OFFICE OF RAIL AND ROAD

Annual Assessment of Highways England
End of Road Period 1
2015-2020

HC485

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End of Road Period 1
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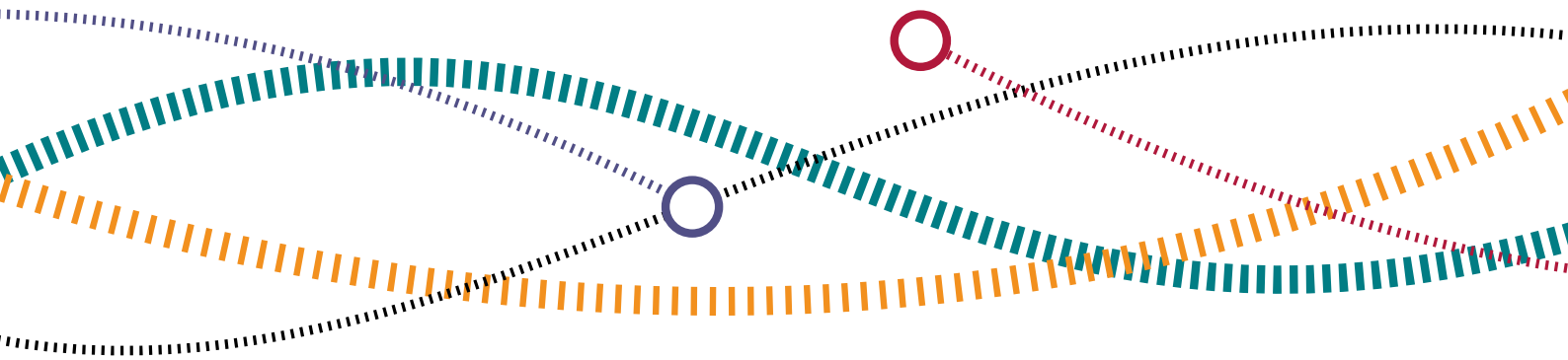

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Published 21 July 2020

Foreword

This assessment of Highways England is different from our previous annual publications. This year provides an opportunity for us to reflect on the first road period and assess Highways England's performance for the whole five years.

Highways England is still relatively new, formed in 2015 as a result of the UK government's programme for roads reform. At the same time, the Roads Monitor (the role we undertake) and the Watchdog (Transport Focus) were created. Roads reform brought an unprecedented level of investment planning and government's promise of the funding security to deliver it. This has necessitated a fundamental change in the way in which our motorways and major A-roads are constructed, maintained and operated.

We have seen Highways England changing the way it works and several key successes have come from its approach; an enhanced focus on improving safety on the strategic road network, an increased focus on what is important to road users' experience and communities, the supply chain more engaged and able to plan their work better and improvements in the transparency around the company's financial performance. It has also responded positively to issues we have investigated.

At the same time, there have been challenges; too many people still die on our road network despite it being one of the safest in the world, the capital programme for major improvements proved to be overly optimistic needing to be substantially changed from 112 schemes due to have started construction to 73, and Highways England has not quite achieved all of its KPIs. The coronavirus pandemic, which has changed so much of our daily lives, only began to affect the country in the last few weeks of the road period, and as such has not materially affected the company's performance.

The first road period has also been a time of growth and learning for the Office of Rail and Road. We have embraced our new role as Highways England's monitor and I take pride that we have incentivised Highways England to deliver for road users. We have ensured that there have been increases in the transparency and quality of Highways England's financial reporting, and improvements to road surface condition. We have also pursued an overdue backlog of structures inspections, as well as relentlessly monitoring Highways England's work to improve road users' experience following aspects of poor performance.

So, Highways England has made very good progress in its first five years, but now that it is an established company, more is expected of it in the second road period. It must continue to improve safety for all on the network, further integrate its customers in its planning and decision making, and needs to work even more efficiently to deliver a larger programme of works. We are going to provide greater transparency against a backdrop of an investment plan and performance specification that has been developed having learned lessons from the first road period, and broaden our role, e.g. through monitoring and reporting of the company in its delivery of the Department for Transport's Smart Motorway safety action plan and the delivery of environmental commitments.

We are also uniquely placed to look at a wider transport context, due to our role on rail. I am keen that there is further coordination between Highways England and Network Rail on delivery of their respective capital programmes; something we wish to measure in the future and I believe that Highways England can learn lessons from Network Rail on the potential benefits of regional transparency and accountability.

I can confidently say that we are seeing the intended benefit of roads reform. This is important: most of the public use motorways and main A-roads and much of commerce and industry depends on them. A high-performing, safer, network has been vital in supporting the economy and will continue to be so in the future.

John Larkinson
Chief Executive

1. Executive summary

Introduction

1.1 Highways England was set up as a government owned company in 2015, tasked with managing the strategic road network – the motorways and main A-roads of England. In the first Road Investment Strategy (RIS1), government specified a set of outcomes and investments that Highways England was required to deliver over Road Period 1 (RP1), from April 2015 to March 2020.

1.2 The Office of Rail and Road (ORR) independently monitors Highways England's delivery of these outcomes and investments. In monitoring the company we have proactively investigated a number of issues during the five year period to secure better performance and value for money from the strategic road network for the benefit of road users and the wider public.

1.3 This report sets out our assessment of Highways England's performance in RP1. Our key messages are largely unaffected by coronavirus (COVID-19), which emerged at the very end of the five year period. Where there is an impact on performance, this is discussed within the report.

Key messages for Road Period 1

Key message 1. In the first road period, Highways England has demonstrated a strong commitment to improving safety on the strategic road network, but must continue to work hard to meet its challenging target. In response to ORR's probing, the company has taken action to improve road user satisfaction and shown an increased focus on meeting the needs of those users. It has met most of its performance targets.

1.4 In RP1, Highways England has demonstrated a strong commitment to improving safety on the strategic road network. The company has delivered an extensive programme of actions aimed at improving safety. In this area, the strategic road network in England compares well to other road networks, both nationally and internationally.

1.5 However, further hard work is required if Highways England is to meet its safety target. The company's performance against its RP1 safety target will not be known until summer 2021, when the Department for Transport publishes road casualty statistics for 2020. In 2018, a total of 2,152 people were killed or seriously injured on the strategic road network. This represents a 30% reduction from the baseline period (2005-09); if this rate of improvement were to be sustained by Highways England it would not meet its target of a 40% reduction by the end of 2020, therefore further work is required to achieve this. Provisional data for the first six months of the year indicates that further reductions may have been achieved in 2019, but we must wait for the publication of the data by DfT before drawing conclusions.

1.6 Highways England has met its targets for smooth flow of traffic – keeping 98.2% of the network open to traffic, against a target of 97%, and clearing 89.1% of incidents within an hour, against a target of 85%. However, congestion slightly increased in RP1 – from 8.9 seconds delay per vehicle mile at the start of the road period to 9.3 seconds per vehicle mile in 2019-20 – as traffic levels and the amount of improvement work being undertaken on the network increased.

1.7 During RP1, ORR challenged Highways England to improve road user satisfaction, following a decline in its customer satisfaction score. The company subsequently developed and delivered a series of annual customer service plans which demonstrated an increased focus on meeting the needs of road users. Overall satisfaction subsequently increased, and ended RP1 at 89.2% – just below the company's target of 90%.

1.8 Highways England met its target to mitigate at least 1,150 noise important areas in RP1 – it mitigated 1,174 by the end of the road period. It has also delivered the actions set out in the Biodiversity Action Plan it published at the start of RP1. Against its commitment to support vulnerable users, Highways England has delivered 211 new and 227 upgraded crossings in RP1.

Key message 2. Highways England has successfully achieved 95% of its commitments for delivery of major improvement schemes in Road Period 1. The actual number of commitments delivered is lower than originally set out in 2015, but is in line with the revised plan it agreed with Government. Addressing concerns raised by ORR, the revised plan also reduces disruption to road users.

The accuracy of Highways England's planning of renewals delivery has improved through the road period, reflecting an increased maturity in asset management capability. Highways England has largely exceeded its planned delivery of renewals across Road Period 1.

1.9 Highways England's delivery of its investment plan matured over RP1. The company has continued to identify the need for changes to its capital improvement delivery plan. Originally 112 schemes were planned to start work by the end of the first road period, which was revised to 73 schemes. It has substantially agreed these changes with the Department for Transport.

1.10 The company has predominantly delivered its major improvement schemes to the latest agreed plan. Of the 73 RIS1 schemes, Highways England started work on 67, provided funds on two schemes for a third party to start work, and missed its commitment on four schemes. There are two additional schemes, which have been deferred to RP2, that have their commitment status under review. It successfully opened for traffic 36 schemes and missed its commitment on one scheme.

1.11 Highways England's planning of asset renewals has improved through RP1. Whilst it delivered more renewals than planned across the majority of its asset types, delivery was much closer to the plan in the last two years of the road period. This reflects the company's maturing approach to asset management and gives us more confidence that it is managing a safe and serviceable network.

1.12 Highways England met its target for keeping the network in good condition. At the end of RP1 pavement condition was 95.5%, above the target of 95%. This is significant progress from when the target was missed in the first two years of the road period. Following our investigation, Highways England put plans in place to improve its processes for reporting and managing the condition of the road that has led to improved performance in this area.

1.13 The company spent 4% less on renewals than it was funded for across RP1 (£3.494bn spent, against funding of £3.637bn).

1.14 Whilst Highways England improved its reporting of renewals delivery in the latter half of the road period, the nature of reporting does not provide complete assurance that the right assets have been treated, at the appropriate time. This is particularly the case for assets where the condition metrics provides a weak line of sight between renewals plans and delivery of work.

1.15 Highways England's increased maturity in asset management is underpinned by processes and procedures set out in new strategic documentation. This includes its published asset management policy and strategy. The company's knowledge of its asset base has been strengthened by improvements in data collection and management through its operational transition to new ways of working, known within the company as Asset Delivery. This has included addressing inspection backlogs across key assets such as structures, prompted by our enhanced monitoring, and migration of historic data to a new central management system.

Key message 3. Highways England has met its KPI target to deliver more efficiently in Road Period 1. The company has responded positively to ORR's constant challenge to improve the evidence used to support reported efficiency.

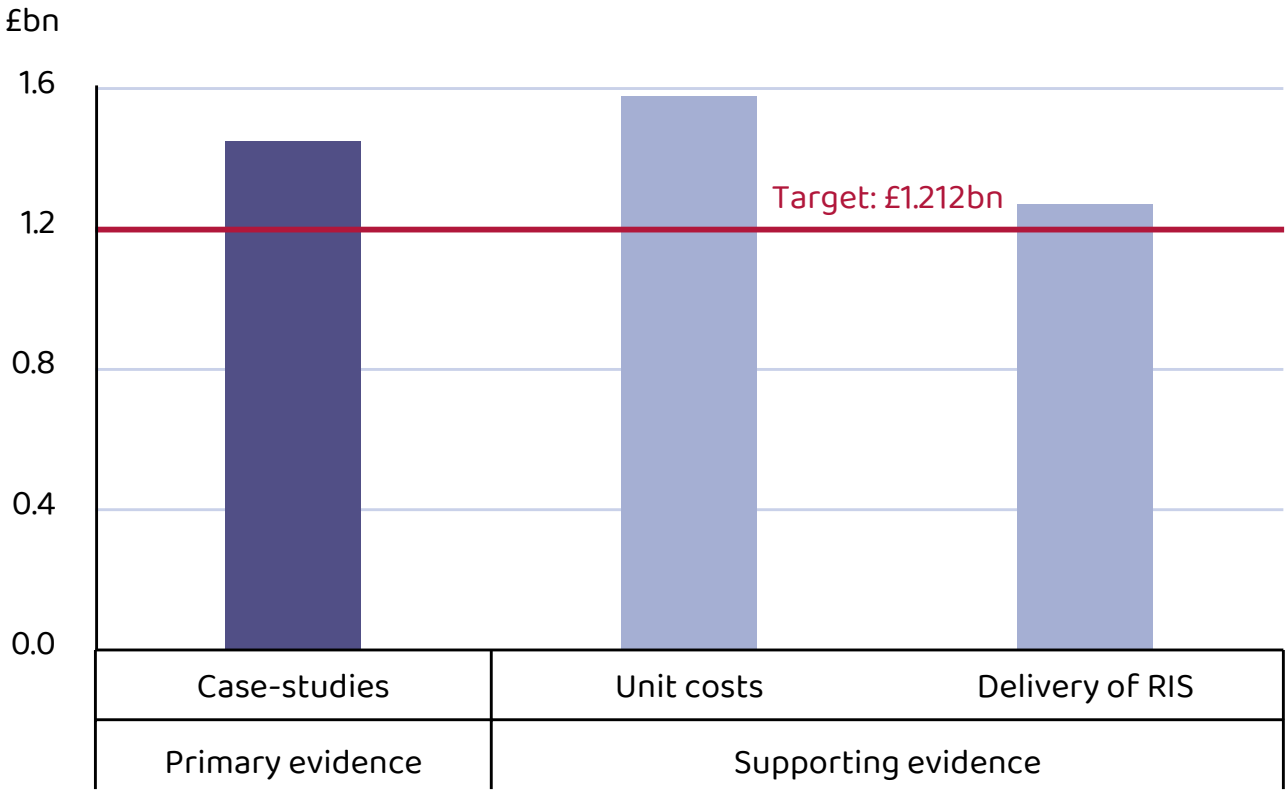
1.16 In RP1, Highways England was set a key performance indicator to deliver £1.2bn of efficiencies, and was required to provide evidence of its progress against this target. This initially proved challenging to the new company in part because the rapid development of the RIS led to several changes to scheme scope and funding assumptions during RP1. However, Highways England has developed its capability in this area, and by the end of RP1 had provided a stronger evidence base to support its increased efficiency.

1.17 Highways England has reported £1.4bn of efficiency in RP1 against the KPI to achieve £1.2bn capital efficiency savings. This is supported by good evidence of the actions taken to manage expenditure and deliver within its funding.

1.18 Throughout the road period we have constantly challenged the quality of other types of evidence of efficiency – specifically unit cost movement and delivery of the RIS. This remains less robust but has improved and we now agree that it provides reasonably sufficient evidence of the KPI having been achieved.

Figure 1: Efficiency evidence supports achievement of the efficiency KPI

Primary and supporting evidence of efficiency in RP1 from three sources (£bn)



1.19 To demonstrate achievement of the KPI Highways England is required to provide evidence in the three different ways:

a) Primary evidence from efficiency case-studies

1.20 The company provided 200 case studies of management action taken to deliver more efficiently during the road period. The majority of the efficiency has come from renewals (54%) and major improvement schemes (43%).

1.21 The case studies have been assured internally by Highways England and reviewed by the ORR. We found this evidence to be of good quality.

b) Unit costs

1.22 Highways England has developed unit cost models to verify the value reported through case studies. This proved challenging and the company's own assurance found sources of uncertainty with some models. However, after adjustments for some efficiencies, which are excluded from the models, they provide a reasonable quality of evidence above the KPI target.

c) Delivery of the RIS

1.23 Highways England has also provided supporting evidence by demonstrating that it has delivered most of the RIS1 outputs for its post-efficient funding. This was not straightforward as the cost of schemes that were deferred or cancelled was more than expected within RIS1, and the company has benefited from lower than expected inflation. However, it delivered greater scope on some schemes and did not receive sufficient funding for some business costs. This evidence was developed by Highways England late in the road period in response to our challenge and we have disagreed in some areas. Ultimately, our review found that there was reasonable evidence of efficiency exceeding the KPI target.

Impact of coronavirus (COVID-19)

1.24 The coronavirus pandemic emerged in the final weeks of RP1. This resulted in significantly reduced traffic on the strategic road network towards the end of March 2020. Highways England's performance in RP1 is largely unaffected because most performance indicators are measured on an annual basis, and cover a full year up to the end of March 2020. The main exception is safety, where Highways England's RP1 target runs to December 2020. The impact of this is discussed in more detail in chapter 2. We will continue to take a pragmatic approach to reporting performance which is affected by the coronavirus pandemic, including using Highways England's actions to provide wider context where appropriate[1].

Summary of performance

1.25 We measure Highways England's performance against the outcomes in the RIS. This sets out eight outcome areas, each with one or more key performance indicators, as well as a number of performance indicators[2]. Our assessment of delivery against each key performance indicator in RP1 is summarised in the table below.

[1] On 1 June 2020 we wrote to Highways England to provide more detail of our approach to monitoring during the coronavirus pandemic: https://orr.gov.uk/__data/assets/pdf_file/0003/42978/holding-highways-england-to-account-during-the-coronavirus-pandemic-2020-06-01.pdf

[2] A detailed description of each indicator can be found in Highways England's Operational Metrics Manual: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/775149/Operational_Metrics_Manual.pdf

Outcome	KPI and target	Performance in Road Period 1 (RP1)	Rating	
Making the network safer	**Killed or seriously injured** Target: 40% reduction by end of 2020	Data for the end of RP1 will not be published until summer 2021. The latest figures show 2,152 KSIs in 2018 – a 30% reduction from the baseline.	A	Provisional: data not yet available
Improving user satisfaction	**Road user satisfaction** Target: 90% by March 2017	89.2% satisfaction at the end of RP1 – below the target of 90%.	A	Target missed
Supporting the smooth flow of traffic	**Network availability** Target: 97% lane availability	98.2% availability – above the RP1 target of 97%.	G	Target met
	Incident clearance Target: 85% of motorway incidents cleared within one hour	89.1% cleared within one hour - above the RP1 target of 85%.	G	Target met
Encouraging economic growth	**Average delay (secs per vehicle mile)** Target: No target set	9.3 seconds delay per vehicle mile. An increase of 0.4 seconds from 2015-16.	A	No Target set
Delivering better environmental outcomes	**Noise important areas** Target: Mitigate at least 1,150 noise important areas by 2020	1,174 noise important areas mitigated in RP1 – the target of 1,150 was met.	G	Target met
	Improved biodiversity Target: Publish biodiversity action plan	Highways England has delivered the actions set out the biodiversity action plan it published in 2015.	G	Target met
Helping cyclists, walkers and other vulnerable users	**Number of new and upgraded crossings** Target: No target set	211 new and 227 upgraded crossings completed by Highways England in RP1.	G	No target set
Achieving real efficiency	**Capital expenditure savings** Target: Savings of at least £1.212 billion on capital expenditure	£1.4bn of capital efficiencies reported in RP1 – exceeding the target of £1.212bn.	G	Target met
	Progress of work, relative to delivery plan Target: No target set	Highways England achieved 95% of its capital delivery milestones in RP1.	G	No target set
Keeping the network in good condition	**Pavement condition** Target: 95% of pavement requiring no further investigation for possible maintenance	95.5% requires no further investigation for maintenance – above the target of 95% for RP1.	G	Target met

2. Operational performance

In the first road period, Highways England has demonstrated a strong commitment to improving safety on the strategic road network, but must continue to work hard to meet its challenging target. In response to ORR's probing, the company has taken action to improve road user satisfaction and shown an increased focus on meeting the needs of those users. It has met most of its performance targets.

The number of people killed or seriously injured each year on the strategic road network has reduced since the start of Road Period 1, but Highways England must continue to focus on safety, and deliver further safety improvements. The company has met its targets to deliver better environmental outcomes, and to minimise the disruption caused by incidents and roadworks. However, road user delays have increased in Road Period 1 as traffic levels, and the amount of improvement work being undertaken, has increased. It narrowly missed its target for road user satisfaction, but has demonstrated an increased focus on meeting the needs of road users.

Safety

2.1 The first Road Investment Strategy (RIS1) set a key objective for Highways England to improve safety for all road users and workers on the strategic road network. Over the past five years, the company has shown a strong commitment to achieving this. It has consistently identified safety as its top priority, and has delivered a range of interventions aimed at improving safety.

2.2 Highways England's key performance indicator for safety in Road Period 1 (RP1) is to reduce the number of people killed or seriously injured on the strategic road network by 40% by 2020, compared to the 2005-09 average baseline. The final outcome against this target will not be known until summer 2021, when the 2020 road casualty statistics are published.

2.3 The most recent road casualty data show that 2,152[3] people were killed or seriously injured on the strategic road network in 2018[4]. This represents a 30% reduction from the baseline period (2005-09); if this rate of improvement were to be sustained by Highways England it would not meet its target of a 40% reduction by the end of 2020, therefore further work is required to achieve this. Provisional data for the first six months of the year indicate that further reductions may have been achieved in 2019 but we must wait for the publication of the data by DfT before drawing conclusions.

2.4 In 2018, there were 250 deaths on the strategic road network, which is 14 (6%) higher than in 2017. Of these, 85 deaths were on motorways – a reduction of six (7%) from the previous year. However, rates of fatalities and serious injuries are lower on the strategic road network than on other roads in England. In 2018, the strategic road network carried 34% of all traffic in England, but accounted for 16% of all road deaths.

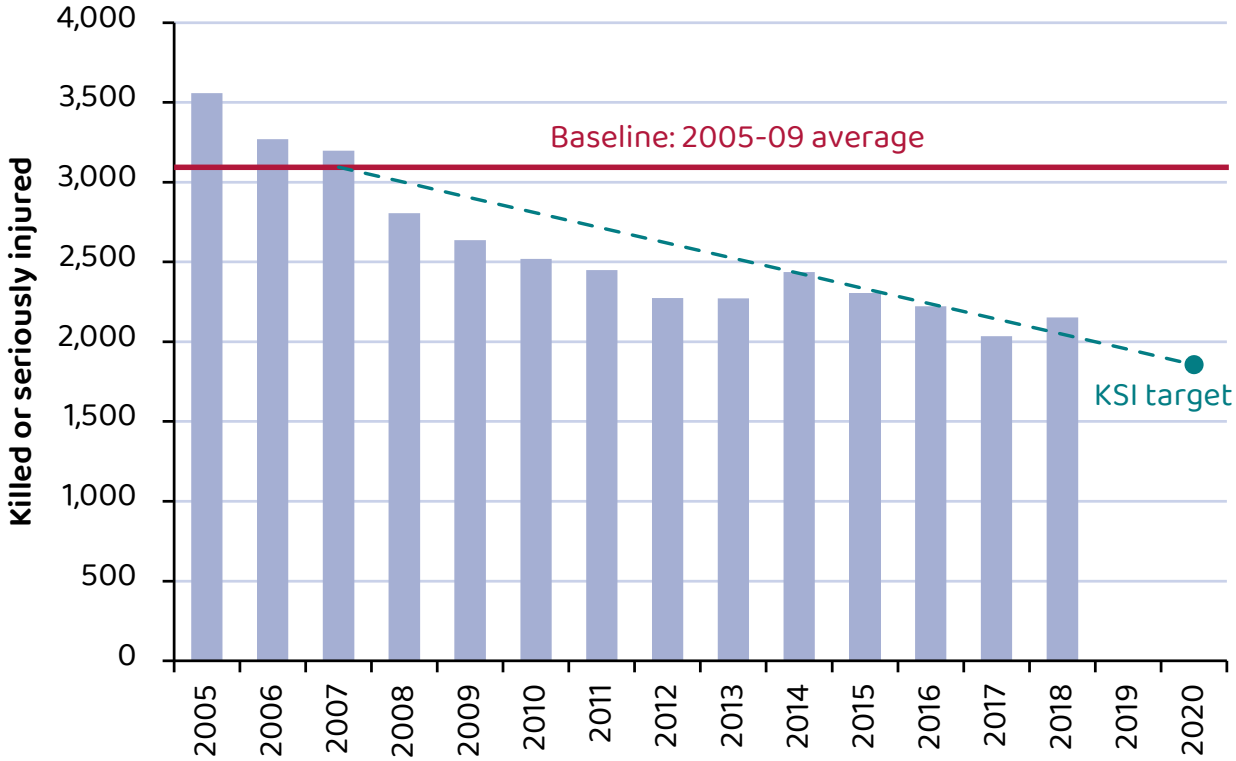
2.5 Since 2010, the trend for the number of fatalities on the strategic road network has been broadly flat, which is in-line with the trend on all roads in Great Britain.

[3] Adjusted figure. See Annex A for further details relating to the adjustment of road casualty statistics.

[4] Figures for killed or seriously injured in 2019 are not available at the time of publication – we will provide an update on the ORR website once DfT publishes the latest road casualty data, later in 2020.

Figure 2.1: In 2018, KSIs were 30% below the baseline, but above the straight line trajectory required to achieve the target in 2020.

Killed or seriously injured on the strategic road network (adjusted data), 2005-2018



2.6 Due to the coronavirus (COVID-19) pandemic, traffic on the strategic road network is expected to be significantly lower in 2020 than in previous years[5]. Early indications are that road traffic casualties have also declined, which increases the likelihood that the company will meet its safety key performance indicator for RP1. However, any significant reduction in casualties in 2020 is likely to be temporary. Highways England should therefore continue to focus on its longer term goal of zero casualties by 2040, and explore every avenue to reduce the number of people killed or seriously injured on its roads.

2.7 Early in RP1, Highways England set out its approach to safety in its 5-year Health and Safety Action Plan, which set out 130 actions that the company then completed over the course of the road period. In June 2019, Highways England launched its current safety strategy: *Home Safe and Well*[6]. This sets out the company's approach to achieving its longer term goal that by 2040 nobody is harmed when travelling or working on the strategic road network. This is an important long term goal for Highways England, and we will monitor the company's progress in delivering this strategy in RP2.

[5] The Department for Transport's provisional estimates of road traffic for April 2019-March 2020 show a 2.3% reduction in motorway traffic in Great Britain compared to the previous year. It is likely that a more substantial decrease will be reported when estimates beyond March 2020 are published in September 2020.

[6] http://assets.highwaysengland.co.uk/about-us/Home+Safe+and+Well+Strategy+2019.pdf

2.8 In RP1, Highways England and ORR have worked together to identify opportunities to share best practice in areas such as risk management. For example, ORR has shared its experience of managing health and safety risks through the Risk Management Maturity Model (RM3) that it developed for the rail industry. We will continue to look for opportunities to share knowledge and experience in RP2 and beyond.

2.9 The actions taken by Highways England to improve safety in RP1 have covered the company's three areas of focus: safer roads, safer people and safer vehicles. Projects delivered by the company in RP1 have included:

- **Using ring-fenced funds to deliver small scale safety interventions.** In RP1, Highways England delivered 109 small scale safety schemes aimed at improving safety on higher risk sections of the strategic road network.

- **Information campaigns** which have focussed on improving the driver behaviours which contribute to a high proportion of KSIs on the network. This has included the 'Space Invaders' campaign which targeted tailgating (close following) – a factor in one in eight casualties on the strategic road. Other campaigns have targeted winter driving, drink/drug driving, and users of commercial vehicles.

- **Funding three unmarked heavy goods vehicle (HGV) tractor units** to support police in capturing evidence of driving offences. Known as Operation Tramline, this has involved cooperation with over 30 police forces, and identified over 10,000 offences, mainly around mobile phone use, seatbelt use, and the driver not being in proper control of their vehicle. The unmarked HGVs have also been used to support specific campaigns, such as the M1 safety week, when all three vehicles were deployed on the M1 from 13 to 19 of May 2019. This resulted in fewer collisions than average on the M1 that week, with the police recording almost 200 driving offences.

- **Driving for better business** campaign. Highways England partnered with other safety organisations to deliver a campaign aimed at improving awareness of work-related road safety. It aims to help employers make better decisions to improve the safety of their vehicles and drivers. By the end of RP1, businesses representing almost 900,000 drivers had signed up to the programme. This is discussed in more detail in the case study below.

2.10 Other actions taken by the company include interventions to support improved post-collision response, and better use of research and analysis to ensure its plans are informed by a strong evidence base. Each year Highways England publishes detailed statistical breakdown of all collisions on the network that resulted in serious or fatal injuries. This provides a valuable evidence base to support Highways England's work to reduce road casualties, but also demonstrates a wider commitment to transparency by enabling wider use of the data by road safety professionals.

Safety case study - Driving for Better Business

In RP1, Highways England delivered the Driving for Better Business (DfBB) campaign with the aim of reducing the risks for commercial and business users of the strategic road network. This is also an area of particular interest for ORR under its wider safety remit in the rail sector.

Developed in partnership between Highways England and the Health and Safety Executive (HSE), DfBB provides information and resources to help employers make effective interventions with their drivers and vehicles to improve safety. It is designed to benefit both employers - through a reduction in incident rates for their staff, fuel use, carbon emissions, insurance claims and costs - and Highways England - by supporting a safer, free-flowing network.

Since the programme began in April 2017, employers responsible for almost 900,000 drivers, and 500,000 vehicles have signed up.

DfBB supports employers in achieving compliance with legislation, guidance and good practice through a seven-step process including an online assessment of work related road risks with guidance and resources.

The programme also includes advice and guidance on the next steps to maintain, and improve, driving standards amongst employees. Employers that have signed up to the programme have reported significant reductions in the number of 'at fault' incidents and improved the fuel efficiency of their fleets.

The safety of people driving for work is an example of an area where ORR and Highways England can work together on issues that are relevant to both rail and road to deliver benefits to the travelling public. In 2020, ORR successfully prosecuted a rail contractor over the deaths of two workers in a traffic accident on the strategic road network. Renown Consultants Ltd were found to have failed to follow both its own fatigue management policies and the working time limits on safety critical work, and were fined £450,000. This case will provide a greater incentive for employers to ensure the safety of their workforce when driving for business, as Highways England continues to expand its DfBB programme in RP2.

2.11 In RP1 Highways England surveyed its roads to provide a safety star rating assessment of the strategic road network. Star ratings use road inspection data to provide an objective measure of the level of safety of a road based on the systems used for the International Road Assessment Programme (iRAP). RIS1 set Highways England a target to achieve 90% of travel on roads given a 3-star rating, or above, by 2020. The company met its target, with an estimated 95% of travel on roads rated as at least 3-star in 2019.

2.12 Highways England has not met its commitment to improve the majority of 1-star and 2-star roads to 3-star or more by 2020. In response to this, the company has explained to ORR that it takes account of both the star rating, and statistical risk of death or serious injury, of a road when prioritising safety interventions. We recognise that targeting its finite resources in this way can help the company achieve a greater reduction in casualties than if it focused on improving star-ratings alone.

2.13 The company is currently surveying the network to provide an updated star rating for 2020, and forecast for 2025. This work has been delayed as a result of the coronavirus pandemic, with results now expected by summer 2021.

2.14 In 2019, the Office of Rail and Road commissioned the Road Safety Foundation to review how Highways England prioritises its expenditure on safety to ensure it delivers the maximum possible benefit for road users. Key findings include:

- A recognition that Highways England's commitment to safety, and its performance framework for monitoring and measuring safety outcomes, is world class.
- Highways England has made real progress since it was established in 2015, and the company should further develop how it uses safety performance metrics to guide investments to achieve its goals and targets.
- Further action is required if Highways England is to meet its safety target for 2020; and further investment is required to meet its longer term goal that nobody should be harmed on the network by 2040[7].
- A recommendation that the company can make more use of data within the star-rating system to inform its investment programmes.

2.15 The full report is published on ORR's website[8]. We will work closely with Highways England in RP2 to address the recommendations to drive further safety improvements in the second road period, and beyond.

[7] We recognise that that this is not fully within Highways England's remit. DfT's road safety management capacity review sets out wider changes that are required across the sector: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/717062/road-safety-management-capacity-review.pdf

[8] https://orr.gov.uk/annual-assessment-of-highways-england

Road worker safety

2.16 Highways England has two performance indicators, measuring accident frequency rates of the workforce. This is measured by the number of RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulation) accidents per 100,000 hours worked, reported separately for Highways England's supply chain, and for the company's own staff working in the operations directorate, which includes its Traffic Officer Service function.

2.17 For both measures, Highways England has achieved significant improvements over RP1. At the end of March 2020:

- The accident frequency rate for the supply chain was 0.07. This is an improvement on the score of 0.15 reported at the end of the 2015-16, the first year of the road period.
- The accident frequency rate for Highways England's operations directorate was 0.02. This was down from a score of 0.77 at the end of 2015-16.

2.18 Highways England has delivered a number of interventions over RP1 specifically aimed at improving safety for the workforce and reducing the accident frequency rates. These have included:

- Creating regional safety performance teams, to address regional priorities for improvement and co-ordinate with national and local improvement teams.
- Delivering workshops and information campaigns to increase awareness of near-miss and accident reporting.
- Improving how it collects and uses workforce accident data to help develop preventative and corrective action plans.
- Rolling out a health and safety leadership programme for Highways England and supply chain staff.

Smart motorways

2.19 In RP1 Highways England has built, and operated, a number of sections of smart motorway. The term 'smart motorway' can be used to describe three different designs:

- **Controlled motorways**, which retain a permanent hard shoulder, and have overhead electronic signs which can be used to set variable speed limits and display messages to drivers, such as warning of an incident ahead.
- **All lane running motorways**, which deploy the technology used on controlled motorways. In addition, the hard shoulder is permanently converted to a running lane, with refuge areas available for drivers to use in an emergency. The distance between emergency refuge areas varies from 0.3 miles to 1.6 miles.
- **Dynamic hard shoulder running motorways** also use the technology deployed on controlled motorways. Here, the hard shoulder is used as a live running lane at peak times to mitigate congestion. Electronic signs inform drivers when the hard shoulder is in use as a running lane. Emergency refuge areas are installed in the same way as on all lane running motorways.

2.20 There has been considerable public debate on the safety of smart motorways in recent years – particularly relating to those designs where the hard shoulder has been permanently removed. This follows a number of incidents where road users have been killed or seriously injured in collisions, after coming to a stop in a live running lane.

2.21 Highways England has engaged closely, and shared evidence, with ORR and the Department for Transport in relation to smart motorway safety. This culminated in the Department commissioning a smart motorway evidence stocktake in late 2019, which was published in March 2020[9].

2.22 Based on analysis of road casualty data from 2015 to 2018, the stocktake concluded that, in most ways, smart motorways are as safe as, or safer than, conventional ones. It also recognised that, while some risks are reduced on smart motorways, other risks (in particular the risk of collision between a stationary and moving vehicle) are increased.

2.23 Alongside the stocktake, the Department for Transport set out an action plan for improving safety on smart motorways. This listed 18 separate actions, including speeding up the deployment of stopped vehicle detection technology, reducing the distance between emergency refuge areas, and increasing funding for public awareness campaigns on using smart motorways.

2.24 ORR will monitor Highways England's delivery of the actions it is responsible for in the Department for Transport's action plan in RP2. We also believe that it is vital that Highways England continues to review and assess any evidence relating to smart motorway safety as more data becomes available.

Image courtesy of Highways England

[9] https://www.gov.uk/government/publications/smart-motorway-evidence-stocktake-and-action-plan

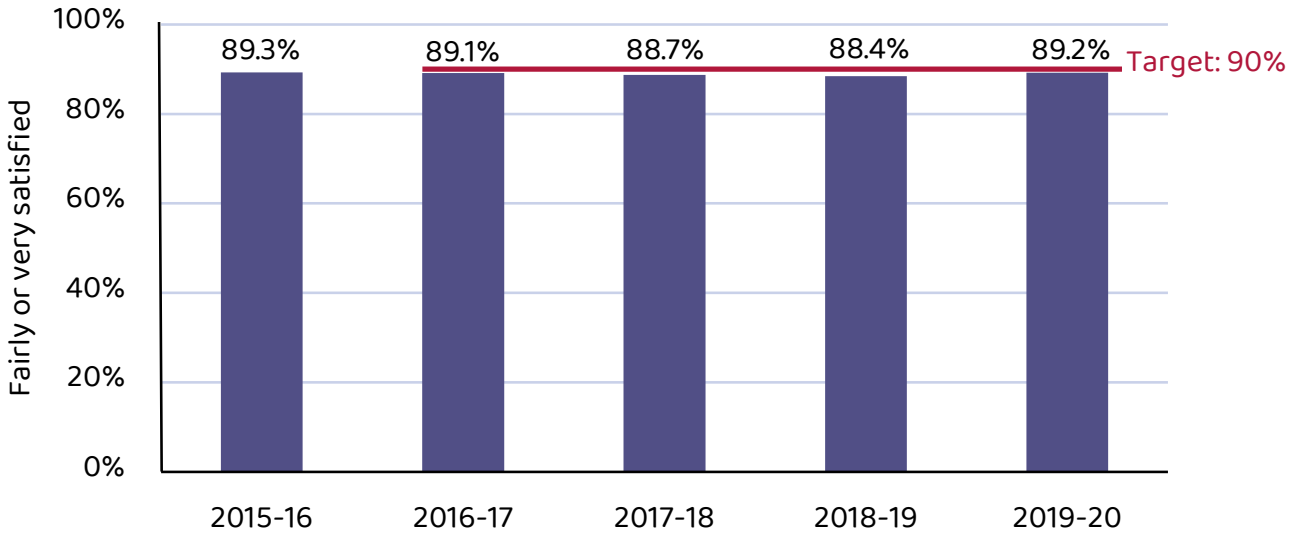
Satisfaction

2.25 Highways England must deliver a service that meets road users' needs and maintain a high level of satisfaction. Satisfaction over the first road period was measured by the National Road User Satisfaction Survey (NRUSS), which is conducted by Transport Focus. Highways England was set a target to achieve a score of 90% overall user satisfaction by the end of 2016-17, which it then had to at least maintain for the remainder of the road period.

2.26 At the end of RP1, overall satisfaction score was 89.2%, 0.8 percentage points below the 90% target. This is slightly below the score at the beginning of the road period (89.3%), but above the previous year's score (88.4%). Highways England has developed and delivered a series of annual customer service plans which we consider demonstrates an increased intent and focus on meeting the needs of road users.

Figure 2.2: Satisfaction improved in the final year of RP1, but narrowly missed the 90% target

End year satisfaction scores, RP1



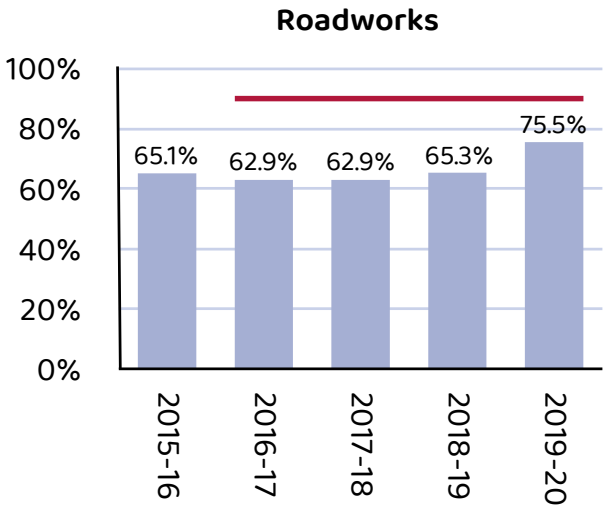
2.27 In response to Highways England missing its performance target in 2016-17, ORR began a period of enhanced monitoring and required the company to produce a recovery plan. The company achieved this in the form of its annual customer service plans. ORR met with the company's Customer Service Directors every quarter to discuss the progress and impact of customer service schemes, ensuring it maintained improvement regionally and across the components of its satisfaction score.

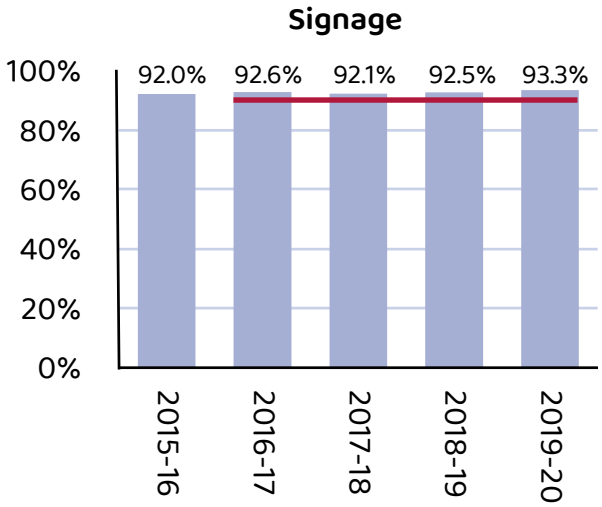
2.28 As part of its customer service strategy, Highways England worked effectively with Transport Focus to gather insight from road users and to identify improvements. Many of those improvements focused on roadworks and signage, two of the five components that make up NRUSS overall satisfaction. The other three are safety, general upkeep and journey time.

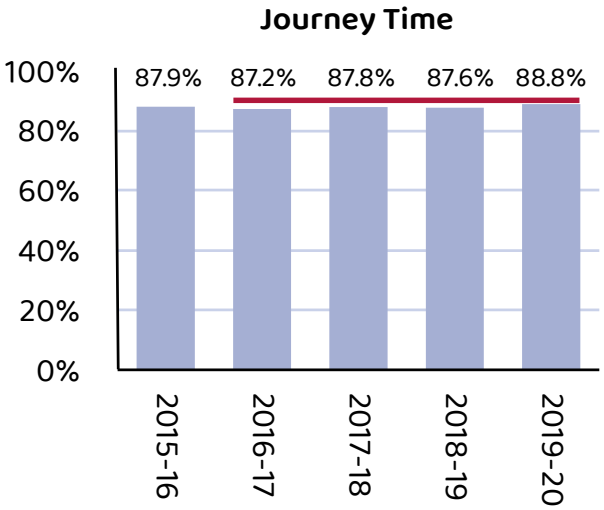
Figure 2.3: Three of the five components of satisfaction increased over the road period.

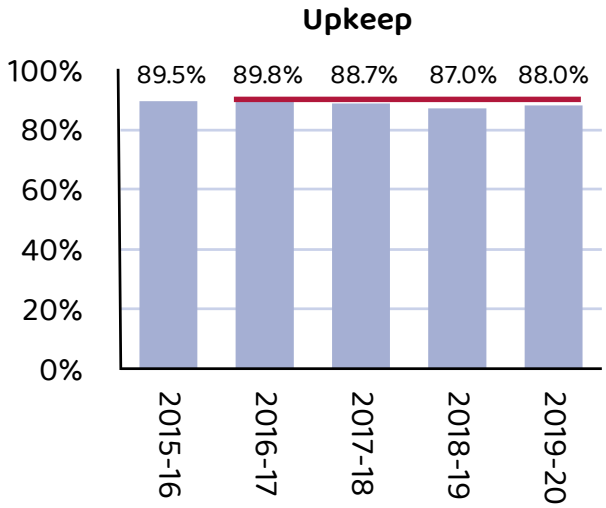
Roadworks satisfaction scores increased from 65.1% to 75.5% by the end of the road period while satisfaction with safety was below 90% for the first time in 2019-20.

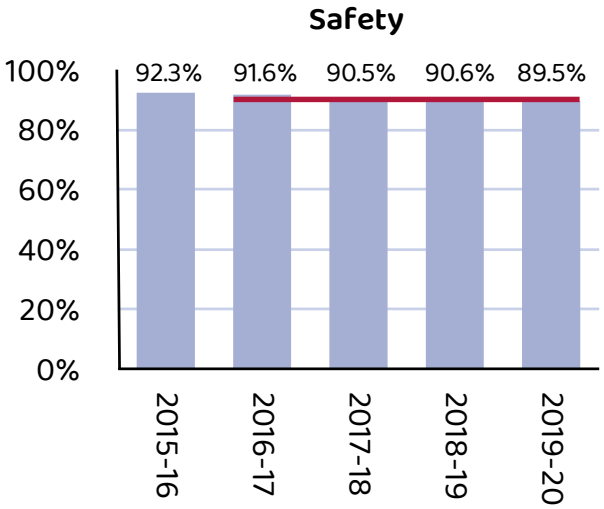
User satisfaction score by component in RP1.











2.29 Although overall satisfaction was below the 90% target across the road period, there have been improvements in some of the performance indicators. Figure 2.3 shows that satisfaction scores increased across all components, except safety, in the final year of the road period. Satisfaction with roadworks management, signage and journey time improved when compared to the start of the road period. As discussed above, in response to our enhanced monitoring, Highways England has focused on actions to improve roadworks management and signage as part of its customer service action plan.

2.30 The signage satisfaction score was above 90% throughout the period, reaching a peak of 93.3% in 2019-20. Satisfaction with journey time also recorded the highest score (88.8%) in the final year of RP1.

2.31 Customer satisfaction with roadworks management is consistently lower than the other four components, but increased substantially from 65.1% at the start of the road period to 75.5% in 2019-20. The case study below highlights Highways England's approach to increasing satisfaction with roadworks.

Case study - Improving road user satisfaction with roadworks

Road user satisfaction with roadworks management consistently ranked lower than other components of Highways England's overall satisfaction score. In 2016, ORR commissioned a study to explore Highways England's approach to roadworks planning and communications. The report examined ways to improve road user satisfaction and made actionable recommendations. In response, Highways England reviewed its approach to roadworks management and has subsequently increased roadworks satisfaction scores towards the end of RP1.

Three innovative customer led approaches resulted in a significant rise in roadworks management satisfaction, especially in the last two years of the road period.

1 **Understanding customers:** Highways England undertook extensive research in RP1 during roadwork schemes. It also developed customer insight tools including a Customer Panel.

2 **Implementation:** Highways England produced a 'customer view' toolkit to capture road users' needs and best practice. Embedding the toolkit in its project governance gives project managers and suppliers a clear path to improving delivery quality.

3 **Innovation:** Highways England introduced specific initiatives to address areas of concerns for road users, including:

- **Improving journey time:** Highways England carried out various trials for increasing speed limits during roadworks. Before each trial, a risk assessment was conducted to ensure safety was maintained. To evaluate the effect, drivers' behaviour in differing speed limits was logged using biometric data. Highways England also received feedback from customers and stakeholders which was implemented into its approach. The introduction of increased 60mph speed limits in roadworks, where safe to do so, reduced journey time through roadworks by an average of 10%. It also led to better speed compliance, reduction in close following and an overall improvement in driver behaviour.

- **Clear messaging:** Active communication with road users using electronic billboards and roadside information. Highways England explained what work it was undertaking, and displayed expected construction completion dates.

- **Visibility of temporary road barriers:** Installation of reflective studs and white lining alongside the barrier to better delineate the edge of the carriageway lane. The project received positive feedback from road users, including comments that it improved their perception of safety.

Highways England identified 20 principles for improving customer experiences. The company is consolidating its understanding from these trials and will roll out best practices across its major improvement projects. We will ensure that Highways England continues its collaboration with ORR and Transport Focus for an improved customer approach in RP2.

2.32 This customer-centric approach is reflected in the improvement in signage and road management satisfaction scores which created a boost to the overall satisfaction score in 2019-20.

2.33 However, the improvements from signage and roadworks were offset by declining safety satisfaction across the road period. Highways England is working to understand how safe road users feel on their journey and addressing other accessibility issues.

2.34 Although Highways England missed its satisfaction target, we consider the actions it has identified and carried out have generally been the right ones. The latest data also indicates that these were having a positive impact on the key performance indicator by the end of the period.

2.35 At the end of the road period, user satisfaction was highest in the Yorkshire & the North East region (92.6%). The North West (85.2%) trailed other regions throughout RP1 but improved from its 2015-16 user satisfaction score of 83.5% to 85.2% in 2019-20.

2.36 Highways England has highlighted steps it has taken in RP1 and will continue its customer service action plan in RP2, building on improvement areas. These include:

- Understanding satisfaction on roadworks management;

- Creating an operational culture of 'every second counts';

- Improving maintenance planning to focus on making a difference to customer satisfaction and;

- Developing plans to help road users feel safer.

2.37 In RP2, customer satisfaction will be measured by the Strategic Roads User Survey (SRUS). This replaces the NRUSS and will again be administered by Transport Focus. Surveying is currently suspended due to the coronavirus pandemic, but during the period of dual-running both surveys, Transport Focus was already reporting that SRUS provides a more reliable and richer measure of road user satisfaction.

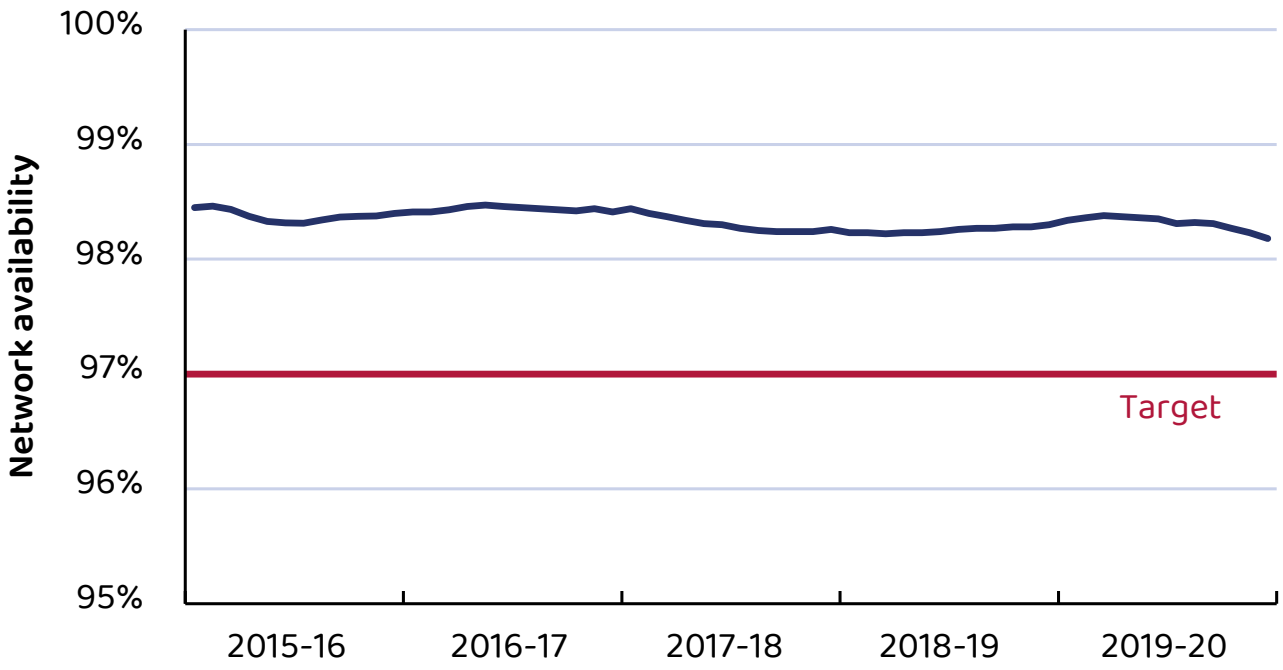
2.38 We expect Highways England to build on work from the first road period and develop clearer links between the actions it takes and the resulting impact on user satisfaction. The company must ensure that best practice and lessons learnt are shared across its regions to drive up performance across England. It should also achieve a consistent level of performance across all elements of satisfaction to create a better overall experience for road users. We will continue to monitor the delivery of its customer service plans to ensure that the progress made at the end of RP1 is built upon in RP2.

Supporting the smooth flow of traffic

2.39 Highways England has met its RP1 targets to support the smooth flow of traffic on the network. The company's performance was measured by two key performance indicators in this area – network availability and incident clearance.

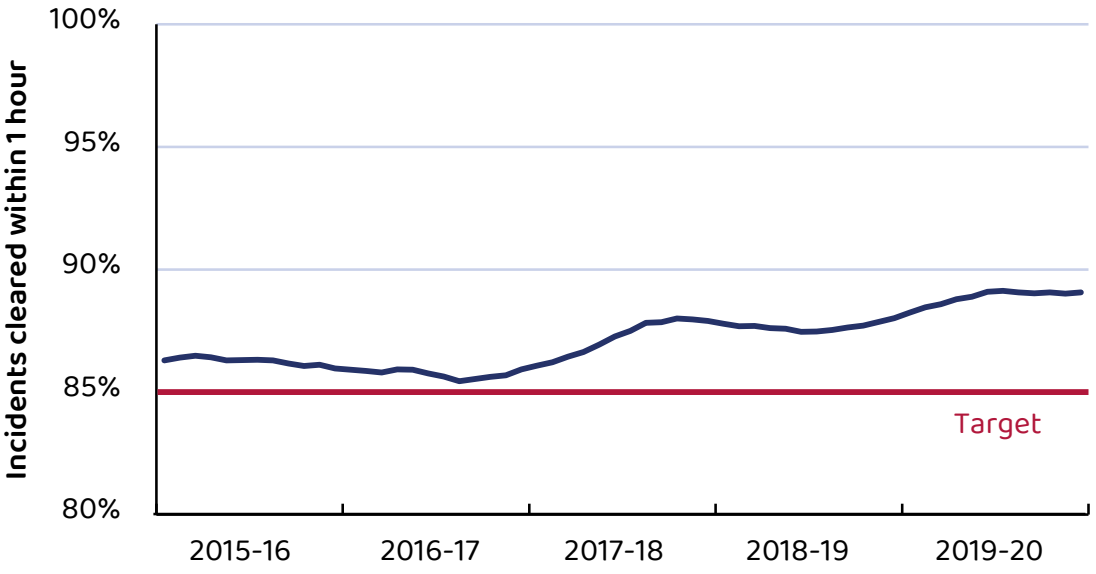
2.40 Highways England's target for network availability measured disruption caused to road users by planned events on the network, such as roadworks. At the end of the road period, 98.2% of the network was available to traffic – above the target of 97%. The company has performed well against this target throughout the road period, taking actions such as using narrow lanes during roadworks to maximise network availability.

Figure 2.4: Highways England has consistently met its target of 97% network availability in RP1.



2.41 Highways England's target for incident clearance captured disruption caused to road users by unplanned events on the motorways network, such as breakdowns or collisions. At the end of RP1, 89.1% of motorway incidents were cleared within one hour – above the target of 85%. The company consistently met its target throughout RP1, and increased performance by three percentage points since 2015-16 (the first year of RP1).

Figure 2.5: Highways England has consistently met its target of clearing 85% of incident within 1 hour in RP1.



2.42 Actions taken by Highways England to support performance against this target in RP1 include:

- Providing better coverage for incident management on the network by increasing the number of traffic officers trained to work as a single-crew.
- Enabling control centre staff to request vehicle recovery before a traffic officer is at scene – it is estimated that this can reduce incident duration by approximately 20 minutes.
- Learning lessons from incidents which were not cleared within the one hour target through holding post-incident debriefs.
- Setting internal 'stretch' targets for regions, which has improved understanding of the measure, and also created additional motivation for regions to improve performance.

2.43 Despite taking these actions, average delay has increased on the strategic road network over RP1 – as discussed below. In RP2 we will monitor Highways England against the new, and more stretching, targets it has been for both network availability and incident clearance.

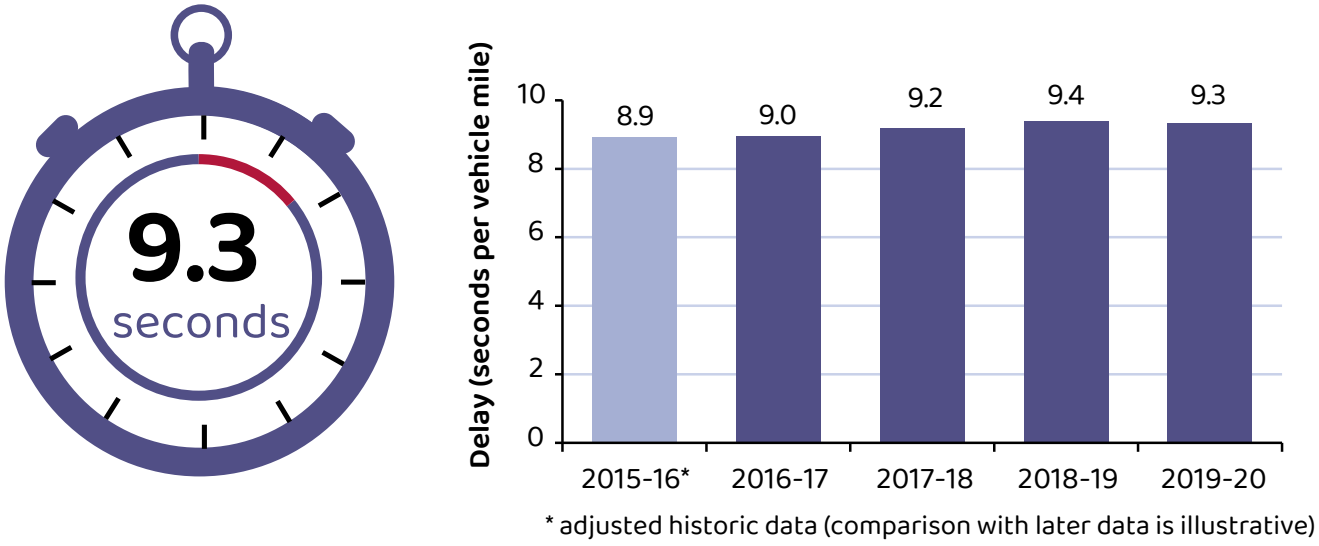
Supporting economic growth

2.44 A smooth flowing strategic road network, which enables the safe and timely movement of people and goods, is vital to the economic health of the country. Highways England's contribution to supporting economic growth is measured by a key performance indicator for average delay on the network. The company was not set a target for average delay in RP1.

2.45 Average delay on the strategic road network was 9.3 seconds per vehicle mile at the end of RP1. This is a small increase in delay from 8.9 seconds per vehicle mile at the end of 2015-16, but down slightly from a delay of 9.4 seconds per vehicle mile at the end of 2018-19. The slight reduction in the last year is possibly a result of lower levels of traffic in March 2020, due to the coronavirus pandemic. Average delay in the rolling year to February 2020 (before travel restrictions were introduced) was 9.5 seconds per vehicle mile.

Figure 2.6: Average delay at the end of RP1 was 9.3 seconds per vehicle mile.

Average delay on the strategic road network in RP1



2.46 The increase in average delay over RP1 has coincided with increased traffic – the network carried 94.7bn vehicle miles in 2018, an increase of 6% compared to 2015. There were also more major road improvement schemes in construction at the end of the road period – 32 at the end of March 2020, compared to 16 at the start of the RP1.

2.47 By meeting its targets to maximise lane availability, and clear incidents quickly, Highways England has helped mitigate increases in delay in RP1. Actions the company has taken to improve user satisfaction, such as increasing speed limits to 60mph through roadworks, have also supported performance in this area.

2.48 In RP2, we will monitor Highways England against an ambition that average delay will be no worse at the end of the second road period than it is at the end of RP1. The longer term impact of coronavirus on traffic levels – and therefore delay – is still unclear, but ORR will continue to challenge the company to seek new ways to mitigate delays in RP2.

Delivering better environmental outcomes

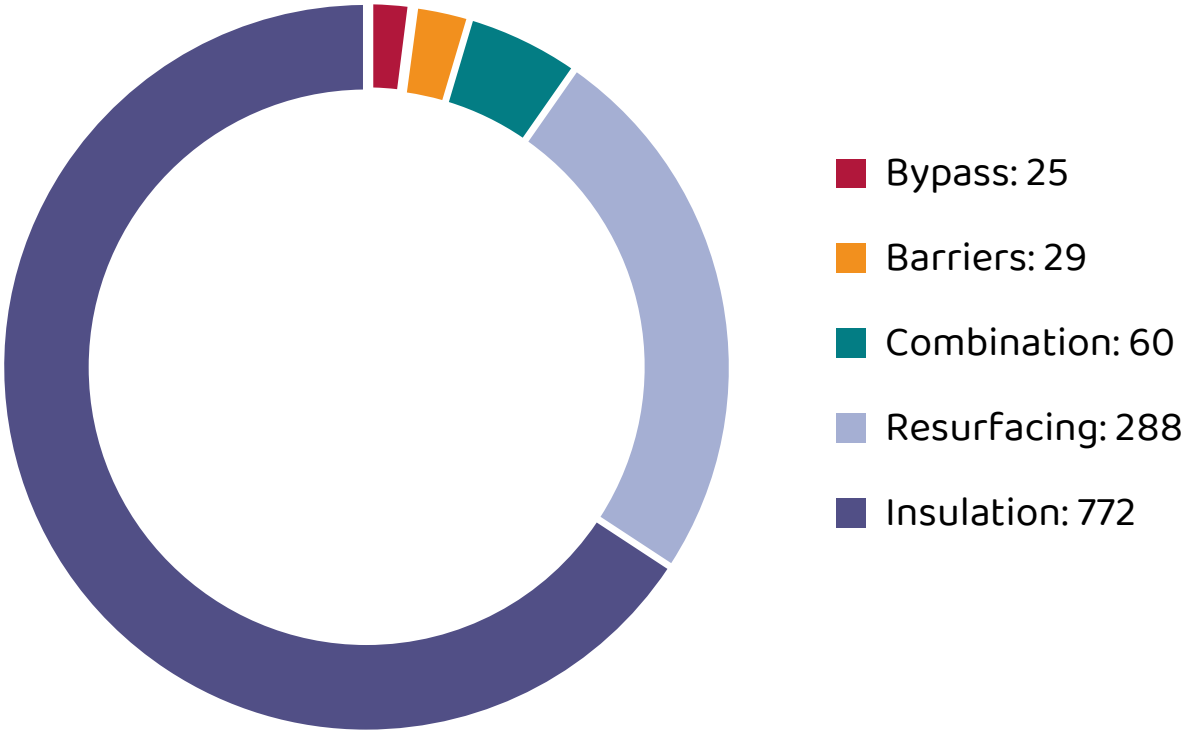
2.49 An important area for Highways England in RP1 was to deliver better environmental outcomes. The company has performed well in this area, delivering its two key performance indicators, covering noise and biodiversity.

2.50 Highways England met its target to mitigate noise at 1,150 noise important areas in RP1. At the end of the road period, the company had mitigated 1,174 noise important areas – exceeding the target by 24.

2.51 Of the 1,174 noise important areas mitigated, the majority (772) were delivered through Highways England's noise insulation programme to fit double glazing to noise affected properties. The remainder were delivered through low-noise surfacing (288), noise barriers (29), bypasses (25) and a combination of these measures (60).

Figure 2.7: Highways England met its target to mitigate 1,150 noise important areas in RP1 (1,174 mitigated)

Noise important areas mitigated in RP1 by mitigation type



2.52 In total, 914 properties had double glazing installed as part of the noise insulation programme. A further 1,016 properties were counted as mitigated where the homeowner either refused the offer of double-glazing, or did not respond to at least three attempts to contact them. In this situation, the offer from Highways England remains open, and these properties will continue to have the option of double glazing installation in RP2.

2.53 Highways England originally expected a higher proportion of noise important areas to be mitigated through resurfacing. However, as the company developed its resurfacing plans during RP1, it became clear that this would deliver fewer mitigations than initially thought. Therefore, the noise insulation programme was expanded to support delivery of this target. Highways England has a new key performance indicator to mitigate noise for 7,500 households in RP2.

2.54 Highways England published its Biodiversity Action Plan in the first year of RP1. The company subsequently delivered the majority of commitments set out in the plan, and published annual updates of its progress. In RP1, the company:

- Met its commitment to deliver 40 management plans for sites of special scientific interest (SSSIs) on its estate. It has also increased the number of SSSIs in favourable or recovering condition.
- Developed and trialled a new biodiversity metric, which will be used to measure progress against its new biodiversity target, to deliver no net biodiversity loss in RP2.
- Published annual updates of its progress against the Biodiversity Action Plan.

2.55 The company also delivered 575 hectares of species rich grassland. However, the area of grassland delivered is less than the 3,500 hectares originally set out in the delivery plan at the start of the road period.

Environment case study - Catterick flood alleviation scheme

The A1 at Catterick was one of the worst flooding hotspots on the strategic road network. In 2012, a major flood closed the A1, and affected 130 homes. The cost to the local economy was estimated to be £2m.

Working in partnership with the Environment Agency, and North Yorkshire County Council, Highways England used designated funds to deliver a £6.2m flood attenuation reservoir which would deliver a wide range of benefits to the local area.

Opened in 2018, the reservoir was built using spoil from an adjacent A1 Leeming to Barton major improvement scheme, therefore avoiding the use of landfill. It is capable of holding 91million gallons of water, which will help alleviate flooding during severe weather. Since opening, the scheme has worked well. The reservoir partially filled a number of times in 2018 and 2019 following heavy rainfall, protecting Catternick, and the A1, from flooding.

It provides five hectares of new habitats, including wetland, bat habitats, owl nesting and meadowland, while rerouting the river provided increased fish habitat. The new area also provides a better amenity for the local population, using bridleways and footpaths in the area.

2.56 Highways England has worked with DfT and the Joint Air Quality Unit (JAQU) to support the government's air quality policies. In RP1 the company reviewed 101 links on the strategic road

network, highlighted by the Pollution Climate Mapping (PCM) model, to assess compliance with legal limits for nitrogen dioxide. At the end of the road period, work was ongoing to identify the number of links that required intervention.

2.57 Highways England has assessed which of these 101 road links are potentially non-compliant, and expects to publish details of this in the next year. Based on this assessment, the company has developed mitigation measures (where possible) for how it can address air quality on road links where nitrogen dioxide levels are above legal limits. Potential measures include lower speed limits, traffic management solutions and barriers. In 2019-20, ORR worked with DfT, and JAQU to review Highways England's delivery of the actions to improve air quality. By the end of RP1, the company had put reduced speed limits in place on four PCM links to address air quality. However, a number of other proposed mitigations are currently paused, primarily due the decreased levels of traffic, and pollution, due to the coronavirus pandemic, meaning that further monitoring and analysis is required to better understand when measures will be delivered to achieve compliance in the shortest time possible.

2.58 ORR will take a more formal role in monitoring Highways England's progress in this area in RP2, as the company has been set a key performance indicator to bring the remaining road links into compliance in as short a time as possible.

2.59 Highways England has taken action to address litter on the strategic road network in RP1. Actions taken by the company include:

- Collecting 39,000 bags of litter in RP1 as part of Keep Britain Tidy's annual 'British Spring Clean' initiative. The company was unable to provide data for the total amount of litter collected in the road period. It must develop better information relating to its litter picking activities in RP2.
- Working with local authorities to arrange litter picking on A-roads to coincide with lane closures for other maintenance work.
- Installing car and lorry-height funnel bins at motorway service areas to make it easier to dispose of litter. The initial trial in 2016 demonstrated a significant reduction in littering on the slip road immediately after the service area. Service area operators have subsequently installed 41 of these bins, across three sites, with more planned in the future.

2.60 Despite this, Highways England has more to do to achieve the vision set out in its litter strategy of "a network predominately free from litter without compromising safety and delivered affordably". In RP2, we will report on Highways England's performance in clearing litter as a new formal performance indicator.

Vulnerable users

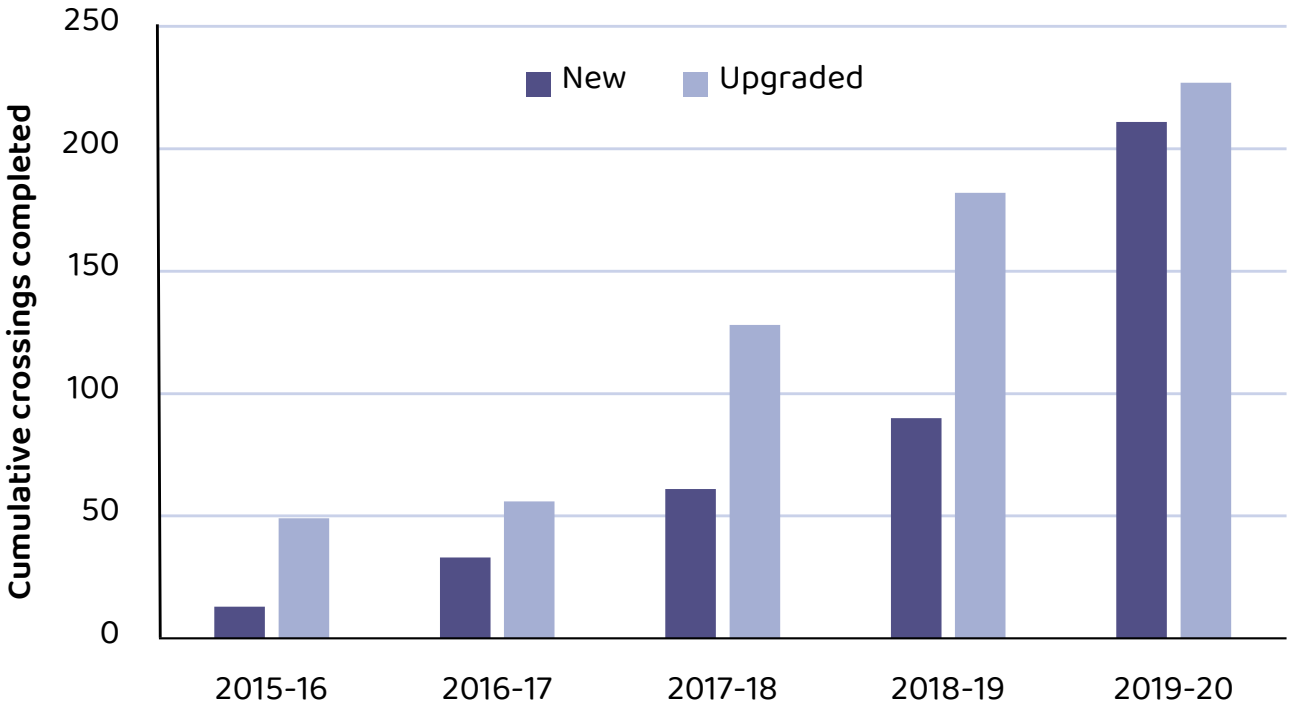
2.61 As part of RIS1, Highways England was required to help cyclists, walkers and other vulnerable users using the strategic road network. This was measured by a key performance indicator for the company to report the number of new and upgraded crossings for vulnerable road users.

2.62 In RP1, Highways England delivered 211 new and 227 upgraded crossings on the strategic road network. Over a third (166) of these crossings were delivered in 2019-20 – more than any other year of the road period.

2.63 ORR identified this as an area where Highways England could produce clearer plans for delivery, and improve the accuracy and timeliness of the information it reports. The company subsequently took steps to address this, including rolling out training within the business to improve the quality of reporting.

Figure 2.8: Highways England delivered 211 new and 227 upgraded crossings in RP1.

Cumulative new and upgraded crossings in RP1



2.64 Highways England completed construction on 59 cycling schemes in 2019-20, bringing the total delivered in RP1 to 160. This is 10 more than the company had committed to at the start of the road period.

3. Investment delivery

Highways England has successfully achieved 95% of its commitments for delivery of major improvement schemes in Road Period 1. The actual number of commitments delivered is lower than originally set out in 2015, but is in line with the revised plan it agreed with Government. Addressing concerns raised by ORR, the revised plan also reduces disruption to road users.

The accuracy of Highways England's planning of renewals delivery has improved through the Road Period, reflecting an increased maturity in asset management capability. Highways England has largely exceeded its planned delivery of renewals across Road Period 1 (RP1).

Highways England's delivery of its investment plan matured over RP1. The company has predominantly delivered its major improvement schemes to the latest agreed plan. It has substantially agreed changes to the programme of improvements that means it had a revised commitment to start 73 schemes by the end of RP1, compared to 112 set out in the initial RIS1.

Development of Highways England's capital plan

3.1 Highways England's original delivery plan (2015-16) included the start of work on all 112 RIS1 major improvement schemes by the end of the first road period.

3.2 The original commitment to progress 112 major improvement schemes during the first road period was reviewed and optimised, following observations we made on the delivery risk of a back-ended programme.

3.3 During RP1, Highways England continued to identify the need for changes to its capital delivery plan. It reviewed its major improvement schemes with particular focus on their scope, value for money and impact on road user experience. As a result of the review, the company improved how it scheduled major improvement schemes, which impact on the same routes or geographical locations, in order to reduce expected road user disruption.

3.4 In 2017-18, the company introduced an optimisation of the capital programme as follows:

- Paused or stopped - schemes that did not demonstrate value for money; and
- Scheme schedule change - based on a corridor approach, a number of schemes started work earlier than originally planned, with others starting later.

3.5 ORR supported the company's approach to improved scheduling of RIS1. We will monitor that Highways England has embedded the lessons learnt from this in RP2 and future road periods.

3.6 During 2019-20, the company also re-evaluated some schemes in the pre-options phase. It concluded further work was required to ensure that these schemes represented value and delivered the necessary outcomes for road users and communities. Therefore these schemes reverted back to the options development phase, to be included in RIS2 as part of the RIS3 pipeline package for potential delivery in future road periods.

Image courtesy of Highways England

3.7 Changes to the programme reduced the original 112 RIS1 scheme commitment by:

- 8 schemes - paused or stopped due to low value for money;
- 2 schemes - stopped due to lack of stakeholder support; and
- 2 schemes - moved to the RIS3 pipeline.

Further schemes were deferred to RP2, as follows:

- 15 schemes - to minimise expected road user disruption;
- 10 schemes - due to other external factors, for example an outcome of judicial/statutory process or a need for further work; and
- 2 schemes - decision as to whether it is a missed commitment or an approved change is to be confirmed by DfT.

This reduced the number of major improvement schemes due to start of works by the end of RP1 to 73. Figure 3.1 illustrates the changes to the RIS1 portfolio. The map below (figure 3.2) shows the status of RIS1 schemes at the end of RP1.

Figure 3.1: The RIS1 portfolio reduced from 112 schemes to 73

Approved changes to major schemes during RP1

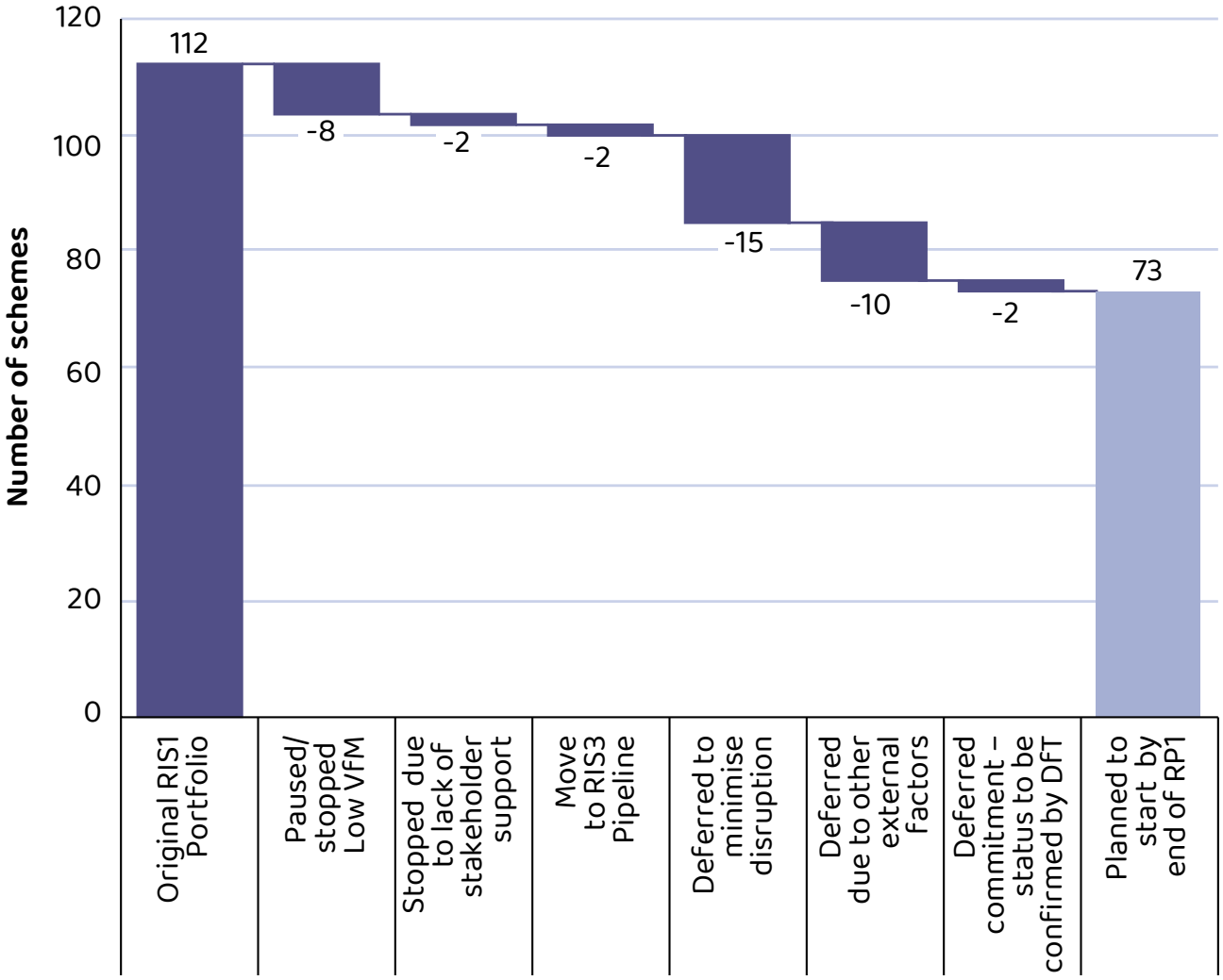
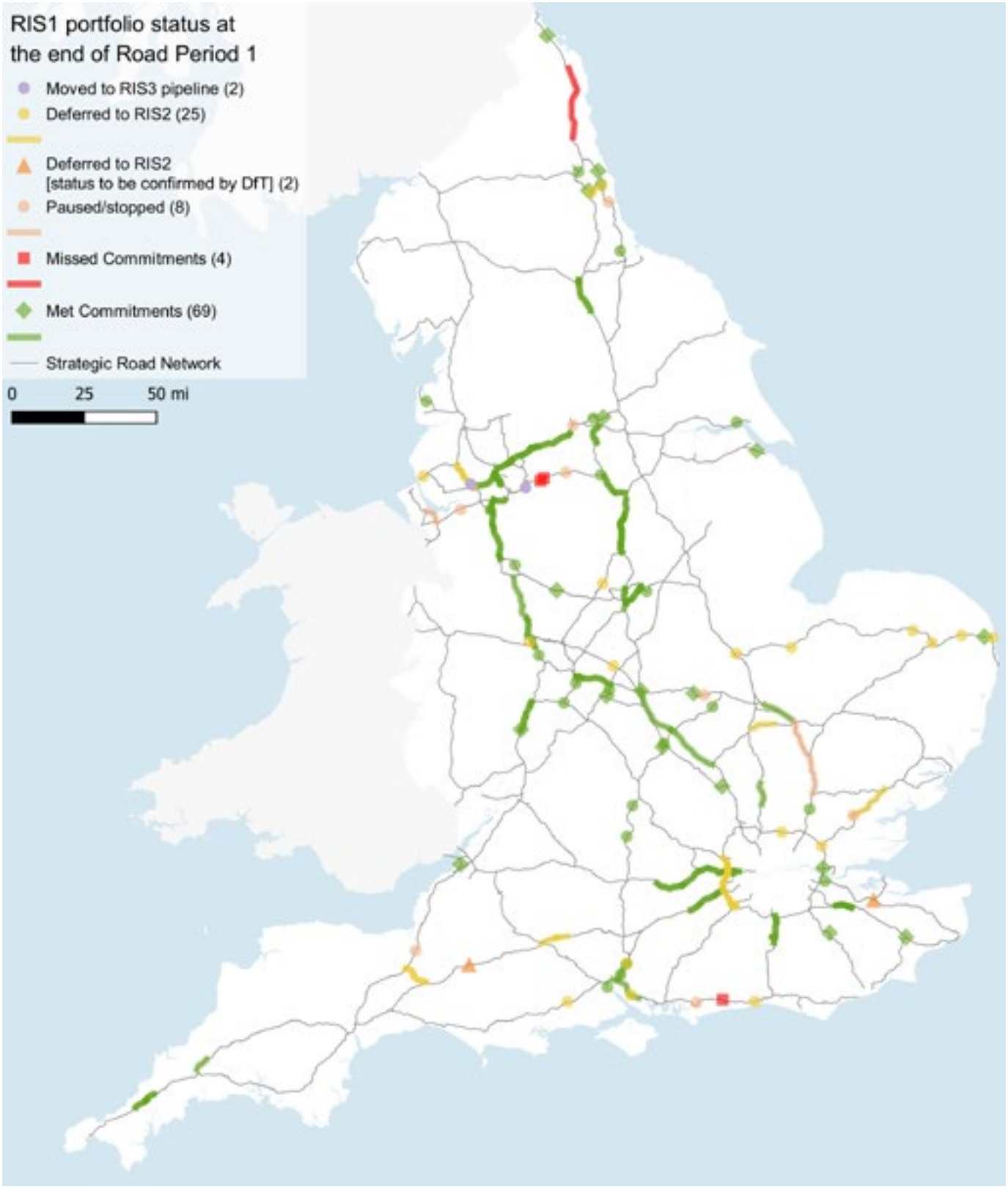


Figure 3.2: Map of major improvement schemes at the end of RP1



3.8 Highways England substantially agreed the changes to its RIS1 portfolio and delivery plan with government, through the Department for Transport's formal change control process. The company revised its baseline plan which then reflected the changes made to schemes through its optimisation exercise.

3.9 The changes to portfolio described above and other changes to individual project scope have not resulted in a change to the company's funding. This is because the funding provided for RIS1 was not enough to deliver all of the specified schemes. As was common practice with the company's predecessor (the Highways Agency), at the start of RP1 more schemes were programmed than could be delivered for the funding. This was in the expectation of some scheme deferral, or stopping poor value for money schemes. The value of the reduced scope in RP1 for these changes exceeds the anticipated 'overprogramming' in RIS1. However, the company reports that it has delivered additional scope on some of the remaining 67 schemes. This is discussed further in paragraph 4.35 and Annex C.

Major investment delivery - start of work

3.10 As part of its revised plan, Highways England was committed to start work on 40 schemes by the end of the first four years of RP1. It successfully started work on 44 schemes.

3.11 The delivery programme for 2019-20 represented the largest number of schemes required to start work, compared with any other year in the road period (figure 3.4). Highways England's plan was to start construction of 27 schemes in-year, of which 21 were in the final quarter of the year.

3.12 In addition to the back-end loaded programme, the company faced a number of other in-year delivery challenges: Brexit uncertainty, an unplanned general election, adverse weather events and the coronavirus pandemic in the last weeks of RP1.

3.13 The company put in place mitigation plans to successfully manage these risks to start of work. We have closely monitored the company's approach to these risks and, where appropriate, challenged some of its mitigation plans while they were in development.

2019-20 commitments

3.14 The company had a commitment to start work on 27 RIS1 schemes in 2019-20, of which:

- 23 schemes - started construction in year;
- 2 schemes - Highways England met its commitment to contribute to the overall funding for a third party to start work; and
- 2 schemes (M2 junction 5 Improvements and A303 Sparkford to Ilchester dualling) - Start of work has been deferred to RP2. Both schemes have been submitted to the Department for Transport's formal change control process, on which final decisions will be made following the completion of the statutory planning processes for both schemes.

Highways England also started work on the A27 East of Lewes scheme, in the final quarter of the year. This scheme was funded for feasibility study in RIS1, but did not appear in the company's published delivery plans during RP1, and is not one of the defined 112 RIS1 major improvement schemes. It has, however, been funded and work has started. This has happened outside of the governance process for changes to the RIS1 plan agreed between Highways England and DfT.

RIS1 commitments

3.15 For the overall RIS1 portfolio, comprising of a revised 73 schemes, Highways England started construction on 67 RIS1 schemes as follows:

- 16 schemes - started work prior to RP1 and the creation of Highways England; and
- 51 schemes - started work during RP1.

For the remaining six schemes:

- 2 schemes - the company met its commitment by providing funds for a third party to start work; and
- 4 schemes - missed the stated delivery commitment.

Through carrying out work, or providing funding, Highways England met its commitment on 69 of the 73 RIS1 schemes. These numbers are subject to change, if the status of the M2 J5 improvements and/or the A303 Sparkford to Ilchester dualling schemes are altered by DfT. Figure 3.3 summarises Highways England's delivery of its RIS1 portfolio delivery.

Figure 3.3: The company has successfully started work on the majority of major schemes in the revised RIS1 portfolio

Summary of RIS1 portfolio delivery

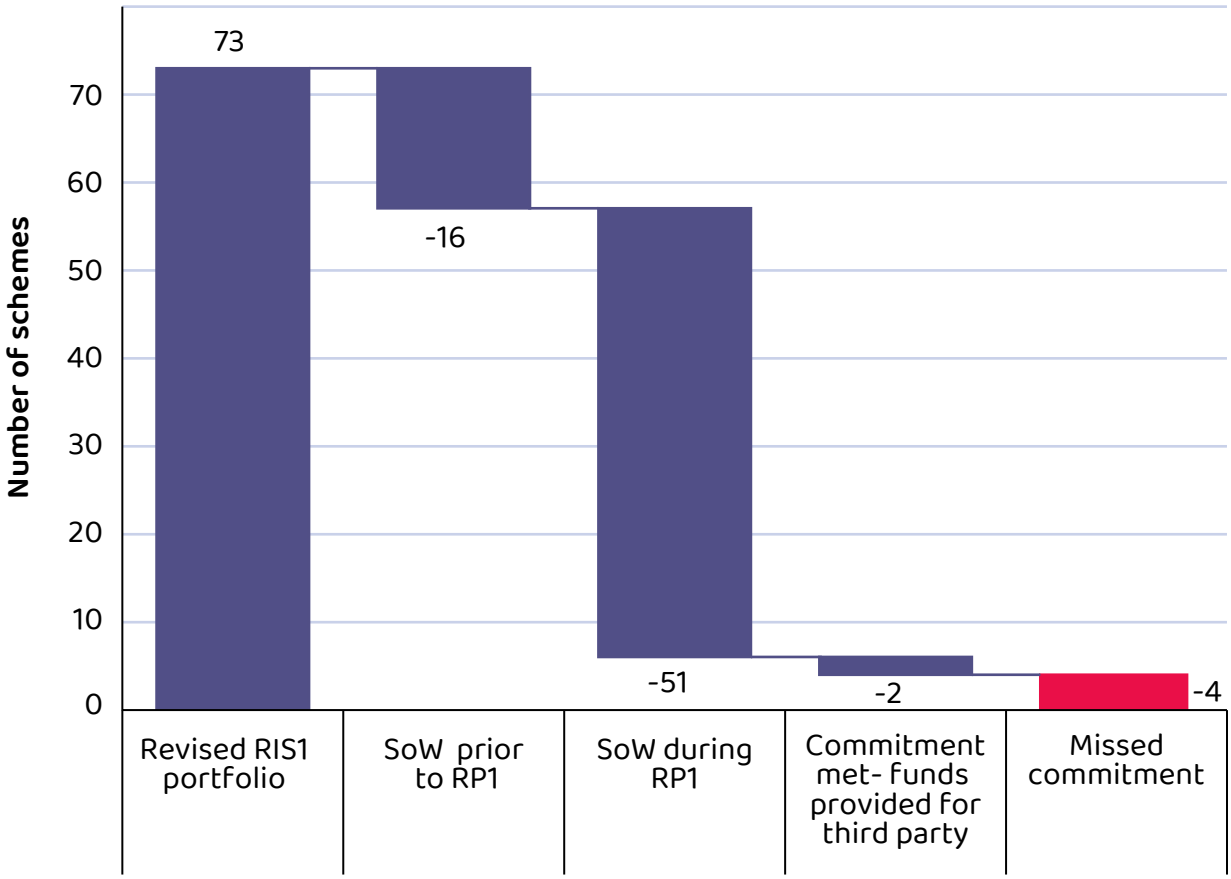
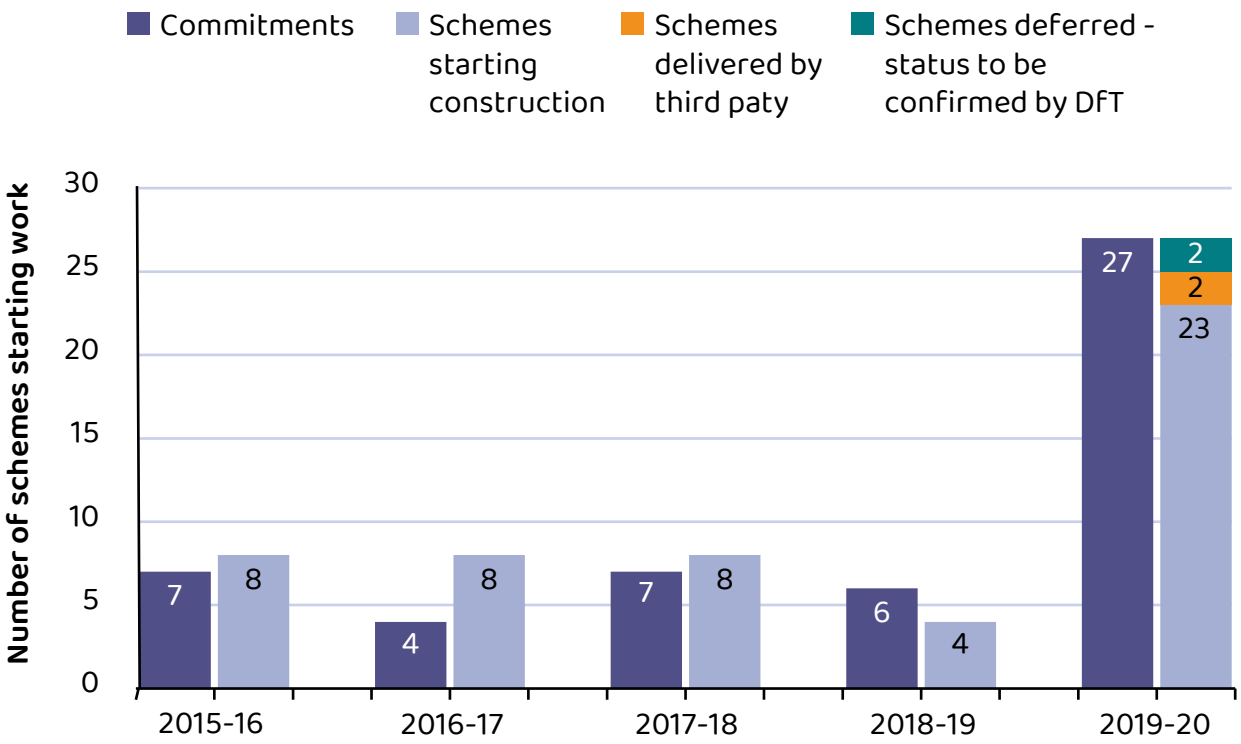


Figure 3.4: A large number of schemes were scheduled to start work in the last year of RP1

Number of schemes started construction/commitments during RP1



3.16 Highways England made good progress in starting work on schemes during RP1 and has generally had success in the construction phase of projects, once started on site. The case study below – for the A14 Cambridge to Huntington scheme – provides an example of the company's focus on delivery.

Case study - A14 Cambridge to Huntington major scheme

- The A14 Cambridge to Huntington Project is Highways England's biggest ever improvement project, costing £1.5bn. It will improve the economic links between the Midlands and the East of the UK and upgrade a vital link to Europe, via the east coast ports. The project has created the opportunity to open up new land to the development of over 10,000 new homes and associated infrastructure.

- The project includes a 12 mile bypass, 8 new junctions, 34 new bridges and structures, the demolition of old structures and the upgrading of local roads. It also includes 24 miles of new routes for cyclists, walkers, and horse riders to improve the integration with local roads and existing routes as well as converting the spoil pits into amenity areas. The project will also allow the original road to be "downgraded" to a more lightly trafficked local road.

- The project started work in November 2016 and was scheduled to open for traffic in RP2. However, Highways England was able to complete the offline bypass in December 2019 and allow its customers to fully use it.

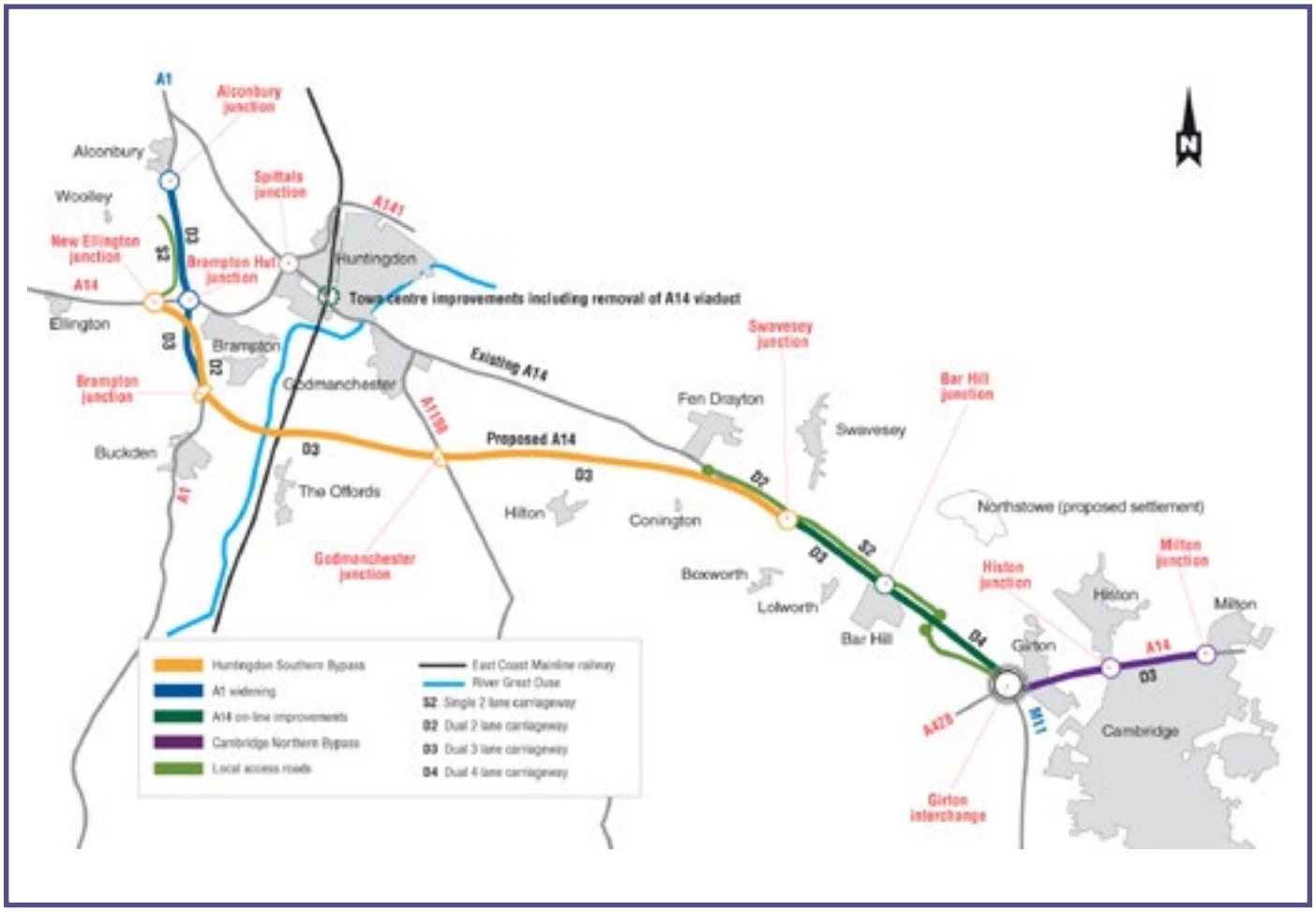
- This project was one of the biggest and most complex archaeological projects ever undertaken in the UK, resulting in significant finds including 18 settlements, 15,000 objects, 500 human burials and cremations, six tonnes of pottery and five tonnes of animal bone.

- Highways England was challenged to deliver an improved road link that is sympathetic to the environment and wildlife. It has met the challenge by delivering 18 new habitat areas and facilitated safe crossing for animals through the provision of 24 wildlife tunnels.

- ORR visited the site in October 2017 and February 2019 and witnessed a number of good practices, including pre-fabrication of structures and locating concrete and asphalt plants on site that reduced transportation requirements.

- Highways England and its suppliers have won 20 awards and been shortlisted for a further 32. In 2019 it was awarded the Considerate Constructors Scheme "ultra award site of the year", which recognises the role that the project team played and the manner in which the large number of suppliers have become integrated.

- It is good project management practice to share the lessons learned and good practice when developing and delivering future projects. Highways England recognises this and intends to use the people, and their experience, from this project when delivering other complex projects during RP2.



Major investment delivery - open for traffic (OFT)

3.17 Highways England was originally committed to open for traffic 28 schemes during RP1, as listed in its 2015-16 delivery plan.

3.18 During RP1, Highways England faced a number of challenges and has continued to identify the need for changes to its capital delivery plan. This resulted in changes to the number of schemes opening for traffic.

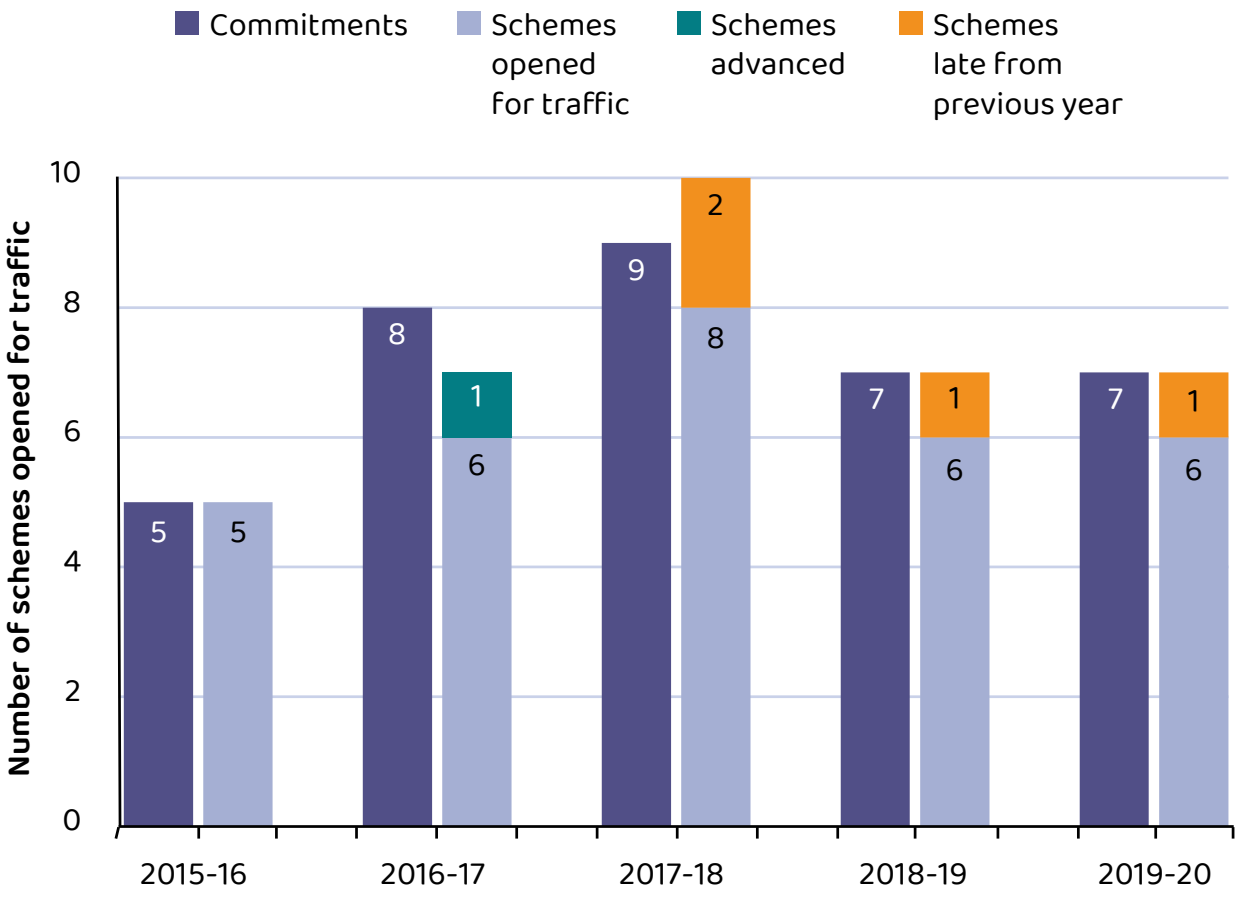
3.19 The company put in place mitigation plans to manage challenges to opening for traffic and successfully achieved this in the majority of cases. We have worked closely with the company to monitor these risks and challenged its mitigation plans.

3.20 Highways England had a commitment to open for traffic seven schemes during 2019-20, in addition to opening one scheme that was delayed from 2018-19. The company missed its commitment on the M271/A35 Redbridge roundabout upgrade, but did open the M20 Junction 10a, which was delayed from 2018-19. Therefore, Highways England has opened for traffic seven schemes (including the delayed 2018-19 scheme) and missed its commitment on one scheme. Figure 3.5 shows the number of schemes that opened for traffic in RP1.

3.21 In RP1 as a whole, Highways England has opened 36 schemes for traffic and missed its commitment on one scheme. These schemes added 343 lane miles to the capacity of the network. Figure 3.5 gives a breakdown of open for traffic schemes.

Figure 3.5: The company has opened for traffic the majority of RIS1 schemes as planned

Number of schemes Opened for Traffic during RP1



3.22 At the end of RP1, there were 31 schemes in construction that are due to open for traffic in RP2. There is also the A27 East of Lewes scheme that also started construction in RP1 (see 3.14 above). We will continue to monitor Highways England's delivery of these projects in RP2.

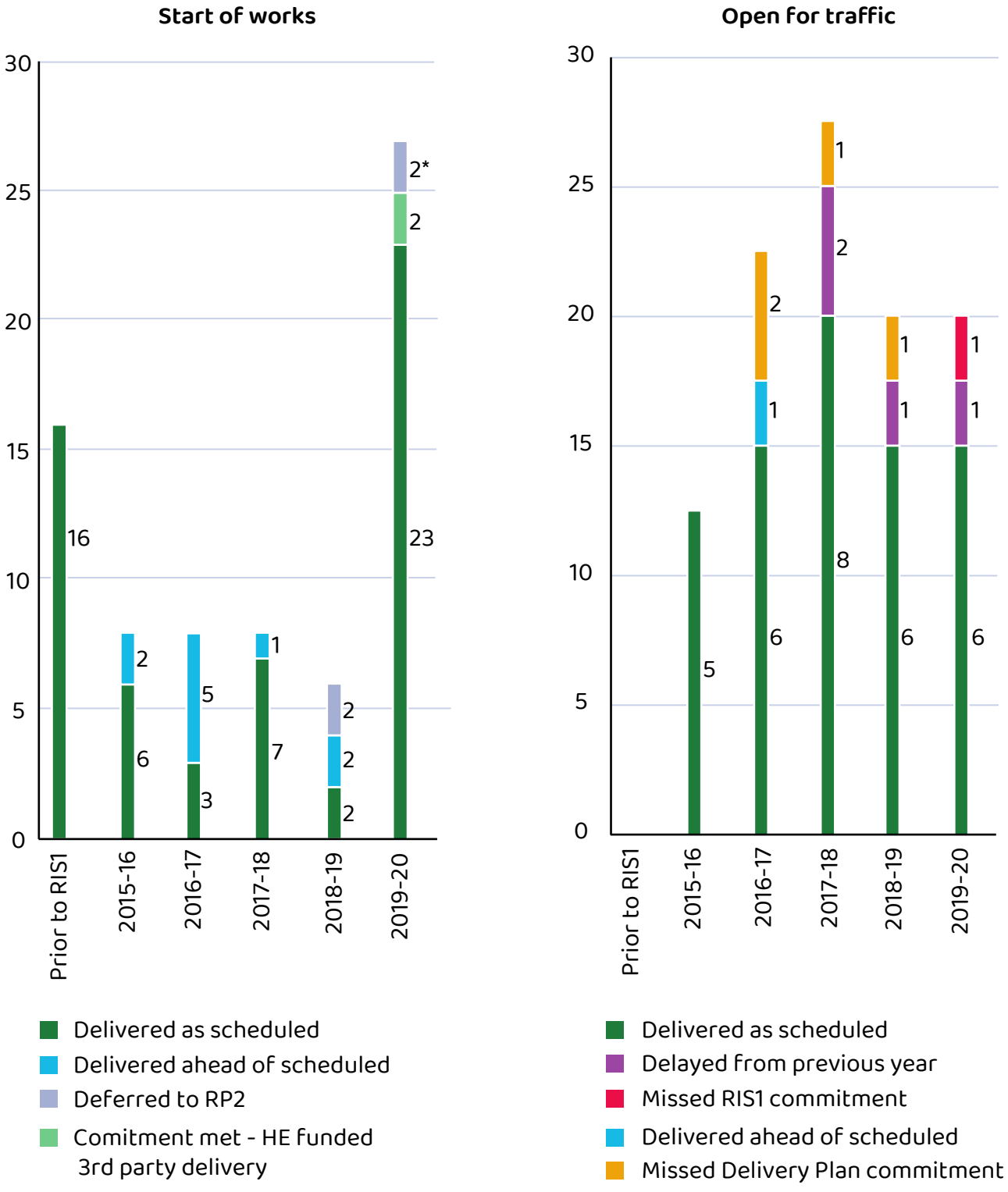
Highways England's programme management

3.23 Highways England has delivered the majority of its improvement scheme commitments during RP1 on time. It has met its delivery plan commitments to start construction on planned schemes, but missed its RIS1 commitment on four schemes as discussed earlier. For the open for traffic commitments, the company has missed a number of its delivery plan commitments, with one scheme also missing its commitment to open in RP1 and had its open for traffic date deferred to RP2.

3.24 By the end of RP1, Highways England met its commitment to start work on 69 schemes and open for traffic 36 schemes. Figure 3.6 summarises the delivery of the RIS1 major schemes portfolio. The charts do not include the four scheme classified as missed start of works commitments in the RIS1 portfolio that are not covered in a delivery plan.

Figure 3.6: The company has predominantly delivered its major improvement schemes to its delivery plan.

Breakdown of major schemes deliver during RP1



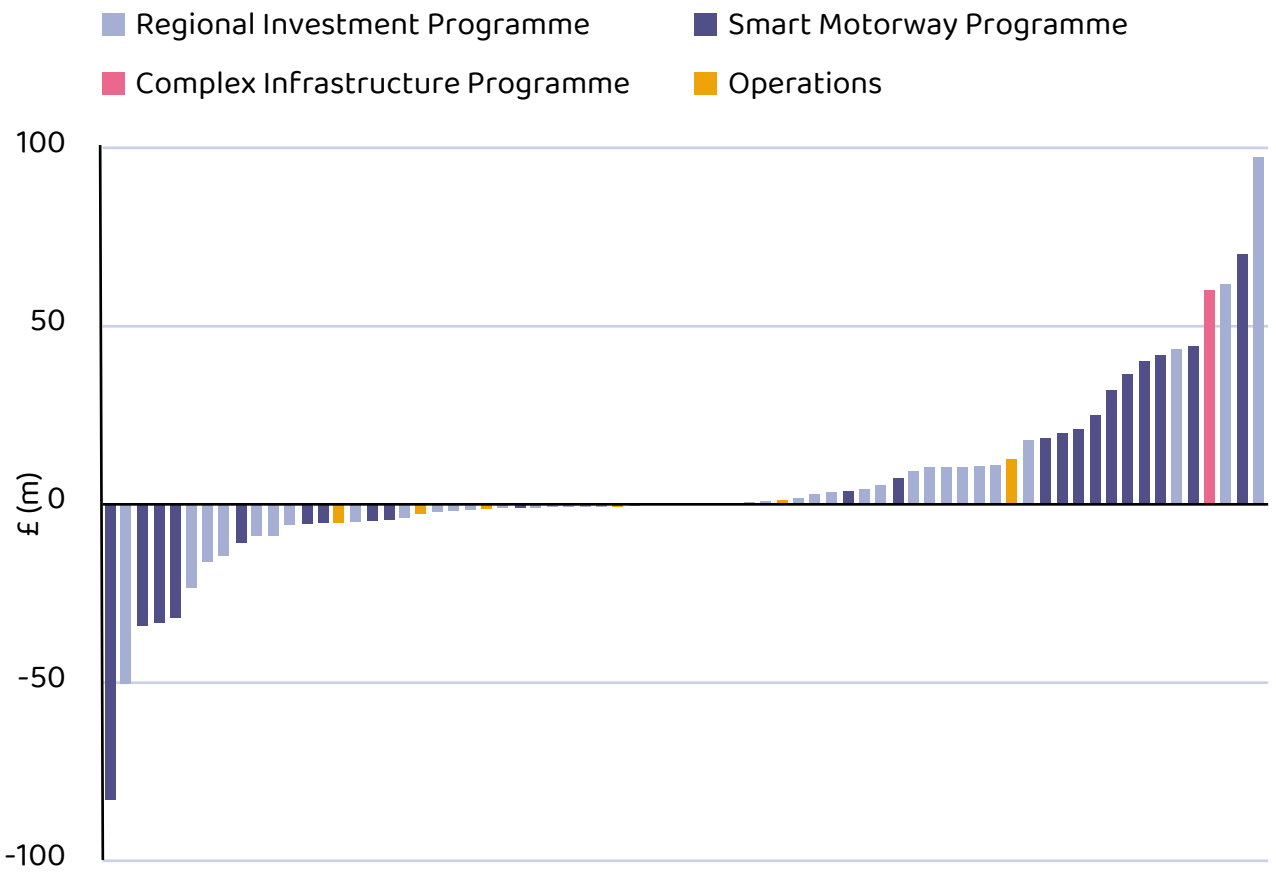
*Awaiting decision on whether status is categorised as deferral or missed

3.25 The company has taken steps during RP1 to proactively manage its programme and to smooth the profile of RIS1 projects. However, the plan to start construction on a significant number of schemes in the final quarter of the final year of RP1 was a considerable increase compared with a typical quarter during the road period. This raised concerns on the approach to programme management. Although the company strengthened its capital portfolio management capability, its programme and portfolio planning capability needs to develop further during the second road period if it is to meet its commitments.

3.26 Highways England's cost estimation processes are well developed. However, during RP1 the company has been managing a significant funding pressure as the forecast cost of the portfolio increased above the original baseline estimate. This has been managed through changes to the portfolio discussed above, rescheduling work within milestone commitments and other capital savings. This resulted in a net underspend of 1% as the final RP1 position for major improvement schemes. At programme level, the cost pressure was largely driven by the Smart Motorway Programme (see figure 3.7).

Figure 3.7: The largest overspends are generally against smart motorway programme schemes

RP1 (under)/overspends against baseline by programme type (£m)



3.27 Over the first road period, Highways England's data matured and its reporting progressively improved. It has robust processes for developing and managing delivery of individual schemes. However, there are still areas for improvement in reporting progress that will provide us with greater confidence in its programme management capability. For example, the company has found it challenging to provide accurate, robust data on its earned value management reporting.

3.28 In RP1, we commissioned consultants to review the reasons for changes in schedule and cost. This review found that the main reason was immature scope definition (in lifecycle development terms) at its starting point, with consequential delivery and cost risk emerging during scheme development, so plans have inevitably changed. There is also some evidence of over-delivery, i.e. enhanced scope delivery with no additional funding arrangement which offsets this to a degree. The review's report is published on ORR's website[10].

3.29 ORR identified concerns around Highways England's ability to identify best practice, and apply lessons learnt, to future projects. We therefore commissioned consultants to review the company's processes for evaluating and assessing the benefits realised from its major improvement investment, and how it implements these processes. This included reviewing Highways England's approach to publishing post-opening project evaluation (POPE) reports.

3.30 The review found that Highways England has a well-established approach to evaluating the benefits delivered by major schemes through the POPE process and compares well with other organisations. It also recommended that Highways England should publish POPE reports in a timely manner in order to maximise their value, improve transparency and benefit interested stakeholders. We will work with the company to monitor the evaluation and publication of future POPE reports. The review's report is published on ORR's website, alongside this assessment[11].

Renewals planning and delivery

3.31 Highways England delivered more renewals than planned in RP1 across the majority of asset types. Only two asset types, bridge bearings and network resilience schemes, saw marginal under-delivery.

3.32 The company created annual delivery plans for its asset renewals, detailing the exact interventions required to keep the network safe and serviceable. Whilst it over-delivered against those plans, it has improved its planning in RP1 and delivery was much closer to plan in the last two years of the road period, compared with performance in the first three years.

3.33 This improvement has been due to its increased maturity as an asset manager during RP1. A key factor supporting this development has been a refresh of its asset management governance. Highways England published its asset management policy and strategy, as required under its Licence, but also took key steps to improve its practice through its asset management plans.

3.34 During RP1, the company has brought in changes in how it operates with its service providers which has enabled it to align itself operationally to the approach required by its asset management framework. This way of working, known as Asset Delivery (AD), has allowed the transfer of responsibilities such as asset inspections, data management and maintenance decision making from suppliers directly to Highways England. This has enabled improvements to asset management processes where decision-making sits directly with Highways England, rather than with external

[10] ,[11] https://orr.gov.uk/annual-assessment-of-highways-england

suppliers.

3.35 As a result of these changes, Highways England was able to respond well to challenges from ORR on its significant structures inspection backlog, and the reporting of road defects and maintenance performance, particularly in regions where the company has transitioned to AD. Greater direct ownership of asset data has supported the migration of historic data systems to new central asset management systems.

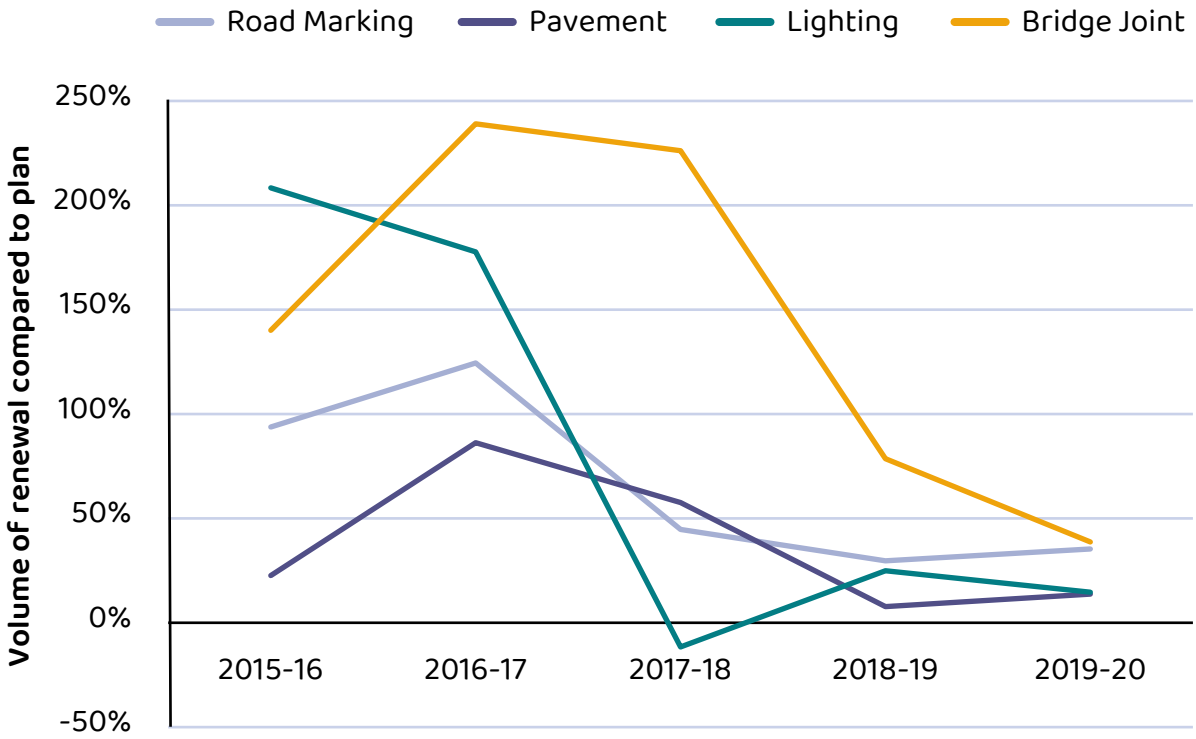
3.36 We have also requested that the company provide more comprehensive reporting of operations, maintenance and renewals activity through regular quarterly review and challenge sessions between company specialists and ORR. These sessions will be vital to our monitoring of RIS2.

3.37 Improving its understanding of its asset base allowed Highways England to increase its renewals planning horizon from annual plans to three year and then five year plans. This improvement to the planning process contributed to the reduced delivery variance to plan seen in the last two years of RP1. Figure 3.8 shows that the assets with the highest over-delivery for the road period, such as lighting and bridge joints, saw the biggest variance from plan early in RP1, with the variance broadly improving for the last two years.

3.38 Highways England recognises that further improvements can be made to its planning processes. Two key challenges to renewals planning during RP1 have been planning for additional renewalss a result of efficient delivery, and planning other asset type renewals, such as road markings, to occur whilst the carriageway surface is renewed. These challenges have contributed to Highways England's over-delivery of renewals in RP1 and we will monitor performance improvements in the next road period.

Figure 3.8: Assets with the highest over-delivery saw the greatest variance from plan early in RP1

Volumes of renewals delivered compared to plan over RP1 for a selection of assets.

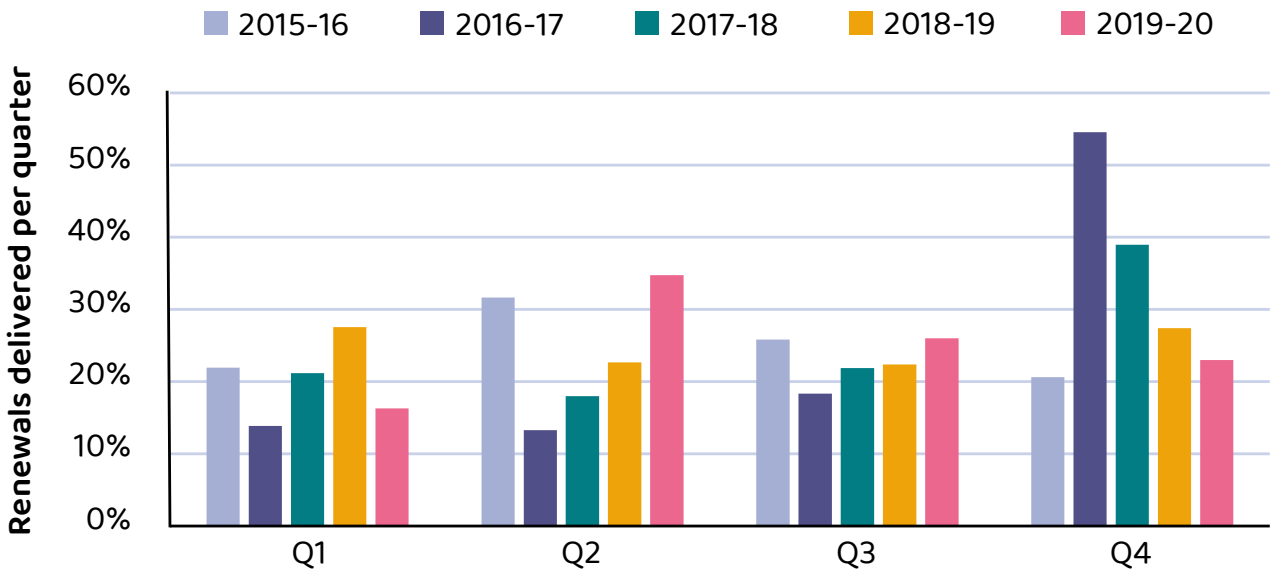


3.39 Early in RP1, we expressed concern at the proportion of renewals delivered in the final quarter of the year (January to March) and the associated peak in spend. Roads reform provided Highways England with the opportunity to move away from annualised funding cycles, which typically leads to delivery of high output volumes to meet budget by year end. In addition to inefficiency concerns when peak delivery is in January to March, winter weather conditions may drive higher work delivery costs and reduce the quality of the work, thereby increasing whole-life costs.

3.40 As well as delivering renewals closer to plan in the latter years of RP1, Highways England improved its delivery of a smoother profile of renewals in-year. This is shown in figure 3.9 where the company has reduced the proportion of pavement renewals delivered in Q4 of each year, from a peak in the second of year RP1.

Figure 3.9: Highways England reduced the proportion of pavement renewals delivered in Q4 of each year, from a peak in 2016-17

Quarterly volumes of pavement renewals delivered in each year of RP1



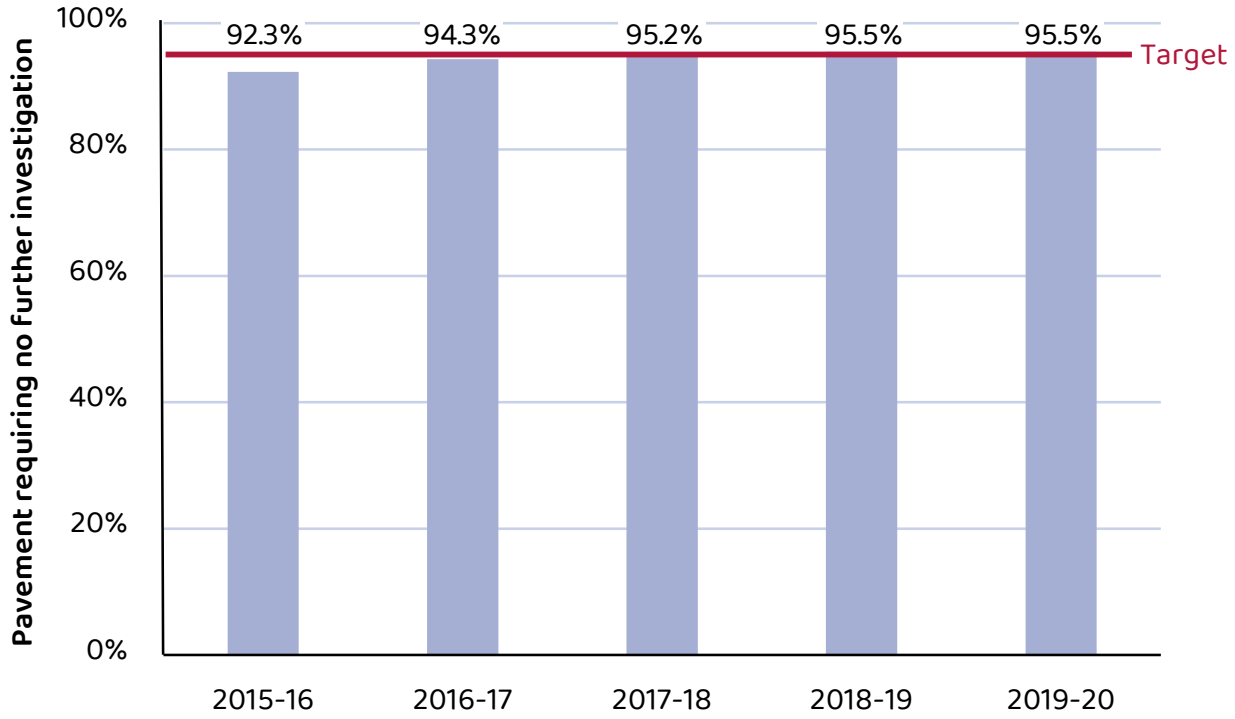
Network condition

3.41 The condition of the strategic road network is monitored by a key performance indicator, which measures the percentage of the road surface that does not require further investigation for possible maintenance. Highways England met the target and returned the network in a better condition than it was at the start of the road period. At the end of RP1, 95.5% of the network did not require further investigation. This is above the KPI target of 95%, and an improvement on the 92.3% recorded in the first year of RP1.

3.42 During the first two years of RP1, Highways England's performance against pavement condition was below target. This led us to review the company's compliance with its requirements against the RIS and Licence. We found areas for improvement in Highways England's reporting of road condition. We concluded that the company recognised the issues that we raised and had put in place plans to improve performance. ORR implemented a programme of additional monitoring to ensure that Highways England delivered improved performance. Subsequently, the company reached acceptable performance in 2017-18 and has maintained it above target since.

Figure 3.10: Highways England met its target for pavement condition in RP1

Percentage of pavement not requiring further investigation for possible maintenance in RP1



3.43 The performance of Highways England's other main assets (structures, geotechnical, drainage and technology) has been either broadly stable or marginally improved over RP1 as defined through the range of performance indicators.

3.44 The metrics used to define the performance of the non-pavement assets do not all report the condition of each asset type. Instead, they report a range of other performance measures including asset data availability, data coverage and asset functionality. It was recognised that for some assets, incomplete datasets meant that the focus on performance would be on expanding data inventory or on asset availability.

3.45 Whilst it is not possible to provide a definitive assessment of the condition of all non-pavement assets, the stable or marginally improved performance of those metrics provide assurance of Highways England effectively carrying out its role as a custodian of its assets and therefore represents a good outcome.

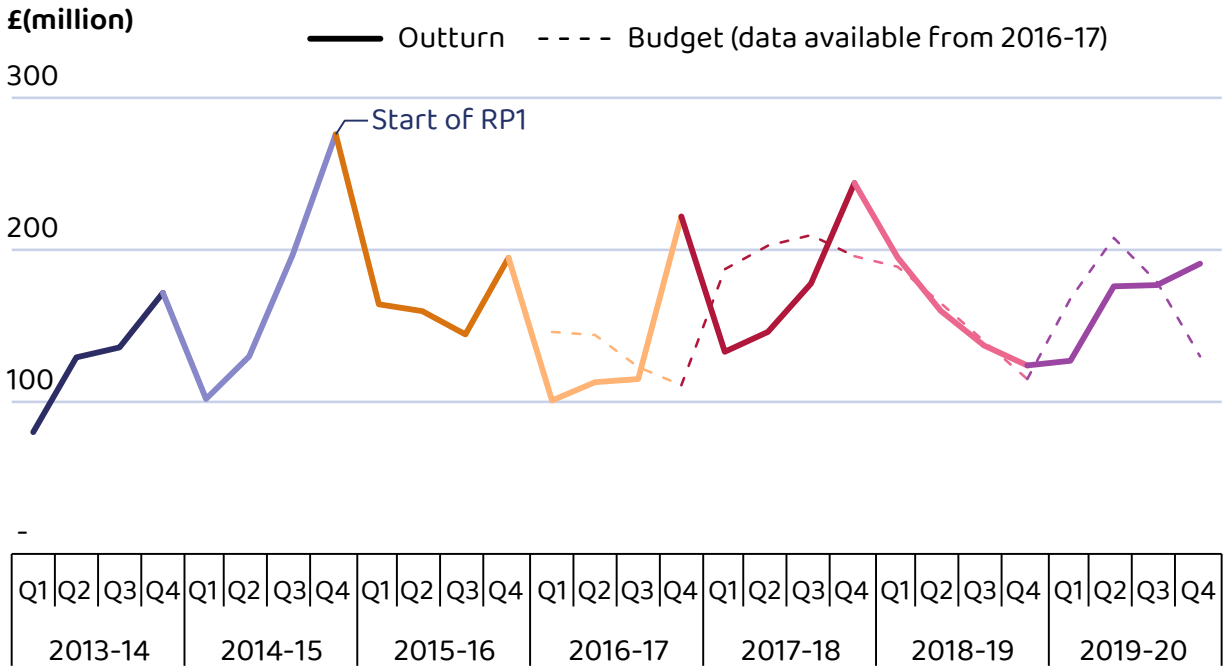
Renewals expenditure

3.46 In RP1, Highways England spent £3,494m on renewals, £143m less than its funding of £3,637m. This was mainly due to a decision for this part of the business to help manage the funding pressure the company was facing on major improvement schemes and other capital expenditure. As such, in the final three years of the road period, renewals was allocated a smaller budget than the level of funding anticipated within the RIS1 package.

3.47 The improvement in planning and then delivering volumes to plan, can also be seen in the company's monthly expenditure on renewals during the road period. The chart below (figure 3.11) shows an improvement in the monthly expenditure profile in the last two years of RP1, with delivery closer to plan and a reduction in the size of the year-end peak in expenditure (and associated delivery).

Figure 3.11: Renewals expenditure profile smoothed in final years of RP1

Renewals expenditure by quarter 2013-14 to 2019-20 (£m)



Renewals assurance

3.48 Highways England has delivered more renewals than planned over RP1, across the majority of its assets with less expenditure than funded. However, a significant challenge has been generating the confidence that the right assets have been treated at the right time. Unlike the delivery of defined major improvement projects, reporting of renewals plans and outturn delivery is not done against schemes or associated risks and needs. The impact of not renewing the right assets at the right time is not usually felt immediately but can lead to a deterioration of asset condition over time, which could then impact users, and ultimately increase costs in the longer term. Whilst some of the performance metrics provide an indicator that the delivery of renewals has led to improved asset condition, this is not the case for the majority of assets. This has limited our assessment of the impact of over-delivery of renewals, or more-for-less, on the performance or value of the asset.

3.49 We have challenged Highways England robustly to develop its reporting of renewals and undertaken in-depth reviews to improve assurance and the quality of our monitoring assessment. The company has engaged well with our reviews and improved its reporting throughout the road period.

3.50 The company has also developed metrics that improve the relationship between renewals activity and asset performance for use in RP2. Whilst not all of the metrics are ready in time for formal use, we look forward to shadow reporting during the second road period to improve reliability.

3.51 Highways England's maturing approach to asset management seen during RP1 gives us confidence that it is managing a safe and serviceable network. We will continue to challenge Highways England to provide assurance that it is efficiently sustaining the condition and value of its asset base.

Ring-fenced funds

3.52 The RIS1 investment plan included a series of ring-fenced funds (also known as designated funds) with a value of £675m. The purpose of these funds was to specifically address a range of issues beyond the traditional focus of road investment. They were split into five areas: air quality; cycling, safety and integration; environment; innovation; and growth and housing.

3.53 On the whole, Highways England has performed well in delivering schemes through these funds. Earlier in RP1, ORR raised concerns that the company's plans for delivery were heavily loaded towards the end of the road period, which risked the funds not being fully utilised. Highways England subsequently addressed this by strengthening its leadership and resources for managing the programme. At the end of RP1, Highways England had spent £652m of the allocated £675m, and delivered a wide range of projects across the portfolio.

3.54 Each fund delivered close to, or slightly above, its budget – except the air quality fund, where the company spent £38.7m of the available £75m. The underspend on air quality reflects that Highways England was unable to identify effective solutions on which to spend the funds during RP1, despite putting in significant effort. Due to the lack of effective solutions, the company has moved its focus to reducing emissions at source. The resulting underspend of £36.1m was balanced by overspends on other budget lines. Highways England has asked the Department for Transport to consider if it can spend £21.2m in 2020-21 to deliver some of the air quality measures that could not be delivered in the previous year - the outcome of this request is pending at the time of publication. That money would come from the Major Projects budget and the spending would be additional to the RIS2 designated funds.

3.55 The overspends reported for the innovation, environment, and cycling, safety and integration funds reflect where Highways England has identified opportunities to begin delivering RP2 priorities ahead of schedule or have enabled some exceedance of environmental and cycling performance metrics for RP1.

3.56 A summary of the projects delivered through ring-fenced funds is provided in figure 3.12, below.

Figure 3.12. Highways England spent close to its budget for all ring-fenced funds, except air quality.

Fund	Funding (£m)	Spent in RP1 (£m)	Budget spent (%)	Delivery in RP1
Air quality	75	38.7	52	Projects delivered through the air quality fund in RP1 include: • A scheme to encourage businesses to switch to electric vans (initially in partnership with Leeds City Council). • Trials of air quality barriers. • Rolling out a network of 60 automatic air quality monitoring stations.
Cycling, safety and integration	175	180.1	103	In RP1, Highways England delivered: • 109 safety schemes, which focussed on single carriageway routes with a higher accident rate or lower star rating. • 160 cycling schemes, against a commitment to delivery 150. • 62 integration schemes aimed at making the network more accessible and safer for vulnerable users.
Environment	225	230.3	102	Highways England used environmental ring-fenced funds to support delivery of its environment key performance indicators in RP1, including: • 914 properties fitted with noise insulation. • 83 biodiversity schemes. • 45 flooding and water quality mitigations. • 92 landscape schemes. • 39 carbon schemes. • 14 cultural heritage and three legacy schemes.
Innovation	120	123.8	103	Over 170 innovation schemes funded in RP1, including: • Trialling 60mph speed limits through roadworks on the M1. • Installing renewable low power infrastructure on the network to reduce carbon emissions. • Trialling mobile safety cameras to protect roadworkers from dangerous driving.
Growth and housing	80	79.5	99	Highways England has delivered 18 growth and housing schemes, and supported a further 28, through the growth and housing fund in RP1. This has supported delivery of up to: • 44,000 homes. • 45,000 jobs. • 1.74 million m^2 of commercial floor space.

Congestion Relief Programme

3.57 In the 2016 Autumn Statement, government announced a £220 million fund to help motorists beat congestion by making junction upgrades, roundabout improvements and better traffic signalling for traffic hotspots on the SRN. The Congestion Relief Programme (CRP) announcement included:

- £14m contribution to Essex County Council for delivery of a new junction at M11 J7a;
- £30m for the A69 Northern Transpennine Programme; and
- £176m towards 25 named schemes across the country to tackle congestion hotspots and to fund small schemes to further tackle road safety and congestion hotspots.

3.60 At the end of RP1:

- 21 named schemes were open for traffic;
- 3 named schemes are in construction and due to complete in early RP2, missing its commitment to open for traffic
- 1 named scheme is in development and due to complete in early RP2, missed its commitment to open for traffic;
- 90 small schemes were open for traffic; and
- The A69 Northern Transpennine Programme originally included improvements to its junctions with the A6079 at Hexham and the A68 at Corbridge. The Corbridge junction improvement was decoupled from the overall project and is subject to ongoing review. The Hexham part of the scheme has started construction but is delayed and will continue into RP2.

3.58 Highways England has completed 21 out of 25 planned named schemes, but delivered 90 small schemes resulting in 111 road safety and congestion hotspot schemes open for traffic in RP1.

3.59 The four schemes yet to be completed are associated with technological and capacity improvements on the M5 (J17-18; J19; J24-J23; and J24-J25). Highways England reports that progress with these schemes has been affected by the transition to AD in the South West region and poor weather, but also the early stage of design the schemes were in when the programme was developed.

4. Efficiency

Highways England has met its KPI target to deliver more efficiently in Road Period 1. The company has responded positively to ORR's constant challenge to improve the evidence used to support reported efficiency.

Highways England has reported £1.4bn of efficiency in the road period supported by good evidence of actions taken. We had previously challenged the quality of the company's top-down evidence of efficiency from unit cost movement and delivery of the RIS. This remains less robust but has improved and provides reasonable evidence of the KPI having been achieved.

4.1 RIS1 required Highways England to deliver the outcome 'Achieving efficient delivery' as part of its performance specification. One of the KPIs we use to monitor Highways England's performance in delivering this outcome is the Efficiency KPI: Total savings of at least £1.212bn over Road Period 1 (RP1) on capital expenditure. Importantly RIS1 also required Highways England to demonstrate how these efficiencies have been achieved.

4.2 This chapter initially discusses the efficiency reported by Highways England and then the broader evidence presented by the company for meeting the KPI.

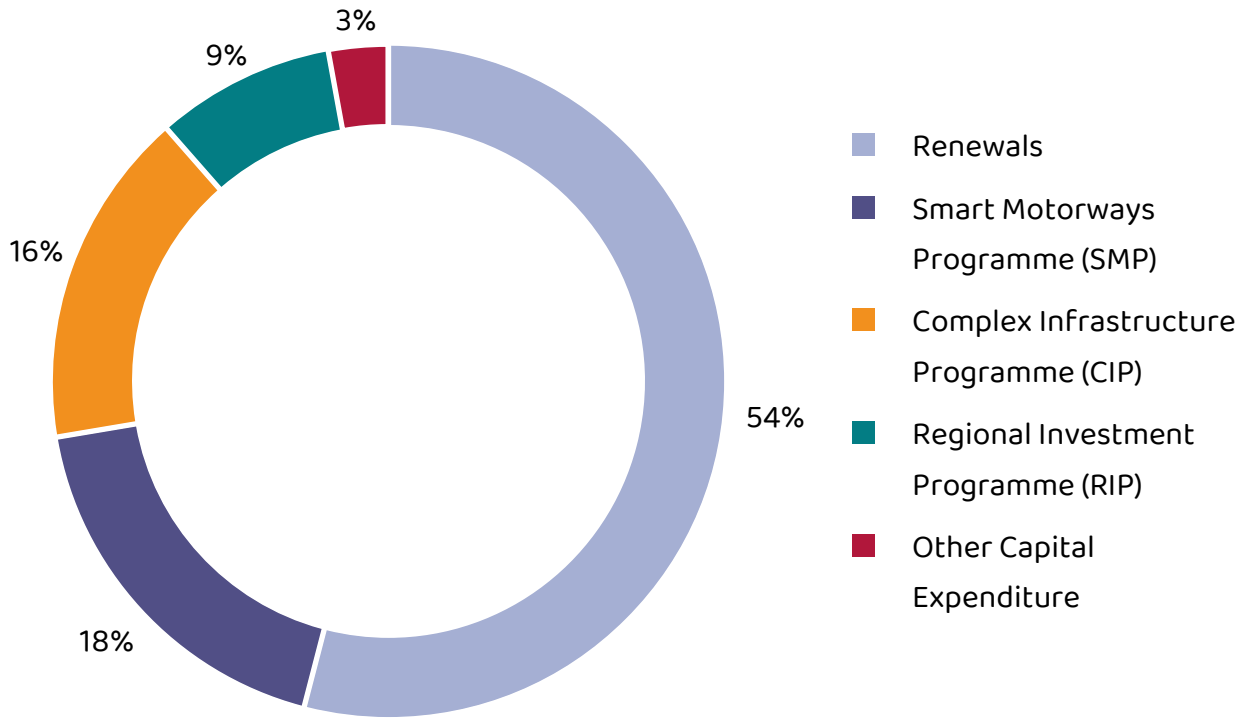
Highways England reported efficiency

4.3 Highways England has reported that during RP1 it has delivered (gross) capital efficiency savings of £1.448bn. It is important to note that this figure does not reflect the impact of any inefficiency or other overspend positon against budgets. This does form part of the evidence for achievement of the KPI and is discussed later in this chapter.

4.4 In the first road period, 54% of efficiency has come from renewals and 46% from road improvements (major projects). This includes 18% from the Smart Motorway Programme, 16% from the company's Complex Infrastructure Programme and 9% from the Regional Investment Programme. Figure 4.1 shows the breakdown of contributions from across the business.

Figure 4.1: Over half of reported efficiencies have come from renewals

Contribution of capital programmes to efficiency (%)



4.5 Highways England's Capital Efficiency Delivery Plan[12] separated the initial KPI target of £1,212m to a programme level. Figure 4.2 shows that the intention was for the total efficiencies to be split with 54.8% relating to renewals, 43.6% to major projects and 1.6% to other capital. Each programme has exceeded its target and the proportions of the final reported efficiencies are very close to the original plan with differences of less than 1% against renewals and major projects.

Figure 4.2: Efficiencies by category

	Capital Efficiency Delivery Plan (£m)	% share	Final efficiencies reported (£m)	% share
Renewals	664	54.8%	783	54.0%
Major projects	528	43.6%	624	43.1%
Other capital expenditure	20	1.6%	42	2.9%
Total	**1,212**	**100%**	**1,448**	**100%**

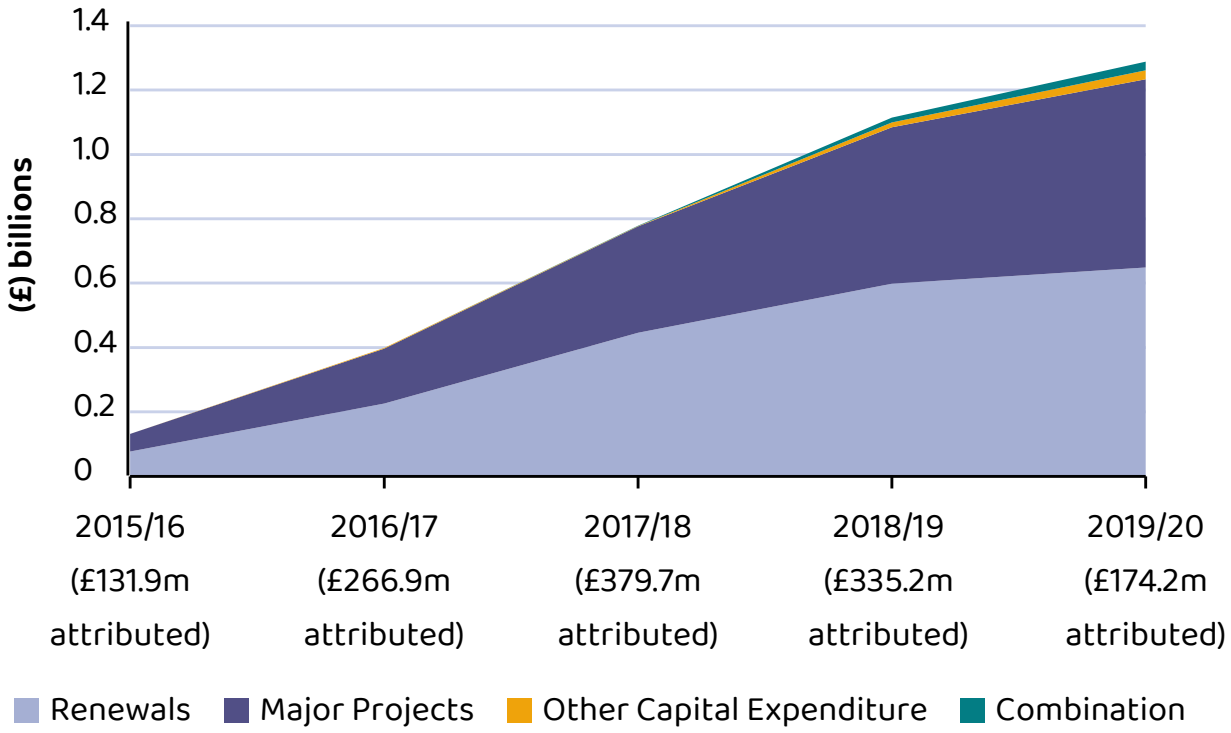
[12] https://www.gov.uk/government/publications/capital-efficiency-delivery-plan

4.6 Figure 4.3 shows the cumulative reported efficiency by each programme type through RP1. This figure is based upon the year in RP1 that an efficiency relates to, which may differ from the year it was submitted for review. It shows that most of the efficiency identified related to the middle years of the road period. This likely reflects new efficiency approaches being rolled out across the business, the shape of the company's capital expenditure profile during RP1 and potentially a time lag in identifying and reporting efficiency meaning some potential under-reporting in the final two years.

4.7 In the first three years of RP1 the majority of efficiencies related to asset renewals. As the road period progressed, the value of efficiency claims related to major projects increased, especially in 2018-19 and 2019-20. This reflects that major improvement schemes made up an increasingly large part of the company's capital programme[13].

Figure 4.3: The proportion of efficiencies relating to major projects has increased throughout RP1

Cumulative contribution to efficency by programme type (£)



[13] From analysis of case-study evidence provided. Excludes £117m of 'small claims' below £750,000 for which case-studies are not provided

4.8 Figure 4.4 shows that the majority of efficiency in RP1 has been derived from improved scheduling of major improvement schemes, adopting Lean management approaches and changes in contracts and design.

4.9 The scheduling of schemes category accounts for 31% of the total, captures efficiencies relating to the way schemes are scheduled and delivered. This covers both a reduction in the duration of a single scheme, or improvements to ensure tasks are carried out at an appropriate time. A good example of this is where Highways England introduced a Programme Mapping App tool, which allowed for the visualisation of operations and major projects forward programmes. This results in a focused approach on the works that will deliver the greatest benefits for a particular route, allowing for the cancellation of obsolete proposals.

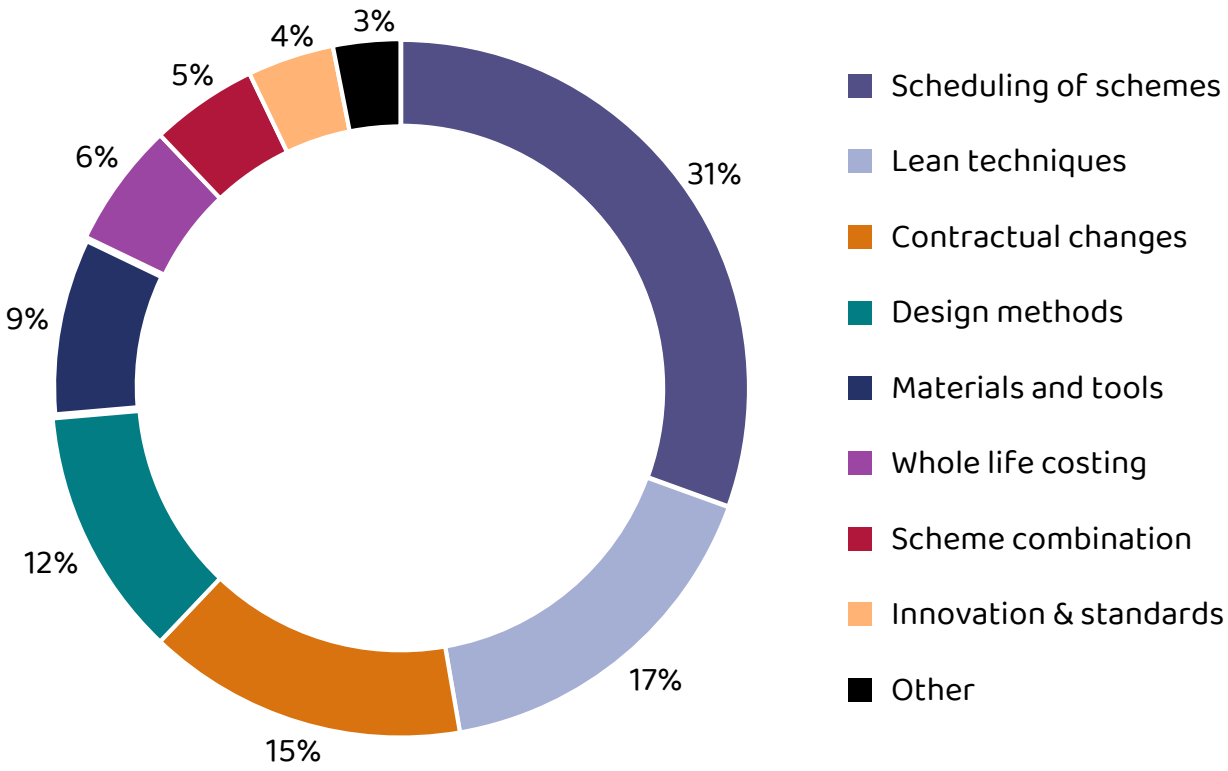
4.10 Lean techniques, which account for 17% of the total, identify issues within the design and production process of schemes. This allows more efficient ways of working to be implemented.

4.11 Contractual changes, which account for 15% of the total, captures all efficiencies related to improved procurement methods, creating economies of scale or gaining access to better procurement rates.

4.12 The introduction of new design methods, including standardised products, regional traffic modelling, off-site production, value engineering and process improvement has generated 12% of the total efficiencies in RP1.

Figure 4.4: The largest proportion of efficiencies have come from scheduling of schemes, lean techniques and contractual changes

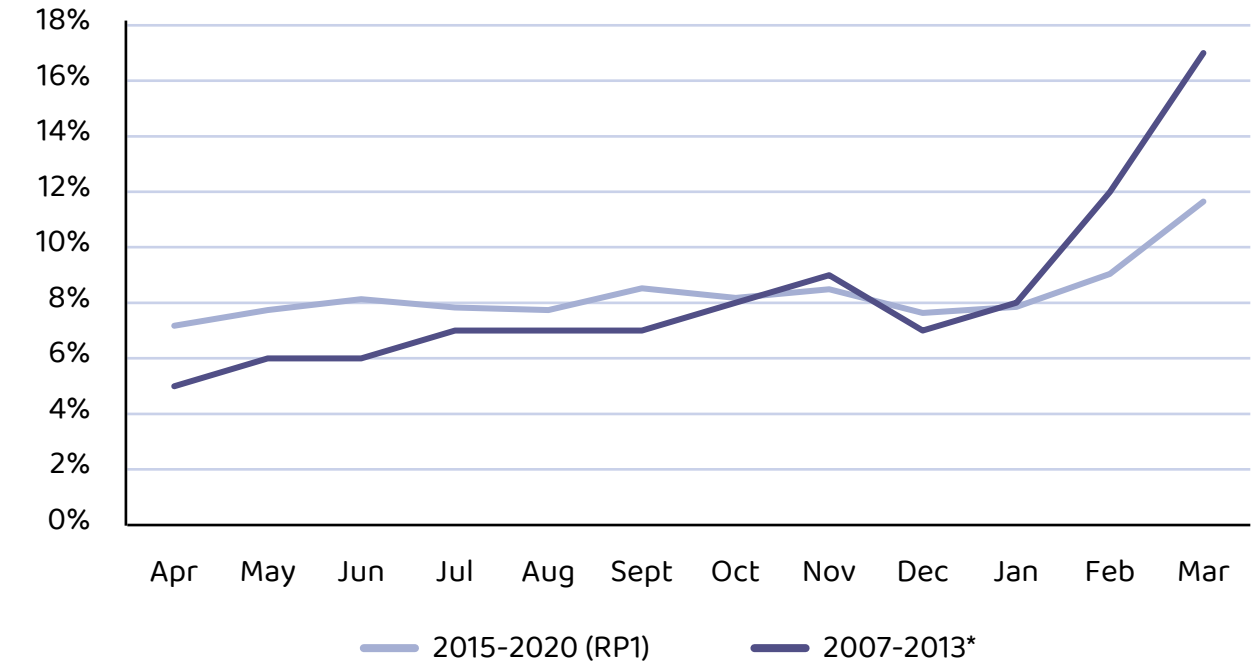
Contribution to efficency by theme (%)



Case study - Impact of roads reform on the efficiency of the spending profile

- One of the drivers for roads reform, which saw the creation of Highways England, was increased long-term certainty of investment on the network and a five year funding allocation.
- The largely annual allocations that were provided to Highways Agency impaired the organisation's ability to plan long term, provide certainty to the supply chain and operate in the most efficient way.
- Figure 4.5 shows the difference in annual average spend profile from 2007-2013, pre-roads reform, and 2015-2020 (RP1).

Figure 4.5: The average annual spend profile has improved in RP1



*Source: DfT's roads reform impact assessment; Figure 5

- Prior to roads reform there was a clear trend where higher levels of expenditure occurred in the final months of the financial year. This was mainly due to uncertain annualised funding creating a culture of asset renewals and many improvement schemes being planned in the first half of the financial year and delivered in the second. This meant that more works were being completed in the winter months where adverse weather can often cause cost increases. This could also have led to inefficient delivery as scheme development may have to be rushed to ensure delivery before year end.
- In comparison, the RP1 spend profile shows a significant improvement, where the spend profile is mostly consistent across the whole year. There is still a small peak in spend for March, however this is no longer to the same extent as was seen before roads reform.

Evidencing efficiency in RP1

4.13 In September 2015, Highways England published its Efficiency & Inflation Monitoring Manual (EIMM). It set out how efficiency would be reported and monitored during RP1. ORR and DfT contributed to the development of the EIMM and gave agreement to the final document.

4.14 The EIMM set out that Highways England should provide evidence from three different sources:

- Primary evidence - Bottom-up: detailed register of efficiency measures and their quantified benefits,
- Supporting evidence - Top-down: movement in unit costs,
- Supporting evidence - Top-down: assessment of performance against the RIS (delivering the RIS1 outcomes/outputs for the post-efficient funding).

4.15 In general during RP1, Highways England has provided good primary evidence of efficiency. However, until recently the quality of supporting evidence has lagged behind. We have continually challenged the company on this, and highlighted it in previous Annual Assessments. In our 2018-19 Annual Assessment, one of our key messages was that "Highways England is delivering more efficiently, but better evidence is needed to support reported levels".

4.16 We recognise that the application of the methodology described in the EIMM has been difficult, in part because of how the EIMM was set-up. There were also challenges because of: significant overspends due to scope change on some schemes; reported underfunding; and changes to RIS1. In addition, Highways England had to develop new data, required for efficiency unit cost models. These factors have informed the development of RIS2 and changes to the EIMM for RP2.

4.17 In September 2019, we appointed consultants to assist us in reviewing supporting evidence (particularly unit cost and 'performance against the RIS' evidence relating to inflation). The findings are reflected in parts of the following sections.

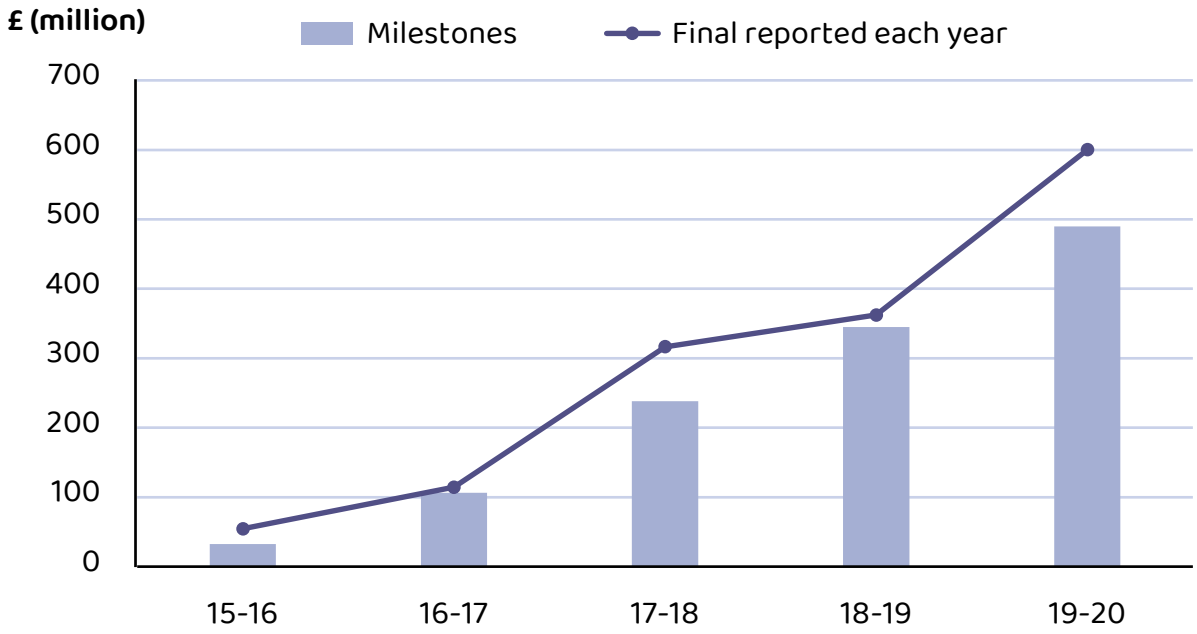
Primary evidence: Bottom-up description of efficiency measures

4.18 The primary evidence of efficiency against the KPI comes from a bottom-up description of measures taken to deliver more efficiently. Highways England has provided evidence of £1.448bn of efficiency from this source in RP1, 19% ahead of the KPI target of £1.212bn.

4.19 At the beginning of the road period, Highways England developed a Capital Efficiency Delivery Plan. This plan identified milestones for reported efficiencies each year. Figure 4.6 shows the efficiency reported each year by the company against these milestones. We can see that in each year of RP1 the milestone for efficiency was exceeded. Given the sharp increase in efficiencies required in the final two years of RP1, Highways England made a conscious decision to focus on over-delivery earlier in RP1 to help mitigate any potential risk. Cumulatively, the five year £1,212m target was exceeded by £236m against primary evidence.

Figure 4.6: Highways England exceeded their efficiency milestones in each year of RP1

Performance against efficiency milestones



4.20 Highways England completes case studies describing what has been done to deliver efficiently and the quantified benefit of those actions. For each case study Highways England undertakes several layers of internal assurance, including internal audit, prior to them being shared with us for final review. The value of efficiency derived from this process is recorded against the KPI, however this is verified using the top-down supporting evidence described in the following two sections. This helps protect against the risk of selecting examples of good practice and ignoring areas of inefficiency.

4.21 During RP1, Highways England has produced over 200 case studies ranging in value from £0.75m (de-minimus threshold) to £40m. We review each case study and via quarterly sessions with the company we sought further clarity and provided challenge on more than half of them.

4.22 When considering the depth of internal assurance applied, in addition to our external scrutiny, we found that Highways England has provided good primary evidence from this source for achievement of the KPI.

Top-down movement of unit costs

4.23 As supporting evidence to the bottom-up evidence from its efficiency register, Highways England has developed unit cost models for its major programmes of capital expenditure. The company has presented evidence of £1,578m of efficiency from this source in RP1. This includes £1,107m as the output from unit cost modelling and £471m of adjustments for items excluded from the models to ensure comparability with the other sources of evidence.

4.24 Whilst the approaches to modelling unit costs have been quite similar across the programmes, renewals and major improvement schemes have presented different challenges.

4.25 For asset renewals, Highways England has produced a model that provides evidence of £556m efficiency in RP1. The company changed its approach to the modelling of unit costs during the road period to address limitations in the approach used in early years which relied heavily on the correct classification of costs/activities by the company's supply chain. The new approach takes into account variances in high-level unit costs by using probability distribution curves. However, it still has limitations and Highways England's internal analytical assurance process found that there were a number of sources of uncertainty with the model and provided an overall amber assurance rating. Therefore we could not have complete confidence in the company's ability to provide a fully accurate picture using this method.

4.26 Within the major improvements portfolio, all programmes use a similar unit cost model to provide evidence of efficiency. This involved analysing the cost of elements of pre-2015 baseline schemes to build an expected pre-efficient cost for each major improvement scheme, based on the composition of those elements and adjusting for scheme type. The project cost is compared to the pre-efficient baseline to determine the efficiency of the scheme. This approach was established and used early in the road period for the Smart Motorway Programme and identified efficiency of £260m. However, it took several years to develop further for modelling unit costs of the more diverse schemes in the Complex Infrastructure Programme (£208m) and the Regional Investment Programme (£84m).

4.27 Highways England's internal analytical assurance process found the approach to be fit for purpose and gave it a green/amber assurance rating. This gave us greater confidence in the suitability of this approach for evidencing efficiency.

4.28 Highways England has done some detailed work in attempting to address the challenges that they have encountered whilst modelling unit costs. However, development of high-quality unit cost data takes time and is built on the experience of the actual costs of completed projects. This has been recognised by the company to the extent that unit cost models will not be used to provide evidence of efficiency in the early years of RP2. We support deferring the use of unit costs for efficiency evidence until there is greater maturity and granularity in the data used.

4.29 In addition to the unit cost models, we have reviewed the £471m of adjustments Highways England has made to ensure comparability with other types of efficiency evidence. These can be split between;

- Renewals (£338m):
    - Whole-life costs (£203m). This results in a reduction of maintenance costs for the asset in future road periods and therefore does not result in a comparable change in unit costs.
    - Oldbury viaduct (£62m). Excluded from the model due to its abnormal scale as a renewals scheme and data not being available until completion.
    - Avoidance of work/reduced outputs (£42m). Either unit costs are not generated, the value is unchanged or the post and pre-efficient costs are not comparable.
    - Change in delivery method (£31m). There is a reduction in the number of units being delivered, but no change to the unit cost.

- Major projects (£91m): Schemes to which unit cost model could not be applied.
- Central & IT (£42m): A combination of whole-life costs not impacting on unit costs and a claim that does impact unit costs, but where no unit cost data was produced.

4.30 Our consultants reviewed Highways England's approach to unit cost modelling and found that it was sensible and that the models provided good coverage. In addition, they reviewed the adjustments made for comparability with the other evidence sources and concluded that it was appropriate that such schemes were excluded.

4.31 On balance, particularly taking into account the internal assurance of the models used and the consultant's findings, we conclude that in this area Highways England has provided reasonable evidence for achievement of the KPI.

Top-down assessment of performance against the RIS1

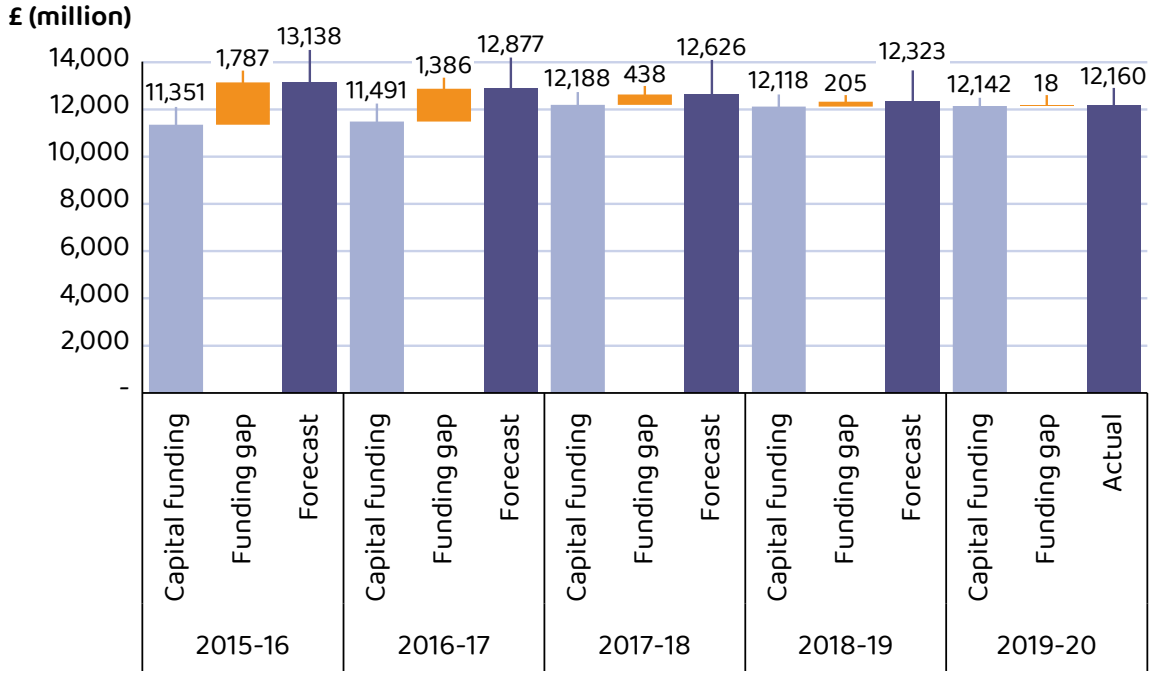
4.32 The second area of supporting evidence is based on whether Highways England has delivered the requirements of RIS1 for its post-efficient funding. Highways England has presented evidence for delivering £1.349bn of efficiency using this source of evidence.

4.33 As Highways England has delivered most of the requirements in the performance specification and investment plan, our focus in this area of evidence has been on considering whether the company has spent within its capital funding settlement.

4.34 Throughout RP1, Highways England has forecast total capital spending in excess of its funding. As the following chart shows, this reduced considerably to £18m by the end of RP1.

Figure 4.7: Reduction in capital funding gap during RP1

Funding, funding gap and forecast/outturn (year-end, £m)



4.35 A net overspend of £18m initially suggests underperformance of this value against the KPI, therefore demonstrating achievement of £1,194m (£1,212m - £18m) efficiency in RP1. However, as we reviewed this area of evidence with Highways England, it was clear that there were a number of factors which either aided or hindered the company's ability to deliver within its funding that had to be taken into consideration. These are discussed in more detail below:

- **Over-programming & major scheme scope reduction (deferral/cancellation)**
  The funding provided for RIS1 was not enough to deliver all of the specified schemes. In common with practice adopted by the Highways Agency, more schemes were programmed than could be delivered for the funding. This was in the expectation of some scheme deferral, or stopping poor value for money schemes. The value of over-programming for RP1 was reported by the National Audit Office (NAO)[14] in 2017 to be £652m. Our monitoring suggests that there has been £781m of costs removed due to schemes that have been deferred or stopped through formal change control. This exceeds the value of over-programming by £129m. This indicates that Highways England has been funded at a greater level than intended, for the portfolio of schemes that were delivered.

- **Inflation**
  Highways England recognises that it has benefited from lower actual inflation than was forecast and built into RIS1 funding levels. Our initial assessment was that the benefit was in excess of £600m. Highways England then made a case for a number of adjustments, giving a benefit value of £275m. Following our challenge, Highways England then modified this to £358m. Our conclusion, having reviewed further evidence from the company and the findings of our consultant (Rebel Group), is that the inflation benefit value is £407m.

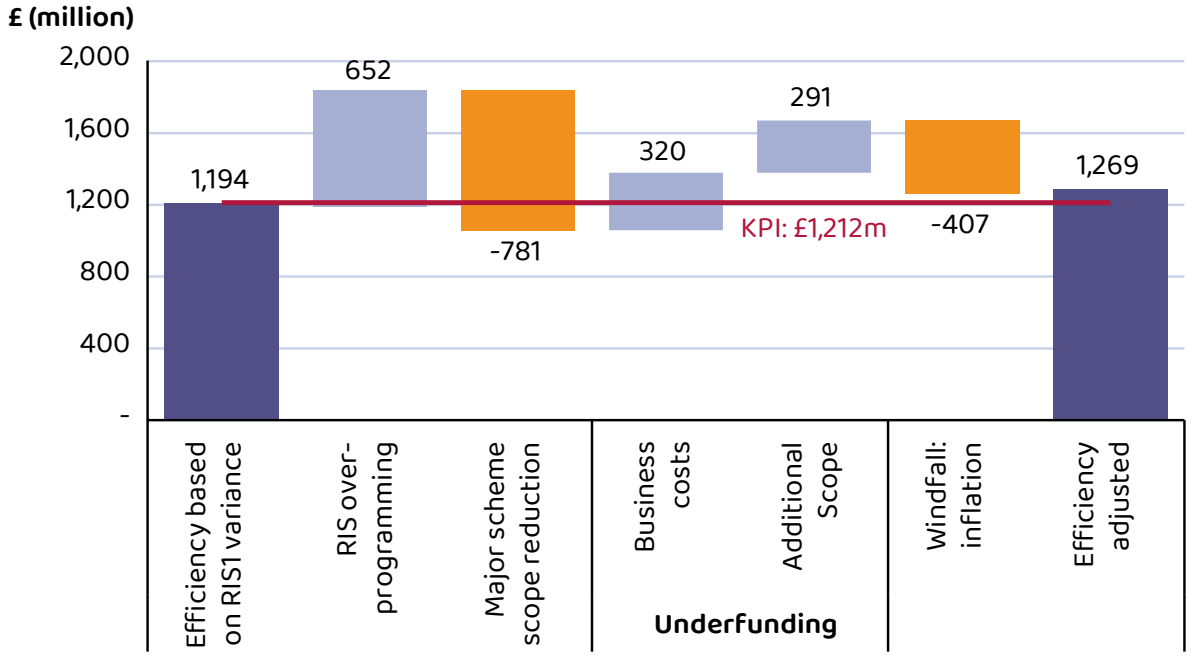
- **Scope change**
  Highways England have argued that they have delivered additional scope beyond the level funded on a number of major improvement schemes. This included £109m for Remotely Operated Temporary Traffic Management Signs (ROTTMS) to improve road worker safety on Smart Motorways and a further £125m attributable to external factors, including stakeholder conditions and client requirements. In total the company requested £342m of adjustments for taking into consideration. Our review found there was reasonable evidence for £291m of adjustments.

- **Unfunded business costs**
  Highways England has made a strong case that it was not funded for some essential expenditure incurred during RP1. This included upgrades to IT systems for monitoring traffic flows and increasing process and system capacity for new portfolio, programme and customer service functions required with the scaling up of the business. This is supported by both the findings of the NAO review in 2017 and in our recognition of the future need for this expenditure as part of our review of Highways England's RIS2 draft Strategic Business Plan. We challenged the company's initial claim for £545m of unfunded business costs and found that there was reasonable evidence for £320m.

[14] https://www.nao.org.uk/report/progress-with-the-road-investment-strategy/

Figure 4.8: Efficiency evidence based on delivery of the RIS supports achievement of the KPI

Efficiency based on RIS delivery adjusted for changes in scope, underfunding and inflation (£m)



4.36 The scale of the adjustments made in this category of evidence are clearly significant and we have spent considerable time assessing their validity. We have also drawn on information from an external study by the NAO, ORR commissioned studies from Ankura and from Rebel Group looking specifically at this evidence. We have given weight to Highways England's relative immaturity as a company and the rapid development of RIS1, e.g. impacting the (then) Highways Agency's ability to predict future costs for the new company.

4.37 Our review of this area of evidence has identified circa £500m of underfunding or other mitigation claimed by the company which is not fully supported by the evidence provided, in our view. We have taken this into account and balanced underfunding which is supported by evidence against the 'windfall' inflation benefit and major scheme scope reduction in RIS1 (beyond the over-programming level). We conclude that Highways England has provided reasonable evidence of achievement of the KPI in this area.

Conclusion: Balanced view of efficiency evidence in RIS1

4.38 Highways England has demonstrated that it has achieved the efficiency KPI through bottom-up evidence of efficiency initiatives and top-down evidence from movement in unit costs and delivery of the RIS1.

4.39 The quality of evidence across the three areas varies. The strongest area of evidence (on which Highways England's reported efficiency is based) comes from the bottom-up case-studies. Whilst there is some uncertainty in the supporting top-down evidence, our view is that the quality is sufficient to support the achievement of the KPI.

5. Priorities for our monitoring of RIS2

5.1 Road Period 2 started in April 2020, and ORR will now monitor Highways England's performance against the new set of targets set out for RIS2. It is a more mature organisation than at the start of RP1, so more will be expected of it. However, we are also mindful that the new road period has begun in extraordinary circumstances, due to the coronavirus (COVID-19) pandemic.

5.2 Our approach to monitoring Highways England during the pandemic is set out in more detail in a letter that we sent to the company, and shared with DfT. In summary, our approach will be pragmatic and flexible, and take account of the changing circumstances, while still holding Highways England to account for delivering efficiently and effectively.

5.3 Across RP1, we have worked with the company to identify a number of areas which we require Highways England to develop and improve, in order to provide us with better monitoring outputs. Highways England has produced several key documents that demonstrate its approach to delivering RIS2.

5.4 We scrutinised Highways England's plans for RIS2 through a robust process of detailed review, challenge workshops, written questions / responses and deep-dive sampling of the company's plans. We complemented this with a programme of benchmarking and by assessing the efficiency improvements the company might realise through increased capability in areas such as procurement, asset management and portfolio management.

5.5 Highways England's plans had good supporting evidence and represented a step-change in quality compared to plans produced for the first road period. This reflects the company's growing maturity, increasing safety and customer focus, and improving portfolio management capability.

5.6 On safety, our monitoring of Highways England's key performance indicator is likely to be affected by the coronavirus pandemic. Reduced levels of traffic at the end of RP1, and beginning of RP2, will make it difficult to evaluate trends for the number of people killed or seriously injured. It is therefore important that the company continues to focus on its longer term goal that, by 2040, nobody is harmed while travelling or working on the strategic road network. In RP2, we will also monitor Highways England's delivery of the actions set out in DfT's action plan to improve safety on smart motorways.

5.7 The company should also build on the progress it has already made to develop its customer service capability – for example, showing that it is acting on results from the new Strategic Road User Survey.

5.8 The RIS2 enhancement portfolio has a number of challenges including: the development and delivery of 46 projects; inclusive of three nationally important complex projects; and 32 schemes already in construction at the end of RP1. The projects being undertaken should be less affected by the issues faced in RP1 as a result of lessons learnt and Highways England's improved capability. Over the next five years, we expect an evenly distributed delivery profile and a much more stable portfolio with limited changes occurring, given the greater opportunity Highways England has had to develop and plan this work. Highways England should ensure that the enhancement programme is sustainable in delivery terms and that disruption to the traveling public is mitigated. ORR will closely monitor Highways England to ensure that it is doing everything it reasonably can to deliver in an efficient manner.

5.9 During RP1, volumes of planned asset renewals within Highways England's annual delivery plans did not indicate which assets were at the highest risk of failure and therefore where renewal need was greatest. Year-end reporting provided limited visibility of the relationship between those assets renewed and those assets included within plans. In RP2, we will be looking for improved assurance that assets renewed, at a regional level, were the right ones and therefore those included within the original plans. It is important that the pursuit of short-term performance goals are not disproportionately prioritised over maintaining the long-term condition of the asset base.

5.10 Towards the end of RP1, Highway England developed a statement for reporting inspections and maintenance activity. This includes reporting performance for fixing defects like potholes and for keeping the network clear of litter. The improved reporting has been enabled in-part by the company updating the risk-based approach to its regular safety inspections and assessment of defect priority. In RP2, we are keen to gain assurance that the approach to, and appreciation of, risk is consistent across the entire network. This will ensure that robust comparisons in performance between regions can be made.

5.11 Regarding efficiency performance, we have worked with Highways England and DfT to develop and agree a revised Efficiency and Inflation Monitoring Manual. It reflects a new approach for reporting and monitoring against the efficiency KPI in RP2. This recognises both the growing maturity of Highways England and that the major enhancement portfolio contains schemes at a more advanced project lifecycle stage, when compared to the start of RP1. The approach places greater emphasis on top-down efficiency evidence, in contrast to RP1 where bottom-up evidence provided the primary evidence.

5.12 Early in RP2, we plan to set out how we will approach our role in the RIS3 planning process. The core aspects of our role are likely to stay the same. We will advise government on the levels of challenge, deliverability and efficiency in RIS3 plans; and monitor how Highways England meets its licence obligations that relate to setting a new RIS. We will also make sure that we learn the lessons from the RIS2 process and continue to evolve our approach to our role as appropriate.

Annex A: Performance against outcome areas

Outcome: Making the network safer

Key performance indicator: Highways England must achieve an ongoing reduction in network KSI (killed or seriously injured) to support a 40%+ decrease by the end of 2020 against the 2005-09 average baseline

RP1 assessment: Final data not yet available

Since 2018, the Department for Transport has published adjusted road safety statistics that take account of changes in how police forces record road casualty data. Highways England's performance against its key performance indicator is measured using this adjusted series. Further details relating to the adjusted casualty statistics can be found on the Department for Transport website[15].

At the time of publication, the latest available road casualty figures are for 2018. The Department for Transport expects to publish 2019 figures later in 2020; the casualty figures for 2020 are expected to be published in summer 2021.

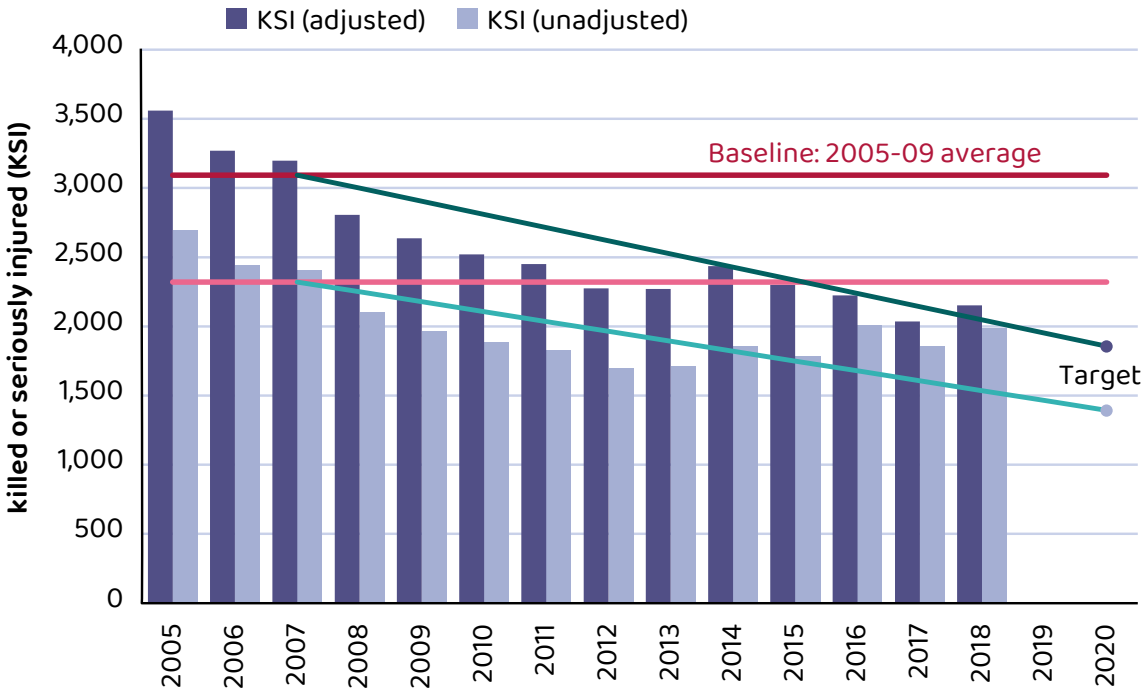
Figure A1 compares adjusted and unadjusted KSIs on the strategic road network up to 2018. The adjusted figures show that 2,152 people were killed or seriously injured on the strategic road network in 2018, which is 165 higher than the 1,987 reported in the unadjusted data.

Reported KSIs for each year between 2005 and 2018 have increased as a result of the adjustment. The baseline period for the RIS1 target (2005 to 2009) is subject to larger increases than more recent years. This is because, as more police forces move to new systems for recording road casualty data, less adjustment to the series is required.

[15] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/820588/severity-reporting-methodology-final-report.odt

Figure A1: Adjustments to road casualty statistics resulted in an increase in reported KSIs - particularly in earlier years

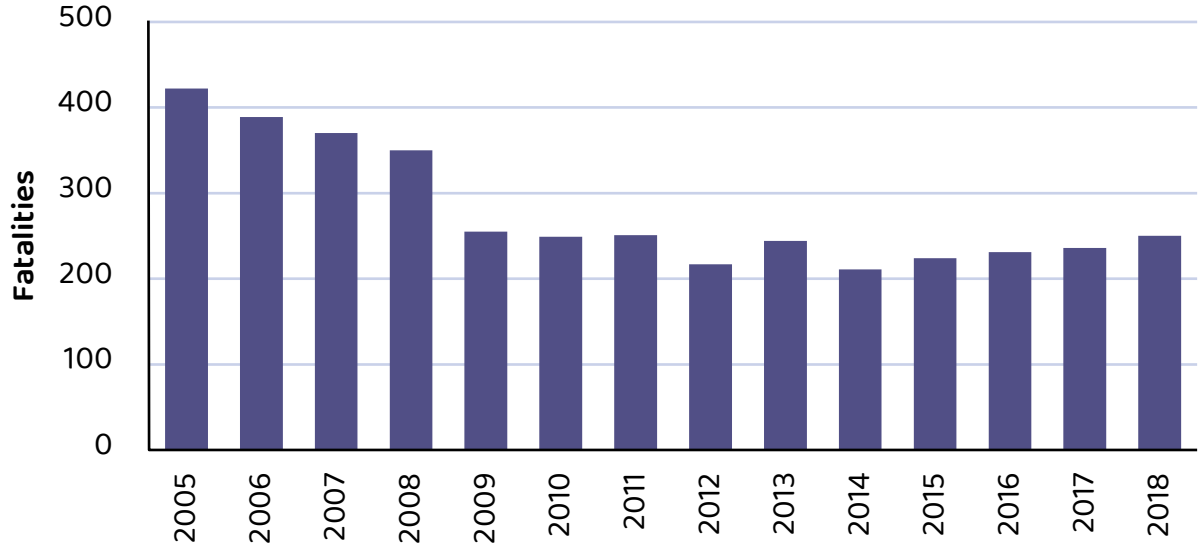
KSIs on the strategic road network, adjusted and unadjusted figures, 2005-2018



The number of fatalities reported each year is unaffected by the adjustment. In 2018 there were 250 deaths on the strategic road network. This is 12% higher than in 2015 (the year Highways England was created), when there were 224 fatalities. Since 2010, the trend for fatalities occurring on the strategic road network has been broadly flat, which is in-line with the trend on all roads in Great Britain.

Figure A2: The trend for fatalities on the strategic road network has been flat since 2010

Fatalities on the strategic road network, 2005-2018



Performance indicators

Safety star rating

Safety star ratings for the strategic road network use road inspection data to provide an objective measure of the level of safety of a road, based on the systems used for the International Road Assessment Programme (iRAP). Highways England was set a target to achieve 90% of travel on roads given a 3-star rating, or above, by the end of 2020. It achieved this, with an estimated 95% of travel on roads rated at least 3-star in 2019. In RP2, Highways England will set a new baseline for the safety star rating of the network in 2020, using a new 5-star model. Work to set the baseline is due to complete by summer 2021.

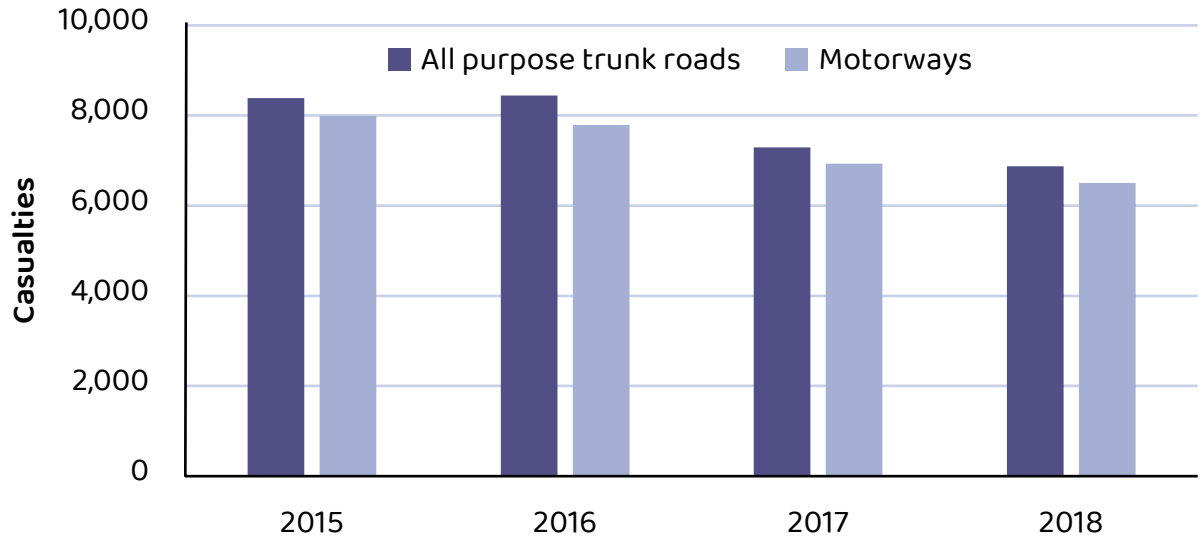
Casualty number for all-purpose trunk roads

The Department for Transport's road casualty statistics are also used to monitor the total number of casualties, of all severity, on Highways England's A-road network (all-purpose trunk roads). Unlike KSIs, these figures are unaffected by revisions made to road casualty data by the Department for Transport. This is because the adjustment picks up changes in the relative proportion of minor and serious injuries over time.

In 2018, there were 6,873 casualties on Highways England's all-purpose trunk roads. This is 18% less than recorded in 2015 (the year Highways England was created).

Figure A3: Casualties have decreased on the all-purpose trunk road and motorway networks since 2015

Casualties on the all-purpose trunk road and motorway networks, 2015-2018

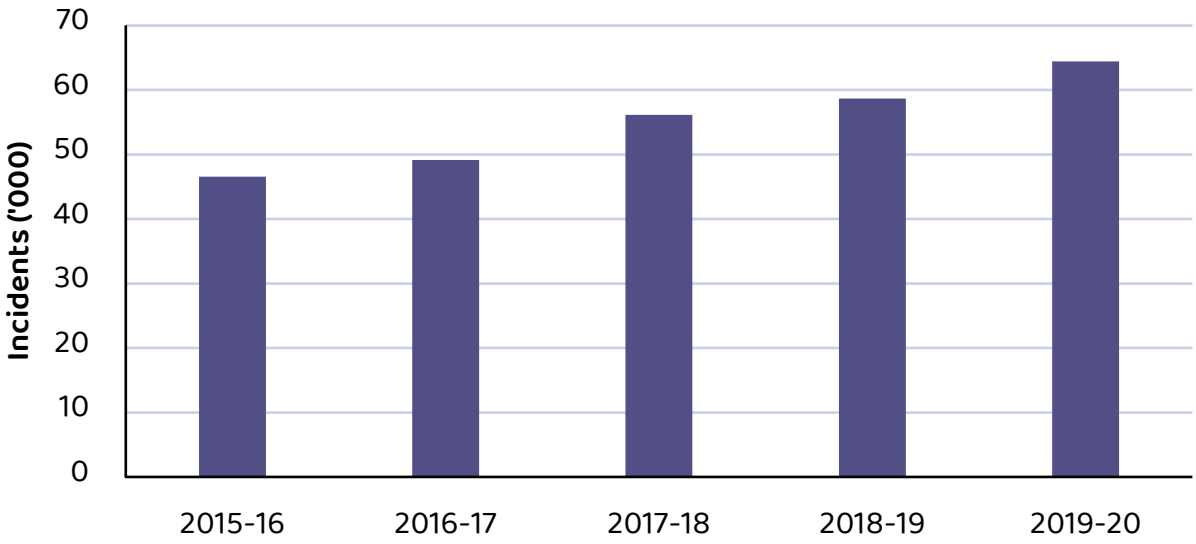


Incident number on motorways

In 2019-20, there were 64,408 incidents recorded on Highways England's motorway network. The number of incidents has increased each year of RP1, in 2019-20 there were 38% more than in 2015-16.

Figure A4: Incidents on the motorway network have increased over RP1

Incidents on the motorway network, RP1



The increase in incidents coincides with a 19% decrease in the number of casualties on the motorway network between 2015 and 2018 (shown in figure A3).

The three most common contributory factors to casualties on the motorway network in 2018 were 'loss of control', 'failure to look properly', and 'failure to judge other person's path or speed'. This is consistent with the most common contributory factors on the all- purpose trunk road network.

Accident frequency rates

Highways England reports accident frequency rates for workers in its supply chain, as well as internal staff working in the operations directorate – which includes the traffic officer service. This is measured as the ratio of RIDDOR (Reporting of Injuries, Diseases and Dangerous Occurrences Regulation) accidents per 100,000 hours worked.

Both measures have shown significant improvement over RP1. At the end of 2019-20, the accident frequency rate for staff in the operations directorate was 0.02 (compared to 0.77 in 2015-16), and for the supply chain it was 0.07 (compared to 0.15 in 2015-16). This improvement follows significant focus from Highways England on delivering safety improvements for workers, which were set out in the company's 5-year health and safety action plan.

Figure A5: Accident frequency rates have decreased over RP1

Accident frequency rates for Highways England's supply chain and operations directoate in RP1

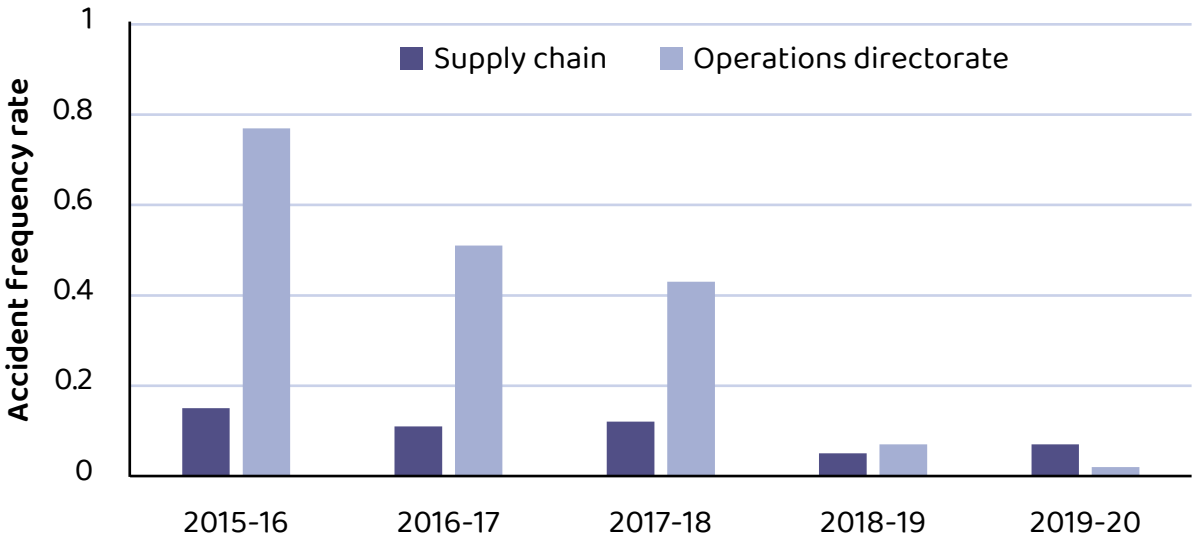


Image courtesy of Highways England

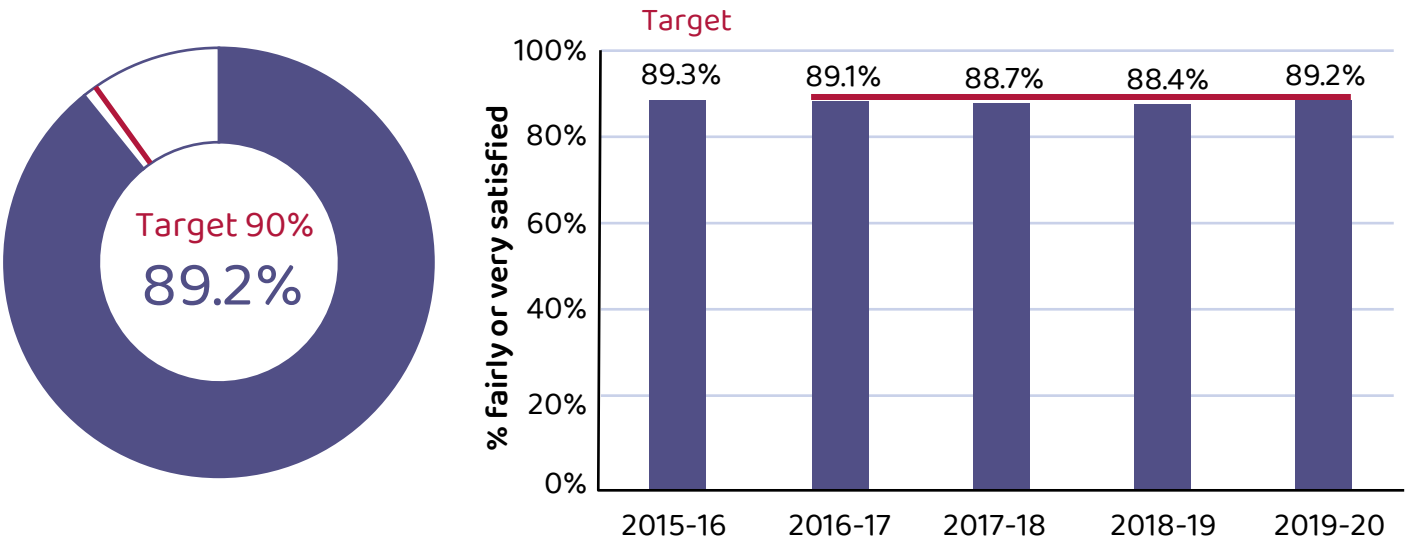
Outcome: Improving user satisfaction

Key performance indicator: Highways England must achieve a score of 90% of respondents who are very or fairly satisfied by 31 March 2017 and then maintain or improve it

RP1 assessment: Target missed

Figure A6: User satisfaction with the strategic road network

Satisfaction improved in the last year of the road period, narrowly missing the 90% target



Highways England's satisfaction scores are calculated from the National Road Users Satisfaction Survey (NRUSS), which is run by Transport Focus. The overall satisfaction measure was 89.2% in 2019-20, below the target of 90% but higher than the 88.4% recorded in 2018-19.

Performance indicators

Overall satisfaction with motorways was lower than for all-purpose trunk roads throughout RP1

2019-20

Motorway **88.3**

% of respondents that were fairly or very satisfied

2019-20

All purpose trunk roads **90.2**

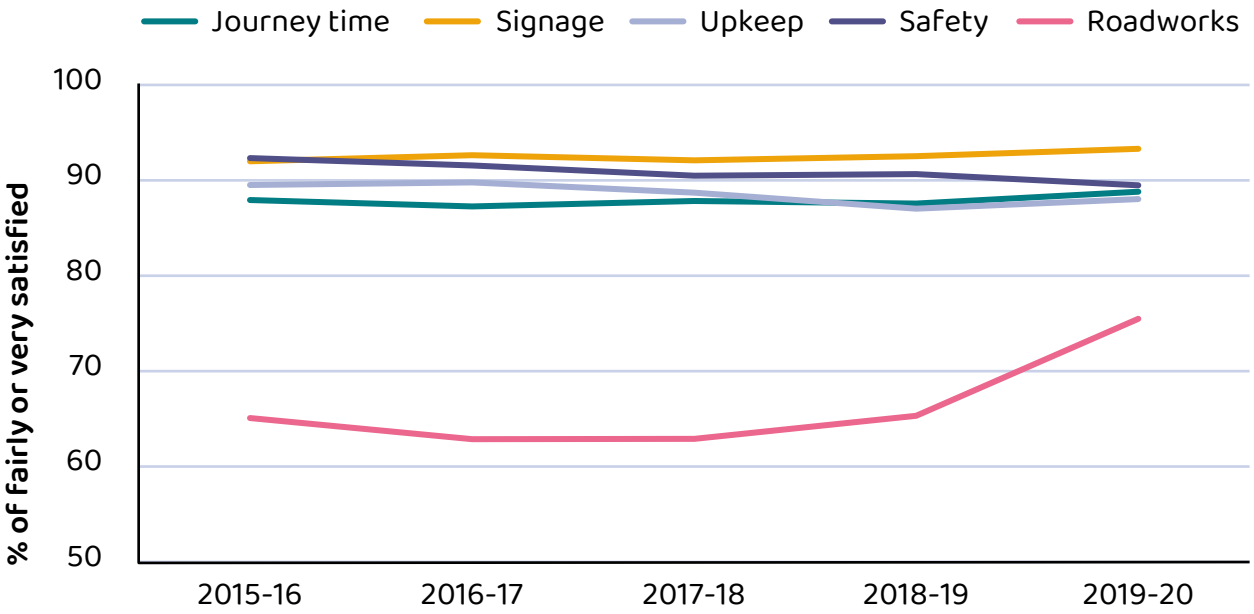
% of respondents that were fairly or very satisfied

Satisfaction on motorways decreased by 0.8 percentage points when compared to the start of RP1, but increased by 0.5 percentage points to 88.3% when compared with 2018-19. Satisfaction with all-purpose trunk roads at the end of RP1 was 90.2%, this is 0.7 percentage points higher than the start of RP1 and 1.2 percentage points higher than 2018-19.

Satisfaction with the journey elements in NRUSS: The NRUSS asks respondents about their satisfaction with five elements of their most recent trip on the strategic road network: journey times; roadworks management; general upkeep; signage; and safety. Highways England's focus on road user satisfaction with roadworks appears to have been effective in increasing satisfaction scores. Satisfaction with roadworks continued to improve into the last year of RP1, increasing by 10.4 percentage points to 75.5% when compared to 2015-16. In contrast, satisfaction with safety decreased by 2.9 percentage points to 89.5% in the same period.

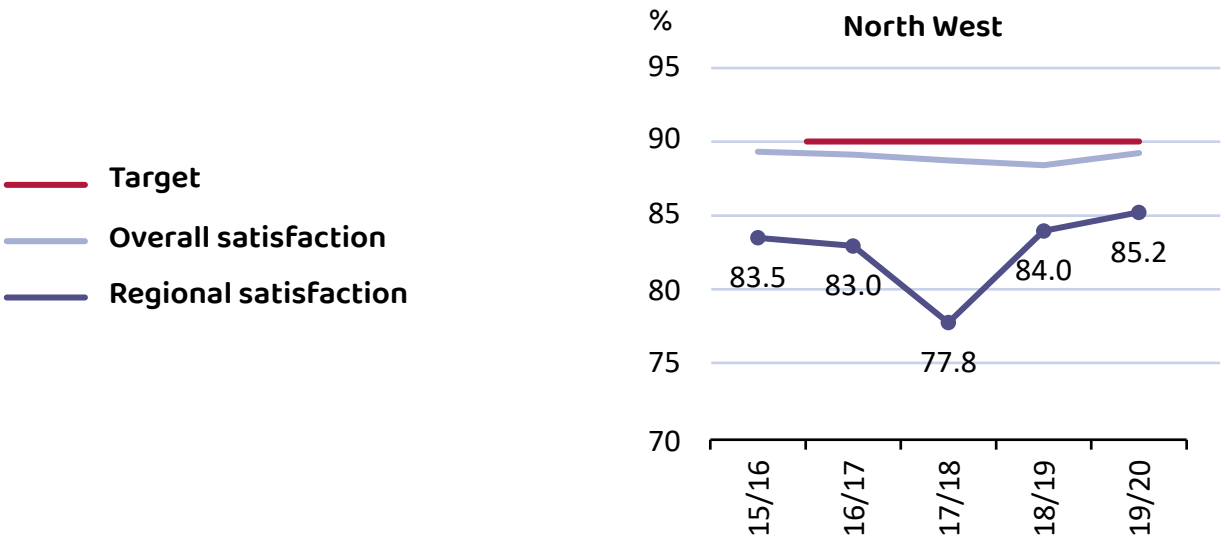
Figure A7: Satisfaction with roadworks increased in the last year of RP1, but still ranks lower than other components

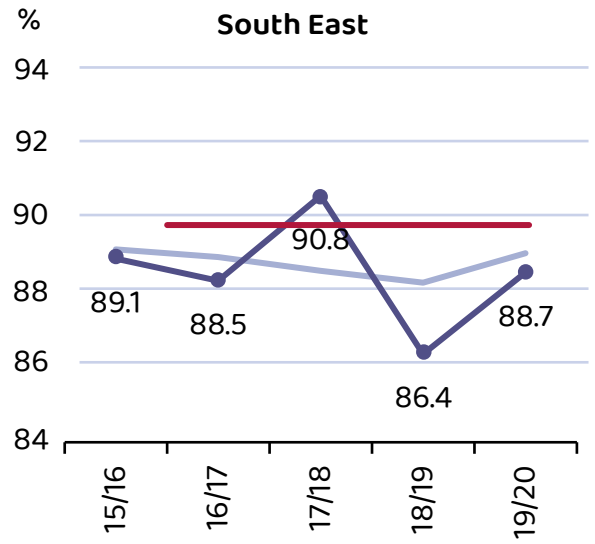
Satisfaction with different components of the journey in RP1



Yorkshire & the North East, the North West and the Midlands had higher levels of satisfaction at the end of the road period, when compared to 2015-16. All other regions saw satisfaction levels decrease. Overall satisfaction in the Yorkshire & the North East region rose from 86.1% at the start of the road period to 92.6% in 2019-20, the highest score of all regions in 2019-20. The North West region consistently underperformed against other regions but ended the road period at 85.2%, 1.7 percentage points above its 2015-16 score of 83.5%.

Figure A8: Over the road period, user satisfaction scores improved in Yorkshire and the North East while scores declined in the South West and East regions.




South East
%
94
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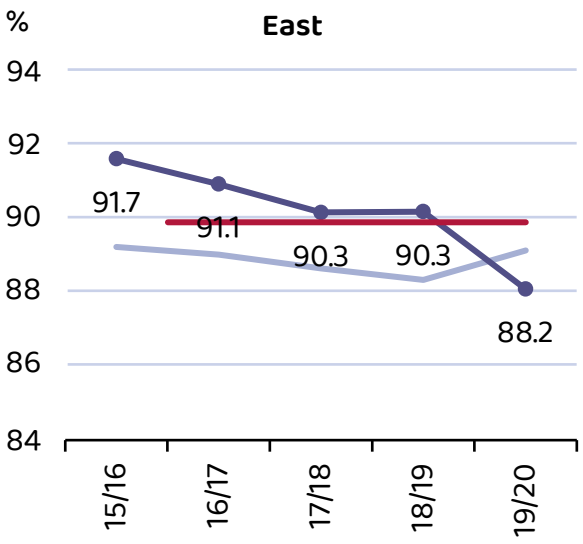
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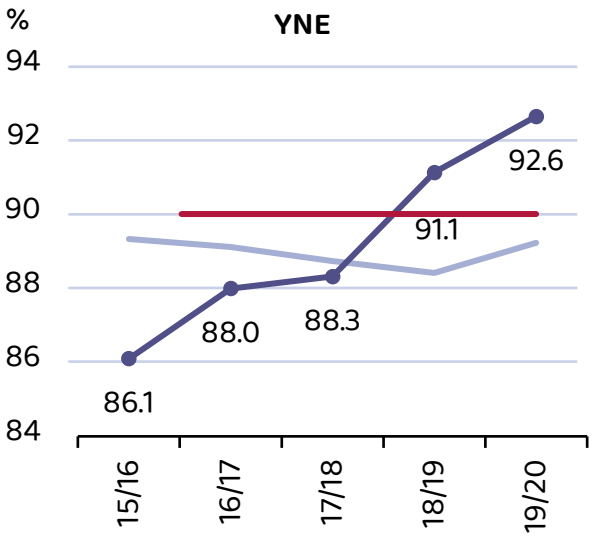
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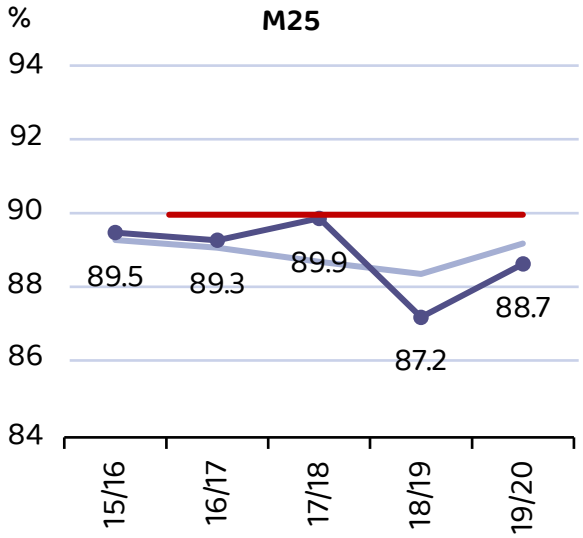
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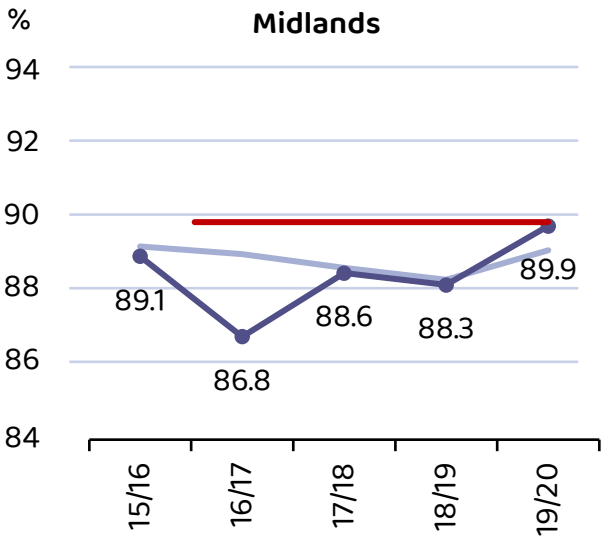
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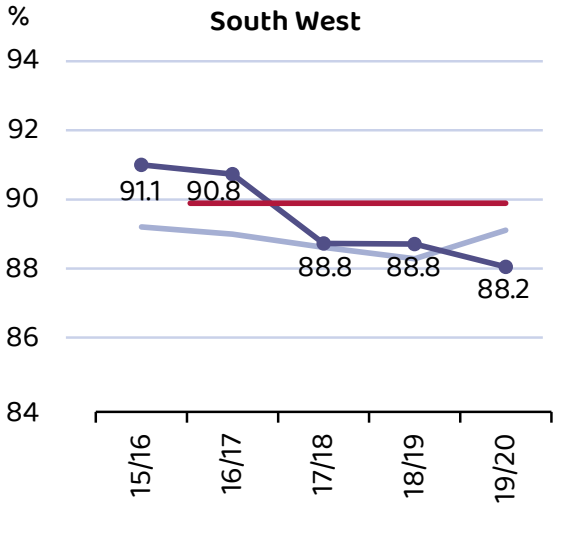
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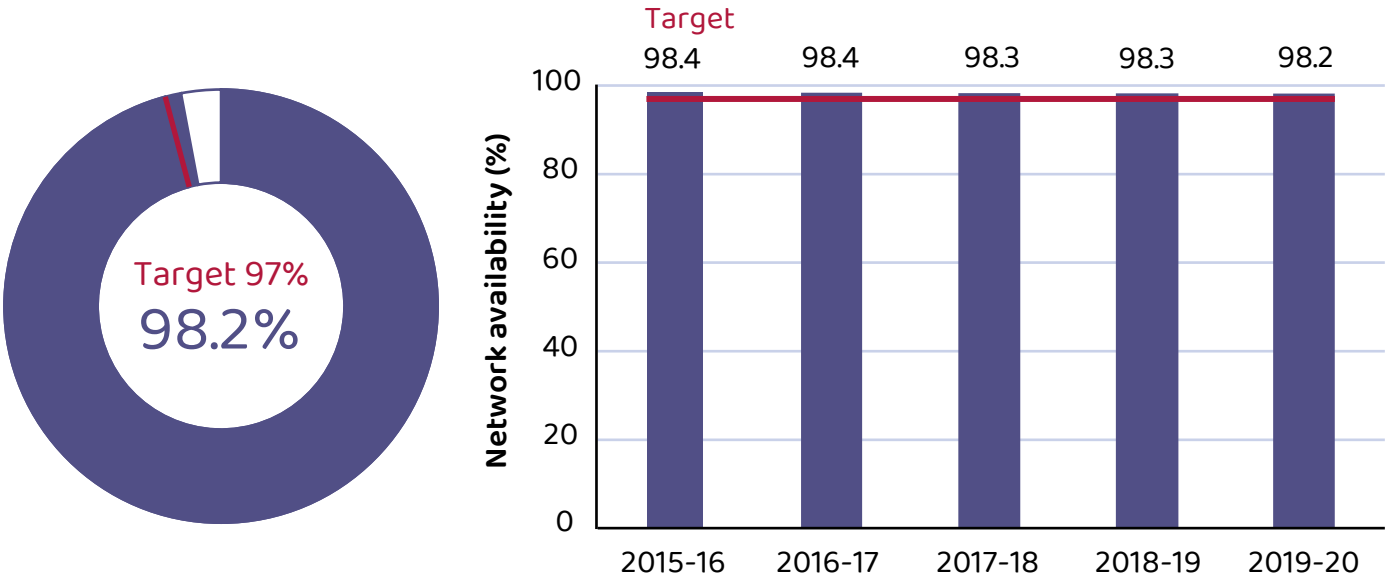
Outcome: Supporting the smooth flow of traffic

Key performance indicator: Highways England must maximise lane availability so that it does not fall below 97% in any rolling year

RP1 assessment: Target met

Figure A9: Highways England achieved its target of maintaining lane availability above 97% throughout RP1.

Lane availability in 2019-20, and for individual years in RP1



Network availability measures the percentage of road lanes that are available to traffic as a percentage of the total road lanes on the network. Performance is calculated over a rolling year.

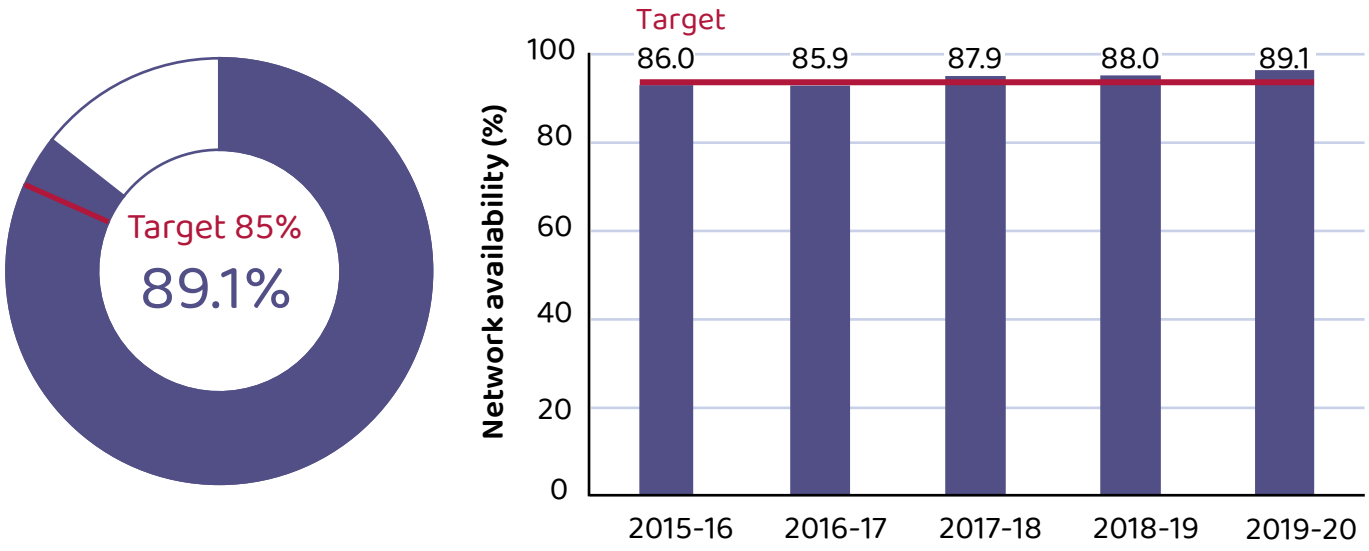
Highways England has consistently met its target of achieving at least 97% availability throughout RP1. In 2019-20, lane availability was 98.2%.

Key performance indicator: Highways England must clear at least 85% of incidents on motorways within one hour

RP1 assessment: Target met

Figure A10: Highways England achieved its target of clearing at least 85% of incidents on motorways within one hour throughout RP1.

Incident clearance in 2019-20, and for individual years in RP1



Highways England's RP1 incident clearance target was to clear at least 85% of motorway incidents within one hour. The company met this target throughout the road period, and in 2019-20 it cleared 89.1% of motorway incidents within one hour.

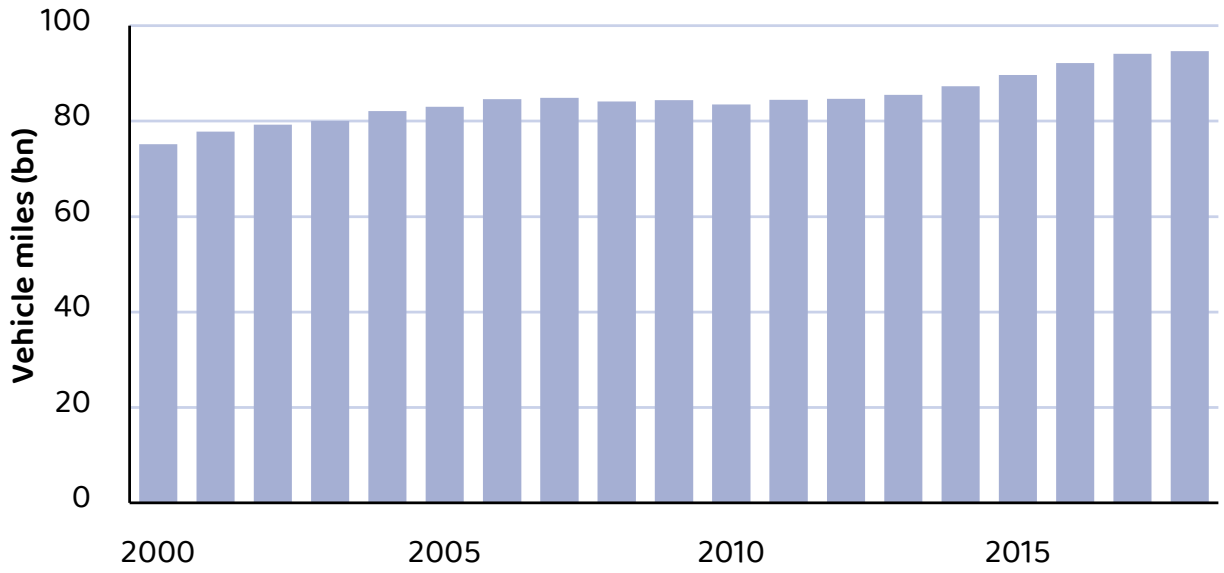
Performance indicators

Traffic on the strategic road network

Traffic estimates for the strategic road network are produced by the Department for Transport. The latest available figures[16] show that 94.7bn vehicle miles were travelled on the strategic road network in 2018. This is the highest volume recorded to date, and 5.6% more than in 2015, at the start of RP1. Traffic growth on the strategic road network has slowed to under 1% in recent years. As a result of the coronavirus pandemic, it is possible that significant reductions in traffic will be recorded in 2020. This will have a relatively minor impact on RP1, and is expected to mainly affect the network during RP2.

Figure A11: In 2018, traffic on the strategic road network was at record levels.

Traffic on the strategic road network, 2000 to 2018



Planning time index

The planning time index is designed to provide an indication of the additional time that road users should allow for their journey to arrive on time 19 times out of 20. It is calculated by taking the ratio of the 95th percentile journey time to the free flow journey time. In 2019-20, the planning time index was 1.66, which is the same as reported at the start of RP1.

Acceptable journeys

Acceptable journeys are measured by the percentage of journeys that are above 75% of the free flow speed. In 2019-20, 82.6% of journeys were above this threshold. This is one percentage point lower than in 2015-16, when 83.6% of journeys were above 75% of the free flow speed.

Average speed

In 2019-20, the average speed for all journeys on the strategic road network was 58.9mph. This is 0.4mph lower than in 2015-16, when it was 59.3mph.

[16] https://www.gov.uk/government/collections/road-traffic-statistics

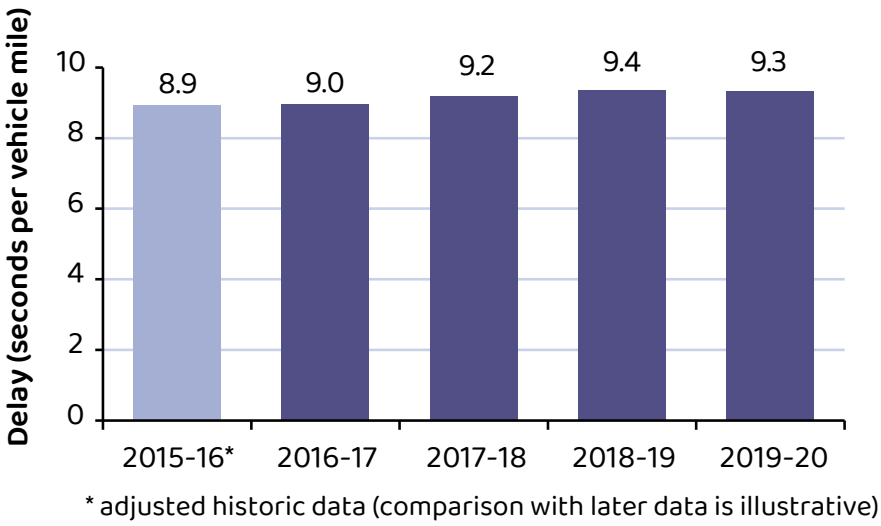
Outcome: Encouraging economic growth

Key performance indicator: Highways England must report on average delay – time lost per vehicle mile

RP1 assessment: No target set

Figure A12: Average delay on the strategic road network increased over RP1, to 9.3 seconds per vehicle mile.

Average delay in 2019-20, and for individual years in RP1



* adjusted historic data (comparison with later data is illustrative)

Highways England's contribution to supporting economic growth is measured by average delay on the strategic road network.

At the end of RP1, average delay was 9.3 seconds per vehicle mile This has increased throughout the road period, up from 8.9 seconds per vehicle mile in 2015-16. This has coincided with increased traffic on the network and Highways England undertaking more improvement work as part of its investment programme.

The small reduction in average delay between 2018-19 and 2019-20 is probably a result of lower levels of traffic in March 2020 due to the coronavirus pandemic. Average delay in the rolling year to February 2020 (before travel restrictions were introduced) was 9.5 seconds per vehicle mile.

Performance indicators

Average delay for gateway routes

Gateway routes are a subset of the strategic road network, comprising key connections linking cities and industry with the busiest ports, airports, and rail freight services. Average delay on these routes at the end of RP1 was 8.6 seconds per vehicle mile. This measure has increased over the road period (from 8.1 seconds per vehicle mile in 2015-16), which is in-line with average delay on the full network. It also records a reduction in average delay between 2018-19 (9 seconds per vehicle mile) and 2019-20, which is probably a result of coronavirus pandemic related travel restrictions.

Responding to formal planning applications

In 2019-20, Highways England responded to 99.9% of planning applications within 21 days. The company has consistently met this target throughout RP1.

Spend on small and medium sized enterprises (SMEs)

Highways England is required to support the government target to achieve 25% spend through SMEs. In 2019-20, Highways England estimates that the proportion of its expenditure on goods and services from SMEs was 29.9%.

Outcome: Delivering better environmental outcomes

Key performance indicator: Highways England must mitigate at least 1,150 noise important areas over the first road period

RP1 assessment: Target met

Figure A13: Highways England achieved its target to mitigate 1,150 noise important areas in RP1

Highways England mitigated 1,174 noise important areas in RP1. This is 24 more than its target of 1,150. The majority of mitigations were delivered through Highways England's noise insulation programme, which offers to install double glazing to noise affected properties at no additional cost to the homeowner.

Key performance indicator: Highways England must publish a Biodiversity Action Plan by 30 June 2015 and report annually on how it has delivered against the plan

RP1 assessment: Target met

Highways England published its Biodiversity Action Plan in the first year of RP1, and has subsequently delivered the majority of commitments set out in the plan. Key achievements in the road period have included:

- Met its commitment to deliver 40 management plans for sites of special scientific interest (SSSIs) on its estate.
- Increased the number of SSSIs in favourable or recovering condition.
- Developed and trialled a new biodiversity metric which will be used to measure the company's performance in RP2.

Performance indicators

Air quality pilot studies

Highways England completed 10 air quality studies in RP1, and published the conclusions from these studies on its website.

Carbon dioxide (Highways England's activities)

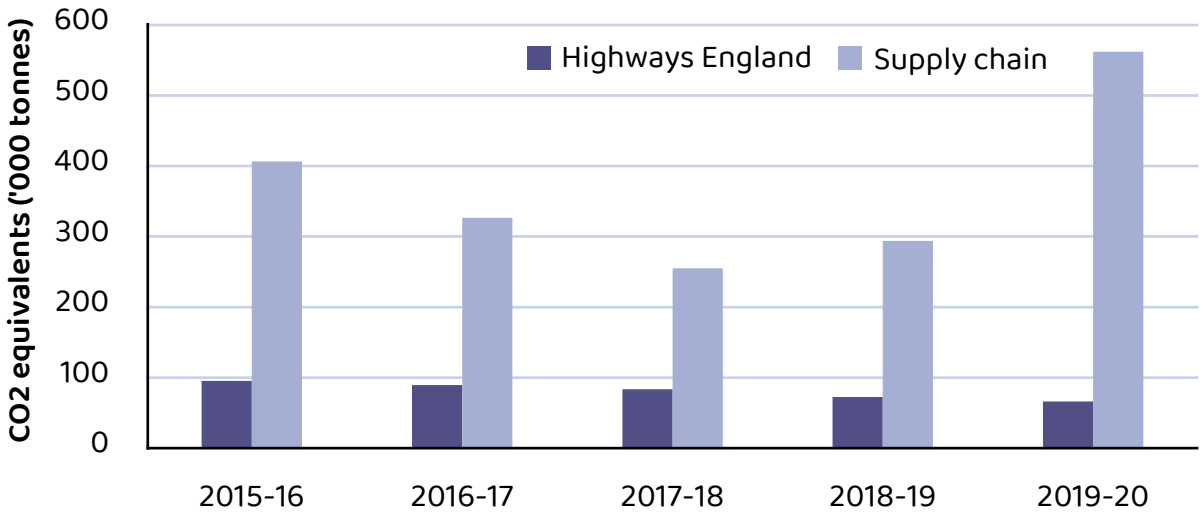
Highways England reported emissions of 66,046 tonnes of carbon dioxide equivalents from the company's activities in 2019-20. This is a 31% reduction from 2015-16, the first year of RP1.

Carbon dioxide (Highways England's supply chain)

In 2019-20, Highways England reported 563,847 tonnes of carbon dioxide equivalents emitted by the company's supply chain. This is 38% higher than reported in 2015-16. The large increase is a result of Highways England collecting more complete emission data from its supply chain at the end of RP1 than it has done previously.

Figure A14: Highways England's CO2 emissions decreased in RP1; reported supply chain emissions increased

CO2 emissions for Highways England and supply chain in RP1



Number of flooding hotspots and culverts mitigated

In RP1, Highways England mitigated 248 flooding hotspots, and 12 culverts considered to be at risk of flooding.

Number of outfalls and soakaways mitigated

In RP1, Highways England mitigated 30 outfalls that posed a risk to pollution of surface water. No soakaways were reported as mitigated during the road period.

Image courtesy of Highways England

Outcome: Helping cyclists, walkers and other vulnerable users

Key performance indicator: Highways England must report on the number of new and upgraded crossings

RP1 assessment: No target set

Figure A15: Number of new and upgraded crossings delivered in RP1

211 new and 227 upgraded crossings were delivered in RP1.

Highways England has delivered 211 new, and 227 upgraded, crossings for walkers, cyclists and other vulnerable users in RP1.

Performance indicators

Identification and delivery of the annual cycling programme

Highways England delivered 160 cycling schemes in RP1. This is 10 more than the 150 that the company originally committed to deliver in the road period.

Vulnerable user casualties

The latest available road casualty data is for 2018. Figures for 2015 to 2018 are shown below. These show a reduction in the number of casualties across all categories of vulnerable user.

Figure A16: Vulnerable road user casualties on the strategic road network (all severities), 2015 to 2018

	2015	2016	2017	2018
Motorcyclists	849	864	760	785
Pedal cyclists	153	152	137	103
Pedestrians	158	154	153	148
Equestrians	0	0	0	0

Outcome: Achieving efficient delivery

Key performance indicator: Highways England must deliver capital expenditure savings of at least £1.2bn over the first road period.

RP1 assessment: Target met

In 2019-20 Highways England reported £600.1m of new achieved efficiencies, bringing the cumulative reported efficiency for Road Period 1 (RP1) to £1,448m. This value exceeds the KPI target of £1,212m by £236m. The £600.1m reported this year is also £111m (23%) ahead of the company's internal capital efficiency delivery milestone for 2019-20.

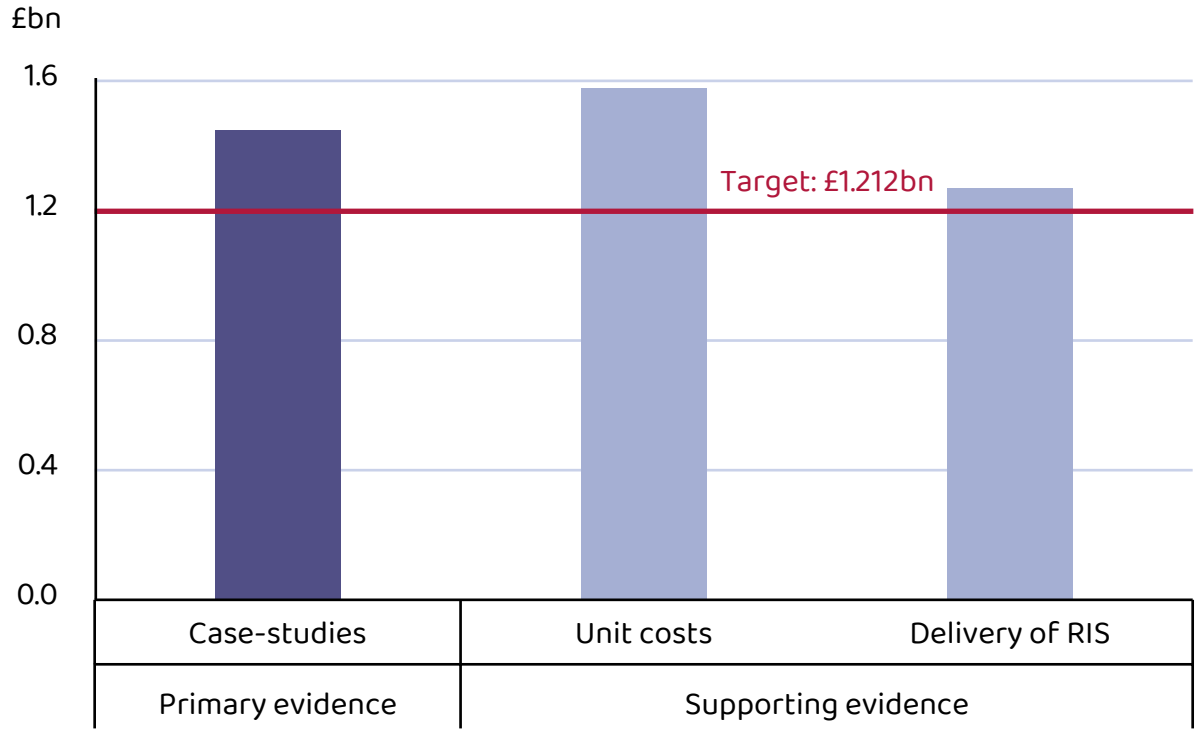
Highways England's Efficiency and Inflation Monitoring Manual (EIMM) sets out how efficiency is reported and monitored in RP1. There are three components to our assessment of Highways England's efficiency performance. These are:

- Primary evidence from efficiency case-studies;
- Supporting evidence from unit cost modelling; and
- Supporting evidence from delivery of the RIS (for post-efficient funding).

The evidence presented by the company in each of these areas supports achievement of the KPI.

Figure A17: Efficiency evidence supports achievement of the efficiency KPI

Primary and supporting evidence of efficiency in RP1 from three sources (£bn)



Detail about our full assessment of these three areas of evidence can be found in Chapter 4 of this report.

Performance indicators

We monitor Highways England's performance in the construction phase of major improvement scheme delivery using two commonly used earned value measures:

Cost performance index (CPI) - is a ratio of budgeted cost of work performed to date against actual cost to date.

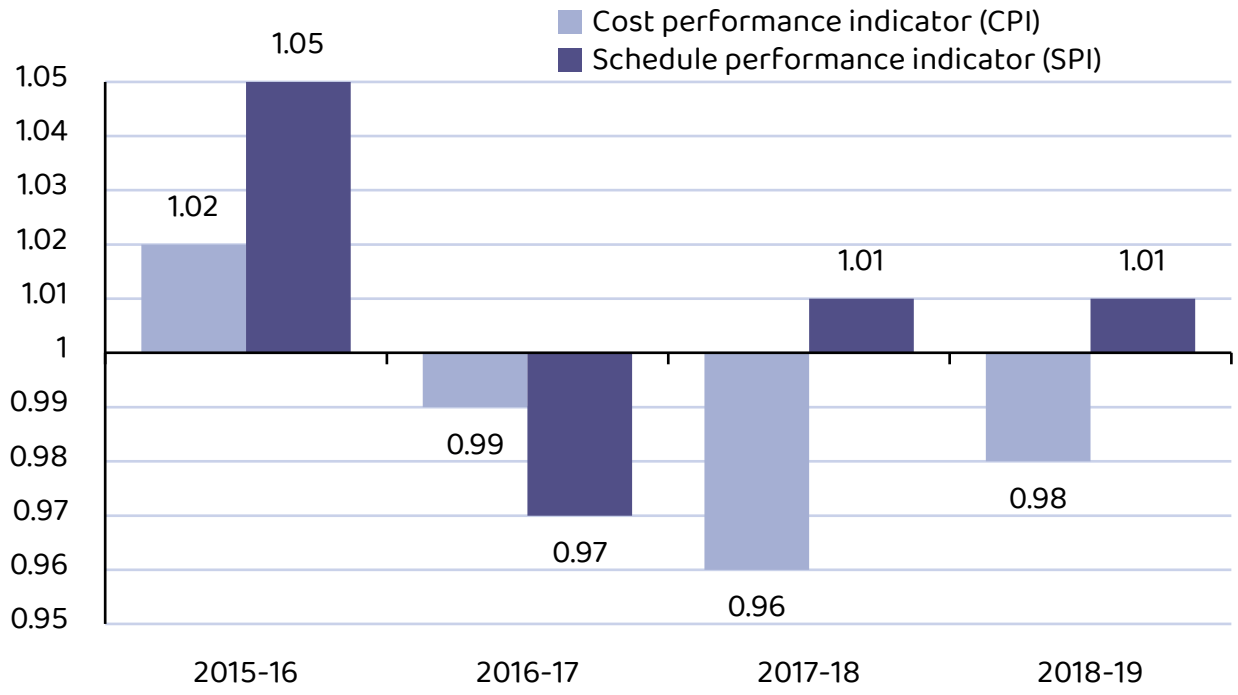
Schedule performance index (SPI) - measures the relationship between the actual progress of work to date and planned (or scheduled) progress.

In 2018-19, Highways England reviewed how it collects CPI and SPI data. This work continued in 2019-20 with the goal of reporting more robust earned value data, at a scheme level, for the end of the road period. However, the company reported that it had encountered difficulty in quality assuring the CPI and SPI data for all relevant schemes and was not able to report on all of the schemes in construction. This is an area of concern and we are working with Highways England to ensure that there is improvement in the quality and breadth of data reported on these indicators in RP2.

The chart below shows reported aggregated CPI and SPI performance information for schemes in construction as at the end of 2015-16 to 2018-19. In these years, the reported values were close to 1 which indicated that on average projects were progressing close to target cost and schedule.

Figure A18: CPI/SPI close to 1 for schemes in construction to 2018-19

CPI and SPI for schemes in construction 2015-16 - 2018-19



The data reported to us at the end of 2019-20 for schemes in construction shows some significant variability, in particular for SPI, with schemes ranging from 0.69 and 2.23. We are engaging closely with Highways England to understand the reasons for the reported performance on these schemes, whether there will be impacts on users or funding, and what lessons can be learnt for the cost and schedule performance of future schemes.

Figure A19: At scheme level there are some significant variances in reported CPI and SPI

SPI and CPI for a sub-set of major improvement schemes in construction during 2019-20

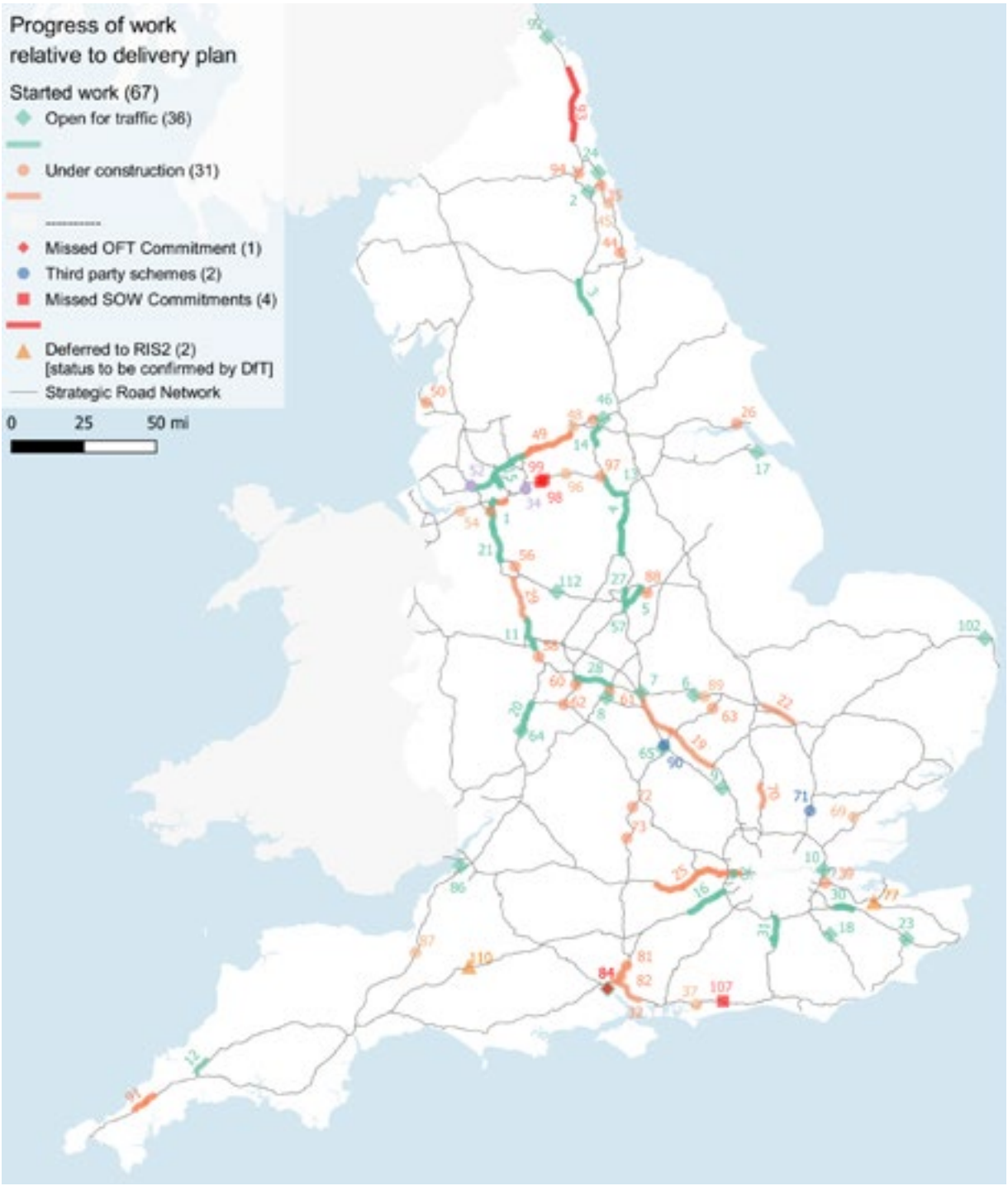
Scheme	SPI	CPI
A1 (M) Junctions 6-8	1.00	0.87
M1 Junctions 13-16	0.72	0.88
M3 Junctions 9-14	0.98	0.85
M6 Junctions 13-15	0.71	0.84
M20 Junctions 3-5	0.94	1.01
M23 Junctions 8-10	1.00	1.02
M27 Junctions 4-11	0.69	0.89
M62 Junctions 10-12	0.92	0.98
A14 Cambridge to Huntingdon	0.97	1.01
M6 Junctions 2-4	0.98	1.00
A19 Norton to Wynyard	0.73	0.85
A1 Scotswood to North Brunton	2.12	1.18
M621 Junctions 1-7 Improvements	0.93	1.11
A500 Etruria Valley	0.76	0.91
M6 Junction 10 improvement	2.23	1.29
M40/M42 Interchange	0.91	0.93
M62 Junctions 20-25	1.00	1.06
A52 Nottingham Junctions	1.36	0.99

Key performance indicator: Progress of work relative to delivery plan

RP1 assessment: No target set

Highways England started work on 67 schemes, provided funds on two schemes for a third party to start work, and missed its commitment on four schemes. Additionally, there are two schemes, which have been deferred to RP2, that have their commitment status under review by government.

It successfully opened for traffic 36 schemes and missed its commitment on one scheme. Figure 3.6 (section 3) summarises the delivery of the RIS1 major schemes portfolio. The map below illustrates progress of improvement works on the strategic road network in relation to Highways England's delivery plans.



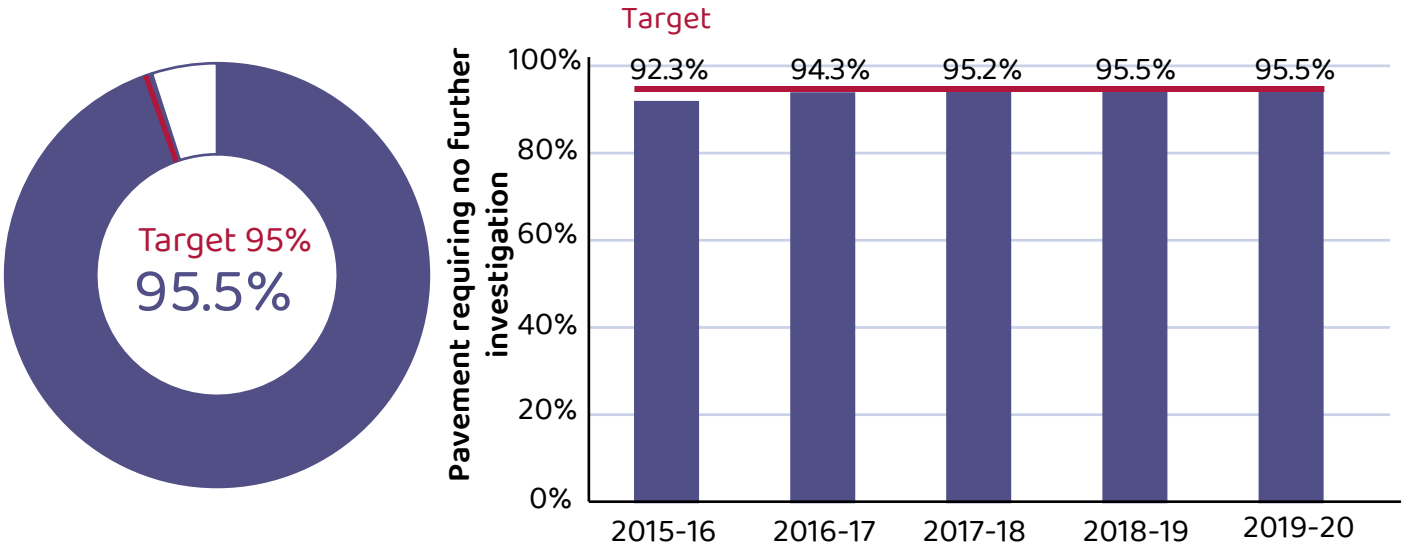
Outcome: Keeping the network in good condition

Key performance indicator: Highways England must maintain the pavement asset such that at least 95% of it does not require further investigation for possible maintenance

RP1 assessment: Target met

Figure A20: Highways England achieved its target for the percentage of pavement not requiring further investigation for possible maintenance above 95% in the last three years of RP1.

Percentage of pavement not requiring further investigation for possible maintenance in 2019-20, and for individual years in RP1



At the end of 2019-20, Highways England reported that 95.5% of its pavement (road surface) asset did not require further investigation for possible maintenance. This is above the target of 95% and is the same as the score recorded in 2018-19. Highways England has therefore returned the asset in a better condition than it started the road period with, as defined by the metric.

Performance indicators

Structures assets: Highways England has continued to improve its structures inventory information, which is now 98.57% complete. This is an improvement of 0.27 percentage points from 2018-19. The score represents an improvement of 0.77 percentage points since 2015-16, the first year of the road period.

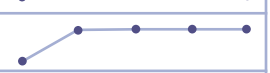
The condition of Highways England's structures is measured by three performance indicators. The first two – the average condition of the stock (SCav), and the condition of the assets' most critical elements (SCcrit) – show a slight decrease in 2019-20, compared to 2018-19. However, both these scores have improved over the road period. The third indicator – the percentage of structures which have been inspected and rated as 'good' (SCI) – shows a slight improvement in 2019-20, compared to 2018-19, and across the road period.

Geotechnical assets: Highways England reports that 97.3% of its geotechnical assets did not require (and are not recommended for) remedial interventions at the end of 2019-20. This is a slight improvement compared to the position reported at the end of 2018-19. The score represents an improvement of 0.7 percentage points since 2015-16, the first year of the road period.

Drainage assets: Highways England reports that it has drainage inventory data for 90% of its network, which is a decrease of 1 percentage point from its 2018-19 position. The percentage of the network with drainage condition data is 36% in 2019-20, up from 33% in 2018-19. Both indicators have improved over the road period.

Technology asset availability: The availability of operational technology assets is measured by the percentage of time lost by service affecting faults. During 2019-20, performance has been reported as above Highways England's targets for all three technology systems: control centre technology, national roads telecommunications services technology and roadside technology. All three indicators have remained broadly stable across the road period, and above Highways England's targets.

Figure A21: Summary of asset performance indicators in 2019-20 and trend for road period 1

Asset	Performance Indicator	2019-20	RP1 Trend
Structures	Inventory	98.57%	
	Condition (SCav)	85.16	
	Condition (SCcrit)	63.23	
	SCI Rating of 'Good'	80.49%	
Geotechnical	Condition	97.3%	
	Inventory	12,979 km	
Drainage	Inventory Coverage	90.0%	
	Condition Coverage	36.0%	
Technology Availability	Control Centre	99.97%	
	National Roads Telecommunication Services	99.99%	
	Roadside	98.21%	

Key: Relative position in 2015-16 ▲ increase ▶ no change ▼ decrease

RIS2 – A well maintained and resilient network

During RP1, Highways England has developed new metrics for use in RP2 to satisfy the RIS2 outcome area: a well maintained and resilient network. The company has consulted with us during the development process and we have provided advice to DfT on their use in the next road period.

Pavement: The metric for pavement will improve upon the RIS1 metric by capturing condition data for all lanes of the road, rather than just lane 1. It is also linked more closely to the company's maintenance requirements. Whilst this metric has been developed, it still requires a full data baseline against which a target can be set. Therefore, for the first two years of RP2, the RIS1 metric will be formally reported against, with the same target of 95%. We will monitor the dual running of the pavement metrics and provide advice to DfT on the establishment of a target for the new metric to be used from 2022-23.

Structures: The indicators used in RP1 are well established metrics used by Highways England and local highway authorities across England. The company has developed a new metric to simplify existing indicators by providing a singular representation of asset condition. It was agreed that the existing indicators will be used during RP2, but that the new metric will be developed further.

Geotechnical: Highways England have developed a new metric that provides a single indicator of good condition rather than the multiple indicators used in RP1. This new metric will be used from the start of RP2 as the measure for geotechnical assets.

Drainage: In RP2, Highways England will report a new measure of resilience to carriageway flooding, rather than the measures of data coverage used in RP1.

Technology: Highways England has improved its metric for measuring the availability and functionality of its roadside assets that it will report against during RP2. The company is required to develop an alternative indicator to further improve performance reporting, as recommended in ORR's in-depth review of technology assets.

Image courtesy of Highways England

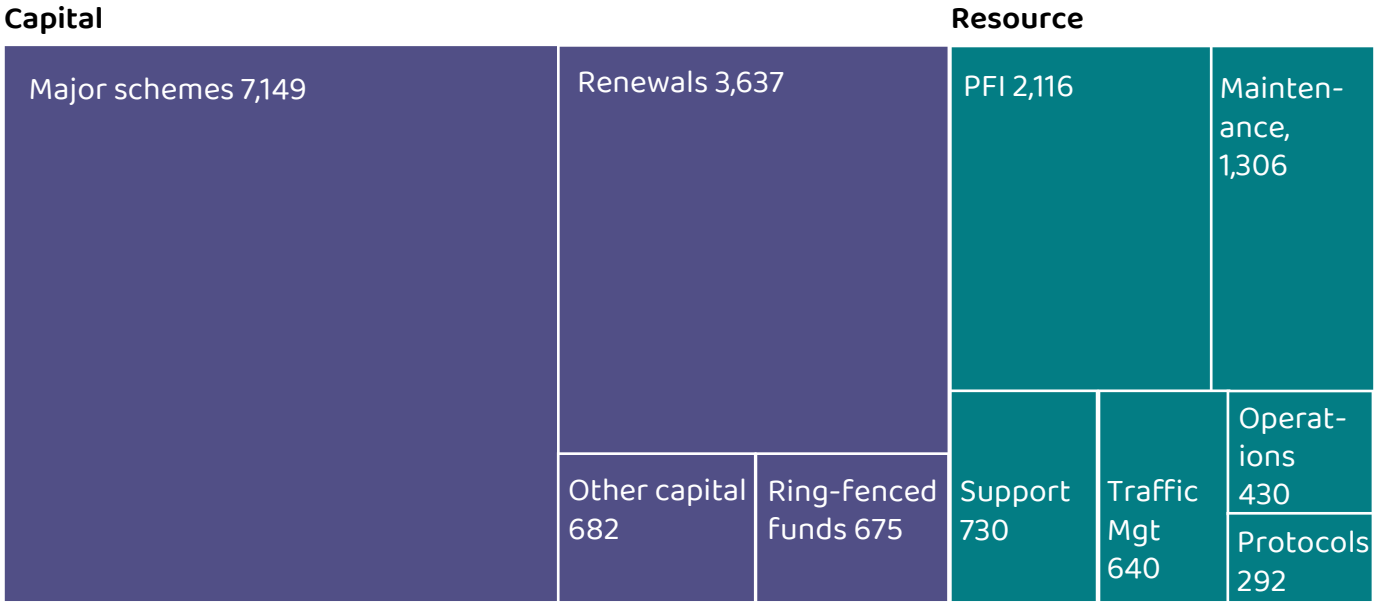
Annex B: Financial performance

Funding

Highways England's funding for delivering the RIS1 outputs in RP1 was set in 2015 at £11,351m capital (specified in the RIS) and £5,310m resource (specified in Spending Review 2015). Over the course of RP1, the funding was subject to a number of approved changes which both increased and decreased its value. The final position as at March 2020 was agreed capital funding of £12,142m and resource funding of £5,513m.

Figure B1: Highways England received £12,142m capital and £5,513m resource funding in RP1

Capital and resource funding in RP1 (£m)

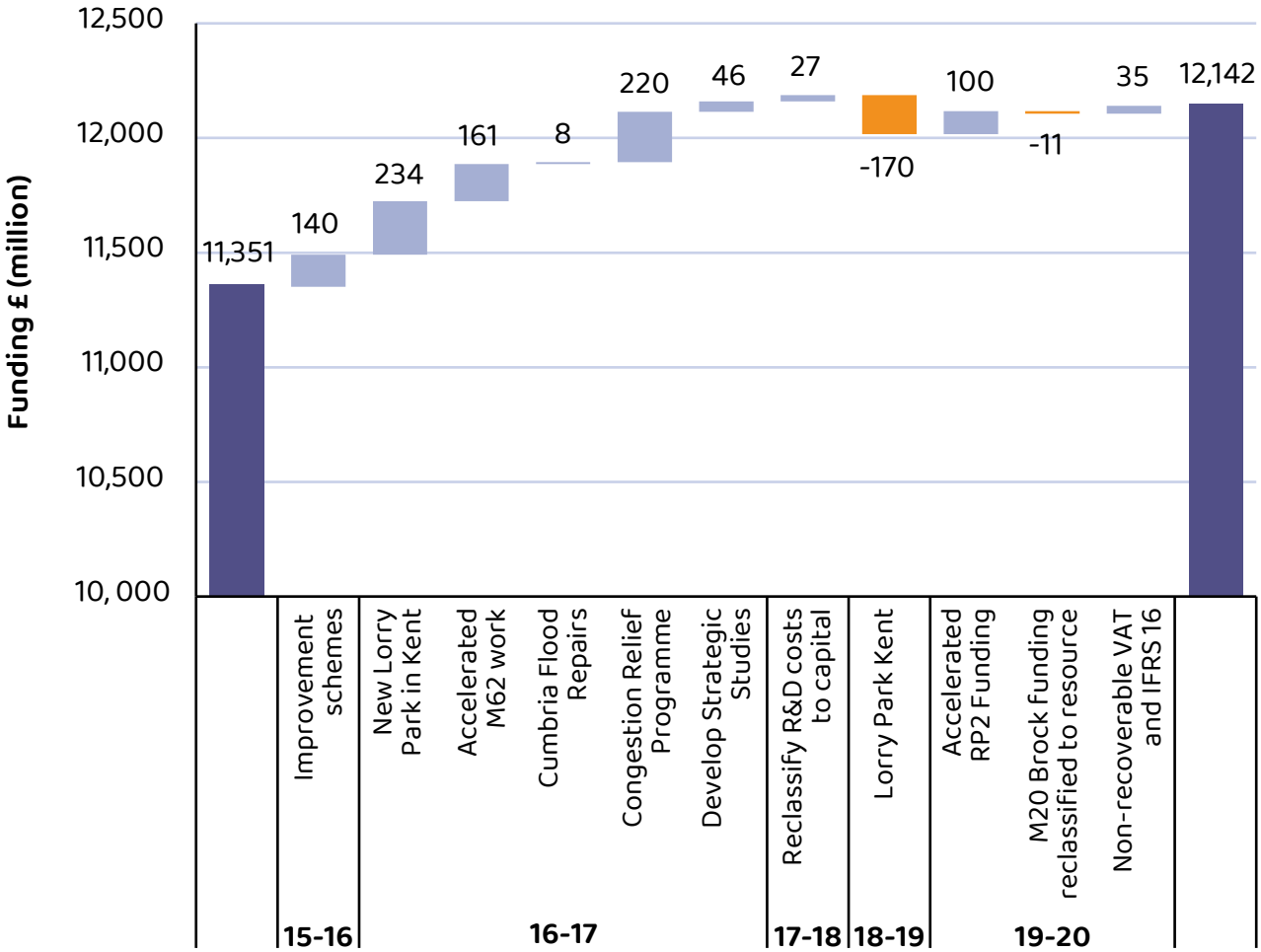


The most significant change to capital funding was the additional funding for the Lorry Park in Kent of £234m in 2016-17. Subsequently this was reduced by £170m in 2018-19 when the scheme was cancelled, before the start of construction. Other notable changes related to additional funding for the completion of some pre-RIS1 schemes, early start of construction works on the M62 junctions scheme and accelerating works on other schemes due to start construction in RP2. Most recently, in 2019-20, the funding was increased by £35m to cover increased costs related to unrecoverable VAT and updates to IFRS16, treatment of leases[17].

[17] https://www.ifrs.org/issued-standards/list-of-standards/ifrs-16-leases/

Figure B2: Capital funding increased from £11,351 to £ 12,142m

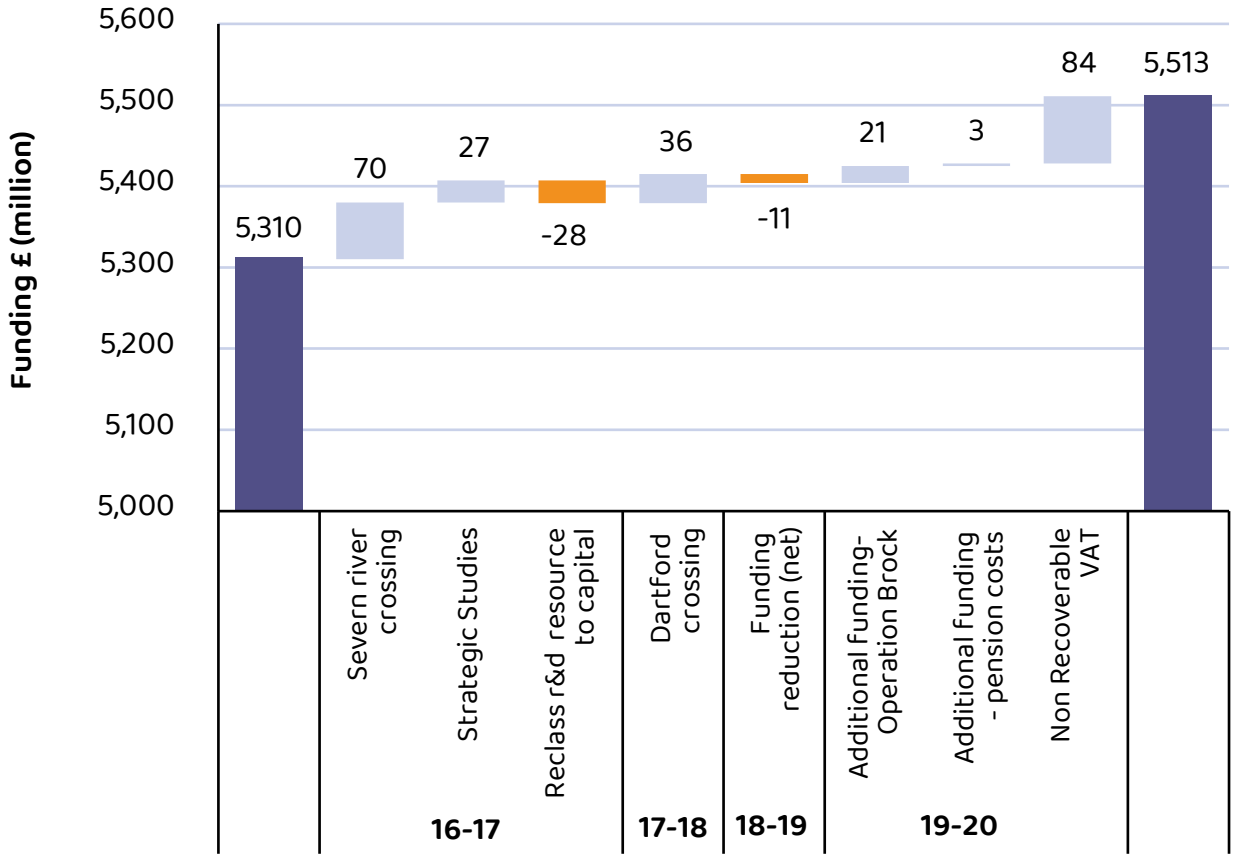
Changes to capital funding over RIS1 (£m)



Resource funding increased by £203m over RIS1. The most significant changes were an increase of £70m in 2016-17 for the Severn River Crossing and more recently, in 2019-20, there was £108m of additional funding provided to cover increased costs related to unrecoverable VAT (£84m), Operation Brock (£21m) and HMRC (£3m).

Figure B3: Resource funding increased from £5,310m to £ 5,513m

Changes to resource funding over RIS1, £m

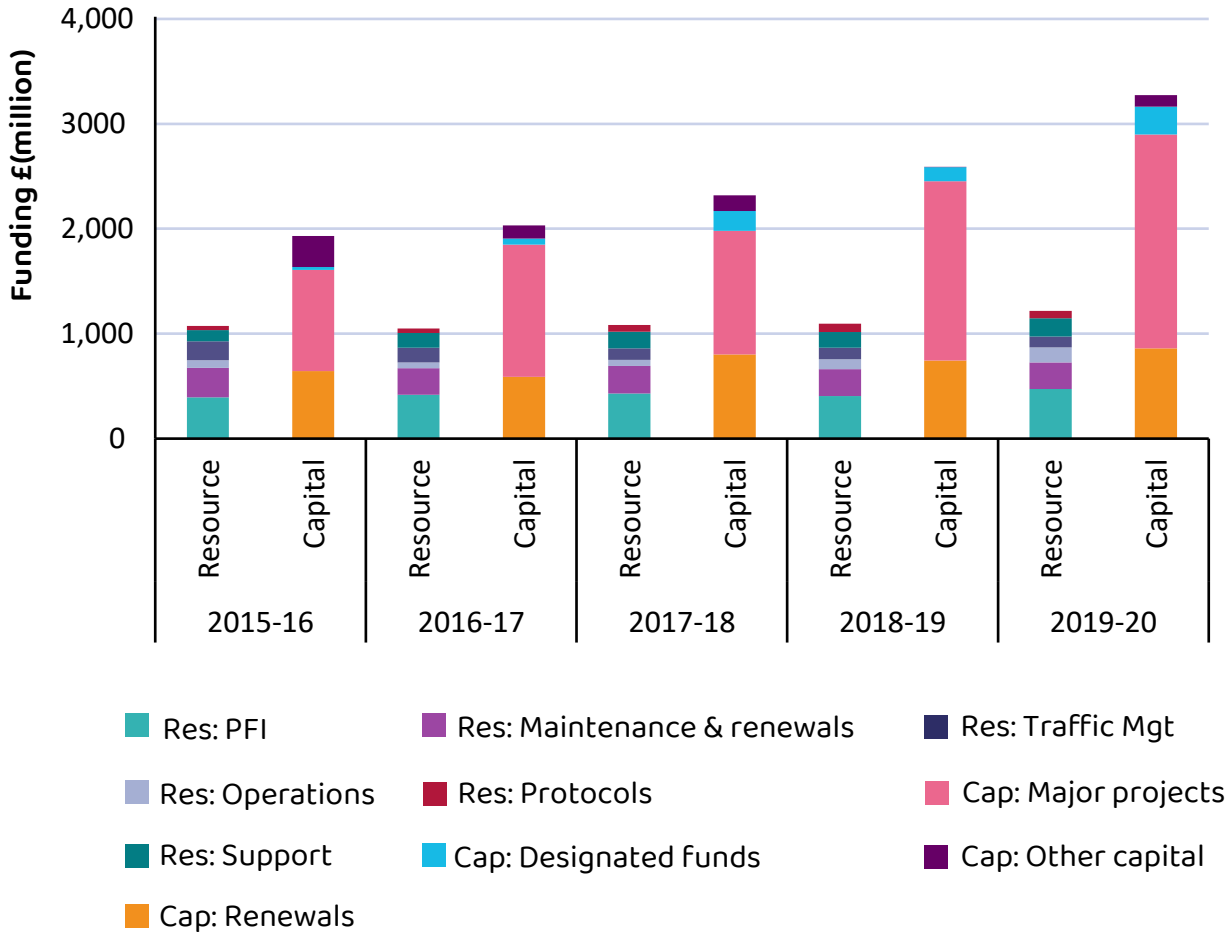


RIS1 required Highways England to manage the construction of a significantly larger number of major improvement schemes as RP1 progressed. This was reflected in the profile of its capital funding, which was 70% higher in 2019-20 than it was in 2015-16. However as Highways England grew from being a £3bn to £4.5bn business, its resource funding did not increase in-line with capital and actually reduced as a proportion of its total funding from 36% in 2015-16 to 27% in 2019-20.

Image courtesy of Highways England

Figure B4: In RP1 capital funding grew with major scheme delivery but resource funding remained broadly constant

Resource and capital funding by year in RP1 (£m)



Overprogramming & scope change

Highways England's capital funding for RIS1 was not enough to deliver all of the improvement schemes specified. As was common practice in (Highways England's predecessor) the Highways Agency, the capital portfolio was 'overprogrammed' in the expectation of some scheme deferral or low value for money schemes being cancelled.

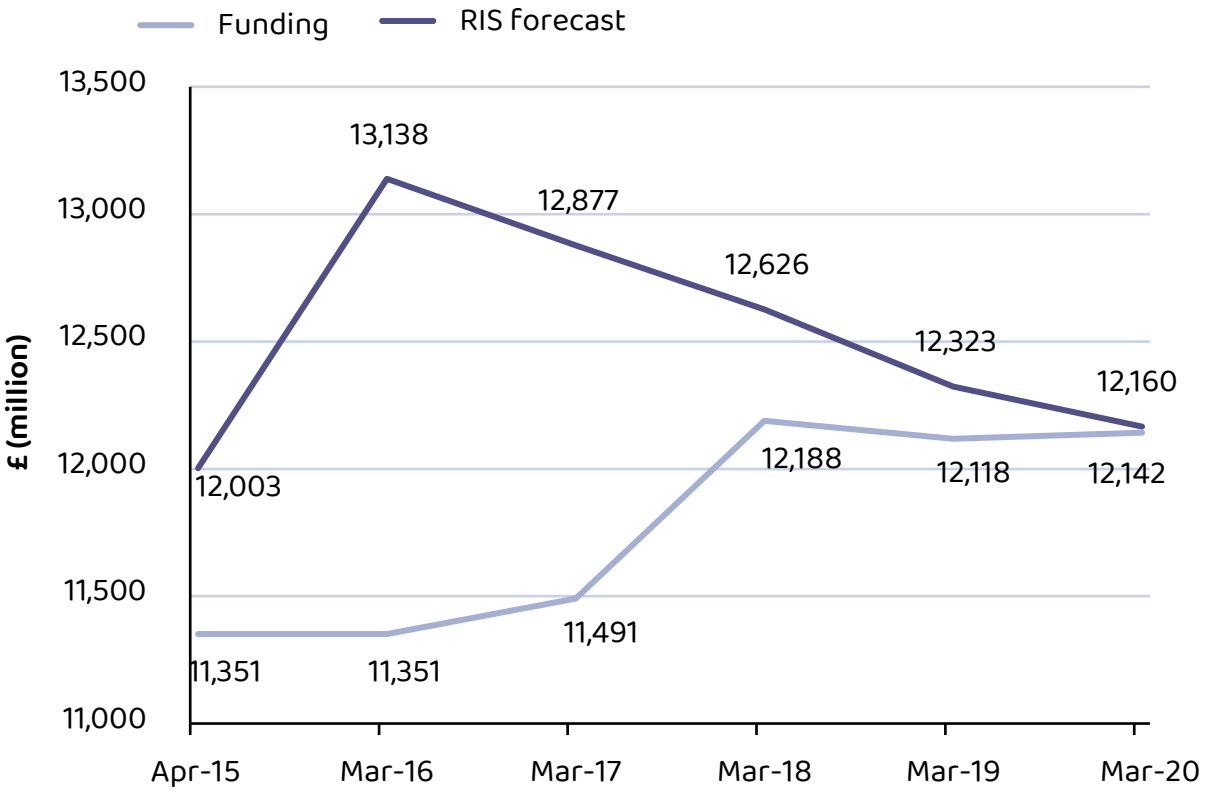
The value of overprogramming at the start of RP1 was estimated to be £652m. During RP1, DfT approved changes to the outputs of the RIS1 with some schemes being cancelled, deferred or changed in scope. The value of the change within RP1 has exceeded the anticipated level of overprogramming by £129m. This means that there were fewer schemes being delivered in the road period than intended, given the funding provided. However, there is evidence that additional scope was delivered on some schemes of up to £291m. Other schemes delivered less scope but there is less certainty about this value. The impact of these factors and others affecting delivery within capital funding (e.g. underfunding of business costs and windfall inflation) are discussed in chapter 4 as part of our efficiency evidence assessment.

Capital expenditure

In the first road period, Highways England spent £12,160m of capital expenditure delivering the outputs within the RIS, as amended through change control and agreed by DfT. This marginally exceeded the company's funding of £12,142m by £18m (0.1%). However, during RP1 Highways England had been managing a significant funding pressure as the forecast cost of the RIS1 major improvement scheme portfolio increased above the original baseline estimate. At the end of RP1, the forecast total costs for the RIS1 portfolio of schemes across RP1 and future road periods, was £1.7bn higher than baseline. This was caused mainly by immature schemes estimates when the original baseline was set. A revised baseline and funding package for RP2 has now been agreed.

Figure B5: The funding pressure reduced during RP1 from £1,787m to £18m

Funding pressure between forecast and funding during RP1 (£m)



At the outset of the road period, the programme carried a RP1 pressure of £652m, reflecting the overprogramming within the investment plan. During the first year, the company began to develop clearer forecasts for major improvement schemes (many of which were immature in their scope/design when RIS1 was created) and the pressure grew to £1.8bn. Since this point, the gap has reduced through;

1. the delivery of efficiency, or other capital savings, not identified or reflected in the early scheme forecasts,

2. change control reducing RIS1 major outputs to the level of expected overprogramming and beyond, and

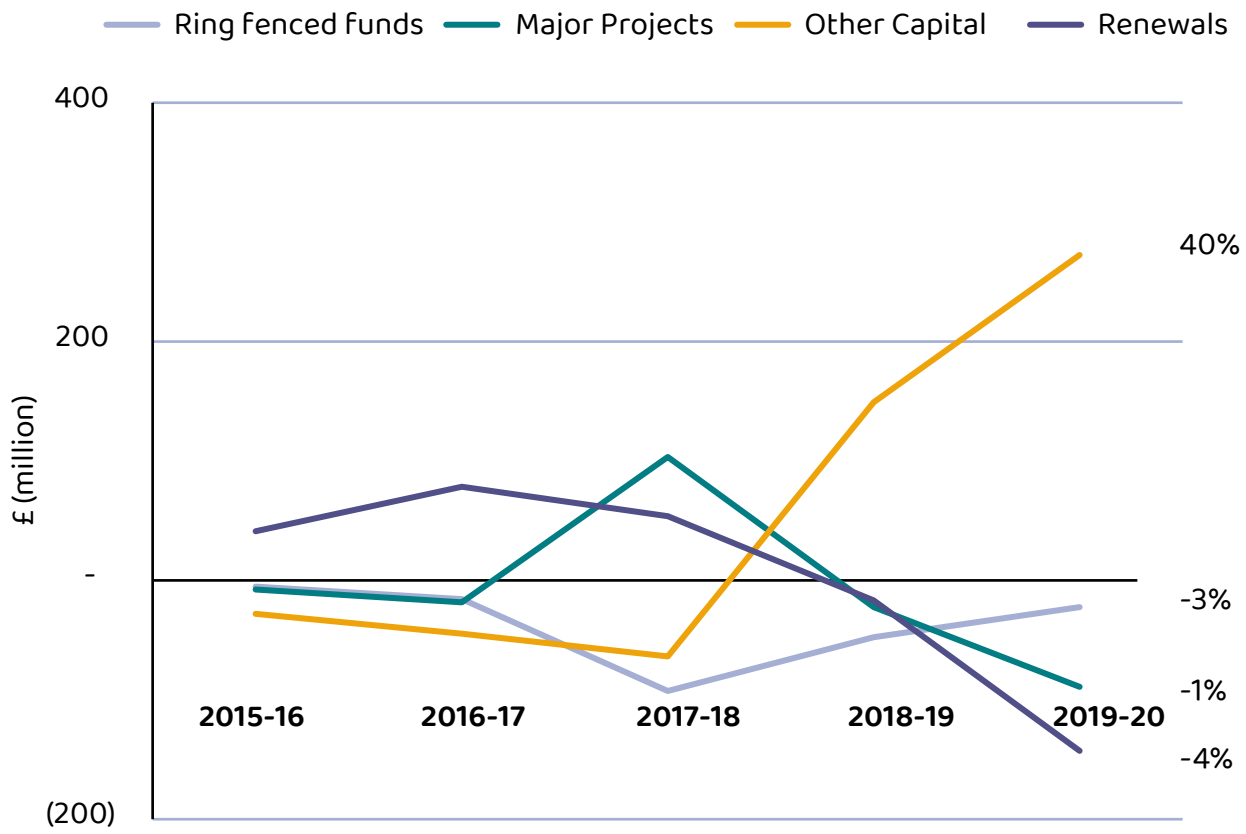
3. in later years asset renewals, and designated ring-fenced funds underspending their funding allocation.

During the road period, overall funding has increased. However, this was matched by additional outputs, suggesting that this has not contributed to a reduction in the funding gap.

Figure B6 shows the cumulative capital underspends and overspends across RP1. It compares the baseline funding against actual spend. At the end of RP1, there were underspends against funding in ring-fenced funds, asset renewals and major improvement schemes. These underspends were largely offset by an overspend on other capital business costs (discussed below).

Figure B6: Pressure on other capital offset by underspends on renewals, major projects and ring fenced funds

Capital Over/(Under)spends across RP1 (cumulative, £m)



Major schemes

Highways England spent £7,060m on major improvement schemes in RP1, compared to its funding of £7,149m. The company has been able to spend within its major improvement schemes total baseline funding for RP1. This is notable because the forecast funding pressure, illustrated in figure B5 and discussed above, arose mainly within the major improvement schemes and 'other capital' expenditure categories.

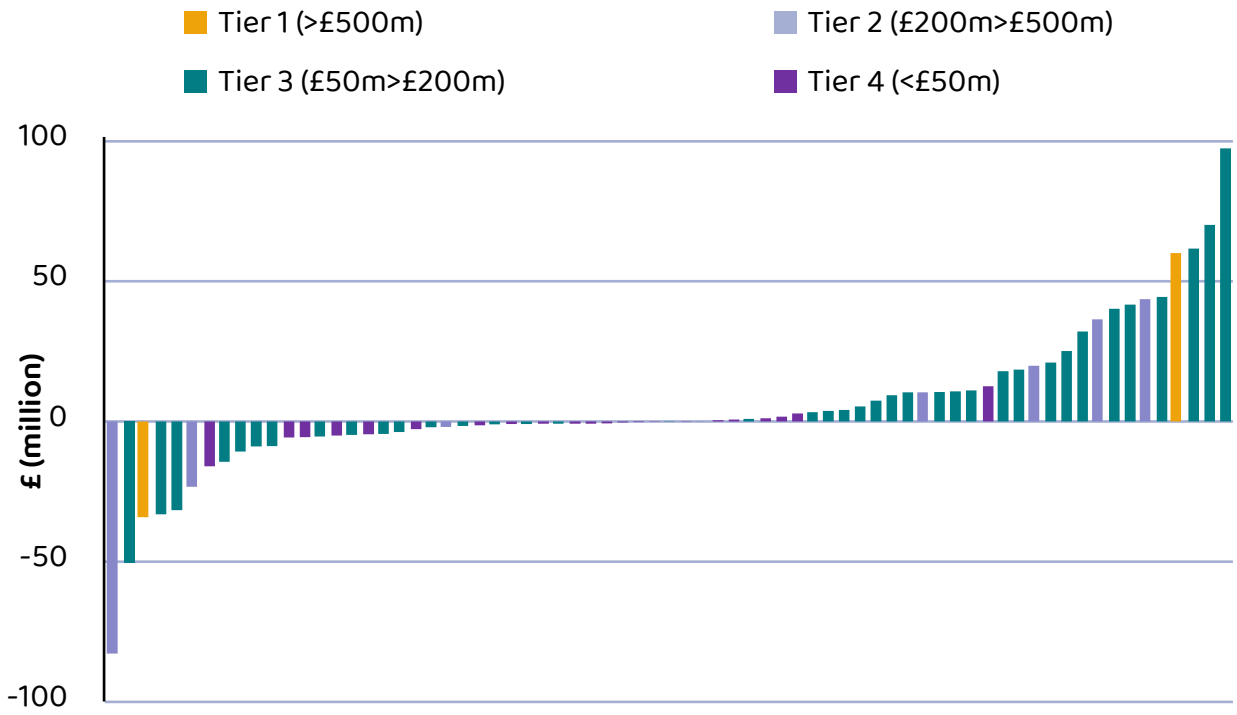
Within the major improvement schemes expenditure category, the pressure has been mainly mitigated through underspends on other schemes, or change control reducing the size of the RIS1 portfolio. Analysis of schemes with the largest underspend variances indicates that they were mainly due to either DfT agreed change control deferring milestone delivery commitments or rescheduling and resequencing works to RP2, but within existing milestone commitments.

We commissioned consultants to review the reasons for the largest cost increases on major improvement schemes. They analysed the variances on a sample of schemes that had the largest overspends and concluded that immaturity in the assumptions on which scheme estimates were calculated was the largest driver of scope change and cost variance. They found that there was a lower risk of recurrence for RIS2 schemes, due to a greater level of development maturity.

We have further analysed cost variances on schemes of different types and sizes to see whether this factor has affected the portfolio equally, or if particular programmes or scheme sizes are impacted differently. Figure B7 shows the major improvement schemes that Highways England was required to have started construction on during RP1 and the variance against its RIS1 baseline, categorised by tier[18] (project size based on total baseline funding). Analysis in these sections is based on the funding and spending related only to RP1. Work on many schemes will span road periods, so the total cost/funding for a scheme will differ to that relating purely to RP1.

Figure B7: The largest £m overspends to baseline are against tier 3 schemes

RP1 (under)/overspends against baseline by tier (£m)



[18] Tier 1 (Scheme baseline>£500m), Tier 2 (£200m>£500m), Tier 3 (£50m>£200m), Tier 4 (<£50m).

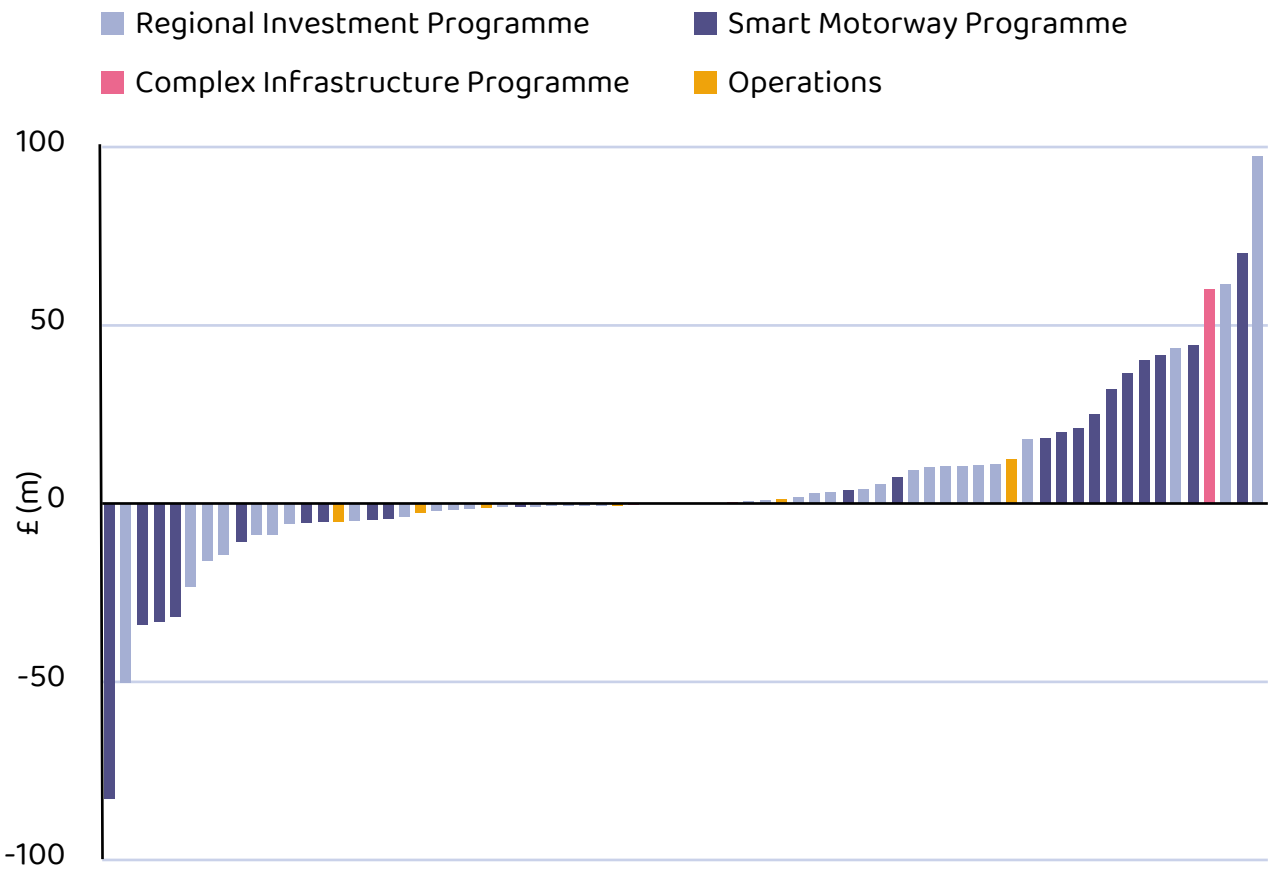
In general, other than an overspend of £60m (5%) to RP1 funding on a Tier 1 scheme (the A14 Cambridge to Huntingdon), the largest overspends are against Tier 3 schemes (£50m-£200m). On these schemes, the average variance was a £9m overspend and half of them had an overspend greater than 10%. Whilst there are also some large overspends against Tier 2 schemes, these are relatively small in percentage terms when compared to the schemes' larger baselines. This suggests that schemes of relatively smaller size created the cost pressure in RIS1. This may be due to their quantity within the portfolio or indicate that there is stronger financial control and more mature baseline assumptions on the larger, more high profile, Tier 1 and 2 schemes. We will look further into this during RP2.

Figure B8 shows the major improvement schemes that Highways England was required to have started construction during RP1 categorised by programme type. This shows that the Smart Motorway Programme (SMP) contributed many of the largest major scheme overspends to RP1 funding, with eight schemes overspending by more than £20m (average SMP RIS baseline £109.5m) and 10 overspending by more than 10%. There were also several large overspends on the Regional Investment Programme (RIP) schemes in the portfolio. Whilst on average the variances were smaller the RIP schemes were generally smaller projects generating some larger percentage variances.

Image courtesy of Highways England

Figure B8: The largest overspends are generally against smart motorway programme schemes but the Regional Investment Programme also generated some large % overspends

(Under)/overspends against baseline by programme type (£m)



Corresponding schemes percentage (under)/overspends against baseline (%)

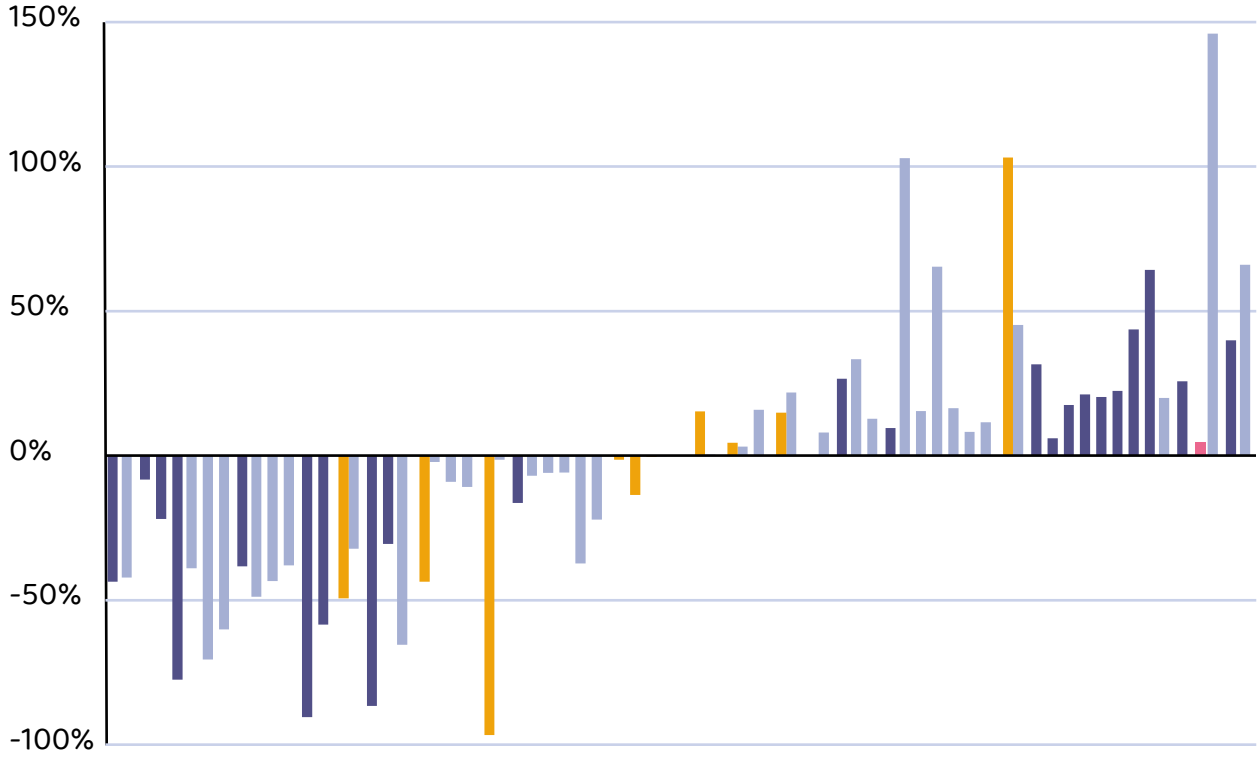
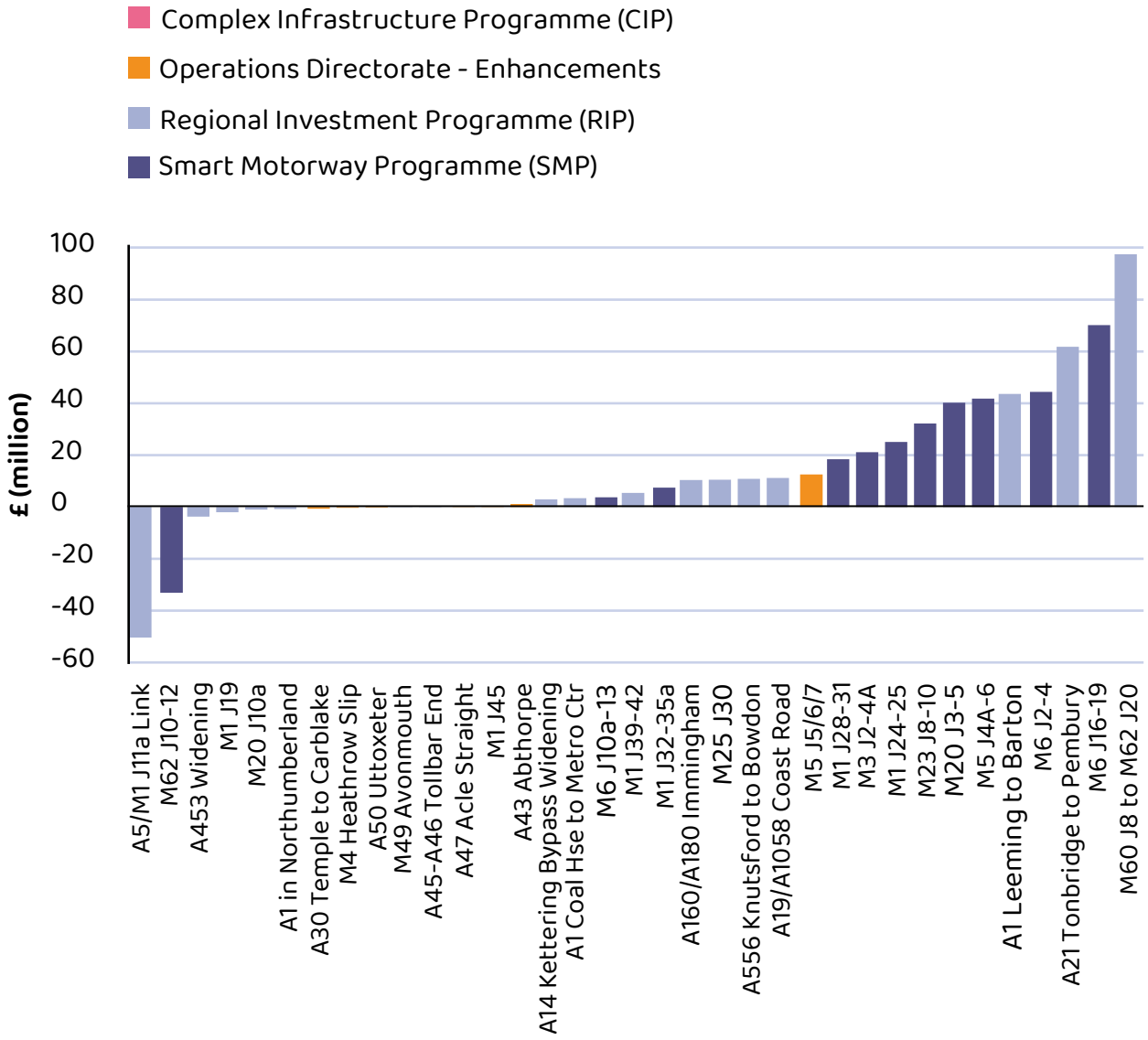


Figure B9 shows the RIS1 underspends and overspends against baseline for the schemes that were open for traffic (completed) as at March 2020. Most of the schemes that opened during RP1 spent more than their RIS1 funding. Of the 17 Regional Investment Programme schemes that opened in RP1, 10 overspent their RIS1 funding and of the 11 SMP schemes that opened, 10 were overspent.

Figure B9: The majority of schemes opening in RP1 overspent their RIS funding, in particular smart motorways

Over/(Under)spends to RIS funding on schemes opening during RP1 (£m)



Renewals

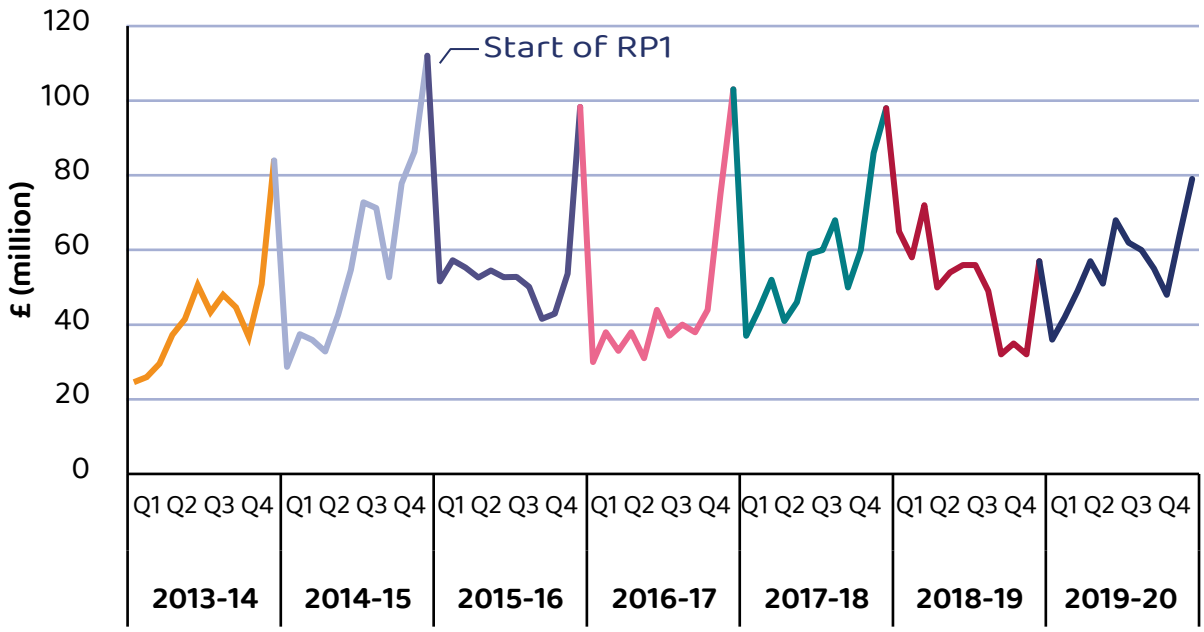
Highways England spent £3,494m renewing assets in RP1, compared to its funding of £3,637 m.

In the final three years of RP1, Highways England allocated a lower budget than its baseline funding to asset renewals. The purpose of this was to share the burden of the funding pressure faced by major projects in the early years of RP1. Asset renewals contributed c£131m of its funding to help meet this pressure. Overall for RP1, spending on asset renewals was within 0.3% of budget and was 3.9% less than funding.

Figure B10 shows the profile of asset renewals expenditure from 2013-14 to 2019-20. This illustrates how the profile has changed prior to the creation of Highways England and the start of RP1 in April 2015, through to the end of the first road period. In previous years of RP1, we raised concerns around the disproportionate delivery of asset renewals in Q4 due to the potential inefficiency caused by higher costs in winter weather conditions. We can see that in the final two years of RP1 this profile has flattened, suggesting improved planning and control.

Figure B10: Renewals expenditure profile improved in final years of RP1

Renewals expenditure by month 2013-14 to 2019-20 (£m)



Ring-fenced funds

Highways England spent £652m on ring-fenced funds in RP1, compared to funding of £675m. The company underspent its Air Quality ring-fenced fund by £36m and overspent or spent in-line with budget on other funds. This is discussed further in Chapter 3.

Other capital

Highways England spent £954m on other capital expenditure, compared to baseline funding of £682m (a 40% overspend). The apparent growth of this cost pressure in the final two years of the road period was caused by several different factors.

This category includes c£600m of costs of developing capacity to deliver the significantly larger capital programme, in particular major improvement schemes. There was no assigned funding for this within the RIS1 package and it was a leading cause of the cost pressure in RP1. This was identified by the company early in the road period, but the impact was mostly felt during later years as the business grew. Similarly, Highways England capitalised more of its staffing cost because the company employed more people than originally anticipated to meet the demanding major improvement scheme delivery profile in 2018-19 and 2019-20. The company was experiencing cost pressure to a lesser extent in earlier years but this was in part masked by additional funding being provided by DfT for the M20 Lorry Park in

2016-17 before its cancellation and funding being returned in 2018-19.

Other capital also included additional funding for small scale congestion relief schemes. An underspend of £27m on this item, due to delays in delivery, were more than offset by other pressures arising on the budget.

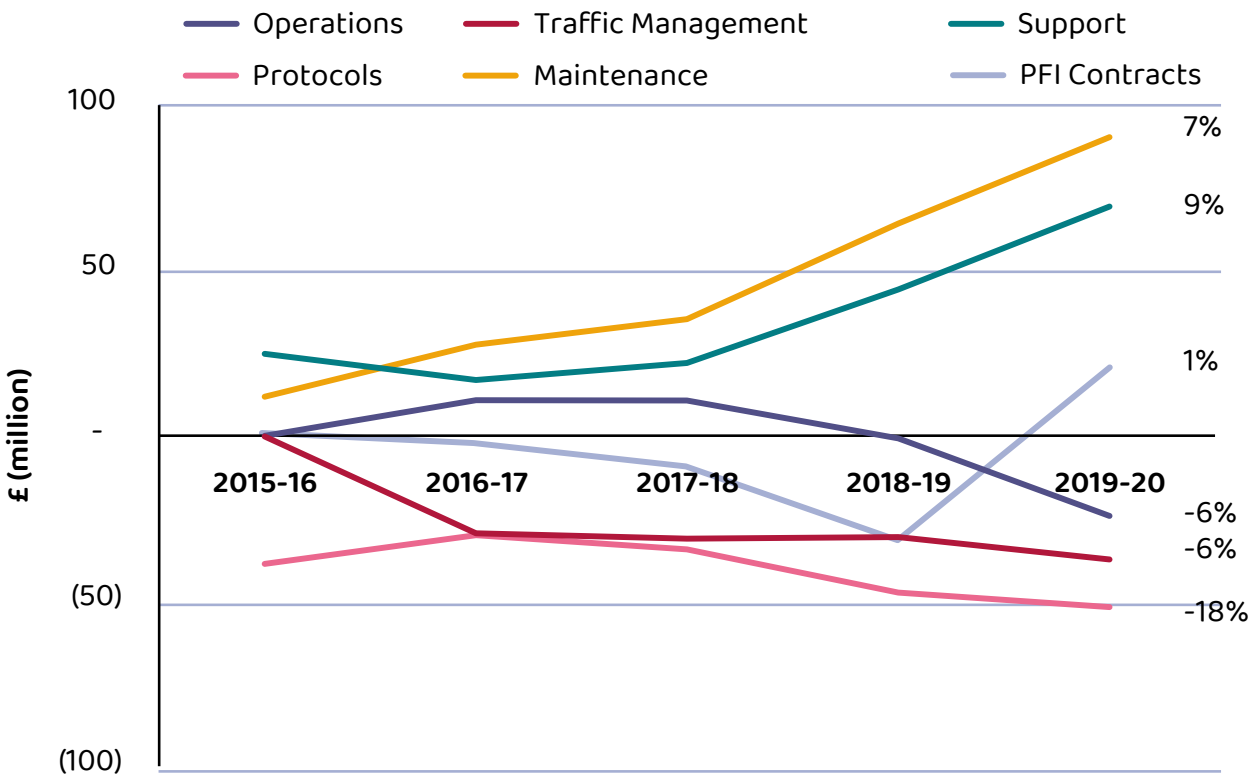
Resource expenditure

During RP1, Highways England spent £5,579m of resource expenditure delivering the outputs within the RIS1. This exceeded the company's funding of £5,513m by £66m (1.2%) and was agreed by DfT.

Figure B11 shows the cumulative resource underspends and overspends across RP1. It compares the baseline funding against actual spend. At the end of RP1, there were overspends against funding in maintenance, support and Private Finance Initiative (PFI) contracts. These overspends were offset by underspends against operations, traffic management and protocols.

Figure B11: Overspends on maintenance, PFI contracts and support were offset by underspends in other categories

Resource over/(under)spends to baseline across RP1 (cumulative, £m)



Private Finance Initiative (PFI)

Highways England spent £2,136m on its PFI contracts, £20m (1%) more than its funding of £2,116m. This was due to higher costs at close of contracts than anticipated, offset by lower indexation and traffic volumes than assumed and a refinancing of the M25 contract during 2018-19.

Maintenance

Highways England spent £1,396m on maintenance, £90m (7%) more than the funding of £1,306m. The funding for maintenance during RP1 assumed that costs would reduce during the road period. The company has changed its procurement and contracting approach over to Asset Delivery during RP1. This has cost more than the funding assumption set for maintenance. However, Highways England report it is delivering more efficiently for the same funding as the previous type of Asset Support contracts. Furthermore, they believe that had the Asset Support contracts been renewed, market conditions meant that costs would have exceeded those incurred on Asset Delivery.

Operations

Highways England spent £405m on operations, £25m (6%) less than the funding of £430m. However, we understand this mainly relates to a categorisation error whereby the contractor spend on IT and operations projects was budgeted for in this category, but the expenditure is categorised as support costs.

Traffic management

Highways England spent £602m on traffic management, £38m (6%) less than its funding. During most of RP1, the company set a budget that was lower than its funding of £640m by c£30m and spent in-line with its budget.

Support

Highways England spent £799m on support, £69m (9%) more than the funding of £730m.

As described above, expenditure on contractor IT and operations projects is categorised here but the budget resides in operations and traffic management. Additionally, this pressure likely reflects the additional costs of supporting a company growing in size to manage delivery of the larger capital programme.

Protocols

Highways England spent £240m on protocols, £52m (18%) less than the funding of £292m. This is partially due to costs being allocated to other expenditure categories in 2015-16. In recent years, the variance has grown due to lower than anticipated costs on the contracts for the Severn Crossing tolling and Dartford-Thurrock crossing.

Annex C: Network investment delivery

This annex describes Highways England's performance against its investment plan during RP1.

The RIS1 set the outcomes, outputs and capital investments that Highways England had to deliver over the first road period. The Investment Plan, part of the RIS, outlined a five-year capital funding package of £12.1 billion for Highways England to invest in maintaining, renewing and improving the strategic road network. This included:

1. a programme of major improvement schemes, of more than £7.1bn;
2. a maintenance and renewals programme, of approximately £3.6bn;
3. a £675m programme of ring-fenced investment funds; and
4. £680m of other capital investment including congestion relief schemes.

We measure and report on Highways England's performance against the network investment required by the investment plan.

Development and delivery of major scheme programme in RP1

At the start of RIS1, Highways England was committed to start the construction of 112 schemes.

Since the start of RP1, Highways England has improved its scheduling of major improvement schemes, with particular focus on their scope, value for money and impact on road user experience. Highways England made changes to optimise its improvement plan, by considering the best way of scheduling major schemes which impact on the same routes or geographical locations (road corridors) to reduce customer disruption.

During the RP1, Highways England continued to assess how it delivers its capital plan during the remainder of the road period.

As a result, some major improvement schemes are now programmed for delivery in future road periods, while other schemes have been brought forward within RP1. Further changes were introduced for other reasons.

The company substantially agreed the changes to its RIS1 commitments and delivery plan with government and has taken these through the Department for Transport's formal change control process. There are two schemes (M2 Junction 5 improvements and the A303 Sparkford – Ilchester dualling) that have been deferred to RP2, but the company is yet to agree whether it is a missed commitment or an approved change with the Department for Transport.

Highways England's progress in developing its capital programme during RP1 is shown in figure C1.

Figure C1: Highways England continued to assess how it delivers a challenging RIS1 capital programme

Changes to the major improvements programme during RP1

Schedule impact	Number of schemes	RIS1 scheme number - name
Schemes paused that do not currently demonstrate value for money	8	#45 - A1 & A19 Technology enhancements #48 - M62/M606 Chain Bar #53 - M53 Junctions 5-11 #54 - M56 new Junction 11A #67 - M11 Junctions 8 to 14 - technology upgrade #69 - A12 whole-route technology upgrade #87 - M5 Bridgwater Junctions #89 - A14 Junction 10a
Stopped due to lack of stakeholder support, to avoid adverse environmental impacts or to align with local authority plans	2	#37- A27 Chichester Improvement #96 - A628 Climbing Lane
Schemes moved to RIS3 Pipeline to enable formal options development and avoid the risk of progressing the wrong proposal.	2	#34 - M60 Junctions 24-27 & J1-4 #52 - M6 Junction 22 upgrade
Start of works deferred from RP1 to RP2 to minimise road user disruption	15	#33 - M6 Junctions 21A-26 #59 - A5 Dodwells to Longshoot widening #68 - A12 Chelmsford to A120 widening- #74 M25 Junction 25 improvement #75 - M25 Junction 28 improvement #78 - M25 Junctions 10-16 #79 - M25 Junction 10/A3 Wisley interchange #80 - M3 Junction 9 improvement

Shedule imapct	Number of Schemes	RIS1 scheme number - name
Start of works deferred from RP1 to RP2 to minimise road user disruption (cont)		#85 - A31 Ringwood #95 - A1 Birtley to Coal House widening #100 - A47 North Tuddenham to Easton #101 - A47 Blofield to North Burlingham dualling #104 - A47/A11 Thickthorn Junction #105 - A47 Guyhirn Junction #106 - A47 Wansford to Sutton
Start of works deferred from RP1 to RP2 due to other factors, for example an outcome of public consultations and schemes' options appraisals	10	#36 - M54 to M6/M6 Toll link road #38 - A38 Derby Junctions #43 - A19 Down Hill Lane junction improvement #51 - A5036 Princess Way - Access to Port of Liverpool #66 - A428 Black Cat to Caxton Gibbet #83 - M27 Southampton Junctions #103 - A47 & A12 junction enhancements #108 - A27 Worthing and Lancing improvements #109 - A303 Amesbury to Berwick Down #111 - A358 Taunton to Southfields
Start of work has been deferred from RP1 to RP2, schemes have been submitted to the Department for Transport's formal change control process, on which final decisions will be made following the completion of the statutory planning processes	2	#77 - M2 Junction 5 improvements #110 - A303 Sparkford - Ilchester dualling

The company has progressed RIS1 schemes through its Project Control Framework (PCF) governance process. Figure C2 illustrates the number of schemes progressed through the PCF process.

Figure C2: Majority of the RIS1 project portfolio was at an early stage of development at the outset of RP1

Number of schemes that progressed through project control framework process during RP1

The revised plans mean that, of the 112 major schemes originally planned to start works in RP1, Highways England committed to start work on 73 schemes by March 2020. The 73 schemes were progressed as follows:

I. two schemes are to be delivered by third parties:

- M11 junction 7a - junction upgrade (commitment met by Highways England with agreement to transfer funds to Essex County Council) the start of work is dependent on a third party; and
- A5 Towcester Relief road - we consider that Highways England has met its obligation and the start of work is dependent on a third party.

II. four schemes missed their commitment:

- A1 Morpeth to Ellingham dualling - due to the delay to the development consent order submission;
- Mottram Moor link road - delay to delivery arising from air quality issues compounded by supplier poor performance;
- A57 (T) to A57 link road - delay to delivery arising from air quality issues compounded by supplier poor performance; and
- A27 Arundel Bypass - to complete a further non-statutory consultation, prepare a revised preferred route announcement - ensuring the scheme delivers against the outcomes stated in the RIS and the strategic outline business case.

III. 67 schemes have successfully started construction by the company:

- 16 schemes started prior to RP1; and
- 51 schemes started during RP1.

There are two additional schemes which have been deferred to RP2 (M2 J5 improvements and the A303 Sparkford to Ilchester dualling), but the company is yet to agree whether it is a missed commitment or an approved change with the Department for Transport. If either status changes, then these numbers will be affected.

Highways England also started work on the A27 East of Lewes, on 24 March 2020. This is in addition to the 112 major improvement schemes listed in RIS1 and in the company's 2019/20 delivery plan.

Figure C3 summaries the progress made on RIS1 schemes.

Figure C3: Highways England started construction of 67 schemes and opened for traffic 36 schemes

Major scheme delivery status for RP1

Phase	Original delivery plan commitments (2015-20)	Progress	No.	Details	Status
Start of works	112	Started	67	• 16 started construction prior to RP1 • 51 started in the five years of RP1	
		To be delivered by 3rd party	2	• 2 HE provided funds for 3rd party to deliver schemes	
		Missed commitments	4	• 4 schemes missed RIS1 commitments	

		Removed from RIS1 portfolio	39	• 37 approved changes
				  • 8 low VfM schemes - paused
				  • 2 schemes stopped
				  • 2 moved to RIS3 pipeline
				  • 25 deferred from RP1 to RP2
				• 2 deferred from RP1 to RP2 - status to be confirmed by DfT	

Open for traffic	37	Opened	36	• 36 opened for traffic in the five years of the road period	
		Missed commitment	1	• 1 scheme missed its RIS1 commitment	

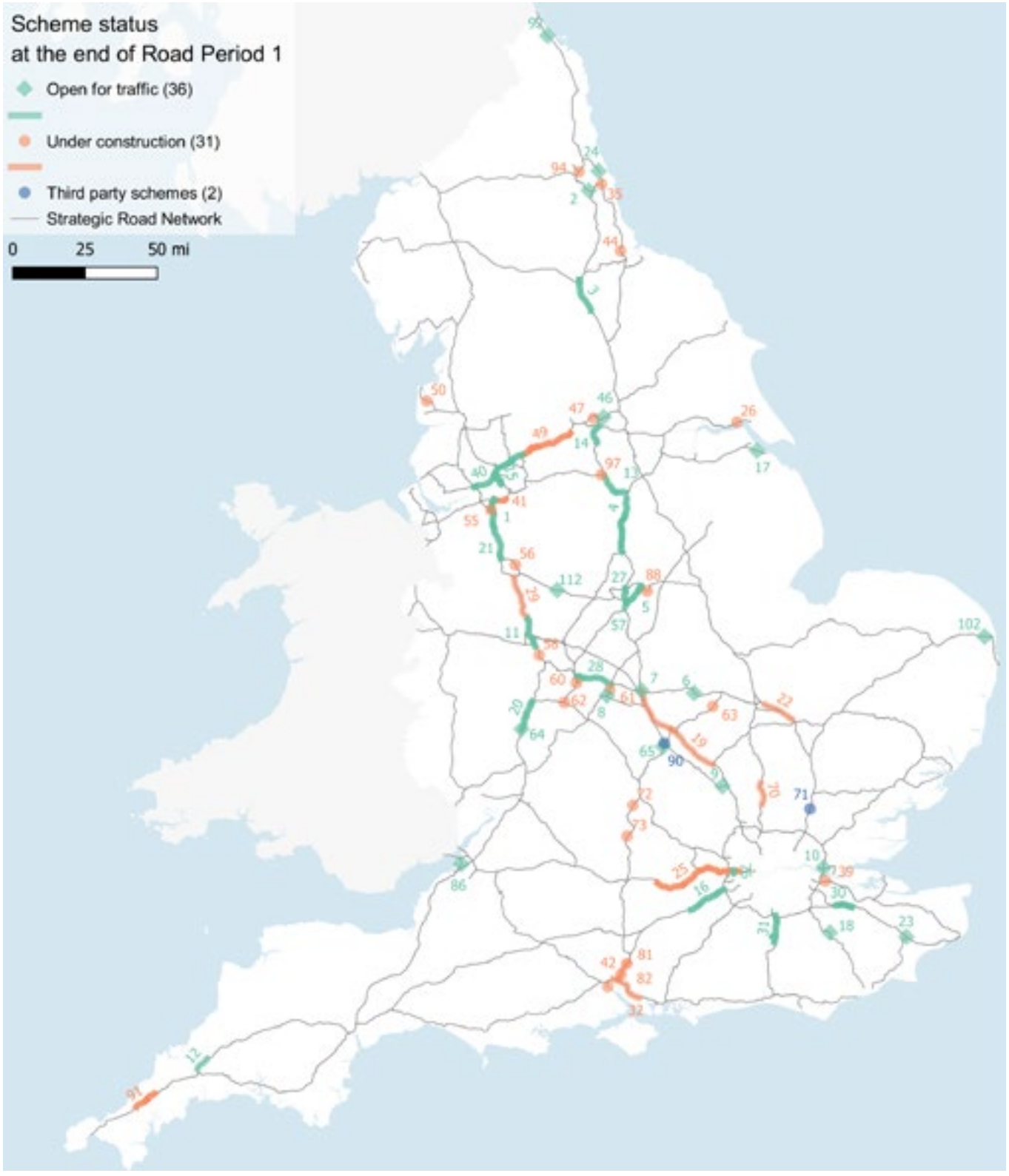
Milestone on schedule or ahead of schedule Milestone on schedule or ahead of schedule Milestone changed

At the end of RP1:

- the company had opened for traffic 36 schemes adding extra capacity to the SRN of 343 lane miles. (This does not include the partially completed M1 Junction 13-19 scheme, which added capacity of 29 lane miles, because the scheme was not officially OFT by the end of RP1); and

- there were 31 schemes in construction on the SRN (excluding the A27 East of Lewes).

The map below illustrates schemes that were OFT or in construction.



The map below illustrates RIS1 schemes' status at the end of RP1. Figure C4 illustrates the status of RIS1 major schemes in terms of: start of work, open for traffic, additional lane miles delivered and status at the end of RP1.

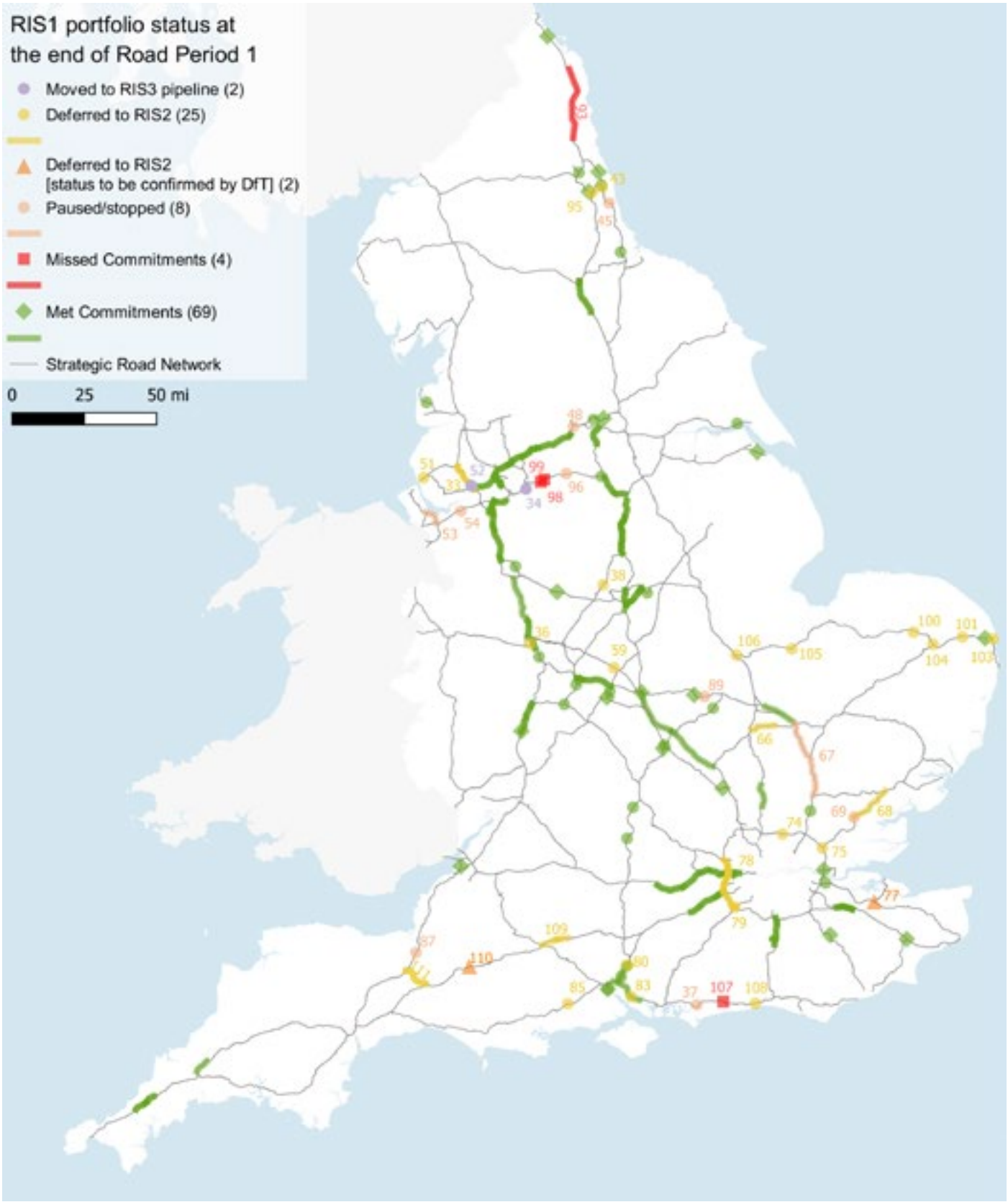


Figure C4: Status of RIS1 major schemes portfolio

Scheme ref on map	Scheme name	Start of Work	Open for Traffic	Lane miles delivered	Scheme status
1	A556 Knutsford to Bowdon	Pre-RIS 1	2016-17 Q4	0	OFT
2	A1 Coal House to Metro Centre	Pre-RIS 1	2016-17 Q1	9	OFT
3	A1 Leeming to Barton	Pre-RIS 1	2017-18 Q4	24	OFT
4	M1 Junctions 28-31	Pre-RIS 1	2015-16 Q4	38	OFT
5	A453 Widening	Pre-RIS 1	2015-16 Q2	14	OFT
6	A14 Kettering bypass widening	Pre-RIS 1	2015-16 Q1	6	OFT
7	M1 Junction 19 improvement	Pre-RIS 1	2016-17 Q3	0	OFT
8	A45-A46 Tollbar End	Pre-RIS 1	2016-17 Q3	4	OFT
9	A5-M1 Link Road	Pre-RIS 1	2017-18 Q1	11	OFT
10	M25 Junction 30	Pre-RIS 1	√ 2016-17 Q3	0	OFT
11	M6 Junctions 10a-13	Pre-RIS 1	2015-16 Q4	16	OFT
12	A30 Temple to Higher Carblake	Pre-RIS 1	2017-18 Q2	8	OFT
13	M1 Junctions 32-35A	Pre-RIS 1	2016-17 Q4	18	OFT
14	M1 Junctions 39-42	Pre-RIS 1	2015-16 Q3	13	OFT
15	M60 Junction 8 to M62 Junction 20	Pre-RIS 1	2018-19 Q2	9	OFT
16	M3 Junctions 2-4A	Pre-RIS 1	2017-18 Q1	27	OFT
17	A160/A180 Immingham	2015-16 Q1	2016-17 Q4	2	OFT
18	A21 Tonbridge to Pembury	2015-16 Q1	2017-18 Q2	5	OFT
19	M1 Junctions 13-19	2015-16 Q3	Not fully OFT	29	In construction

Scheme ref on map	Scheme name	Start of Work	Open for Traffic	Lane miles delivered	Scheme status
20	M5 Junctions 4A-6	2015-16 Q3	√ 2017-18 Q1	18	OFT
21	M6 Junctions 16-19	2015-16 Q3	2018-19 Q4	36	OFT
22	A14 Cambridge to Huntingdon	2016-17 Q3			In construction
23	M20 Junction 10a	2017-18 Q4	2019-20 Q3	0	OFT
24	A19 Coast Road	√ 2016-17 Q1	2018-19 Q4	0	OFT
25	M4 Junctions 3-12	2016-17 Q4			In construction
26	A63 Castle Street	2019-20 Q4			In construction
27	M1 Junctions 24-25	2016-17 Q4	2018-19 Q3	10	OFT
28	M6 Junctions 2-4	2017-18 Q4	2019-20 Q4	24	OFT
29	M6 Junctions 13-15	2017-18 Q4			In construction
30	M20 Junctions 3-5	2017-18 Q4	2019-20 Q4	11	OFT
31	M23 Junctions 8-10	2017-18 Q4	2019-20 Q4	21	OFT
32	M27 Junctions 4-11	√ 2018-19 Q1			In construction
33	M6 Junctions 21A-26	Deferred minimise disrupton			
34	M60 Junctions 24-27 & J1-4	Scheme is moved into RIS3 pipeline			
35	A19 Testos	2018-19 Q4			In construction

Scheme ref on map	Scheme name	Start of Work	Open for Traffic	Lane miles delivered	Scheme status
36	M54 to M6/M6 Toll link road	Deferred external factors			Judicial/ Statutory process
37	A27 Chichester Improvement	Stopped Other factors			
38	A38 Derby Junctions	Deferred external factors			Further work required
39	A2 Bean & Ebbsfleet junctions	2019-20 Q4			In construction
40	M62 Junctions 10-12	2017-18 Q4	2019-20 Q4	17	OFT
41	M56 Junctions 6-8	2019-20 Q4			In construction
42	M3 Junctions 9-14	2019-20 Q4			In construction
43	A19 Down Hill Lane junction improvement	Deferred external factors			Further work required
44	A19 Norton to Wynyard	2019-20 Q4			In construction
45	A1 & A19 Technology enhancements	Paused-stopped Low V M			
46	M1 Junction 45 Improvement	√ 2016-17 Q4	2017-18 Q4	0	OFT
47	M621 Junctions 1-7 improvements	2019-20 Q3			In construction
48	M62/M606 Chain Bar	Paused-stopped Low V M			
49	M62 Junctions 20-25	√ 2019-20 Q2			In construction
50	A585 Windy Harbour - Skippool	2019-20 Q4			In construction

Scheme ref on map	Scheme name	Start of Work	Open for Traffic	Lane miles delivered	Scheme status
51	A5036 Princess Way - Access to Port of Liverpool	Deferred external factors			Further work required
52	M6 Junction 22 upgrade	Scheme is moved into RIS3 pipeline			
53	M53 Junctions 5-11	Paused-stopped Low VM			
54	M56 new Junction 11A	Paused-stopped Low VM			
55	M6 Junction 19 Improvements	2019-20 Q4			In construction
56	A500 Etruria widening	2018-19 Q4			In construction
57	M1 Junctions 23A-24	√ 2016-17 Q4	2018-19 Q3	3	OFT
58	M6 Junction 10 improvement	2019-20 Q4			In construction
59	A5 Dodwells to Longshoot widening	Deferred minimise disruption			
60	M42 Junction 6	2019-20 Q4			In construction
61	A46 Coventry junction upgrades	2019-20 Q4			In construction
62	M40/M42 interchange Smart Motorways	2019-20 Q4			In construction
63	A45/A6 Chowns Mill junction improvement	√ 2019-20 Q3			In construction
64	M5 Junctions 5, 6 & 7 junction upgrades	√ 2015-16 Q2	2018-19 Q4	0	OFT

Scheme ref on map	Scheme name	Start of Work	Open for Traffic	Lane miles delivered	Scheme status
65	A43 Abthorpe Junction	√ 2015-16 Q4	2017-18 Q1	0	OFT
66	A428 Black Cat to Caxton Gibbet	Deferred external factors			Further work required
67	M11 Junctions 8 to 14 - technology upgrade	Paused-stopped Low VM			
68	A12 Chelmsford to A120 widening	Deferred minimise disruption			
69	A12 whole-route technology upgrade	Paused-stopped Low VM			
70	A1(M) Junctions 6-8 Smart Motorway	2019-20 Q4			In construction
71	M11 Junction 7 junction upgrade	Commitment met by HE - transfer funds to third party (Essex CC)			Developer to start construction
72	A34 Oxford Junctions	2019-20 Q2			In construction
73	A34 Technology enhancements	2019-20 Q2			In construction
74	M25 Junction 25 improvement	Deferred minimise disruption			
75	M25 Junction 28 improvement	Deferred minimise disruption			
76	M4 Heathrow slip road	2017-18 Q2	2017-18 Q4	0	OFT
77	M2 Junction 5 improvements	Deferred external factors			Statutory process

Scheme ref on map	Scheme name	Start of Work	Open for Traffic	Lane miles delivered	Scheme status
78	M25 Junctions 10-16	Deferred minimise disruption			
79	M25 Junction 10/A3 Wisley interchange	Deferred minimise disruption			
80	M3 Junction 9 improvement	Deferred minimise disruption			
81	M3 Junction 10-11 improved sliproads	2019-20 Q4			In construction
82	M3 Junctions 12-14 improved sliproads	2019-20 Q4			In construction
83	M27 Southampton Junctions	Deferred external factors			Further work required
84	M271 / A35 Redbridge roundabout upgrade	2019-20 Q1	Missed commitment		In construction
85	A31 Ringwood	Deferred minimise disruption			
86	M49 Avonmouth Junction	√ 2017-18 Q3	√ 2019-20 Q3	0	OFT
87	M5 Bridgewater Junctions	Paused-stopped Low VM			
88	A52 Nottingham junctions	√ 2016-17 Q4			In construction
89	A14 Junction 10a	Paused-stopped Low VM			
90	A5 Towcester Relief Road	Scheme will be delivered by a third party (developer)			Developer to start construction

Scheme ref on map	Scheme name	Start of Work	Open for Traffic	Lane miles delivered	Scheme status
91	A30 Chiverton to Carland Cross	2019-20 Q4			In construction
92	A1 North of Ellingham (re-scoped)	√ 2018-19 Q3	2019-20 Q4	0	OFT
93	A1 Morpeth to Ellingham dualling	Missed commitment			
94	A1 Scotswood to North Brunton	2019-20 Q4			In construction
95	A1 Birtley to Coal House widening	Deferred minimise disruption			
96	A628 Climbing Lanes	Stopped Other factors			
97	A61 Dualling	2019-20 Q4			In construction
98	Mottram Moor link road	Missed commitment			
99	A57(T) to A57 Link Road	Missed commitment			
100	A47 North Tuddenham to Easton	Deferred minimise disruption			
101	A47 Blofield to North Burlingham dualling	Deferred minimise disruption			
102	A47 Acle Straight	√ 2016-17 Q4	2017-18 Q4	0	OFT
103	A47 & A12 junction enhancements	Deferred external factors			Further work required
104	A47/A11 Thickthom Junction	Deferred minimise disruption			

Scheme ref on map	Scheme name	Start of Work	Open for Traffic	Lane miles delivered	Scheme status
105	A47 Guyhirn Junction	Deferred minimise disruption			
106	A47 Wansford to Sutton	Deferred minimise disruption			
107	A27 Arundel Bypass	Missed commitment			
108	A27 Worthing and Lancing improvements	Deferred external factors			Further work required
109	A303 Amesbury to Berwick Down	Deferred external factors			Further work required
110	A303 Sparkford - Ilchester dualling	Deferred external factors			Statutory process
111	A358 Taunton to Southfields	Deferred external factors			Judical/ Statutory process
112	A50 Uttoxeter	2015-16 (delivered by third party)	√ 2018-19 Q3	0	OFT

- Scheme meet commitment
- Scheme missed its delivery date, but delivered with RP1
- Scheme deferred to RP2
- Scheme deferred to RP2 commitment status undecided yet
- Scheme is moved into RIS3 pipeline
- Scheme paused/stopped
- Scheme missed commitment
- √ Delivered ahead of schedule

Maintenance and renewals

Highways England's increased maturity in asset management during RP1 has underpinned its improved planning of renewals, as well as its reporting of renewals and maintenance activity.

Maintenance and inspections

Highways England's reporting of maintenance performance was limited in the first few years of RP1. This prompted our concern that Highways England was not demonstrating the extent to which it was managing a safe and serviceable network. However, the company has responded well to our challenge to develop a reporting statement over the last two years of the road period. Development of the statement first produced in 2018-19 during 2019-20, has demonstrated that Highways England has an improved understanding of the condition of the network and the need for maintenance across the SRN.

The updated maintenance statement, published by Highways England within its annual performance monitoring statements, now provides a measure of performance for inspecting and maintaining its network. It includes information relating to defects resolution, litter clearance, cyclical and reactive maintenance performance and planned asset inspections. We look forward to the dataset being used consistently during RP2, such that a baseline of performance can be established and monitored.

As with improvements to the reporting of asset renewals information, the developed reporting has been enabled by Highways England's maturing approach to asset management. This has been supported by internal improvement programmes, such as Operational Excellence, along with a new way of working that the company has almost completed its transition to, known as Asset Delivery. As such, the maintenance reporting statements do not yet provide a complete picture for regions that have not fully transitioned to Asset Delivery. For example, 24 hour defect resolution is not reported in the South East, or in the East, regions.

We consider the reporting of the scale of need for highway maintenance, for example inspection performance and numbers of potholes, as important as Highways England's performance at fixing defects. This is because the data provides an understanding of condition and state of the network not provided by formal metrics. They therefore improve the line-of-sight between asset condition and asset renewal activity by highlighting areas of longer-term need and indicating whether the network is safe for use. If Highways England can show that it is making regular effective maintenance interventions, for example cleaning drainage runs, then it provides assurance that the asset will achieve its design life. This in turn will show whether the value and condition of its assets is maintained and renewal is therefore not premature.

The maintenance reporting statements also provide an indication of Highways England's performance against its statutory obligations. Red claims are processed where a loss has occurred to a user as a result of the company not meeting its requirements to maintain the highway. The maintenance reporting statement provides a measure of current claims.

During 2018-19, we raised our concern at the significant number of overdue detailed inspections of Highways England structures assets. By the end 2018-19 the company had reduced the number down from approximately 3500 to 21 and we have continued to monitor this closely during 2019-20. At the end of the road period one inspection remained outstanding, which was subsequently completed in June 2020. Many of those with the longest overdue dates were assets where access to railway infrastructure is required. We are currently engaging with Highways England and Network Rail, to explore improvements to access arrangements.

In addition to inspections of structures assets, we raised our concern at overdue inspections for geotechnical assets, vehicle restraint systems, tunnels and lighting during the road period. In response Highways England has improved its presentation of inspection progress such that performance and any backlogs can be monitored. This data has been included within Highways England's published annual performance monitoring statements in 2019-20.

Asset management

During RP1, we completed in-depth reviews of Highways England's asset management approach to its main asset types: pavement and structures; geotechnical and drainage; and technology. We also completed a review of Highways England's ability to improve efficiency from its asset management capability.

The studies sought to understand whether the company manages its assets safely, robustly, sustainably and efficiently. They broadly recognised that Highways England is a competent asset manager, applying many examples of good practice across its asset base, and that it is maturing in its asset management approach. The studies also identified a range of recommendations that might support its maturity journey. During 2019-20, we sought to understand how Highways England is engaging with recommendations made within the studies, and more generally pursuing increased maturity. Highways England has responded positively to our findings and is applying aspects of the various recommendations in the management of its assets.

Renewals

In 2019-20, Highways England met its planned renewals volumes against all asset types. Over the whole road period, the company delivered more renewals volumes than planned across the majority of asset types. Only two asset types, bridge bearings and network resilience schemes, saw marginal under-delivery. This is shown in the table in figure C5 below and graphically in figure C6.

Figure C5: volumes of renewals delivered compared to plan in 2019-20 and RP1

		2019-20			Road Period 1		
2019-20 Commitments		Planned Output	Actual Output	Output Variance	Planned Output	Actual Output	Output Variance
Renewal of roads - pavement	Pavement (lane kilometres)	1,450	1,648.9	14%	7,980.7	10,709.4	34%
	Kerbs (kilometres)	11.6	43	271%	61	158	160%
	Lighting (number)	750	860	15%	9,951	22,059	122%
	Guardrail (kilometres)	0.4	1.3	279%	3	5	84%
	Road Markings (kilometres)	3,300	4,466.8	35%	13,372	21,295	59%
Renewal of roads	Drainage (kilometres)	115	144.3	25%	829	1,240	50%
	Boundary Fencing (kilometres)	24.5	27.1	11%	181	233	29%
	Traffic Signs (number)	400	1,030	158%	6,065	7,655	26%
	Geotechnical (kilometres)	7.2	7.6	5%	74	82	11%
	Vehicle Restraint System (VRS) (kilometres)	114	117.2	3%	669	729	9%

Renewal of structures	Bridge Joint (number)	320	444	39%	1,281	2,893	126%
	Parapet (kilometres)	3.4	5.1	50%	10	15	57%
	Waterproofing (square metres)	69,000	89,791	30%	263,567	331,176	26%
	Bridge Bearing (number)	180	278	54%	855	830	-3%
Renewal of technology	Motorway Comms Equipment (number)	160	306	91%	703	1,731	146%
	Renewals and Improvements (number)	550	656	19%	1,684	2,610	55%
	Winter Resilience (number)	42	63	50%	174	254	46%
	Network Resilience (number)	36	38	6%	125	124	-1%

Figure C6: volumes of renewals delivered compared to plan over RP1

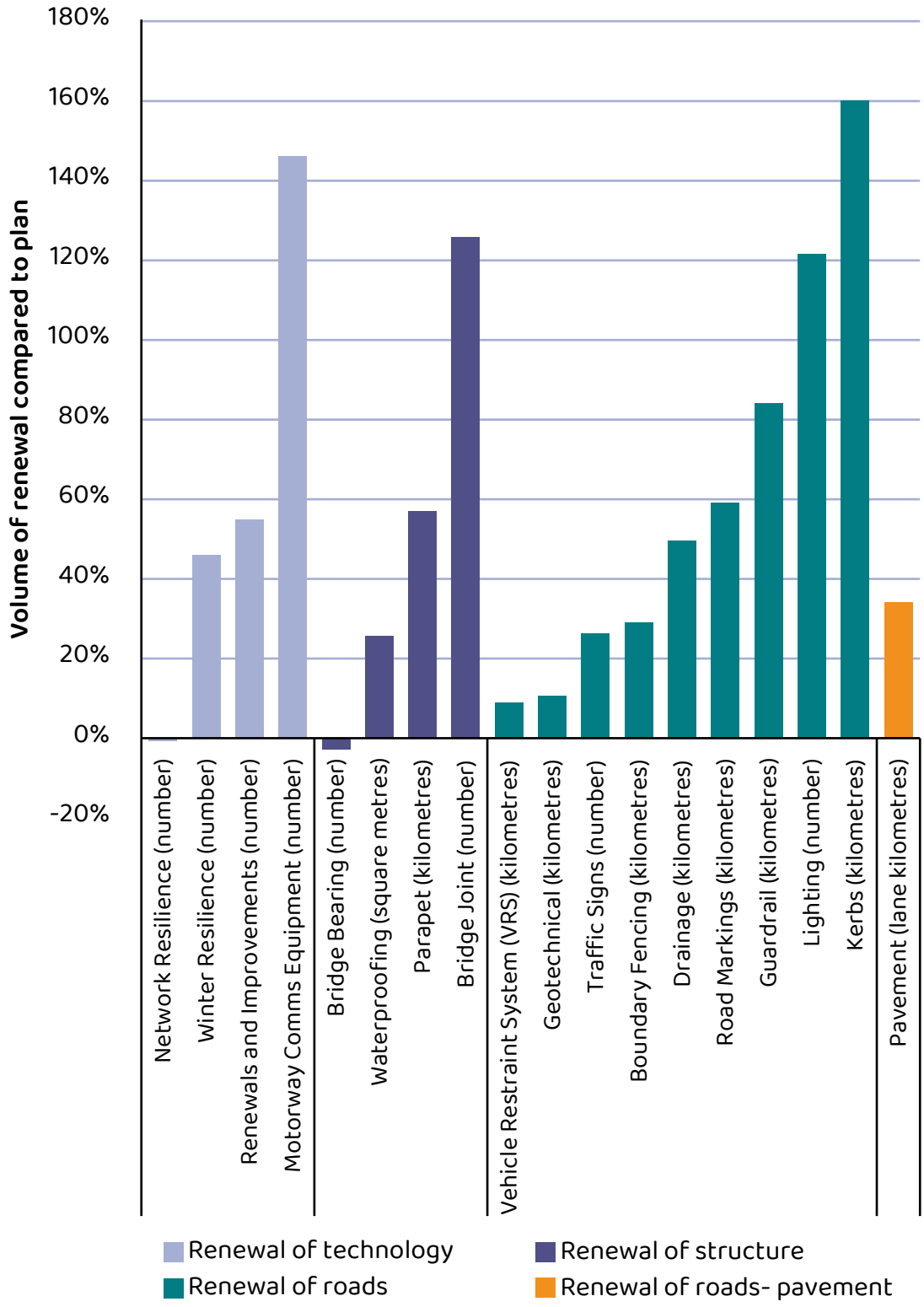
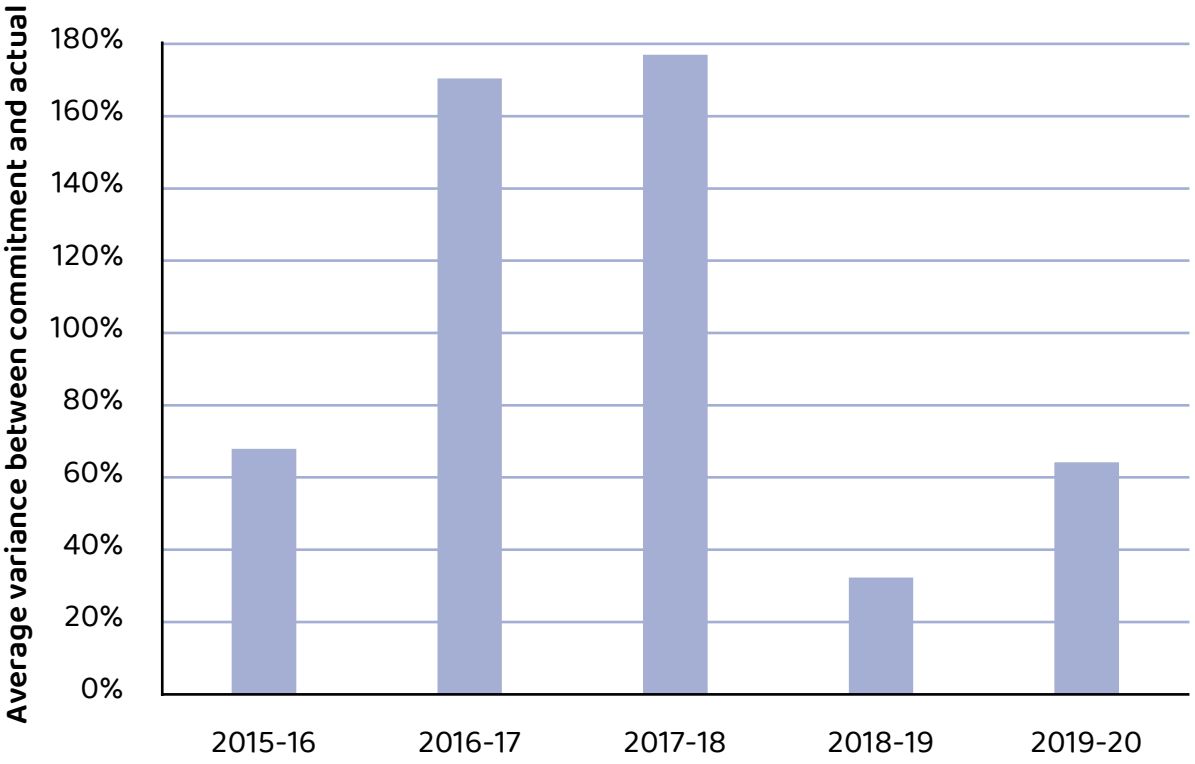


Figure C7 shows the average volumes of renewals delivered compared to plan for all asset types over each of the five years of RP1. The size of the variances show an improvement in delivering renewals that more closely reflect its assets plans in the last two years of the road period, compared with the first three years.

We recognise that change to plans is an inevitable and proper aspect of effective asset management. For example, asset inspections or road user feedback could show that plans need to be adjusted. A variance between plans and delivery is to be expected, particularly when functioning at the more reactive end of the asset management scale – for example 'do-minimum' or 'do-something'. Therefore, whilst we are not necessarily looking for zero variance between planned and delivered, we are looking for consistency in the variance at an asset type level, and robust reporting that explains any changes.

Figure C7: Average variance between commitment and actual for all assets in RP1



In 2019-20, Highways England continued to reduce the proportion of its asset renewals delivered at the end of the financial year, over the winter months. Figure C8 shows the spread of pavement renewals delivered each quarter for each year of RP1. We had been concerned in the first half of RP1 that disproportionately high delivery in Q4 was inefficient and might affect the quality of completed renewals work. The improved profile of quarterly delivery demonstrates improvements made by Highways England in planning its asset renewals.

The company has also improved the transparency of its planning and delivery of asset renewals through the road period through quarterly reporting and review groups initiated by ORR. This has allowed us to better understand planned renewals profiles and the reasons for variances from those plans. It reflects how Highways England has a better central understanding of its asset base and regional work plans and delivery, demonstrating increased maturity as an asset manager. As the company transitions to RP2, we will monitor particular areas for development, such as planning of secondary asset renewals, and planning that allows for efficiency. We will also look for further improvements to reporting in RP2, such as regional breakdowns of asset renewal plans and delivery.

Figure C8: Quarterly volumes of pavement renewals delivered in each year of RP1

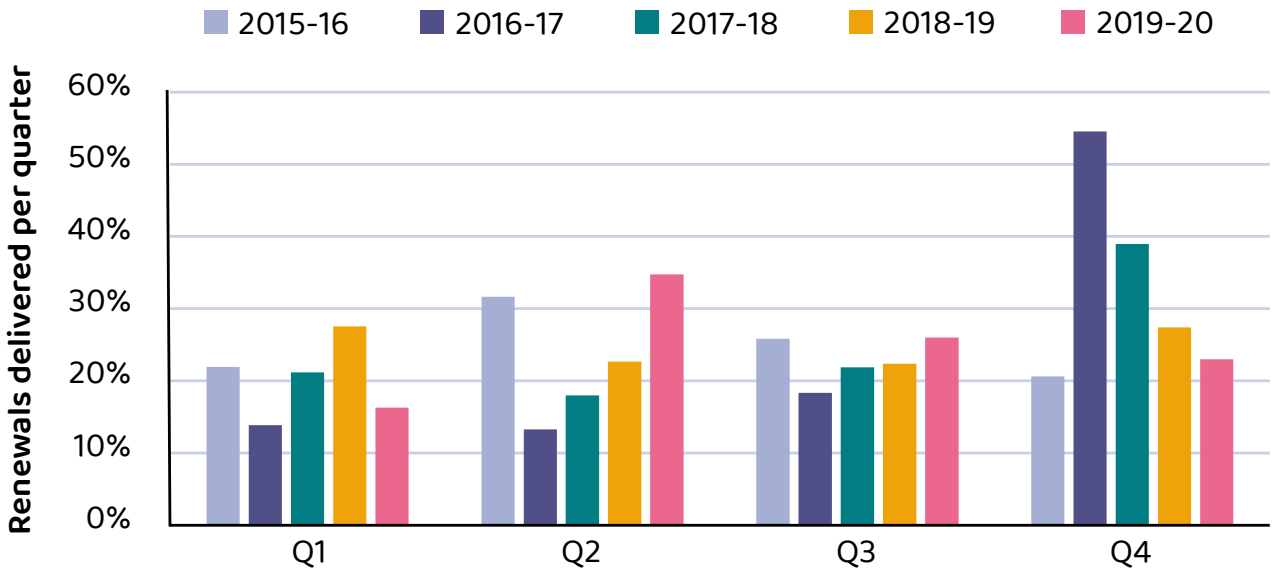


Image courtesy of Highways England

Glossary

Delivery plan – Highways England's plan, which sets out in detail how it will deliver its strategic outcomes and measure success.

Highways England – The government owned company with responsibility for operating, maintaining and enhancing the strategic road network. Launched on 1 April 2015, it replaced the Highways Agency.

Highways monitor – The division within the Office of Rail and Road with responsibility for monitoring the performance of Highways England.

Investment plan – The part of the road investment strategy which set out the planned investments and the funds available for the first road period.

Key performance indicators (KPI) – The performance specification set out 11 key performance indicators which were used to measure Highways England's performance in Road Period 1. Full details of each indicator can be found in the operational metrics manual (referenced on page 7 of the report).

Killed or seriously injured (KSI) – A person killed or seriously injured in a road traffic collision.

Office of Rail and Road (ORR) – The independent safety and economic regulator for Britain's railways and monitor of Highways England.

Performance indicators (PI) – Indicators which sit below, and give context to, the key performance indicators. Full details of each indicator can be found in the operational metrics manual (referenced on page 7 of the report).

Performance specification – The part of the road investment strategy which set out the level of performance that Highways England must deliver in the first road period.

Region - Where regions are discussed in this report, it refers to Highways England's operational regions, which are: Eastern; Midlands; North Eastern; North West; South East; South West; and M25.

Road investment strategy 1 (RIS1) – This document set out a long-term vision for England's motorways and major roads, including a multi-year investment plan for improving the network and high-level objectives for the first road period.

Road period 1 (RP1) – The period that the road investment strategy covers. RP1 covered April 2015 to March 2020. RP2 covers April 2020 to March 2025.

Roads reform – The package of reforms implemented by government in the Infrastructure Act 2015 which included the creation of Highways England.

Strategic road network – The road network which Highways England is responsible for managing, comprising the motorways and main A-roads in England (also 'the network').

Transport Focus – The independent transport user watchdog which represents users of the strategic road network and is responsible for managing surveys of road user satisfaction.

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