporate carbon KPI should be consistent with the Greening Government Commitment guidelines, whereby ‘green’ tariff electricity and existing woodland are not counted as a carbon savings for corporate emissions. Depending on the approach followed, the proposed KPI target may not be achievable and DfT would need to consider whether it would need to be revised.

**KPI – Supply chain – maintenance and construction carbon emissions**

9.69 Emissions from National Highways’ supply chain maintenance and construction activities led to emissions of around 734,000 tonnes of CO<sub>2</sub>e during 2020, compared to 82,000 tonnes CO<sub>2</sub>e from its corporate activities. In our initial advice we recommended that a KPI be set for the company’s supply chain emissions given that this is the greatest contributor to carbon that the company has some ability to directly control.

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9.70 National Highways has set an ambition in Net Zero Highways to reduce its supply chain emissions by 40%-50% by 2030 compared to the 2020 baseline. However, the company has said that issues with data quality, from its supply chain, have precluded it from setting a target. We recommend that the final SBP contains milestones within RP3 for improvements in data quality with the aim of finalising and setting a target in year 2, to be achieved by the end of RP3.

### Noise and air quality KPIs

9.71 In our earlier initial advice we recommended that noise and air quality should be retained as KPIs for RP3. This is because these issues are considered important by the communities impacted by them. In addition, their designation as KPIs ensures additional focus by the company.

### Performance indicators

9.72 National Highways has proposed the following PIs for the 'being environmentally responsible' outcome:

- noise – households within noise important areas mitigated. We recommended in our earlier initial advice that noise should be retained as a KPI. We continue to hold that view;
- air quality – the number of SRN links that are in air quality (NO<sub>2</sub>) exceedance and where action is required. We recommended in our earlier initial advice that air quality should be retained as a KPI. We continue to hold that view;
- maintenance and construction emissions – tonnes of CO<sub>2</sub>e per £ million of expenditure;
- water quality – length of watercourse enhanced;
- cultural heritage assets – total asset score; and
- litter – percentage of network at an acceptable grade of cleanliness. We recommend that National Highways reviews the methodology guidance for the surveys that inform this performance ind. This is to ensure that the timing and frequency of the surveys is consistent, and results comparable, between the company's regions, and that the survey results are not impacted by, for example, the vegetation growth season cycle.

9.73 In its Net Zero Highways Plan National Highways set out its ambition for 'net zero carbon travel on the SRN by 2050'. The company has limited levers to manage the reduction of road user carbon emissions. We recommend that DfT considers the

development of a metric for the SRN to support the company's 2050 net zero ambition for travel on the SRN.

## **Meeting the needs of all road users**

9.74 National Highways proposes that its delivery of this outcome would primarily be measured through two KPIs:

- road user satisfaction; and
- roadworks information timeliness and accuracy.

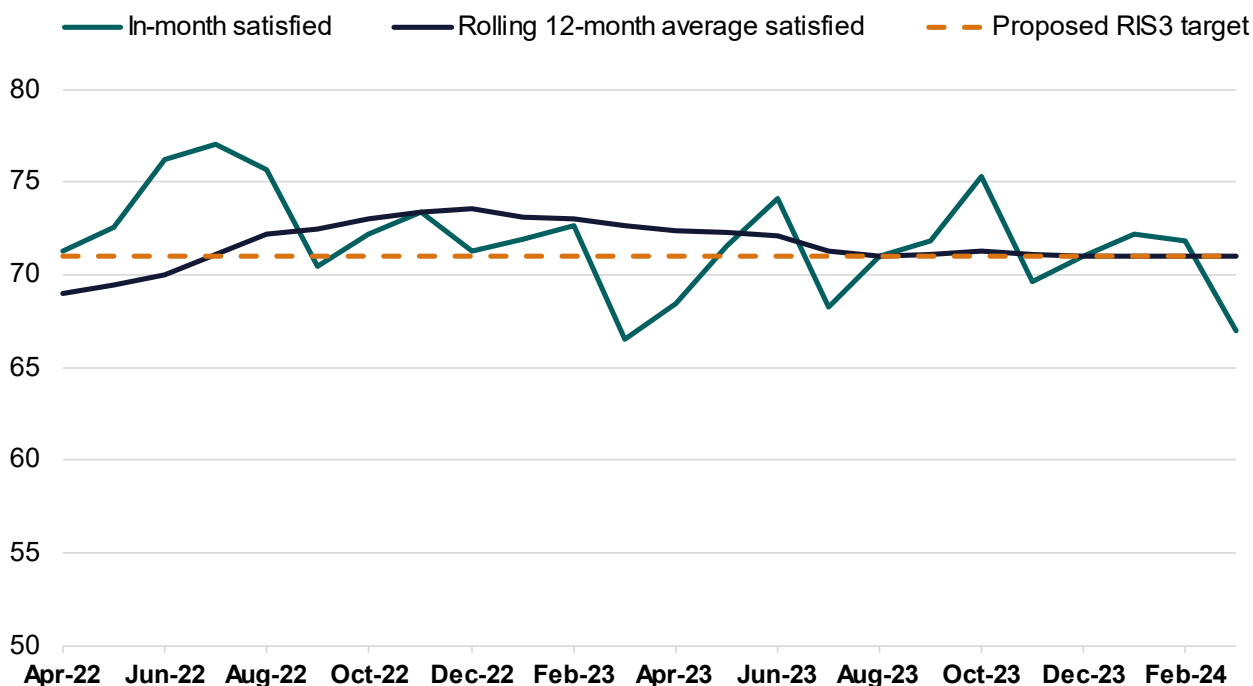
### **KPI – Road user satisfaction**

9.75 This KPI measures road users' satisfaction with their journey on the SRN. It is measured with a 12-month rolling average for the year end. This is unchanged from RIS2. We support the continued use of this KPI. The Change Control Decision Committee agreed National Highways and Transport Focus would develop additional metrics to look at the wider representation of users to complement the data collected from the Strategic Roads User Survey.

9.76 National Highways proposes that its RIS3 road users' satisfaction target be 'to improve performance relative to the previous year outturn position'. The KPI target is proposed to be supported by the delivery of actions from the company's annual customer service plan.

9.77 In year 4 of RP2, National Highways missed its in-year road user satisfaction target of 73%, with 71% of users fairly satisfied or very satisfied with their journey on the SRN. This target was originally set using 10-months' data and, recognising the limited data used, was subject to review once additional data was available. An updated target level of 71%, for the final year of RP2, is awaiting government approval. Figure 9.7 shows that over the 24 months of collected data, the company would have met this new, proposed, target in three-quarters of the months. The average for these 24 months is a score of 71.8% This suggests that a more stretching but deliverable target than that proposed for the final year of RP2 is achievable by the company within the funds available. Therefore, we recommend that a target of 72% is set for RP3.

**Figure 9.7 Road user satisfaction proposed target compared to observed data (percentage satisfied)**



### KPI – Roadworks information timeliness and accuracy

- 9.78 This KPI measures the percentage of road closures correctly notified to road users one week in advance. It is measured with a 12-month rolling average for the year end. This is unchanged from RIS2. We support the continued use of this KPI.
- 9.79 National Highways is proposing to set a target of greater than 75% by the end of RP3, with year-on-year increases from the RP2 outturn. The company is also proposing to remove failure reasons deemed by it to be outside its control, such as weather and resources. We do not support any exclusion of any failure types, as was agreed by DfT and Transport Focus during RP2 when the company proposed a change control to that effect.
- 9.80 National Highways is not on track to achieve its RP2 KPI target of 90%. In year 4 of RP2, 71% of road closures were accurately notified seven days in advance. At the start of RP2 the company only achieved a 54.5% accuracy rate. Therefore, good progress has been made. Data from the company shows that three of its six regions already achieved accuracy rates of 75% in Year 4 of RP2.
- 9.81 Analysis of the reasons why some closures were not accurately notified, seven days in advance, indicates that around 7.5% of closures were not accurately defined or were cancelled due to external factors. These external factors included

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the need for urgent safety work or high traffic flows, not known about when the closures were notified. Allowing for variability, and for the impact of factors outside of National Highways' control to double, indicates that a target of 80% is challenging but deliverable. Our analysis indicates that the company can achieve this through improvements in existing process that do not require additional funds. We therefore propose that a target of 80% be set for the end of RP3.

### Performance indicators

9.82 ORR supports three PIs proposed by National Highways for the 'Meeting the needs of all road users' outcome:

- timeliness of information provided to road users through electronic signage. This measures the average median time to set signs and signals on all motorways;
- ride quality. This measures the percentage of the network assessed to have a good or better ride quality condition; and
- logistics and coach manager satisfaction survey. This measures the percentage of respondents fairly satisfied or very satisfied with how the SRN met their business needs.

9.83 ORR is proposing alternative measures to one other PI that National Highways has proposed: National Highways has proposed the following:

- working with local highways authorities to review diversion routes for unplanned events. This is measured by the percentage of local highway authorities engaged with by the company. This PI only monitors whether a highway authority has been contacted. It does not measure or relate to the impact of that contact on the quality of diversion routes and the road user.

9.84 We propose that this PI be replaced by the following two measures that are more meaningful for stakeholders, using data that is already collected:

- planned event diversion routes – the quality of planned event diversion routes using the results from a sample of 'mystery shopper' drive-through surveys; and
- unplanned event diversion routes – the compliance with standards for unplanned event diversion routes.

## Achieving efficient delivery

### KPI – Efficiency

9.85 Our recommendations in respect of efficiency are set out in section 8. We propose some adjustments to the efficiency target in relation to enhancements, corporate services and protocols. National Highways must re-calculate its efficiency target in its final SBP, taking account of our advice. Our proposed changes will make the efficiency challenge more stretching, but still deliverable and have the effect of slightly reducing the nominal financial value of the target.

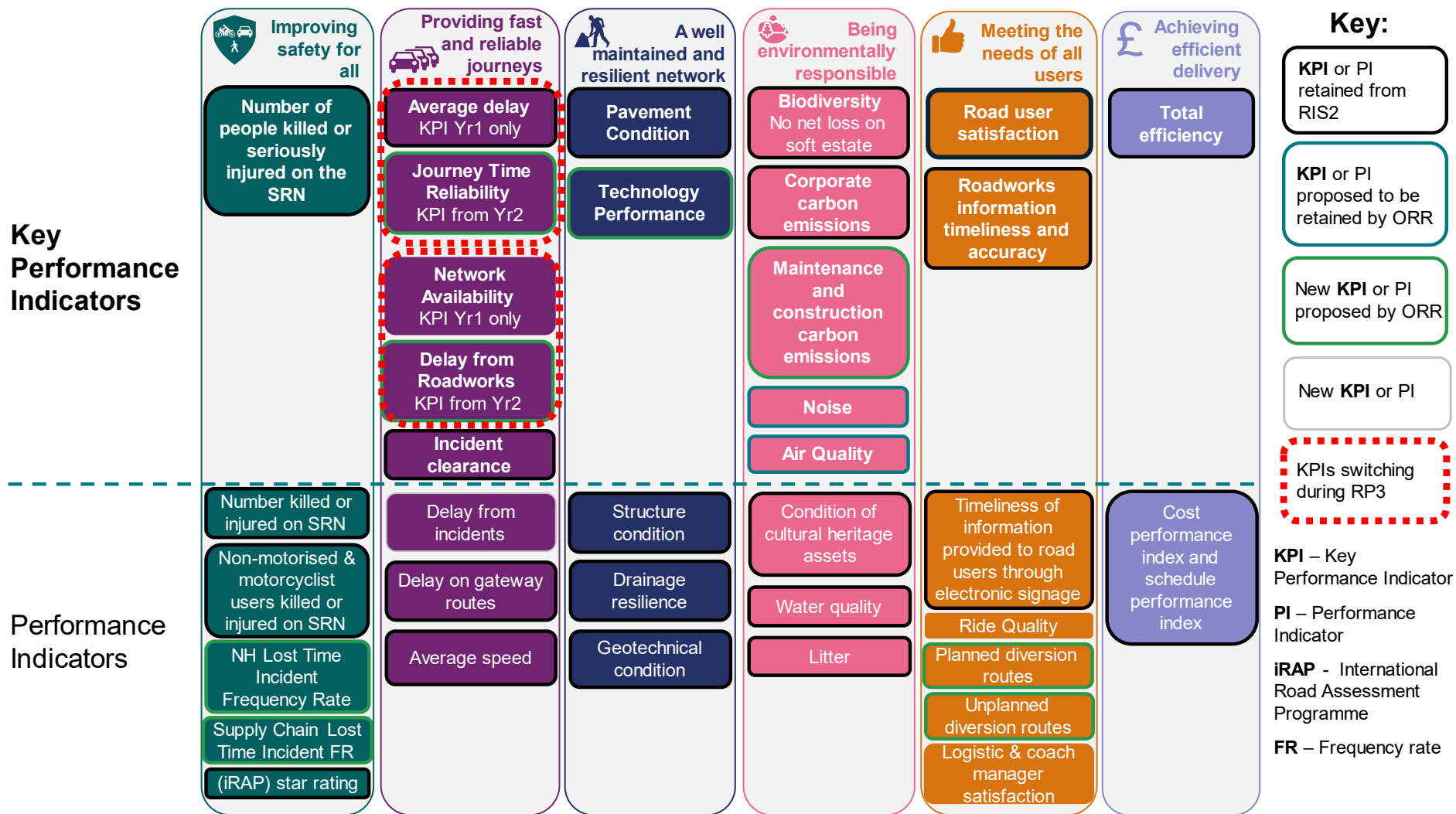
### Performance indicators

9.86 The cost performance index (CPI) and schedule performance index (SPI) are PIs in the efficiency outcome area in RIS2 that measure the performance of enhancements in construction against their budget and schedule. DfT's expectations for RIS3 retain both PIs in the performance specification. Independently of the efficiency review, we concurrently commissioned Jacobs, jointly with National Highways, to review their use in performance monitoring and the potential for improvements in RIS3. The company should set out how it intends to implement the study's recommendations, including timescales for when improvements to the PIs can be implemented during RP3.

## Performance specification summary

9.87 Figure 9.8 provides an overview of our proposals for the performance specification KPIs and performance indicators. Figure 9.8 provides an overview of our proposals for the RIS3 performance specification KPIs and performance indicators.

Figure 9.8 Summary of ORR's proposals for the performance specification KPIs and PIs



## Key proposals

We recommend that National Highways:

- revises its safety target for RP3. Evidence shows that National Highways' proposed safety target, that the company proposes is held flat at the RP2 outturn, is unambitious. The company's approach to developing a target does not explain the reason for a change in safety performance that has been achieved over the last 19 years. We propose a revised, more challenging, KPI target that is aligned with the evidence of an observed longer-term reduction in the KSI rate;
- maintains the current pavement condition KPI target level, subject to the adoption of our recommendation on funding proposals, and monitors it as an annual target;
- revises its proposed road user satisfaction target, and sets a more stretching KPI target of 72% for road user satisfaction based on evidence and past trends; and
- revises its proposed roadworks information timeliness and accuracy target, and sets a more stretching KPI target of 80% by end of RP3 for roadworks information timeliness and accuracy.

We recommend that DfT:

- considers our advice to National Highways concerning revising the company's proposed targets for safety, pavement condition, road user satisfaction, and roadworks information timeliness and accuracy;
- requires National Highways to report lost time incidents for the company's staff and lost time Incidents for supply chain staff as PIs for RIS3. Both data sets are currently provided within the company's regular reports and will not impose additional reporting costs on the company;
- requires National Highways to develop and report new lead safety indicators in RP3;
- requires National Highways to develop and report a new PIs or track delivery of improvements to facilities for active travel users in RP3;
- requires National Highways to develop and report a new 'asset health' measure as a PI in RP3. We recommend that the company develop asset level indicators by end of year 1 of RP3, with reporting to ORR to commence from year 2 of RP3. It must further develop a composite measure during years 2 and 3 of RP3 to inform the early stages of planning and development of RIS4, and for consideration for inclusion in the performance specification for RP4;

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- introduces a new KPI target for roadside technology performance in RP3, disaggregated by road and asset type, particularly in respect of smart motorways;
- considers whether to retain the RP2 KPI s for noise and air quality, in line with our initial early advice;
- considers if the corporate carbon target should be consistent with Greening Government Commitment guidelines, whereby 'green' tariff electricity and existing woodland are not counted as a carbon savings for corporate emissions. Depending on the approach followed, the proposed KPI target may not be achievable and DfT may want to consider whether it should be revised;
- considers whether to introduce a new KPI target related to supply chain carbon emissions in RP3;
- considers the development of a metric for the SRN to support National Highways' 2050 net zero ambition for travel on the SRN;
- requires National Highways to update and implement changes to the litter surveys methodology in RP3 to ensure the data is consistent between regions and more fit-for-purpose for performance monitoring;
- requires National Highways to introduce a new PI relating to the quality of diversion routes in RP3; and
- considers the proposals contained in annex A that describe additional detailed proposals for improvements in evidence, data and capabilities.

## 10. Summary of our financial proposals

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- 10.1 This section brings together our financial proposals, as set out in the previous sections of this report. It provides an estimate of combined financial impacts of our key recommendations.
- 10.2 It should be noted that the results set out here are estimates. To inform the further development of the third road investment strategy (RIS3), National Highways must update its financial model to take account of the full range of recommendations set out in this report, any adjustments to the Department for Transport's (DfT) requirements and other changes such as the expected update to enhancements cost estimates referred to in section 5.
- 10.3 As set out in section 2, in its draft strategic business plan (SBP), National Highways estimates the cost of delivering the RIS3 requirements at £25.4 billion. Given the funding gap, we have placed particular emphasis on whether costs could be reduced to make the plans affordable within a statement of funds available (SoFA) of £24 billion.
- 10.4 We have made the following recommendations that affect costs:
- applying inflation allowances aligned with a 'most likely' scenario for future inflation (see section 8) in addition to adopting the most recent Office for Budget Responsibility (OBR) inflation forecasts. We estimate that these changes would reduce cost by around £1 billion, although this estimate will need to be refined as part of more general updates of National Highways' financial model;
  - revisions to renewals plans but maintaining the overall level of funding proposed by National Highways to help address growing asset need in a sustainable manner. The various adjustments to the renewals plans (described in more detail in section 5) are as follows:
    - revised plans for roadside technology renewals and the operational technology National Programme, saving around £270 million.
    - increased pavement renewals to maintain road surface condition performance, increasing costs by around £340 million.

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- re-instating the previously proposed preventative structures renewals programme, adding costs of £300 million.
- a further allowance of around £80m to maintain investment in renewals at planned levels.
- increased efficiency in the delivery of corporate services (see section 7). This reduces cost by a further £70m;
- increased efficiency in enhancements projects delivery (see section 5). This reduces cost by a further £80m; and
- recommended adjustments to corporate carbon initiatives and associated network electricity costs (see sections 3 and 7). This reduces cost by a further £50m.

10.5 The cost savings are not intended to be exhaustive. In this report we have identified options for DfT to amend the requirements for RIS3 to further reduce cost.

10.6 Table 10.1 shows the impact of these proposals. Considered in isolation, the savings we have identified amount to approximately £0.8 billion. Crucially this does not take account of the increase in the cost enhancements projects that have occurred since the submission of the draft SBP. Nor does it take into account our broader conclusion that current risk allowances for enhancements are likely to be inadequate.

**Table 10.1 National Highways' financial proposal (£ million, nominal)**

	dSBP (updated draft requirements)	ORR recommendations
Operating and maintaining the network	7,013	6,786
Capital renewals	7,082	7,382
Existing enhancements commitments	4,615	4,268
New enhancements commitments	300	300
National Programmes	820	520
Designated Funds	405	405

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	dSBP (updated draft requirements)	ORR recommendations
Future RIS and scheme development	285	285
Central risk reserve	703	703 (subject to re-estimation)
Digital and corporate services	2,906	2,723
Protocols	501	488
LTC	750	750
<b>TOTAL</b>	<b>25,380</b>	<b>24,610</b>
SoFA	24,000	24,000
Funding gap	1,380	610

### Implications for the affordability of National Highways' current RIS3 plans

10.7 The savings we have identified would reduce the funding gap from £1.4 billion to £0.6 billion. However, we are concerned that this understates the true size of the funding gap given:

- upward revisions to enhancements costs since National Highways submitted its draft SBP;
- under-funding in the final year of the second road period (RP2, April 2020 to March 2025) that could lead to cost slipping into the third road period (RP3, April 2025 to March 2030); and
- the currently low level of risk provision.

10.8 Therefore, we conclude that unless additional funding is made available the plans cannot be delivered in their current form.

10.9 DfT will need to make further revisions to the requirements for RIS3 to reduce costs to £24 billion or provide additional funding. If performance is to be maintained, and growing renewals requirements addressed in a sustainable fashion, adjustments to the RIS3 requirements will likely need to include changes to the enhancements portfolio.

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10.10 National Highways must provide updated estimates of project costs taking into account recent cost changes and our conclusions on inflation, efficiency and the adequacy of risk allowances. This should support options to reduce the funding gap that the company can put to DfT, to inform its decisions.

## 11. Next steps

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- 11.1 We will continue to work closely with the Department for Transport (DfT) and National Highways as plans for the third road investment strategy (RIS3) are further developed.
- 11.2 Following the publication of the draft RIS, we will undertake a further review of the company's final draft strategic business plan (SBP). We will update our advice to take account of any changes in requirements or other circumstances that materially alter our advice.
- 11.3 National Highways should take account of the recommendations contained in our review of its interim draft SBP, in preparing its final draft SBP. The cost of enhancements projects is the largest single area of uncertainty that affects the affordability of plans for the third road period (RP3, April 2025 to March 2030). As noted in this report, forecast costs have recently changed and remain uncertain. National Highways must update its assessment of the cost of enhancements projects and consider our advice on the need to ensure adequate risk provision. This should support options to reduce the funding gap that the company can put to DfT, to inform its decisions.
- 11.4 Additionally, we have identified aspects of National Highways' plans that require review, clarification or further development before the finalisation of the RIS. These requirements include:
- development of proposals for how National Highways will align its resources and capabilities to deliver growing renewals requirements;
  - more detailed analysis of the expected increase in traffic incidents and how the company expects this to impact network management performance;
  - further development of key aspects of the company's renewals plans particularly those relating to roadside technology renewals (including those on smart motorways), rigid pavements and the soft estate;
  - more detailed plans for the use of Designated Funds and National Programmes, demonstrating National Highways' readiness to start delivering from the start of RP3;
  - undertaking a review of the cost and impact of plans to convert the operational fleet to electric vehicles;

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- further development of plans to reduce corporate carbon emissions, ensuring these are aligned with DfT's requirements;
- developing clearer plans for expenditure on biodiversity, clearly delineating between costs allocated to maintenance, renewals, National Programmes and Designated Funds;
- more detailed proposals for its Business Improvement programme, how this funding will be used, particularly in the early part of RP3, and the benefits it will deliver; and
- an updated assessment of risks relating to the return of Design Build Finance and Operate roads.

11.5 We want to ensure that National Highways' final SBP and Delivery Plan provides sufficient detail to act as an unambiguous reference point for us to hold the company to account in RP3 on behalf of government and road users. During the second road investment strategy (RIS2) development process, changes to plans made between the draft and final versions of the SBP were not made transparent. Therefore, during the second road period (RP2, April 2020 to March 2025) it has proved difficult to trace the company's plans back to the draft SBP or to see how our advice was reflected in the final plans. We have set out several areas where National Highways should adjust its plans for its final SBP and would expect the company to apply these adjustments in an open and transparent manner.

11.6 We will also work with DfT, National Highways and Transport Focus to develop a comprehensive and robust performance framework for RP3. We will provide further advice to DfT as it takes its final decisions on metrics and target levels of performance. We will also provide updated advice on RIS3 requirements beyond those relating specifically to performance indicators and key performance indicators so we can effectively hold National Highways to account for delivering the commitments set out in its SBP. We will develop monitoring and reporting guidelines for National Highways for RP3 in which we will specify the degree and level of regular reporting that we expect the company to provide to demonstrate delivery against the performance specification.

# Annex A: Further advice on the RIS3 performance framework

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This annex summarises our recommendations to DfT on the requirements it should include in the third road investment strategy (RIS3) performance framework so we can effectively hold National Highways to account for delivering in accordance with its plans in the third road period (RP3, April 2025 to March 2030) and drive improvements in the longer term efficiency of the SRN for stakeholders and users. It includes:

- a summary of our advice on the RIS3 performance specification;
- performance or capability requirements beyond those measured by KPI and performance indicators; and
- initial consideration of the outputs and deliverables DfT should require National Highways to include in its final SBP and Delivery Plan.

## Performance specification

To ensure that improvements are realised in a timely manner, all commitments for improving current metrics, and the development and implementation of new metrics must have defined dates when they are proposed to be completed and implemented to allow for their inclusion in development of RIS4 and future monitoring. We set out proposed dates below although, in some cases, further discussions are required to determine appropriate milestones.

We recommend development of the following measures for the RIS3 performance specification:

- Improving safety for all
  - Develop and report leading safety indicator(s) in RP3.
  - Introduce lost time incident frequency rate for NH staff Performance Indicator (PI) for start of RP3.
  - Introduce lost time incident frequency rate for supply chain staff for start of RP3.
  - Develop and introduce active travel PI in RP3. In the interim we recommend the company produces an active travel delivery plan with

clear actions and time-bound deliverables, delivery of which is monitored by ORR.

- Fast reliable journeys
  - Introduce journey time reliability Key Performance Indicator (KPI) and target in year 2 of RP3;
  - Introduce delay from roadworks KPI and target in year 2 of RP3;
  - Report average delay as a PI from year 2 of RP3;
  - Report network availability as a PI from year 2 of RP3;
  - There is currently no requirement from DfT or proposal for National Highways to maintain, through RP3, operation of the Smart Motorway Safety Evidence Stocktake and Action Plan recommendation for traffic officers to attend to incidents within 10 minutes. DfT should confirm whether it wants to maintain this requirement; and
  - Continue development of a boundary delay metric with the local road network, in partnership with Transport Focus.
- Well maintained and resilient network
  - Develop asset health indicators: develop asset level indicators by end of year 1 of RP3. The company should begin reporting to ORR from year 2 of RP3. The company should also develop a composite measure during years two and three of RP3 to inform the early stages of planning and development of RIS4, and for consideration for inclusion in the performance specification for RP4;
  - Report regional pavement condition alongside national KPI for start of RP3;
  - Set a target, subject to DfT approval of this KPI, for on road technology, and disaggregation of performance of asset type and road type, by start of RP3; and
  - Set a target, subject to DfT approval of this KPI, for smart motorways technology, disaggregated by asset type, by start of RP3.

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- Being environmentally responsible
  - DfT to clarify its requirements concerning corporate carbon emissions related to the Greening Government Commitments reporting guidelines and woodland offsetting;
  - Develop and introduce new supply chain carbon emissions KPI, setting a target in year 2 of RP3 for the end of the road period;
  - National Highways to update the methodology for the surveys that provide data for the litter PI to ensure consistency between the company's regions; and
  - DfT to consider development of a metric for the SRN to support the company's 2050 net zero ambition for travel on the SRN.
- Meeting needs of all users
  - In collaboration with Transport Focus, develop new metrics to look at the wider representation of users to complement the data collected from the Strategic Roads User Survey.
- Achieving real efficiency
  - Implement improvements to the cost and schedule performance indices (CPI and SPI) based on the recommendations from Jacobs' recent jointly-commissioned review of earned value metrics (timescale to be determined).

Where “supportive plans” are proposed to supplement KPI delivery including, but not limited to delay plan, road safety plan and annual customer service plan, these must be in place before the start of the road period and updated annually. Subject to further refinement and agreement the information included in the annually updated plans should include:

- a rolling two-year programme of works disaggregated to named projects or equivalent;
- cost and budget allocation by project or activity;
- Start and finish dates for key projects or activities;

- Where appropriate, quantified analysis of expected outcomes and impacts on the relevant KPI; and
- Upon completion of key projects and activity, confirmation of outturn costs, actual programme and quantifiable benefits realised. Where objectives have not been met, evidence should be provided to demonstrate that the company will apply any lessons learned to future delivery.

## Improvements in capability

There are several areas where we consider National Highways should focus its efforts to improve its capability during RP3 and ahead of the RIS4 development process. These improvements will lead to more robust plans for future road periods built on better understanding of needs, constraints and risk. Improvements are also needed to address the shortfalls identified in the plans submitted for RIS3 as identified in this report including, but not limited to, those points set out in paragraphs 2.45 to 2.54.

We have summarised the key capability improvements across three workstreams. We recommend DfT specifies the development of these plans as requirements of the RIS. Ahead of, and during RP3, we would work closely with National Highways to develop these plans in more detail. They are as follows:

- Cost and estimation improvement plan - National Highways must develop a cost and estimating improvement plan by the second quarter (Q2) of 2025-2026. This should set out time-bound commitments for improving its capabilities ahead of the RIS4 development process. As a minimum this should include consideration of:
  - Improvements in the way in which National Highways records expenditure on renewals such that it can disaggregate expenditure by asset type and estimate outturn unit costs that align more closely with the unit costs used to estimate future costs.
  - Proposals for how it intends to assess and allow for financial risks for renewals. These should make clear how the company intends to apply quantitative evidence from previous road periods and provide a clear distinction between risks covered by 'core' funding and the central risk reserve (CRR).
  - Refinements to its approach to cost estimation for investment areas beyond renewals and enhancement schemes – such as expenditure on digital technology and environment.

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- A review of the practical application of the company's approach to enhancements cost and risk estimation. Whilst we continue to conclude that National Highways' processes are sound, it must continually ensure that cost and risk assessments draw on empirical data from past delivery.
- Creation of a cost benchmarking strategy. This should include development of a regional benchmarking dataset to allow for internal comparison and management of future performance. The company should also set out how it intends to benchmark the cost of its enhancement schemes to demonstrate it is delivering in an efficient manner when compared with road authorities elsewhere.
- Asset data improvement plan – National Highways must develop an asset data improvement plan by Q2 2025-2026 this should set out a programme of improvements to the accuracy and completeness of asset inventory and condition data. This should include, but not limited to:
  - Asset-level data improvement plans.
  - Annually updated audits of data accuracy and completeness.
- Future performance framework development plan – by Q2 2025-2026, working closely with DfT, Transport Focus and ORR National Highways must develop a time bound plan for the development of the RIS4 performance specification. This should include:
  - An assessment of the appropriateness of current KPIs and PIs and, where necessary, develop new or updated metrics to support RIS4 development and emerging priorities.
  - Plans to enhance analytical capability and achieve better alignment between outputs and performance outcomes, including but not limited to KPIs and PIs. These should be in place to support RIS4 development and future monitoring.
  - Development of regional measures and metrics.

## Delivery plan commitments

A significant proportion of the expected cost of RIS3 relates to projects or activities that do not directly contribute to performance as measured by the KPIs. It is important that the

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delivery of these commitments is specified, with sufficient granularity, to ensure there is a clear and unambiguous baseline against which we can effectively hold National Highways to account during RP3.

In the draft SBP, National Highways proposed a “capital specification” to capture commitments relating to enhancements (including small schemes and pipeline development), Designated Funds and National Programmes. We have identified a wider range of projects, investments and outputs that underpin the draft SBP as amended by the advice set out in this report. DfT must require the company to include details of these, including costs and schedule commitments, in its RIS3 Delivery Plan (or through a similar, appropriate medium). However, DfT may also choose to include some as core requirements of the RIS itself.

The list set out here represents our initial view of the commitments that might be reflected in the final plans. They are subject to change and depend, in part, on DfT decisions on the final RIS3 requirements. We will work closely with DfT and National Highways to refine and update the list of requirements before the RIS, SBP and Delivery Plan are finalised.

### Renewals programme outputs

DfT must require National Highways to set out, in its final SBP and Delivery Plan, suitably disaggregated information on planned renewals outputs and expenditure. The Delivery Plan, and subsequent annual updates, should provide a detailed two-year rolling programme for the relevant outputs. The Delivery Plan updates should set out how and why costs and outputs have changed against the proposed programme of works.

Based on current plans (amended based on our recommendations) the Delivery Plan might include the following renewals outputs and requirements:

- Flexible pavements – 10,137 lane kms of pavement renewed, including 230 lane kms at a depth of 100mm and 4 lane kms at a depth of 180mm.
- Rigid pavements – length to be agreed but split by reconstruction and life extending renewals.
- Significant structures – 57 fully completed significant structures projects.
- Drainage – number of high-risk flooding hotspots mitigated (value to be determined).
- Geotech – linear metres of geotechnical asset renewed (value to be determined)

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- Vehicle restraint systems – barrier renewed or repaired (1,191km) by full replacement versus repair (split to be determined).
- Lighting – 6,000 lighting columns replaced.
- Ancillaries – cycleways (188,000 m<sup>2</sup>), footways (1,885,000 m<sup>2</sup>) and combined footway and cycleways (645,300 m<sup>2</sup>)
- Soft estate – renewal of 50% of soft estates assessed as 'condition grade 5'
- Roadside technology – 12,500 technology assets (subject to further development of plans) by asset class and road type (split to be determined).

### Large structures renewals projects

As described in section 4 of this report, a notable feature of RP3 is the number of large and relatively complex renewals projects – primarily structures renewals but also rigid pavement renewals. Governance and reporting arrangements need to be strengthened for large renewals projects (those with an expected cost of £20m or above) in RP3.

For the highest cost renewals projects, we recommend DfT includes the delivery of these schemes as a core requirement of the RIS. This will improve transparency and enable us to effectively monitor the delivery of these schemes against baseline cost and schedule milestones. We recommend this approach only for the largest and most complex schemes – for example, those attracting a cost of £100m or higher.

### National Programmes and Designated Funds

DfT should require National Highways to include annually updated, time-bound, project-level plans for the delivery of National Programmes and Designated Funds. Although these funds should provide a degree of flexibility, we would expect the company to set out a two-year rolling programme of investment, or similar.

Subject to the finalisation of plans, National Programme commitments include:

- **Safety**
  - Deliver 18 safety route corridor improvement projects aimed at corridors with current poor safety performance and a low International Road Assessment Programme (iRAP) star rating.
- **Environment**
  - Mitigate 254 high-risk outfalls.

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- Mitigate 6,430 households in noise important areas (NIAs) currently impacted by noise from the SRN.
- Deliver 900 cultural heritage units (CHUs) over RIS3 and bring all assets up to an 'adequate' condition.
- Deliver improvements to 68 sites of special scientific interest (SSSIs) and achieve 'favourable' status at each site.

### Designated Funds

Designated Fund plans are currently less well-developed than the National Programmes and more detail must be in place prior to the start of the road period. This should include the principles or framework National Highways intends to use to prioritise between interventions and options within each fund.

### Enhancements

Based on options developed by National Highways, DfT should revisit the programme of enhancements it requires the company to develop or deliver in RP3. These should form core requirements of RIS3. Due to current uncertainty, we have not set out proposals for how this should be specified at this stage but DfT should consider the information and data we require to effectively hold National Highways to account.

### Other

There are a range of other requirements that contribute to higher costs in RP3. These sit outside the traditional areas of renewals and enhancements but nonetheless, given their cost, DfT needs assurance that these will be delivered. In some cases, further work is required to consider whether they align with DfT's requirements and are affordable in RP3. Subject to these decisions, and further refinement of plans, we would highlight the following commitments which need to be specified as outputs in the Delivery Plan:

### Operations and maintenance

- Conversion of the operational fleet to electric vehicles.
- High priority structures – inspections and risk management.

Although not classed as KPIs or PIs, we would also expect National Highways to report on its performance in respect of rectifying safety critical and other defects in the requirement timescales (across its regions) and its performance in respect of improving the balance between proactive and reactive maintenance.

**Corporate carbon and estates**

- Conversion of SRN lighting LED lightbulbs.
- Installation of air source heat pumps (ASHP) and ground source heat pumps (GSHPs) to reduce the carbon footprint of operational properties.
- Conversion of HGVs to electric, hydrogen or low carbon fuels.
- Redevelopment of Regional Control Centres (RCC) and major office/RCC redevelopment projects.



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