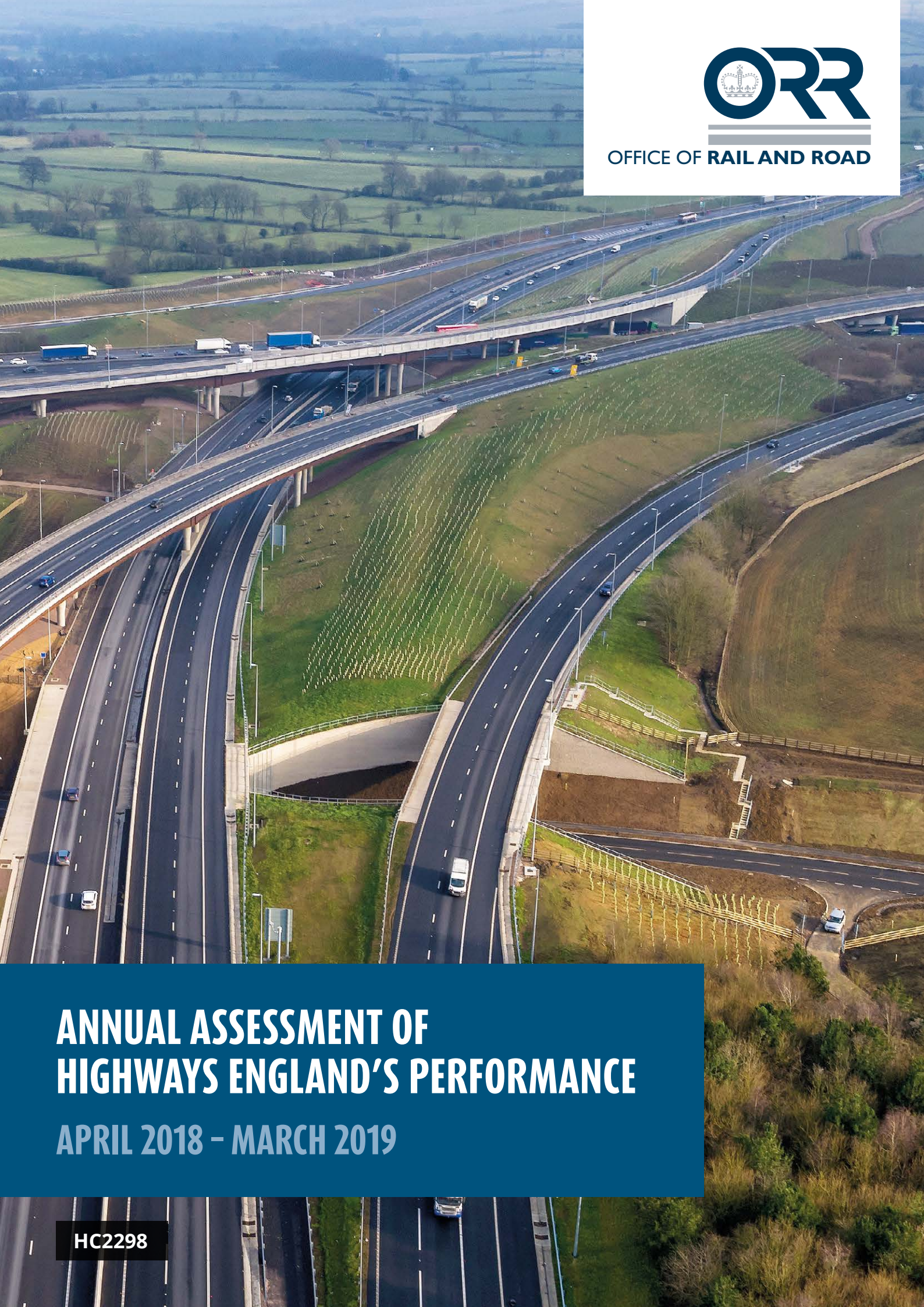

OFFICE OF RAIL AND ROAD

ANNUAL ASSESSMENT OF HIGHWAYS ENGLAND'S PERFORMANCE

APRIL 2018 – MARCH 2019

HC2298

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1. EXECUTIVE SUMMARY

Introduction

1.1 The Office of Rail and Road (ORR) independently monitors Highways England's management of the strategic road network – the motorways and main A-roads in England.

1.2 In the road investment strategy (RIS), government has set the outcomes and investments that Highways England is required to deliver over the first road period, from April 2015 to March 2020 (road period 1). In monitoring the performance and efficiency of the company, our objective is to secure better performance and value for money from the strategic road network to benefit road users and the wider public.

Key messages for 2018-19

1. Highways England is taking the right actions on its network to meet the needs of road users. Despite this, delays are increasing and road user satisfaction is below target.

1.3 Highways England continues to demonstrate a strong focus on safety. Fewer people were killed or seriously injured on the network in 2017 than in any previous year, but further reductions are required if the company is to deliver its challenging target of a 40% reduction by 2020.

1.4 Highways England is delivering its targets for smooth flow of traffic – keeping 98.3% of the network open to traffic, against a target of 97%, and clearing 88% of incidents within an hour, against a target of 85%. However, congestion has increased in the last year, reflecting traffic growth and increasing levels of roadworks as Highways England delivers more network improvements.

1.5 In 2018-19, Highways England set out a customer service improvement plan, aimed at raising levels of user satisfaction. It has delivered the actions set out in the plan, but overall satisfaction remains below the 90% target, at 88.4%.

1.6 The company is making good progress against its environmental targets. In 2018-19 it mitigated 300 noise important areas, and it is delivering the commitments set out in the Biodiversity Action Plan. Against its commitment to support vulnerable users Highways England has delivered 83 new and upgraded crossings in 2018-19, although the company should improve its processes for gathering this information.

2. Highways England is meeting its target to keep the network in good condition, and delivering major improvement schemes to a revised plan that it has agreed with the Department for Transport.

1.7 Highways England is taking a more structured approach to managing its assets and remains above target for maintaining the road surface – its key performance indicator shows that 95.5% of the network is in good condition, above its target of 95%.

1.8 The company has improved how it manages maintenance and renewals, and is delivering volumes that more closely align to its plans. It has also acted on an improvement plan we required that addressed a significant number of overdue inspections of its structures (and other assets), and improved the accuracy of its information relating to inspection records.

1.9 Highways England started work on four major schemes in 2018-19. It originally had a commitment to start work on six, but this was revised to five through the Department for Transport's formal change control process. One scheme did not start as planned and is under review. The company completed six of the seven schemes that were planned to open in 2018-19; the delayed scheme is now expected to open in 2019-20.

1.10 Of 112 major schemes originally planned to start works by the end of the first road period, 103 remain in the programme[1]. Highways England now expects to have started at least 70 by the end of March 2020[2], with 29 expected to

[1] Two schemes - the A34 Oxford junctions and A34 technology enhancements - have been re-scoped and combined into a single scheme.

[2] Two are dependent on delivery by third parties.

start in the second road period[3]. Four further schemes are under review and we consider them unlikely to go ahead in their current form. It has agreed changes to its programme with the Department for Transport. The agreed changes seek to reduce road user disruption. They make sure that only those schemes that deliver value for money and have stakeholder support are taken forwards. The reduced programme partly reflects that the funding provided in road period 1 was not enough to deliver all of the specified schemes.

1.11 There are further risks to delivery of major schemes in the remainder of the road period. 26 schemes are scheduled to start in 2019-20 and these need careful management to avoid further deferrals[4].

1.12 Highways England is forecasting total costs in this road period that are £205m higher than its RIS1 funding. This has reduced significantly over the road period, and from last year, when the difference was £438m.

1.13 Highways England delivered more through ring-fenced funds in 2018-19 than it has in previous years. To date, 54% of the total funds available in road period 1 have been spent. It has credible plans in place for four of the funds, but there is particular risk that it will not fully use the air quality fund.

3. Highways England is delivering more efficiently, but better evidence is needed to support reported levels.

1.14 Highways England is reporting £848m of efficiency in the road period towards its RIS1 target of £1.2bn by March 2020. The company has provided good evidence of the actions it is taking to deliver more efficiently. But broader measures capturing costs of outcomes do not fully support this level.

1.15 Highways England has been working to develop efficiency models based on unit cost information. So far, it has only used these to evidence efficiencies for its smart motorway projects and renewals work – but not for other major improvement projects. More work is needed to assure the renewals model's outputs. It is vital that Highways England progresses work on capturing and reporting productivity improvements to support efficiency reporting in the future. This will also be required to establish a clear baseline for the second road period.

1.16 Highways England can support its efficiency claims by demonstrating that it has delivered its outputs and schemes within its funding. However, providing evidence of this is not straight-forward. The funding provided for RIS1 was not enough to deliver all of the specified schemes, and was set at a time when there was not a full understanding of scheme scope. While fewer schemes are being delivered than originally expected in road period 1, the costs associated with this deferred work are comparable to the under-funding. The company has also benefited from lower than expected inflation. Our analysis of this area of evidence suggests that net levels of efficiency may be lower than those reported.

1.17 Weighing up all of the above, we consider that Highways England has more to do to support its reported £848m of efficiency. We expect it to produce better supporting evidence for the end of road period 1.

1.18 Learning from this, it is essential that a better, fully-funded baseline plan is developed for road period 2, built on a clear understanding of scheme costs, timings and scope.

Summary of performance

1.19 We measure Highways England's performance against the outcomes in the RIS. This sets out eight outcomes areas, each with one or more key performance indicator as well as a number of performance indicators[5]. Delivery against each key performance indicator, and our assessment for the remainder of road period 1, is summarised in the table below using a red, amber, green (RAG) status.

[3] Of these, 25 have been formally agreed and four are expected to miss current commitments to start in RP1.

[4] This may increase depending on the outcome of the four schemes under review.

[5] A detailed description of each indicator can be found in Highways England's Operational Metrics Manual: https://www.gov.uk/government/publications/highways-england-operational-metrics-manual

Outcome	KPI and target	Performance in 2018-19	RAG 2017-18	RAG 2018-19	RAG road period 1
Making the network safer	**Killed or seriously injured** Target: 40% reduction by end of 2020	2,012 killed or seriously injured in 2017, a reduction of 10% from 2016. Figures for 2018 are due to be published in July 2019.	Amber	**Amber**	Amber
Improving user satisfaction	**Road user satisfaction** Target: 90% by March 2017	88.4% satisfaction. Remains below 90% target.	Amber	**Amber**	Amber
Supporting the smooth flow of traffic	**Network availability** Target: 97% lane availability	98.3% availability. Remains above target, and unchanged from 2017-18.	Green	**Green**	Green
	Incident clearance Target: 85% of motorway incidents cleared within one hour	88% cleared within one hour. Remains above target, and improved from 87.9% last year.	Green	**Green**	Green
Encouraging economic growth	**Average delay (secs per vehicle mile)** Target: No target set	9.4 seconds delay per vehicle mile, an increase of 0.2 seconds from 2017-18.	Amber	**Amber**	Amber
Delivering better environmental outcomes	**Noise important areas mitigated** Target: Mitigate at least 1,150 noise important areas by 2020	300 mitigated during the year, bringing total for the road period to 951. 199 further mitigations required in 2019-20 to meet the target.	Green	**Green**	Green
	Improved biodiversity Target: Publish biodiversity action plan	Management plans produced for 10 SSSIs, bringing the total for the road period to 40.	Green	**Green**	Green
Helping cyclists, walkers and other vulnerable users	**Number of new and upgraded crossings** Target: No target set	29 new and 54 upgraded crossings delivered in 2018-19.	Amber	**Amber**	Amber
Achieving real efficiency	**Capital expenditure savings** Target: Savings of at least £1.212 billion on capital expenditure by 2019-20	£362m of efficiencies reported in 2018-19. £848m in road period 1 to date, which is 70% of the target. Further evidence required.	Amber	**Amber**	Amber
	Progress of work, relative to delivery plan Target: No target set	Work started on 4 schemes. 6 schemes opened to traffic. Delivery plans significantly changed.	Green	**Amber**	Amber
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. Remains above target, and improved from 95.2% in 2017-18.	Green	**Green**	Green

Key: Green = Delivery on track/clear plans in place for RP1
Amber = Some risk to delivery of target/plans not fully established for RP1 **Red** = High risk to delivery of target/plans not in place for RP1

2. OPERATIONAL PERFORMANCE

Highways England is taking the right actions on its network to meet the needs of road users. Despite this, delays are increasing and road user satisfaction is below target.

Highways England has helped reduce the number of people killed or seriously injured on its roads over the last four years. It is clearing incidents quickly and minimising disruption from roadworks. But road user delays are increasing due to traffic levels, and the amount of improvement work being undertaken. Road user satisfaction remains high, but is below target; Highways England is delivering an improvement plan.

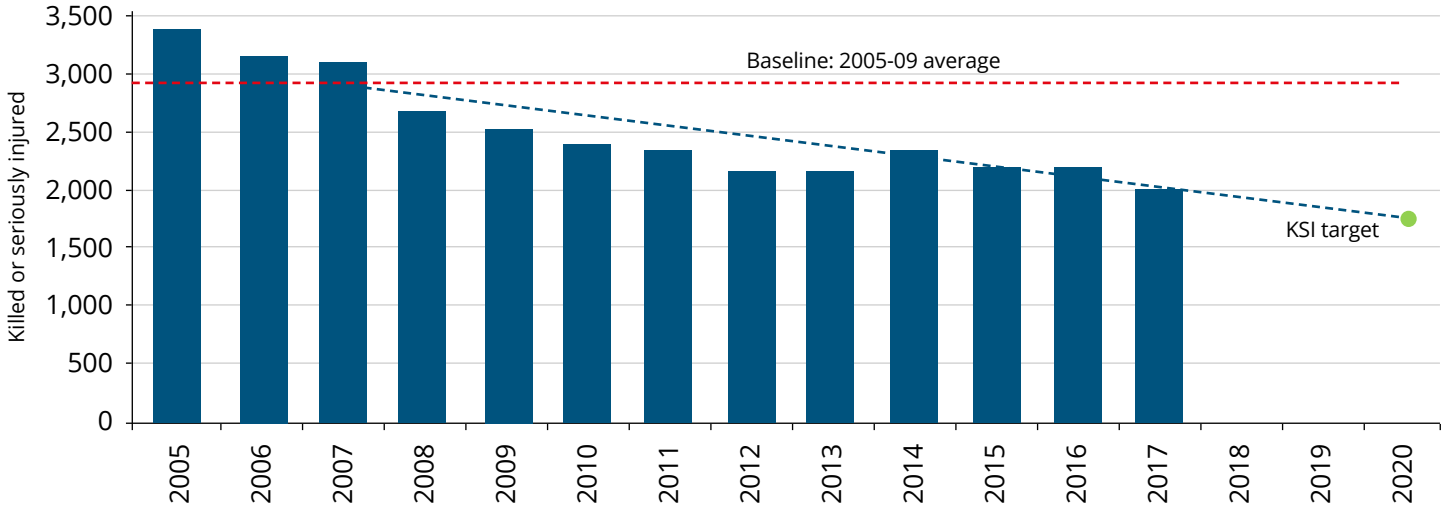
Safety

2.1 One of Highways England's key objectives for the first road period is to improve safety on the strategic road network. The company shows a strong commitment to achieving this, identifying safety as its top priority. During 2018-19 it delivered a number of interventions aimed at improving safety for road users and workers on its network.

2.2 Highways England has a key performance indicator 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. However, changes in how police forces record road casualty data mean that it has not been possible to monitor progress against the target on a consistent basis during this road period. Since late 2015, around half of English police forces have adopted a new system for reporting road casualties (CRASH – Collision Recording and Sharing)[6]. This has caused an increase in recorded KSIs because some casualties which would have been recorded as 'slight' in the old system are recorded as 'serious' in the new system.

2.3 To address this discontinuity, the Department for Transport commissioned the Office for National Statistics to produce a robust methodology for adjusting historic road casualty data. This work enabled the Department to publish an interim report in 2018, which included revised road casualty statistics that consistently account for the impact of the move to new reporting systems over time. The Department expects to publish the confirmed adjustments, alongside its 2018 road casualty data, in July 2019.

Figure 2.1: Killed or seriously injured on the strategic road network (adjusted data), 2005-2017



[6] The Metropolitan Police Service switched to a new reporting system called COPA – Case Overview Preparation Application.

2.4 The adjusted data show that 2,012 people were killed or seriously injured on the network in 2017[7]. This is a 32% reduction on the baseline, and puts Highways England on the straight-line trajectory required to meet its target of a 40% reduction by 2020.

2.5 The number of fatalities reported each year is unaffected by the data changes. In 2017, there were 236 deaths on the strategic road network, which is five (2%) higher than in 2016.

2.6 The Department for Transport advises that these data may be subject to further revision in future years as more police forces move to new systems for reporting road casualty data.

2.7 In 2018-19 Highways England delivered a range of interventions to improve safety on its network, covering its three areas of focus: safer roads, safer people and safer vehicles. These included:

- **Safety schemes.** Highways England has used its ring-fenced funds to deliver 21 small-scale safety schemes in 2018-19. These schemes focus on higher risk sections of the network, which are often single-carriageway A-roads.
- **Smart motorways – 'red X' enforcement.** Highways England has worked with the Home Office and Department for Transport to introduce a change in legislation to allow cameras to automatically detect drivers who disobey 'red X' signals on smart motorways, and enable the police to prosecute these offences. This legislation was passed in May 2019, and enforcement is expected to begin later in the year. This has been supported by multi-media campaigns to increase road user awareness of how to drive on smart motorways.
- **Suicide prevention.** Highways England has made progress in delivering its suicide prevention strategy. In the past year, the company has improved how it captures data on suicides and suicide attempts on the network. This helps inform the effectiveness of suicide prevention interventions taken by the company, which include restricting pedestrian access, and closing lay-bys to prevent parking close to known suicide hotspots. In partnership with The Samaritans, it has installed crisis signage at over 100 priority locations.
- **Business drivers.** In partnership with other safety organisations, Highways England has delivered its Driving for Better Business campaign, which aims to improve awareness of work-related road safety. Businesses representing approximately 200,000 drivers, and 150,000 vehicles have signed up to the programme.
- **Vehicle roadworthiness.** Highways England has partnered with organisations such as the Driver and Vehicle Standards Agency, the

[7] A comparison with previously reported (unadjusted) figures is set out in annex A.

Health and Safety Executive, and police forces to target unsafe vehicles on the network. This has included projects to: identify, and remove from the road, dangerously loaded commercial vehicles; inform private motorists about the dangers of poorly loaded vehicles; and install technology to identify HGVs with dangerous tyres.

- **Driver behaviour.** Highways England funds three unmarked HGV tractor units to capture evidence of driving offences (see case study below). The company has also run national information campaigns. In 2018-19, this included the 'Space Invader' campaign, focussing on tailgating, which is a contributory factor in one in eight casualties on the network.

Case study – targeting dangerous driver behaviour

- Highways England has worked with police forces to fund and coordinate the use of unmarked HGV tractor units to patrol the strategic road network.
- This collaboration with police helps target dangerous driving behaviour, such as mobile phone use and other unsafe activities whilst driving. By using HGV tractor units, police can observe the cabs of commercial vehicles, where driving offences might otherwise be difficult to detect.
- In the first four years of the road period, 28 police forces have stopped almost 9,000 vehicles and detected 10,164 driving offences.
- The most common offences are mobile phone use, non-use of seat belts and the driver not being in proper control of the vehicle.
- Due to the success of the project, it has been extended until November 2020.

2.8 In June 2019 Highways England launched its new safety strategy: Home Safe and Well[8]. This aims to build on the previous 5-year Health and Safety Plan by setting out the company's approach to achieving its longer-term vision that by 2040 nobody is harmed when travelling or working on the strategic road network. We will continue to work with the company to understand the detailed plans it is developing to deliver this vision.

2.9 By April 2019, the company had completed 120 of the 130 actions that were set out in the previous 5-year plan. The majority of the remaining 10 actions have a targeted end-date of March 2020, and the company will continue to monitor and report on the remaining actions until they are complete.

2.10 In July 2019, Highways England published an update on its work to produce a safety star rating for the strategic road network[9]. This showed that 95% of travel on the network is on roads rated as three stars or higher – ahead of its target of achieving 90% by 2020. It is now taking forward work to update the star rating of the network, moving from the current 4-star model to a new 5-star model.

2.11 Highways England is unlikely to meet its commitment of improving the majority of its 1-star and 2-star roads to 3-star or more by 2020. However, the company has demonstrated that it is applying an evidence-based approach to prioritising safety interventions, which takes into account both the star rating, and statistical risk of death or serious injury, of a road. We recognise that this approach helps the company target its resources on delivering a greater reduction in casualties than if it focused on improving star-ratings alone. Over the next year we will work with Highways England to carry out a review of how it is prioritising investment to improve safety on the network.

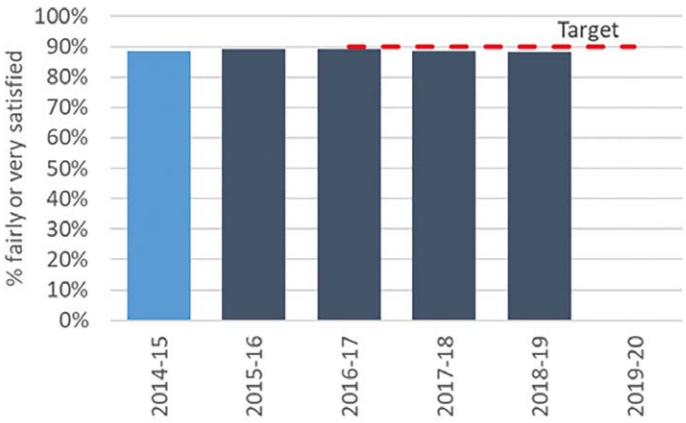
2.12 Accident frequency rates for Highways England's supply chain, as well as the company's own staff have improved in the last year, and both are at the lowest level recorded in the road period so far.

Satisfaction

2.13 Highways England needs to deliver a service that meets road users' needs and maintains a high level of satisfaction. Satisfaction is currently measured by Transport Focus through a regular survey of drivers and other road users – the National Road User Satisfaction Survey (NRUSS).

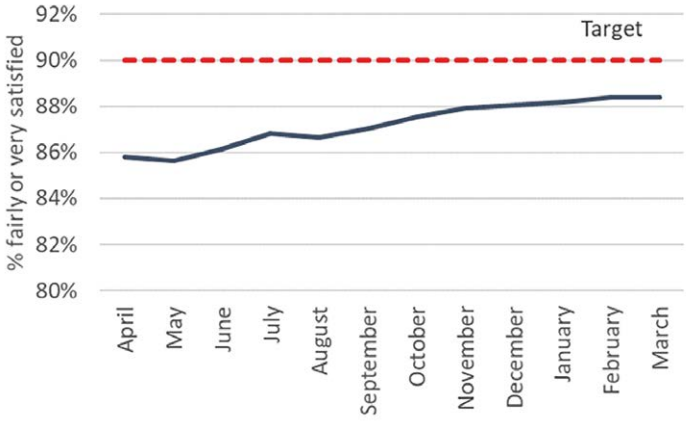
2.14 In 2018-19, satisfaction with using the strategic road network was 88.4%. This is below the target of 90% and below last year's score of 88.7%. This is the lowest end-year figure since our data begins in 2011-12.

Figure 2.2: end-year user satisfaction scores, 2014-15 to 2018-19



2.15 Although the end-year score is below target, the monthly figures have improved throughout the year, starting in April 2018 at 85.8%. Highways England believes this poor start to the year was the result of severe weather.

Figure 2.3: year-to-date user satisfaction scores, 2018-19



2.16 The overall satisfaction score is calculated by combining five separate elements of satisfaction. Satisfaction with safety and signage was above 90%, while satisfaction with journey time, roadworks and upkeep were below 90%. The chart below shows this year's performance compared with last year. Notable changes are an improvement in roadworks management and a deterioration in general upkeep.

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

[9] https://www.gov.uk/government/publications/the-strategic-road-network-star-rating-report

Figure 2.4: user satisfaction scores by component, 2017-18 and 2018-19

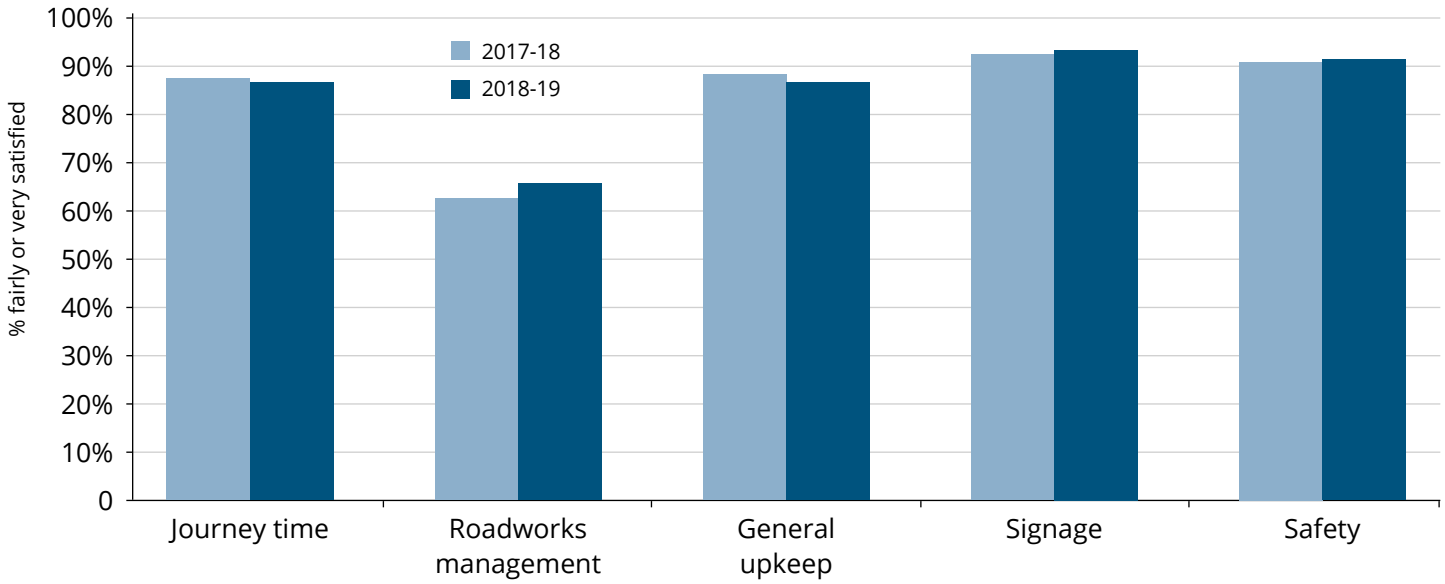
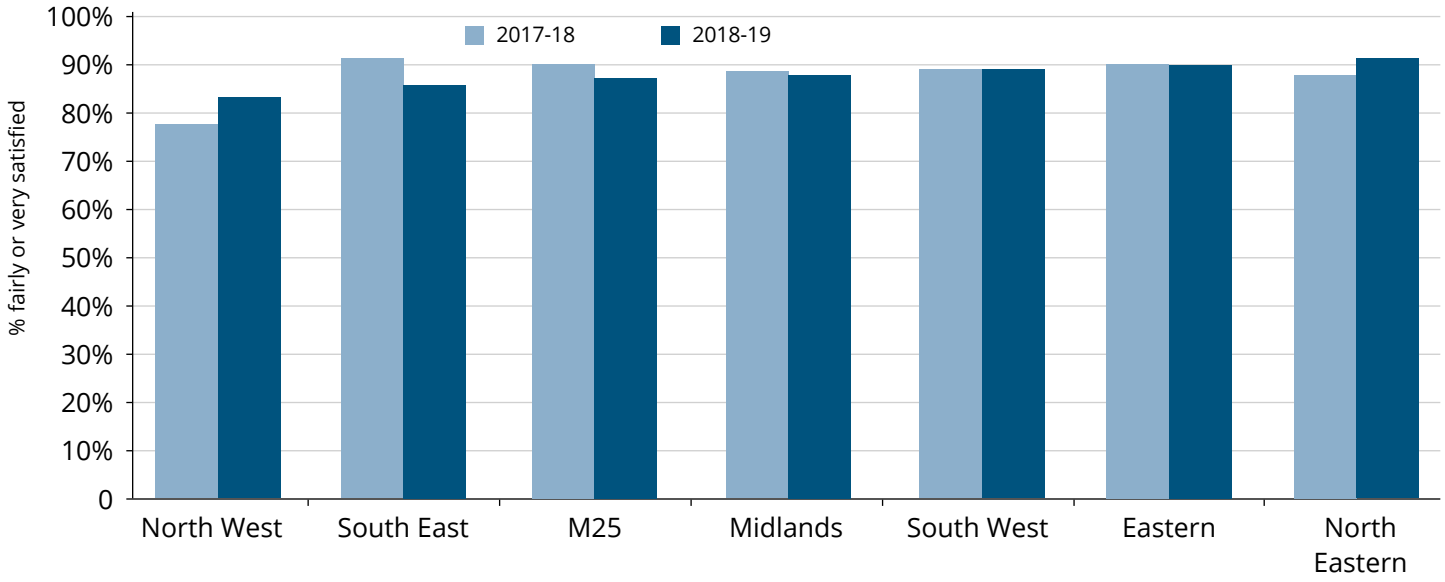


Figure 2.5: user satisfaction by region, 2017-18 and 2018-19



2.17 Analysis of regional satisfaction performance shows that three regions improved and four deteriorated relative to last year. The Eastern, North East and North West regions all improved. The North West improved the most, from 77.8% to 84%, with all five components improving year-on-year. Midlands and the South West performed marginally worse than last year, while M25 and South East showed more significant reductions in performance. In the case of the South East, performance was 86.4%, down from 90.8% the previous year, with all components falling. General upkeep in the South East fell the most, from 91.8% to 82.9%.

2.18 Because Highways England is not currently meeting its key performance indicator target, we are applying an enhanced monitoring approach. A key part of this is more closely monitoring the company's performance against its annual customer service action plan. We meet Highways England's customer service directors each quarter to review progress and challenge.

2.19 In 2018-19, Highways England has taken a range of actions across the five components of NRUSS, including:

- **Safety** – actions to improve customers' awareness of smart motorways, including a programme of improved colouring and signing of emergency refuges;
- **Information** – increased Twitter capability to give better real time information to customers, and revised website covering roadworks information;
- **Journey time** – coached over 60% of its Traffic Officers to work single crewed to improve efficiency and coverage, and recruited five National Network Manager positions to coordinate incident management across the network;
- **Roadworks** – worked on improving the accuracy of day-ahead and week-ahead roadworks information, completed two trials of 60mph speed limits in roadworks and issued two customer service standards. The standards are used to set expectations within Highways England on how to improve information to customers in roadworks and improve accuracy of closures; and
- **General upkeep** – revised inspection and maintenance requirements have been issued to Highways England's contractors so that they focus on both customer satisfaction-related and safety-critical defects, and issued a customer service standard to reduce litter.

2.20 The company also reports that, in addition to its planned actions, it took further steps as follows:

- Increased its incident recovery capability by dispatching recovery operators directly from the Regional Control Centres;
- Trained Traffic Officers to undertake aspects of safety inspections; and
- Mapped its most important stakeholder locations on the network to ensure dedicated consideration is given to activities that might affect them more than others, such as overnight closures.

2.21 In 2019-20, Highways England's customer service action plan builds on the above and includes some important proposals to deliver better customer experience, such as:

- Improving the coordination, scheduling and publishing of all road closures;
- Rolling out further trials of 60mph speed limits through major motorway roadworks; and
- Improving maintenance planning, which includes embedding and monitoring its new 'Intelligence Led Maintenance' approach in asset delivery areas.

2.22 During 2018-19, Transport Focus has been gathering data through a new Strategic Road User Survey. From April 2020, this new survey is expected to replace NRUSS as the measure on which Highways England's user satisfaction key performance indicator is based. It provides more information on road users' experience of the network, including giving detailed information on specific roads. Transport Focus is collecting and publishing this information now. Highways England has been closely involved in developing the survey, and it has already conducted analysis on the data to see what insight it can bring on areas for improvement. We expect the company to use this better information in developing its plans to improve user experience in the future.

Supporting the smooth flow of traffic

2.23 In its role as network operator, Highways England must minimise the impact on road users caused by planned or unplanned disruption. The company has two key performance indicators in this area: network availability monitors the proportion of the network that is open to traffic, and incident clearance monitors how quickly Highways England reopens the road to traffic following unplanned events. Highways England has performed well against both of these key performance indicators throughout the road period.

2.24 The key performance indicator for network availability on the strategic road network was 98.3% at year-end, which is unchanged from the previous year, and above the target of 97%. By taking actions such as using narrow lanes during roadworks, the company expects to maintain performance above target despite an increased number of major schemes on the network in the final year of road period 1.

Figure 2.6: Network availability, 2014-15 to 2018-19

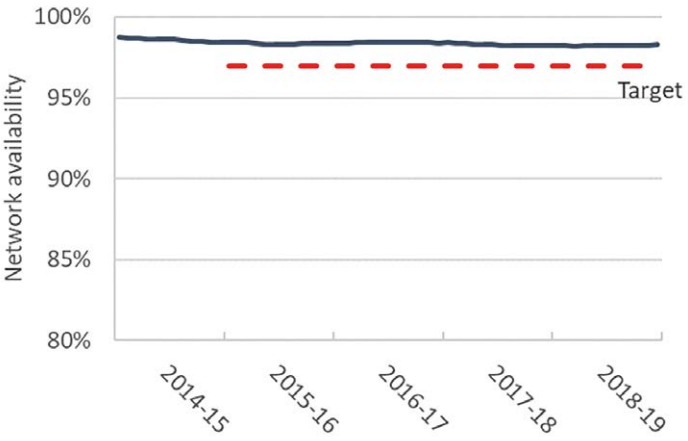
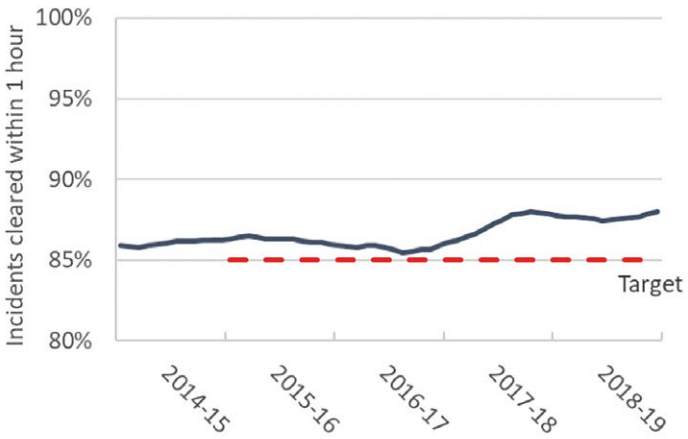


Figure 2.7: Incident clearance, 2014-15 to 2018-19



2.25 Highways England also met its key performance indicator target for incident clearance in 2018-19. It cleared 88% of motorway incidents within one hour, which was slightly higher than performance in the previous year (87.9%), and above the target of 85%.

2.26 To support better decision making in response to incidents on the network, Highways England recruited National Network Managers in 2018-19. Their role is to coordinate intelligence on events affecting the network, and mitigate the impact they have on road users. Other actions taken by the company to support the smooth flow of traffic include using historic incident data to locate Traffic Officers closer to problematic parts of the network, so they are able to clear incidents more quickly.

2.27 Despite taking these actions, and delivering improvement schemes, average delay on the network is increasing – as set out below.

Case study – road user information

- In 2018-19, Highways England collaborated with ORR and Transport Focus to review its provision of traffic data and information to road users. The output of this work is summarised in two reports.
- The first report is based on in-depth research into road users' views about information provision, including what sources are currently used, how they are accessed, and what information needs might be in the future.
- The second report looked more closely at Highways England's provision of data and information to road users, including how the company performs in collecting and disseminating traffic information, and how it compares to other road and transport operators.
- Both reports set out a number of recommendations for Highways England. These include:
  - Highways England should seek to increase satisfaction with information on A-roads, which currently lags behind that on motorways.
  - Highways England should better define who its most important customers for traffic information are, and the relative value of its existing data and information.
  - The company should consider how it can more effectively collaborate with third party data providers, and local highways authorities.
- The reports are published on ORR's website[10].

[10] https://orr.gov.uk/__data/assets/pdf_file/0004/41386/highways-englands-provision-of-traffic-data-and-information-march-2019.pdf

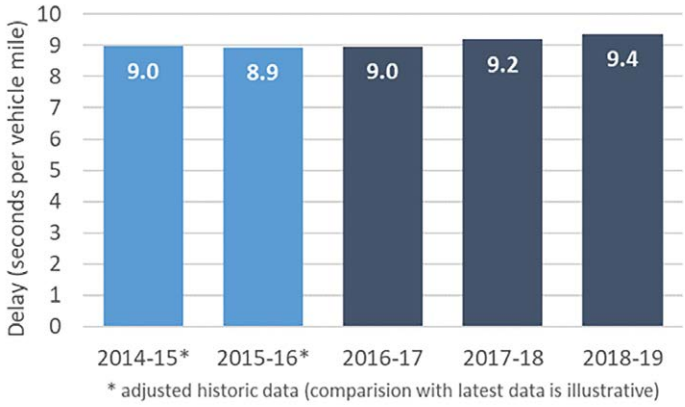
Supporting economic growth

2.28 The strategic road network is vital to our economy. It carries 34% of all traffic in England, despite accounting for 2.4% of the road network by length.

2.29 Highways England's contribution to supporting economic growth is measured by a key performance indicator, which measures average delay on the strategic road network. In 2018-19, average delay was 9.4 seconds per vehicle mile. This is an increase of 0.2 seconds per vehicle mile on 2017-18, and the highest annual figure reported in the road period so far.

2.30 Increased traffic is one underlying reason for increased delays on the network – in 2018, traffic on the strategic road network grew by 0.7%. This is a lower rate of growth than in previous years of road period 1, but still represents record volumes of traffic using the network. There were also more major road improvements in construction during 2018-19 compared to the previous year. Significantly more major schemes are planned to start construction on the network during 2019-20, which increases the likelihood that further increases in delay will be recorded next year.

Figure 2.8: Average delay on the strategic road network, 2014-15 to 2018-19



2.31 Many of the actions Highways England takes to minimise delays on the strategic road network are the same as those it takes to maximise lane availability, clear incidents and improve user satisfaction. One key intervention aimed at minimising delay during 2018-19 has been to trial 60mph speed limits through roadworks where Highways England has assessed it is safe to do so.

2.32 Highways England can also reduce delays on the network by providing better information to road users so they can avoid planned or unplanned disruption. In the past year, Highways England

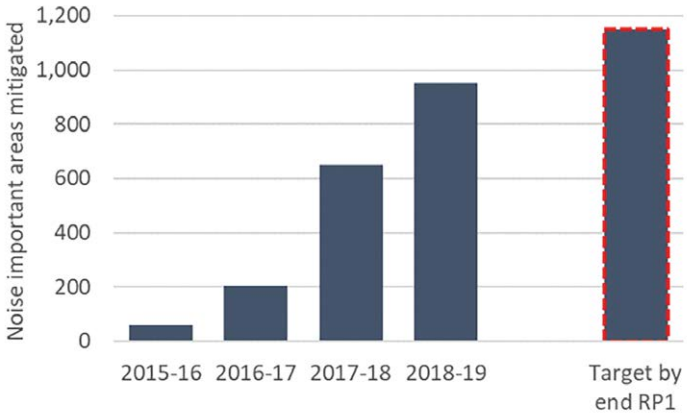
has collaborated with ORR and Transport Focus to review its provision of traffic data and information to road users. The output of this work is summarised in two reports, which are discussed in more detail in the case study above. Highways England has supported the findings in these reports, and we will work with the company in 2019-20 to understand how it plans to implement the recommendations. More broadly, we will continue to challenge the company to seek new ways to mitigate delays.

Delivering better environmental outcomes

2.33 Highways England has demonstrated good progress against its commitment to deliver better environmental outcomes in 2018-19. The company has two key performance indicators in this area, covering noise and biodiversity.

2.34 Highways England has a target to mitigate at least 1,150 noise important areas by 2020. In 2018-19, it mitigated 300, bringing the total to 951 for this road period.

Figure 2.9: Cumulative noise important areas mitigated at 2018-19



2.35 Of the 300 noise important areas mitigated in 2018-19, 232 were mitigated through Highways England's noise insulation programme, 55 as a result of low-noise resurfacing, eight through installing noise barriers, and five through a combination of these measures.

2.36 About half of the properties counted as mitigated through the noise insulation programme had double-glazing installed. The other half were included as mitigated due to the homeowner either refusing the offer of double-glazing, or not responding to at least three attempts to contact them. In this situation, the offer from Highways England remains open – around 150 properties have now had double-glazing fitted where the homeowner had initially declined or not responded.

2.37 The number of noise important areas mitigated in 2018-19 is less than in 2017-18, when 448 were mitigated. This is partly due to the company mitigating larger noise important areas, which include more properties, and a change in the double glazing contractor. Despite this, Highways England reports that it is on course to mitigate at least 199 noise important areas in 2019-20 and meet its RIS1 target.

2.38 Highway England also continues to make progress in delivering the commitments set out in its biodiversity action plan. In 2018-19 the company produced 10 management plans for sites of special scientific interest (SSSIs) on its estate and has now met its commitment to develop 40 plans in this road period. It also completed 25 grassland schemes, delivering almost 100 hectares of species rich grassland. The company trialled its new biodiversity metric in 2018-19, which it will roll out more widely across the business in 2019-20, in preparation for formal reporting in the next road period.

2.39 In 2018-19, Highways England worked closely with the Joint Air Quality Unit[11] to support the Government's air quality policies. In particular, it developed a four-phase plan to address the 101 links on the strategic road network that have been identified as exceeding legal limits for nitrogen dioxide.

2.40 The company has completed the first two phases, by undertaking traffic and air quality modelling for each link, and investigating potential mitigation measures. It is now working on the third phase to identify the most appropriate mitigation measures.

2.41 During 2019-20, ORR will monitor Highways England's delivery of the fourth phase as it implements the agreed mitigation measures. The company is considering a range of potential mitigations, which includes using ring-fenced funds to build air quality barriers. As discussed in chapter 3, the complexity of delivering these barriers, and the short time left to do so in road period 1, represents a significant risk to making full use of the air quality ring-fenced fund.

[11] The Joint Air Quality Unit was established by Defra and the Department for Transport to coordinate delivery the Government's plans for achieving nitrogen dioxide compliance.

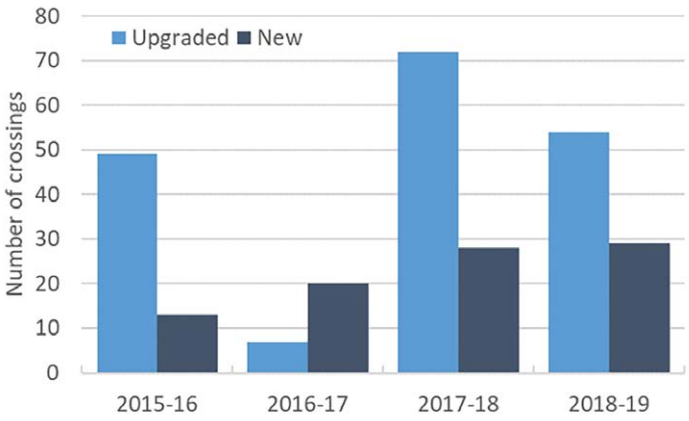
2.42 Highways England has continued to take action to tackle litter on the strategic road network during 2018-19. It refreshed its litter strategy in March 2019[12]. The company collected 20,000 bags of litter on the network during the year, and made greater use of social media campaigns to educate the public about the impact of littering. Other activities in 2018-19 included: trialling an automatic litter-picking machine; extending a trial to install window height bins at service areas; and working with local authorities to undertake litter picking on A-roads to coincide with lane closures for other maintenance work.

Vulnerable users

2.43 Reflecting the wider impact the strategic road network has on neighbouring communities, Highways England has a key performance indicator to report the number of new and upgraded crossings it delivers to help cyclists, walkers and other vulnerable road users.

2.44 In 2018-19, the company delivered 29 new and 54 upgraded crossings on the network, bringing the total delivered in the road period to 90 new and 182 upgraded crossings. These figures include revised totals for 2015-16 to correct an error identified by Highways England in its figures. The company can further improve the accuracy and timeliness of the information it captures relating to crossings on the network.

Figure 2.10: Number of new and upgraded crossings, 2015-16 to 2018-19



2.45 Highways England completed construction on 22 cycling schemes in 2018-19, bringing the total delivered in this road period to 101. The company has a commitment to deliver 150 cycling schemes by the end of road period 1, and it has developed plans for 2019-20 to achieve this.

[12] https://www.gov.uk/government/publications/highways-england-litter-strategy

3. INVESTMENT DELIVERY

Highways England is meeting its target to keep the network in good condition, and delivering major improvement schemes to a revised plan that it has agreed with the Department for Transport.

The condition of Highways England's roads, as measured by its key performance indicator, is good. It is broadly delivering its major improvement schemes to latest plans. However, there are risks to delivery for the remainder of the road period. It has agreed changes to the programme of major improvements with the Department for Transport which mean that it now expects to have started at least 70 by the end of the road period, compared to 112 set out in the RIS. It delivered more through its ring-fenced funds than in previous years – but delivery risks remain.

Major investment delivery

3.1 In 2018-19, Highways England started work on four major schemes. It originally had a commitment to start work on six, of which: three schemes started construction in year; two had their start of works commitment revised through the Department for Transport's formal change control process to reduce road user disruption around Manchester; and one did not start as planned and is under review due to changes on adjacent local roads. In addition, Highways England started construction of one scheme that had been re-scoped and had its start of works revised to 2018-19, following formal change control approval.

3.2 Of the seven schemes which were planned to open for traffic in 2018-19, six were delivered on time (one of which was completed one quarter ahead of schedule). One scheme has missed its delivery date for 2018-19 and will open in 2019-20. In addition, the company also opened to traffic a scheme that was delayed from 2017-18.

Figure 3.1: Summary of major scheme delivery in 2018-19

Construction phase	Schemes committed for 2018-19	Schemes delivered in 2018-19	Details
Start of works	6	4	3 started
			2 formally agreed for deferral
			1 not started and under review
			1 additional scheme started. Re-scoped and start of works commitment revised to 2018-19
Open for traffic	7 1 delayed from 2017-18	7	6 opened
			1 delayed and will open in 2019-20
			1, delayed from 2017-18, opened

Key:

- Milestone due or achieved on schedule or ahead of schedule
- Milestone due or achieved one quarter behind schedule
- Milestone due or achieved more than one quarter behind schedule
- Milestone changed

3.3 Highways England has now started work on 28 schemes in road period 1, in addition to the 16 schemes that started prior to the road period. It has opened 29 schemes for traffic in this road period, and there are currently 15 schemes in construction.

3.4 The majority of major schemes completed to date have cost more than agreed funding assumptions. The 29 schemes that Highways England has opened for traffic by the end of March 2019 are forecasting costs that are £443.9m higher than baseline. This mainly reflects overspends on two schemes – M60 junction 8 to M62 junction 20, and M6 junctions 16 to 19 – due to increased costs associated with making additional improvements to the existing asset, and extended work time to maintain commitment dates.

Case study – M60 Junction 8 to M62 Junction 20

- The M60 junction 8 to M62 junction 20 smart motorway scheme was completed in 2018-19. The final cost of this scheme was higher than originally anticipated, and we have worked with Highways England to understand the factors that contributed to this.
- The M60 and M62 around Manchester is one of the busiest sections of road in the UK, carrying over 180,000 vehicles per day. This route forms an important part of the main east-west transport corridor, linking Merseyside and greater Manchester with Yorkshire and the Humber. It is heavily congested with unpredictable journey times, especially during peak periods. Congestion on this stretch of motorway also impacts on local roads.
- The scheme was designed to address congestion and improve journey time reliability. This involved work to increase capacity by upgrading the existing M60 to a smart motorway from junctions 8 to 18, plus smart motorway with all lane running on the M62 from junctions 18 to 20.
- The scheme introduced variable speed limits, hard shoulder running and new emergency refuge areas to increase capacity and improve traffic flow.
- The scheme opened for traffic in July 2018, 10 months behind schedule. The final cost was £298m, which is £99m above the original estimate. The delays and cost escalation were attributed to delivering additional work, including improvement to asset condition to avoid subsequent maintenance work and construction delays.

3.5 Highways England continues to make good progress on its flagship schemes. The company plans to open the A14 Cambridge to Huntington scheme in March 2020, ahead of its scheduled completion date in 2020-21. The A303 Stonehenge Tunnel is in the middle of the planning application process and construction is expected to begin in 2021-22. On the Lower Thames Crossing, the company completed an extensive public consultation in December 2018 and it is now analysing the comments received before selecting a preferred option to take forward.

Highways England's capital plan

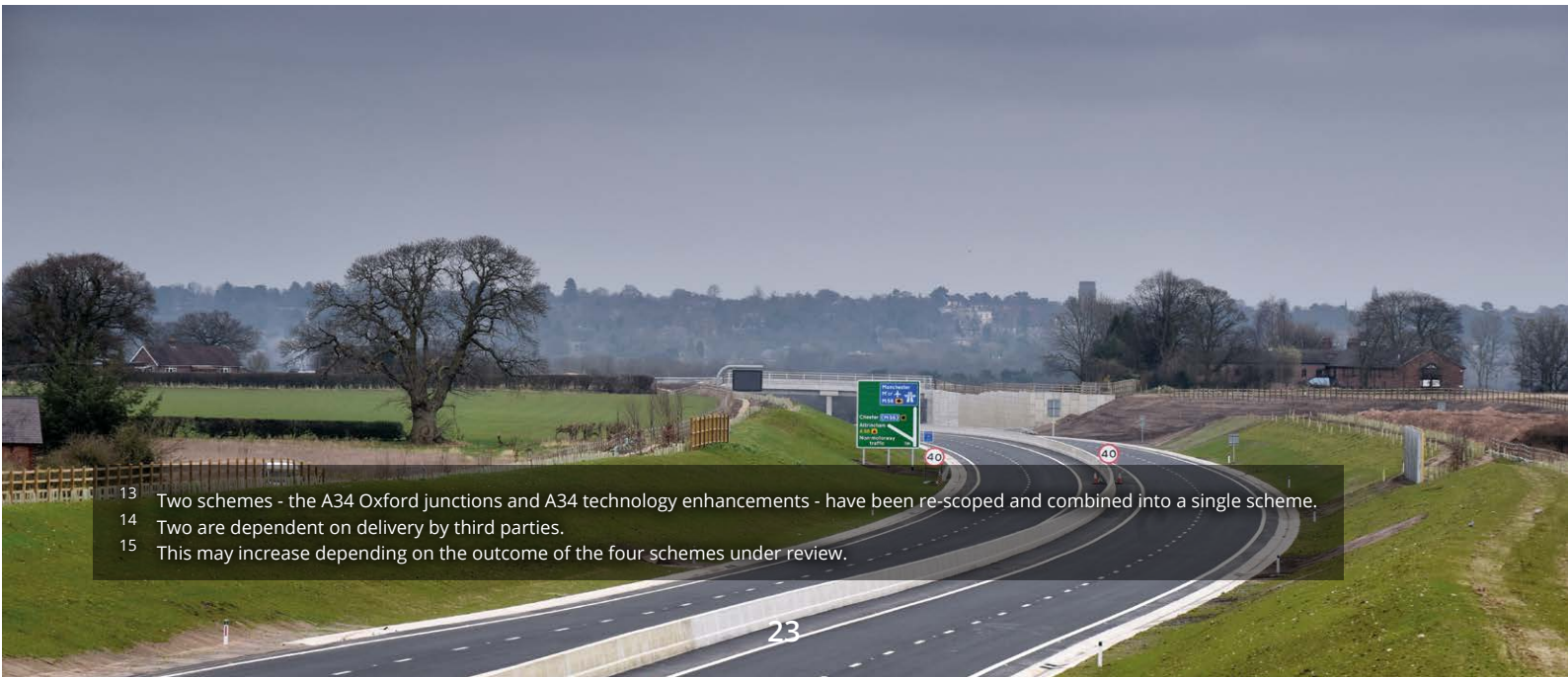
3.6 In 2017-18, Highways England reviewed its plans for delivering capital investment in road period 1. The company improved its scheduling of major schemes, with a focus on their scope, value for money and road user experience. This optimisation of the capital programme resulted in some major improvement schemes being considered for delivery in future road periods, while other schemes were brought forward within the current road period. It also removed schemes from the programme where they were no longer providing value for money.

3.7 During 2018-19 Highways England has continued to identify the need for changes to its capital delivery plan.

3.8 It has agreed all the above changes to its commitments in the RIS and delivery plan with government and has taken them through the Department for Transport's formal change control process. These include:

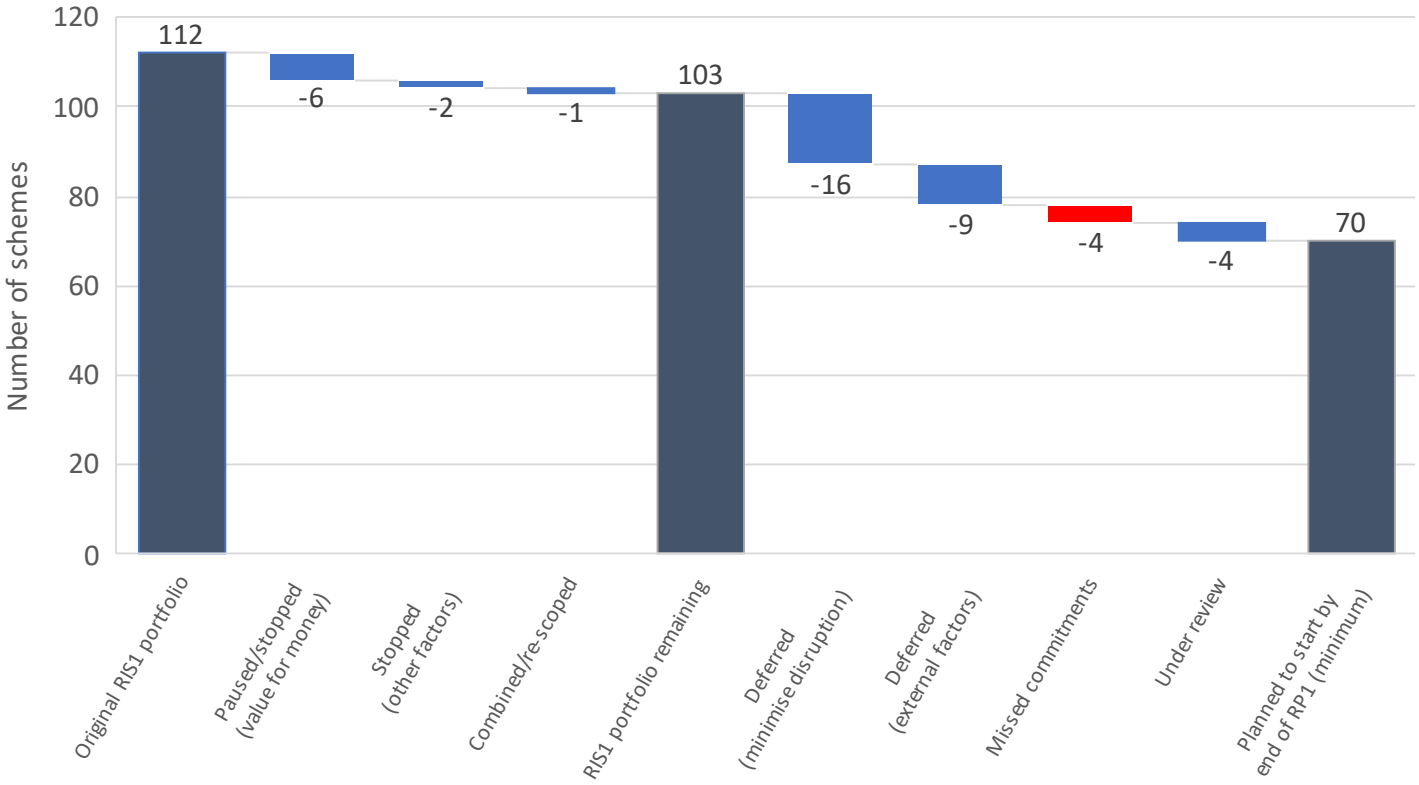
- six schemes formally paused that do not currently demonstrate value for money;
- two schemes formally stopped due to lack of stakeholder support;
- four schemes under review and we consider them unlikely to go ahead in their current form (but not formally changed);
- 25 schemes formally deferred to the next road period, of which 16 were deferred to minimise road user disruption. The remaining nine schemes were deferred mainly as a consequence of external challenges – for example as an outcome of public consultations and schemes' options appraisals;
- 14 schemes advanced within road period 1 to start earlier than originally planned; and
- four schemes likely to miss the RIS commitments to start construction during the road period, predominately as a result of delays with the statutory planning process, and have been deferred to the next road period.

3.9 The revised plans mean that, of the 112 major schemes originally planned to start works in the first road period, 103 remain in the programme[13]. Of these, Highways England now plans to have started at least 70 schemes by end of March 2020[14]. It plans to start 26 during 2019-20[15]. A high proportion of these is forecast to start in the last quarter of road period 1 which increases the risk that some will slip to road period 2.



13 Two schemes - the A34 Oxford junctions and A34 technology enhancements - have been re-scoped and combined into a single scheme.
14 Two are dependent on delivery by third parties.
15 This may increase depending on the outcome of the four schemes under review.

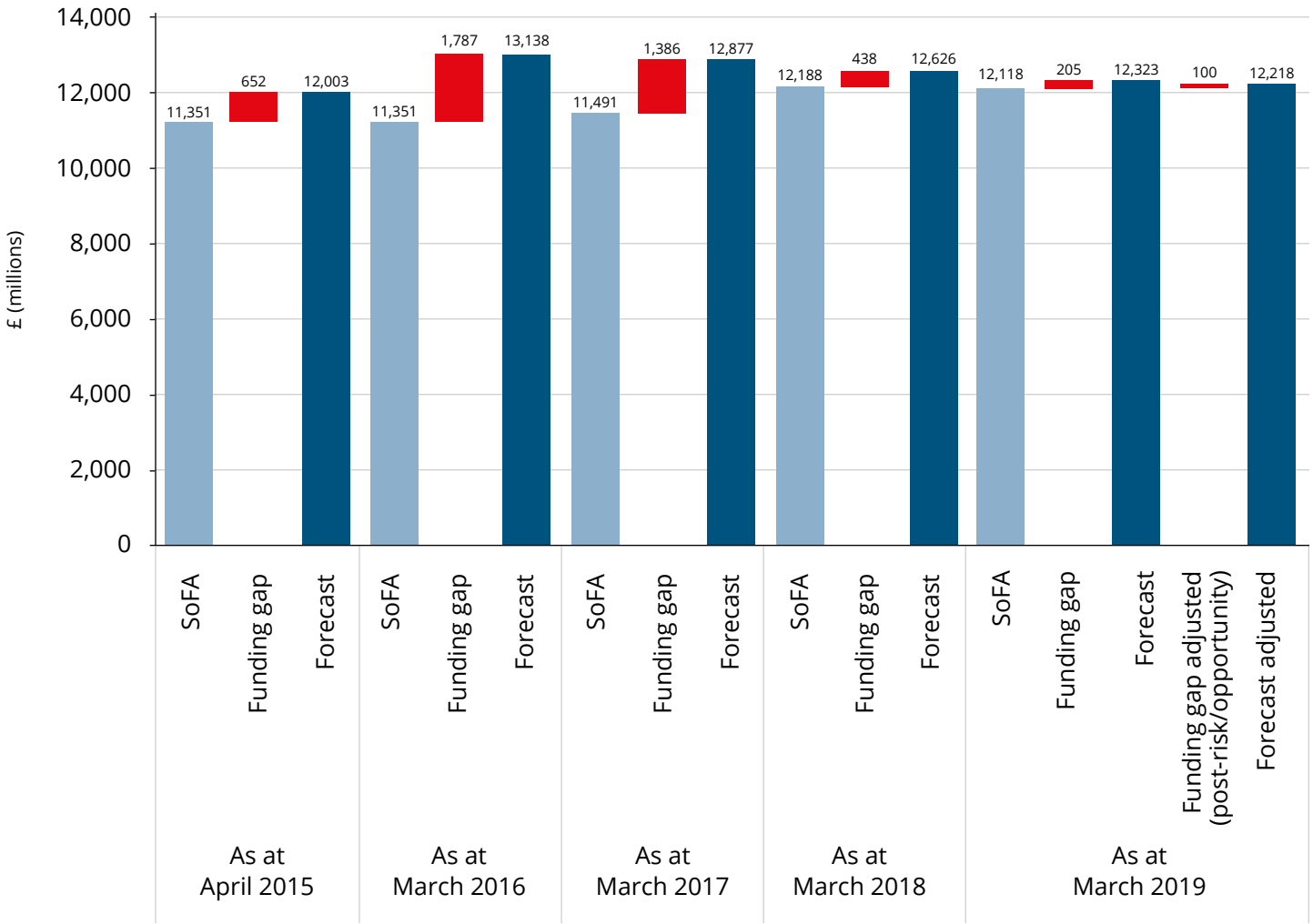
Figure 3.2: Projected start of works in road period 1



3.10 The funding provided for RIS1 was not enough to deliver all of the specified schemes. So, while fewer schemes are being delivered than originally expected in road period 1, the costs associated with deferred work and stopped schemes are comparable to the under-funding.

3.11 The company's forecast total cost for its RIS1 major schemes is currently £1.5bn higher in road period 1 and road period 2 than was originally planned. This is £1.4bn less than what was reported last year mainly due to increasing the baseline for the A428 Black Cat to Caxton Gibbet and A12 Chelmsford to A120 widening to reflect the significantly increased scope of these schemes. Overall forecast costs for RIS1 major schemes are reduced by £1.2bn compared to last year because Highways England is no longer reflecting within its baseline and forecast costs the part of the A303 from Amesbury to Berwick Down that was expected to be funded through private finance. Despite planning to deliver a lower number of major schemes, Highways England is still forecasting total costs that are £205m higher in this road period than its RIS1 funding. This has reduced from last year, when the difference was £438m. Highways England's current assessment of risks and opportunities reduces the funding pressure to £100m by the end of road period 1.

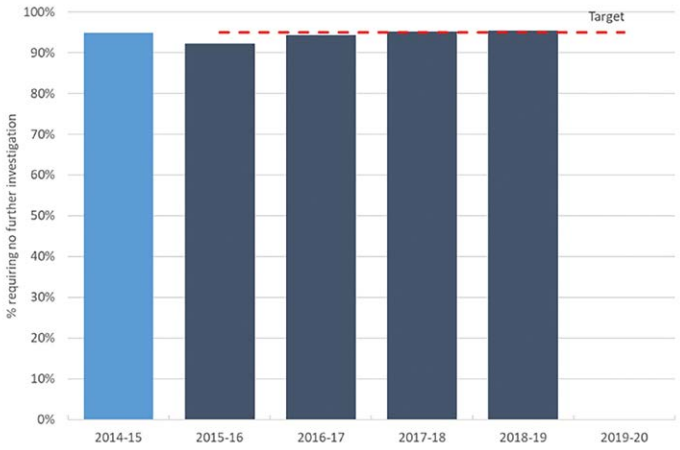
Figure 3.3: Difference between forecast costs and funding for road period 1



Network condition

3.12 The condition of the strategic road network is monitored by a key performance indicator, which measures the percentage of road surface that does not require further investigation for possible maintenance. At the end of 2018-19, 95.5% of the network did not require further investigation. This is above the target of 95%, and an improvement on the 95.2% recorded in 2017-18. Data reported to us by Highways England shows that the condition of other assets on the network is broadly stable.

Figure 3.4: Network condition, 2014-15 to 2018-19



3.13 Highways England's performance monitoring statements for 2018-19 have, for the first time, included data showing the company's performance in maintaining the strategic road network. These statements help inform whether the company is doing enough maintenance and renewal on the network to counter degradation of its assets over time and managing its assets sustainably. It is a positive step that additional reporting on maintenance activity has been published. However, we asked for the published statement to include defects, such as potholes, and it does not yet do this. Reporting of defects would give transparency to the sort of issues that might affect the safety and satisfaction of road users and improve the line of sight between maintenance delivery and network condition. We will continue to work with the company during 2019-20 to resolve the challenge of defect reporting.

3.14 Highways England has a duty to inspect the condition of its structures to identify and plan maintenance and renewals work. During 2018-19 we raised our concern at the significant number of overdue detailed structures inspections. The company put in place a plan to address the backlog, and managed the number of overdue inspections down to 21 by the end of March. It has provided assurance that the outstanding overdue assets have received visual inspections and do not present a risk to users. It has also made improvements to its processes and procedures for managing and monitoring inspection performance going forward. Highways England has also shared progress against inspections for other assets, which we will monitor during 2019-20.

Maintenance and renewals

3.15 In the first three years of the road period, Highways England delivered renewals volumes that were generally higher than planned. In 2018-19, the company improved its management of maintenance and renewals, and delivered volumes that more closely reflected its plans (demonstrated in figure 3.5). Where changes to plans have affected delivery forecasts the company has taken positive steps in reporting the reasons for changes and what it is doing to manage the impact to its operations, maintenance and renewals.

Figure 3.5: volume of renewals delivered compared to annual delivery plan, 2015-16 to 2018-19

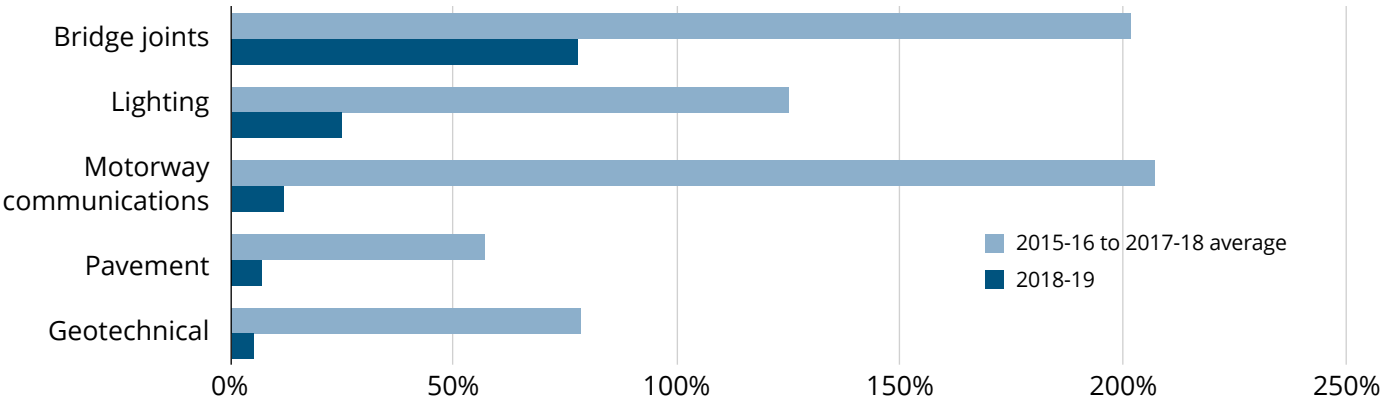
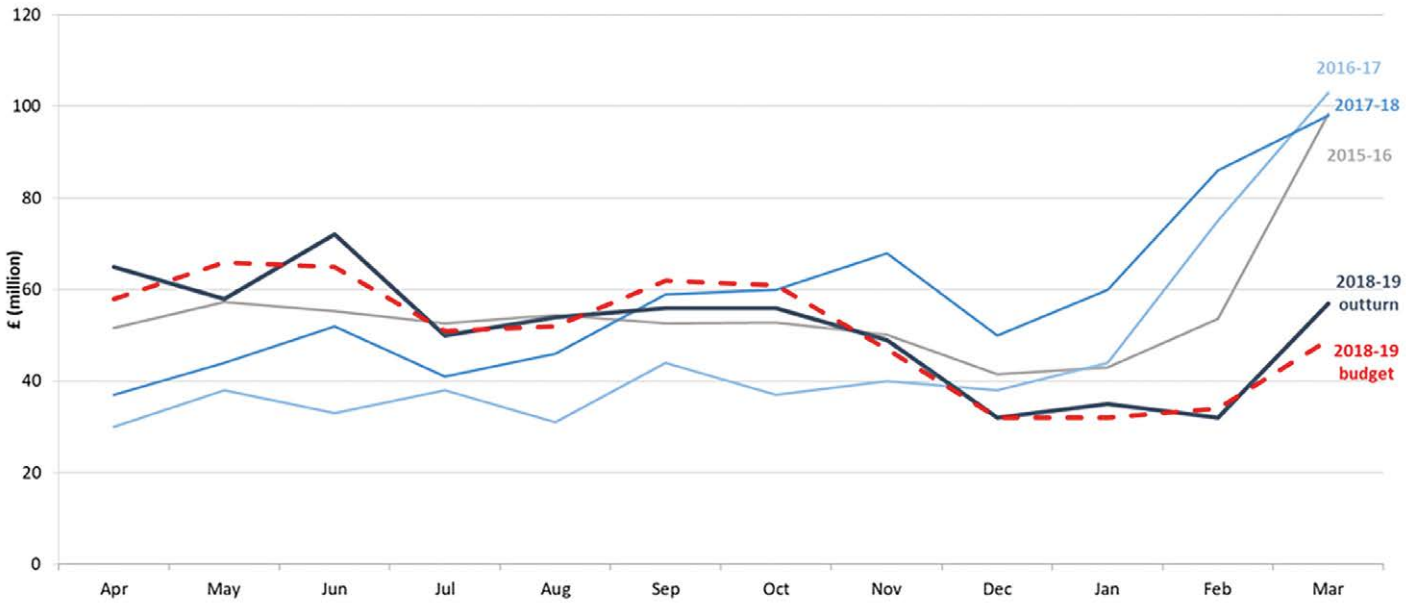


Figure 3.6: renewals monthly expenditure



3.16 In 2018-19, the company delivered its renewals commitments in all assets types, except waterproofing and bridge bearings, where it delivered less than planned. Figure 3.6 demonstrates that Highways England has also shown improved in-year forecasting, and has reduced the high proportion of delivery in the 4th quarter of the year (January to March) that was observed in the three previous years.

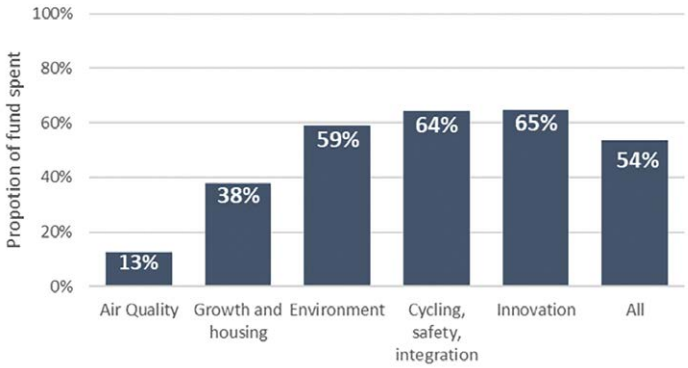
3.17 There remain further opportunities for Highways England to improve its management of renewals work. These include assessing the impact of secondary outputs (where renewal outputs like kerbs and road markings are delivered against a pavement scheme) and the contribution that renewals delivered against enhancement projects have on annual delivery plans.

Ring-fenced funds

3.18 The RIS1 investment plan includes ring-fenced funds worth £675m to address a range of issues beyond the traditional focus of roads investment. These funds are split across five areas: air quality; cycling, safety and integration; environment; innovation; and growth and housing.

3.19 In 2018-19, Highways England spent £181m of its ring-fenced funds. This is the same amount it spent in the previous three years combined and brings the total spend in this road period to £362m. The programme remains heavily back-end loaded, with £313m (46%) of the funds to be invested in the final year of the road period. Highways England's delivery programme for ring-fenced funds in 2019-20 sets out plans for how it will deliver this. It has plans in place for four of the funds, but there is particular risk that the company will not fully use the air quality fund.

Figure 3.7: Ring-fenced funds spent at end of 2018-19



3.20 At the end of 2018-19, Highways England had only spent £9m (13%) of the air quality fund, out of a total fund value of £75m. A large proportion of the proposed investment in the final year of road period 1 depends on delivering a number of air quality barriers to reduce nitrogen dioxide levels on sections of the network. The complexity of delivering these barriers, and the short time available to do so, is a substantial risk.

3.21 Highways England has responded positively to ORR's in-depth review of ring-fenced funds, which we published in July 2018. It has strengthened leadership and resources for the programme, and improved transparency by redesigning the relevant section on its website to make it easier for external parties to contact the company. Better engagement with the Major Projects Directorate in 2018-19 has also been an important factor in increasing the pace of delivery. Highways England is now taking forward work to assess the benefits delivered through ring-fenced funds, and we will work with the company to understand the outcomes from this work, and what lessons can be learnt for RIS2.

Case study – Air Quality Barriers

- Highways England has identified air quality barriers as a potential solution to high nitrogen dioxide levels at some locations on the network.
- Research from the Netherlands shows measurable reductions in nitrogen dioxide concentrations behind the barrier.
- Highways England has commissioned feasibility tests at 12 locations on the network.
- If the feasibility testing is positive, ring-fenced funds will be used to deliver the barriers.
- However, the complexity of delivering the barriers, and the short time left in road period 1 to do so represents a risk to spending the air quality ring-fenced fund.

4. EFFICIENCY

Highways England is delivering more efficiently, but better evidence is needed to support reported levels.

Highways England is reporting £848m of efficiency in the road period towards its target of £1.2bn by 2020. This is based on good evidence of actions taken. But broader measures capturing costs of outcomes do not fully support this level. It is vital that Highways England progresses work on capturing productivity improvements to support future efficiency reporting.

Financial performance in 2018-19

4.1 Highways England spent £3.8bn in 2018-19 which is above the agreed baseline funding for the year (reflecting the RIS funding gap), but £102m below its budget and in line with the Department for Transport's agreed outturn position. Of this, £2.6bn was capital spend which included improvements to the network (£1.6bn), renewing infrastructure (£674m) and ring-fenced funds (£181m).

Reported efficiency

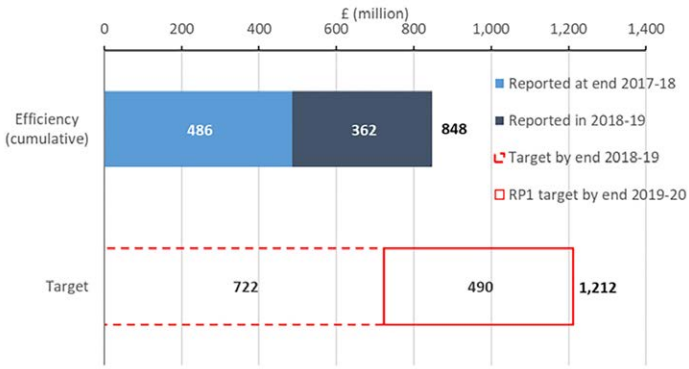
4.2 Highways England has a target to deliver £1.2bn of capital efficiency savings by the end of this road period. It reports efficiency based on capturing the actions it has taken and quantifying their impact – and it provides evidence of this in case studies. We have reviewed this case study evidence, and generally found it to be of good quality. The company, with its supply chain, has established good processes for reporting and internal challenge of this type of evidence.

4.3 Using this approach, Highways England has reported £362m additional efficiency during 2018-19 including some additional efficiency relating to prior years. The cumulative reported efficiency in the first four years of the road period is £848m, against an internal milestone of £722m. The efficiency reported to date is 17% ahead of its internal target and represents 70% of the target for the first road period.

4.4 The renewals programme makes the largest contribution (57%) to the company's reported efficiency to date, followed by its smart motorways programme (26%) and its regional investment and complex infrastructure programmes (16%).

4.5 While Highways England has reported £848m of efficiency through case studies, we also test efficiency using other methods, as set out below, and these do not fully support the levels reported.

Figure 4.1: Efficiency reported to date against target



Supporting evidence of efficiency

4.6 In addition to reviewing bottom-up evidence of efficiency, we also judge Highways England's efficiency using:

- Measures of productivity improvements based on unit costs; and
- An assessment of whether it has delivered the Road Investment Strategy within the funding provided.

Unit costs

4.7 Highways England has been working to develop efficiency models based on unit cost information. Its modelling of smart motorway efficiency is the most mature. We are content that this supports the reported £219m of efficiency.

4.8 The company has also developed a model for renewals efficiency. The model uses an

improved unit cost approach which was first introduced in 2017-18 and has now been extended to cover 66% of its renewals spend. Highways England states that the outputs of this model support its reported renewals efficiency. For the first time in this road period, the outputs have been approved by Highways England's Board[16]. However, there is not yet enough information to give a clear long-term trend in renewals unit costs. In addition, the company's internal assurance review of the model identified risks related to data uncertainty. We will work with Highways England to carry out further analysis to validate the renewals model's outputs before the end of this road period.

4.9 The company has yet to fully develop similar models for providing unit cost based evidence of efficiency for the regional investment and complex infrastructure programmes (16% of reported efficiencies).

4.10 It is vital that Highways England continues to progress work on capturing and reporting productivity improvements to support its efficiency reporting. This will also be required to establish better reporting in the second road period.

Delivery of the Road Investment Strategy

4.11 Highways England receives funding after the removal of expected efficiency. It can therefore support its efficiency claims by demonstrating that it has delivered its outputs, outcomes and schemes within its funding. However, providing evidence of this is not straight-forward for the following reasons:

- The funding provided for RIS1 was not enough to deliver all of the specified schemes, and the value of this over-programming was estimated at £652m. In addition, the RIS was set at a time when there was not a full understanding of scheme scope. Fewer schemes are being delivered than originally expected in road period 1, and outturn costs for schemes have increased. The costs associated with deferred work and cancelled schemes are comparable to the under-funding, with approximately £30m of over-programming remaining.
- At the end of 2018-19, Highways England's forecast costs for this road period exceeded its funding by £205m. It is working to reduce the gap in 2019-20 and there are a number of uncertainties to resolve which may require adjustments to this figure for the purposes of assessing efficiency at the end of road period 1.
- Highways England considers that it was underfunded by £600m for some of its business costs. This includes approximately £100m for delivering outputs not in RIS1. It also includes approximately £500m costs of developing the company's capability and capacity. It has provided reasonable evidence of additional unfunded outputs, but evidence for underfunding of other business costs is more limited.
- Highways England also believes that it has delivered additional scope on some major schemes. Based on the evidence provided by the company to date, our assessment is that £157m of additional scope is being delivered in road period 1.
- Highways England recognises that it has benefited from lower inflation than was forecast and built into funding levels when RIS1 was established. We consider that it may have benefited by up to £685m; Highways England has yet to quantify this benefit, but believes it may be less.

4.12 We are working with Highways England to develop its efficiency evidence relating to delivery of the RIS. Our analysis of the evidence received to date suggests that the company may deliver approximately £600m of efficiency in road period 1, but this figure may change significantly, for example if the company provides improved evidence of the additional £500m of business costs. It is subject to provision of further information by Highways England and more analysis. We will review this further with Highways England in 2019-20 to understand the end of road period position.

[16] In approving the outputs, Highways England's Board recognised certain limitations in data quality. The model's outputs are presented in Highways England's performance monitoring statements as compliant with its Licence Framework and Document obligations.

Our conclusions on efficiency

4.13 When weighing up all three areas of evidence, we consider that Highways England has more to do to support its reported £848m of efficiency. We expect it to produce better supporting evidence for the end of this road period.

4.14 Learning from the uncertainties set out above, it is essential that a better, fully-funded baseline plan is developed for RIS2, built on a clear understanding of scheme costs, timings and scope.

4.15 Our review of efficiency evidence is discussed in more detail in annex A.

5. PRIORITIES FOR 2019-20

5.1 The upcoming year is a particularly important one for Highways England, as it develops its plans for RIS2 whilst delivering its requirements for the final year of road period 1. Priority areas for Highways England to focus on in 2019-20 include:

- Building on its draft Strategic Business Plan for RIS2 to put plans in place, and develop its baseline position, for RIS2;
- Delivering its customer service improvement plan and taking action to minimise delay
- Providing better evidence to support its claimed efficiencies;
- Managing a large number of major schemes starting in the final quarter of the year; and
- Delivering more through its ring-fenced funds programme than it has done previously.

Our monitoring

5.2 The transition from RIS1 to RIS2 is also informs our monitoring priorities in the year ahead. In 2019-20 we will:

- Continue to work with Highways England to monitor its performance, and hold it to account, for delivering its commitments in the final year of road period 1. This will inform our next annual assessment, which will focus on the company's performance across the first road period as a whole.
- Review Highways England's plans, and assess the company's readiness, for delivering RIS2.

ANNEX A: PERFORMANCE AGAINST OUTCOME AREAS

Outcome: Making the network safer

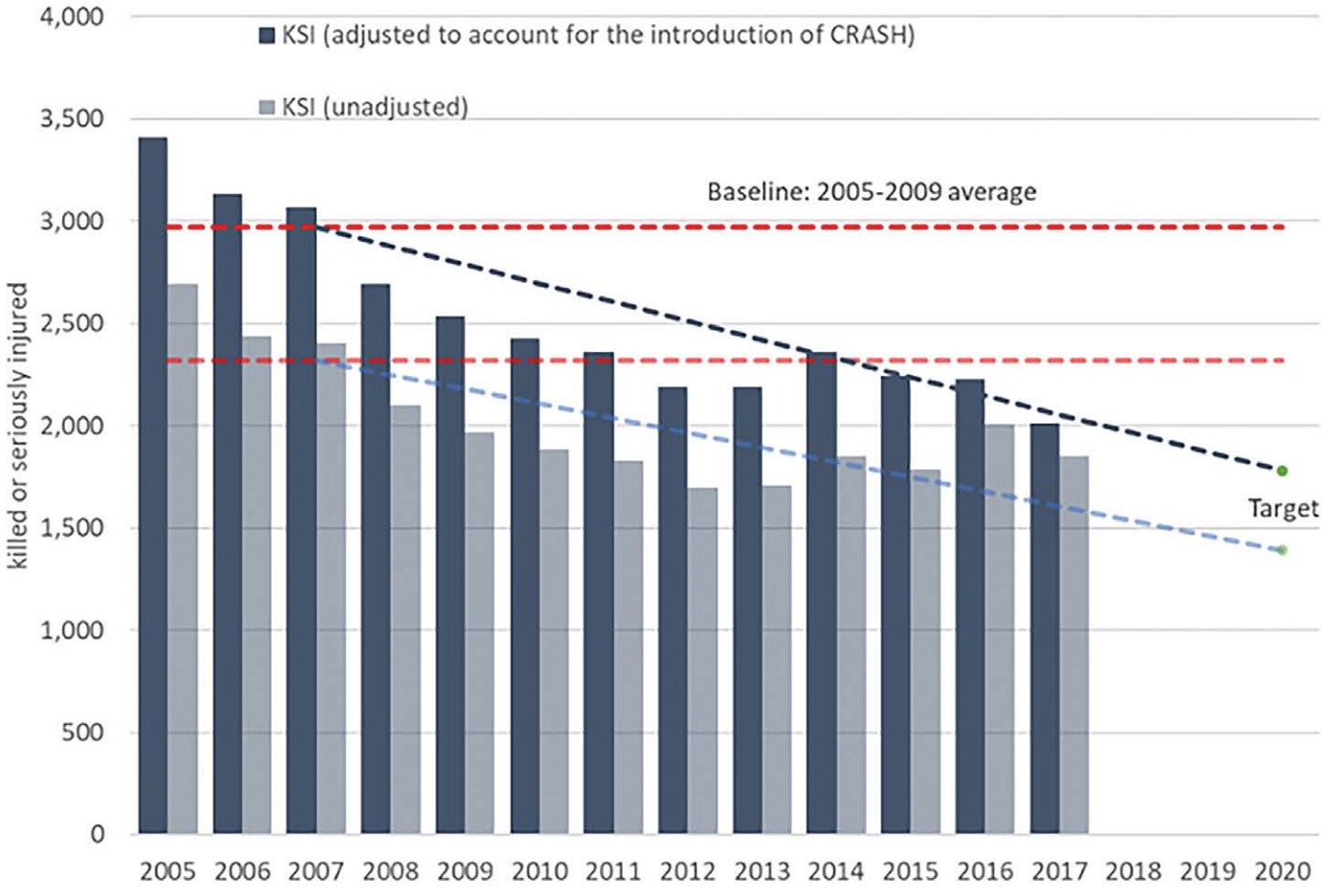
Key performance indicator: Highways England must achieve an ongoing reduction in network KSI (killed or seriously injured) to support a 40%+ decrease by the end of 2020 against the 2005–09 average baseline	
2018-19 status: Amber	**RIS1 status: Amber**

In 2018, the Department for Transport published adjusted road casualty statistics[17]. This was in response to changes in how police forces record road casualty data.

Figure A1 compares adjusted and unadjusted KSIs on the strategic road network. The adjusted figures show 2,012 KSIs on the SRN in 2017, which is 159 higher than the 1,853 KSIs in the unadjusted data.

Reported KSIs for each year between 2005 and 2017 have increased as a result of the adjustment. The baseline period for the target (2005 to 2009) is subject to larger increases than in more recent years. This is because as more police forces move to new systems for recording road casualty data, less adjustment to the data series is required. Therefore, the improvement against the baseline is now greater

Figure A1: Killed or seriously injured on the strategic road network, adjusted and unadjusted figures, 2005-2017



[17] https://www.gov.uk/government/statistics/reported-road-casualties-great-britain-annual-report-2017

than previously reported – the adjusted figures show that Highways England has achieved a 32% reduction in in KSIs in 2017, compared to a 20% reduction under the unadjusted figures.

The number of fatalities reported each year is unaffected by the data changes. In 2017, there were 236 deaths on the strategic road network, which is five (2%) higher than in 2016.

The Department for Transport expects to publish its latest reported road casualty statistics, for 2018, in July 2019.

Performance indicators

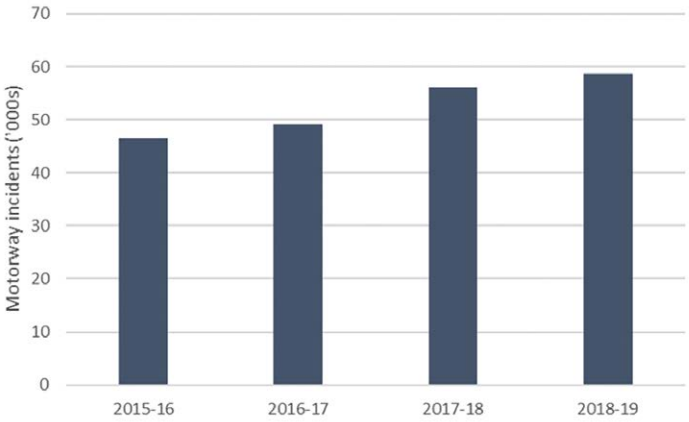
Safety star rating: Highways England has a target to achieve 90% of travel on roads given a 3-star rating, or above, for safety. It estimates that 95% of travel was on roads rated at least 3-star in 2018-19 – putting it on track to meet this target for the end of road period 1. It is now taking forward work to update the star rating of the network, moving from the current 4-star model to a new 5-star model.

Casualty numbers for all-purpose trunk roads: The Department for Transport's road casualty statistics are used to monitor this performance indicator. Figures for all casualties are unaffected by the revisions to KSIs.

In 2017, there were 7,295 casualties of all severities on Highways England's A-roads. This is a 14% reduction on the previous year, and the lowest total recorded in road period 1 so far.

Incident numbers on motorways: In 2018-19 there were 58,680 incidents on the motorway network. This is a 5% increase on the previous year. The three most common contributory factors to casualties on motorways in 2017 were 'loss of control', a 'failure to look properly' and a 'failure to judge other person's path or speed'.

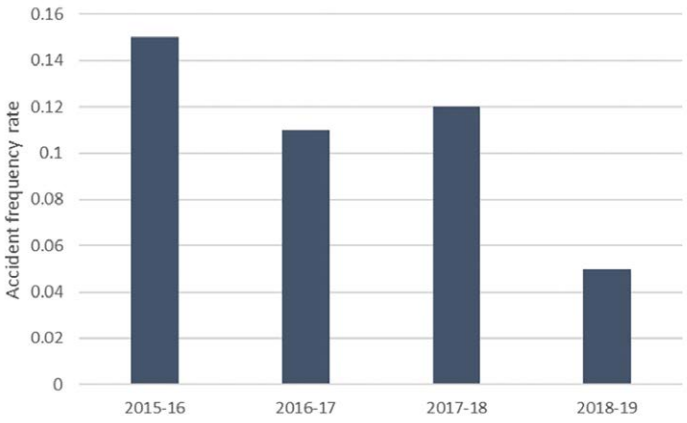
Figure A2: Motorway incidents, 2015-16 to 2018-19



Accident frequency rates: Highways England reports accident frequency rates as the ratio of Reporting of Injuries, Diseases and Dangerous Occurrences Regulation (RIDDOR) accidents per 100,000 hours worked.

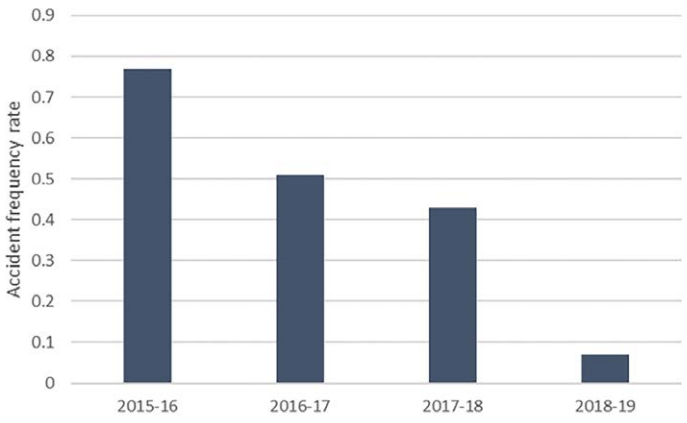
For construction and maintenance workers in Highways England's supply chain, the accident frequency rate was 0.05 in 2018-19. This is down from 0.12 in the previous year, and below the company's internal target.

Figure A3: Accident frequency rate for constructions and maintenance workers, 2015-16 to 2018-19



For Highways England's operations directorate – which includes the traffic officer service – the accident frequency rate was 0.07. This is also a reduction from last year's figure (0.43), and below the company's internal target.

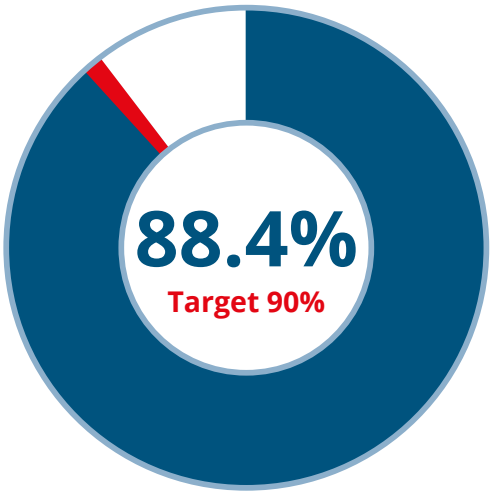
Figure A4: Accident frequency rate for customer operations directorate, 2015-16 to 2018-19

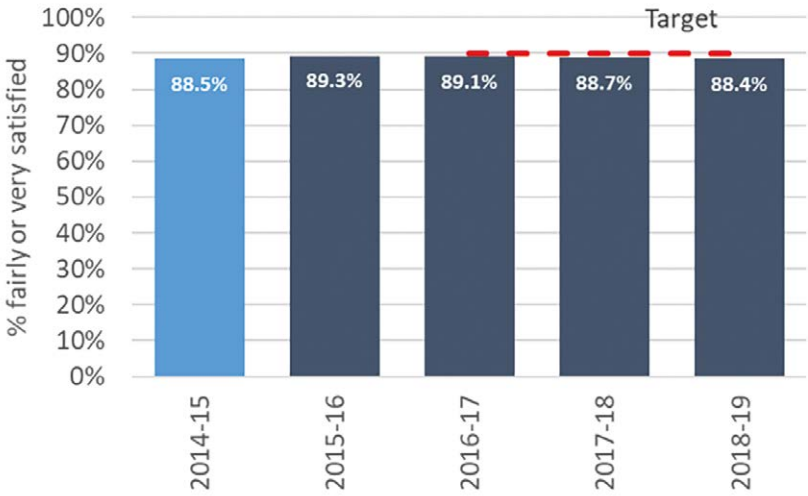


Outcome: Improving user satisfaction

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	
2018-19 status: Amber	**RIS1 status: Amber**

Figure A5: User satisfaction with the strategic road network, 2018-19





Highways England's satisfaction scores are calculated from the National Road Users Satisfaction Survey (NRUSS). The overall satisfaction measure was 88.4% in 2018-19, below the target of 90% and lower than the 88.7% recorded in 2017-18.

Performance indicators

NRUSS scores for motorways and all purpose trunk roads: Satisfaction with all purpose trunk roads fell 1 percentage point to 89.1% in 2018-19. Satisfaction on motorways increased by 0.3 percentage points to 87.8%

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. Satisfaction with roadworks, which consistently scores lower than the other elements, saw the largest increase in 2018-19 (+2.4 percentage points). Satisfaction with general upkeep recorded the largest decrease (- 1.7 percentage points).

Overall satisfaction with motorways is lower than for all-purpose trunk roads

2018-19

Motorway **87.8**

% of respondents that were fairly or very satisfied

All purpose trunk roads **89.1**

% of respondents that were fairly or very satisfied

Figure A6: Satisfaction with different elements of the journey

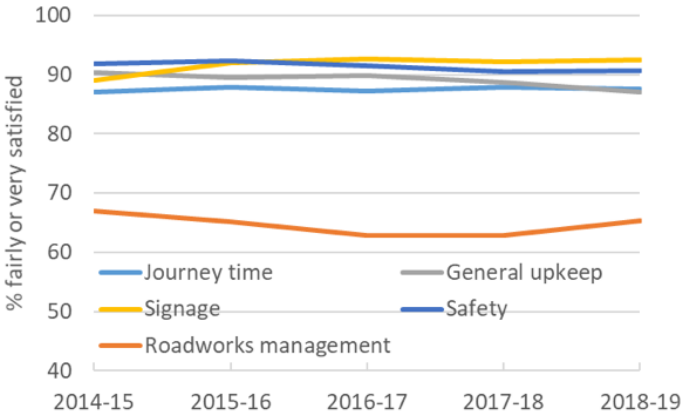
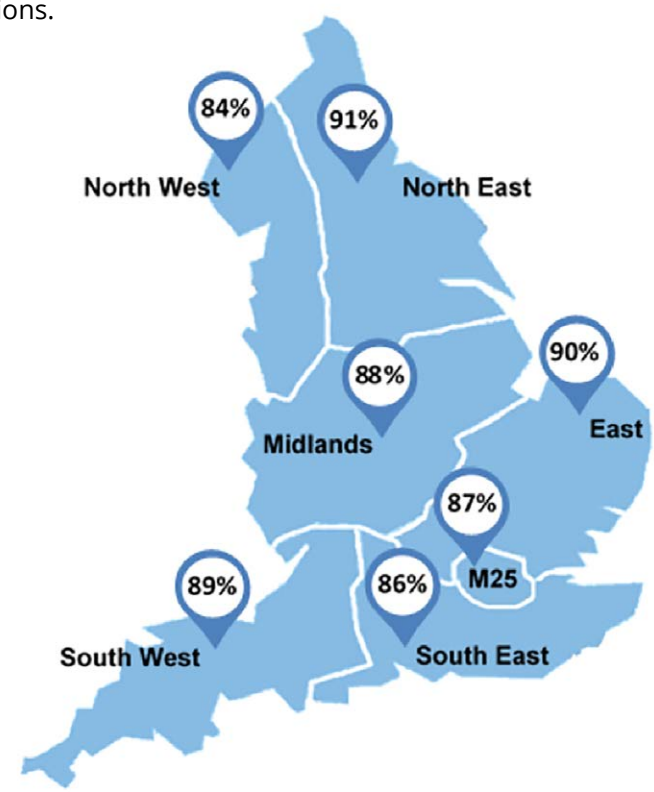


Figure A7: NRUSS scores by location:

The map shows a regional breakdown of NRUSS satisfaction.

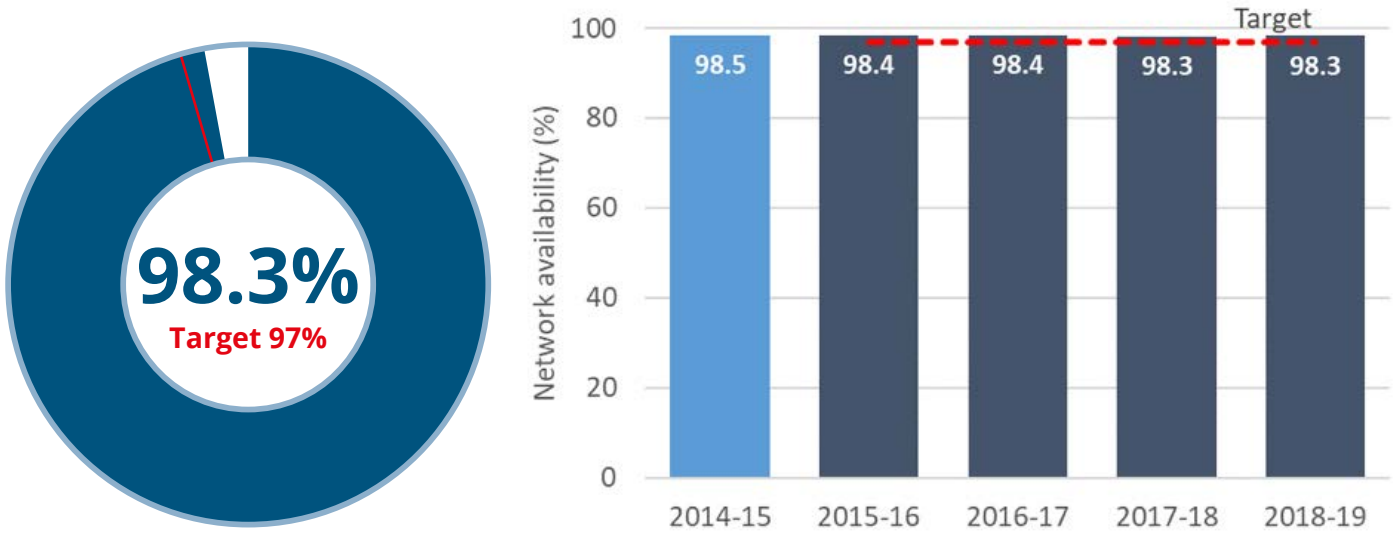
In 2018-19, satisfaction was above 90% in the East and North East regions but was below 90% in all the other regions.



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	
2018-19 status: Green	RIS1 status: Green

Figure A8: Lane availability on the strategic road network, 2018-19

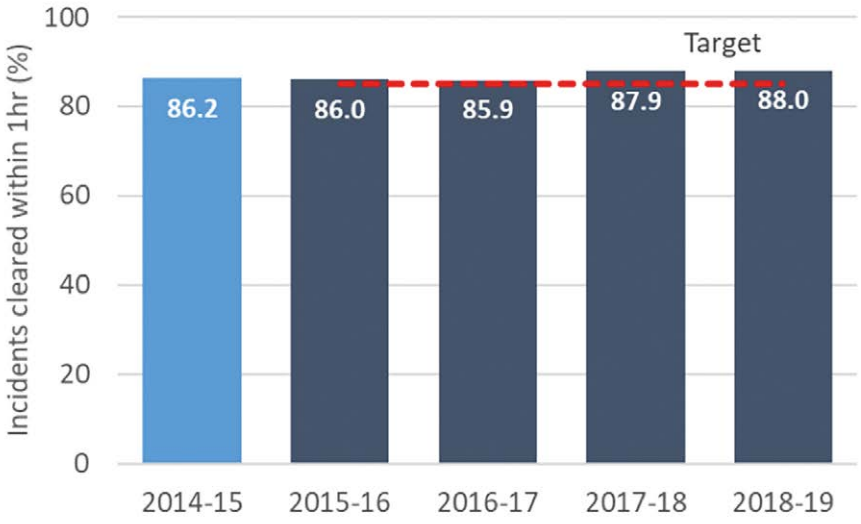


Network availability is a measure of the length of road lanes that are open to traffic as a percentage of the total length of road lanes on the network. Performance is calculated over a rolling year.

At the end of 2018-19, network availability on the strategic road network was 98.3%, which is the same as the previous year, and above the target of 97%.

Key performance indicator: Highways England must clear at least 85% of incidents on the motorways within one hour	
2018-19 status: Green	RIS1 status: Green

Figure A9: Incident clearance, 2018-19

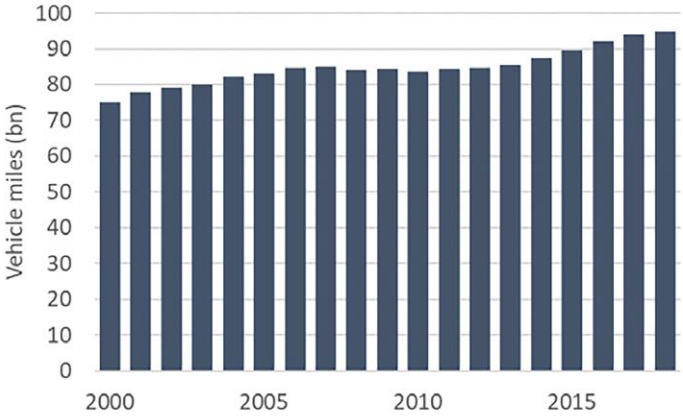


The incident management key performance indicator measures the proportion of incidents on Highways England's motorway network that it clears within one hour. At the end of 2018-19, the company cleared 88% of incidents within an hour – above the target of 85%.

Performance indicators

Traffic on the strategic road network: In 2018, 94.7bn vehicle miles were travelled on the strategic road network. This is 0.7% higher than in 2017, and the highest volume recorded to date. However, the rate of growth is lower than in previous years.

Figure A10: Traffic on the strategic road network, 2000 to 2018



Planning time index: The planning time index measures 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 2018-19, the planning time index was 1.67, which is slightly lower that the figure recorded in 2017-18 (1.69). This indicates that the most delayed journeys on the network were slightly better in 2018-19 than in 2017-18.

Acceptable journeys: This measures the percentage of journeys that are above 75% of free-flow speed. In 2018-19, 82.7% of journeys were above this threshold. This is slightly lower than the previous year, when 83.2% of journeys were above 75% of the free-flow speed.

Average speed: In 2018-19, average speed for all journeys on the strategic road network was 59 miles per hour. This is lower than in 2017-18 when the average speed was 59.2 miles per hour.

Outcome: Encouraging economic growth

Key performance indicator: Highways England must report on average delay – time lost per vehicle mile	
2018-19 status: Amber	**RIS1 status: Amber**

Figure A11: Average delay on the strategic road network

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

In the year to March 2019, average delay was 9.4 seconds per vehicle mile. This is equivalent to a trip of 100 miles taking almost 16 minutes longer than on a free-flowing network. Average delay has increased each year during road period 1, which is likely to be related to increased traffic, and Highways England undertaking more improvement work as part of its investment programme.

Performance indicators

Average delay on 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. Delay on these routes in 2018-19 was 9 seconds per vehicle mile – an increase from 8.7 seconds in 2017-18.

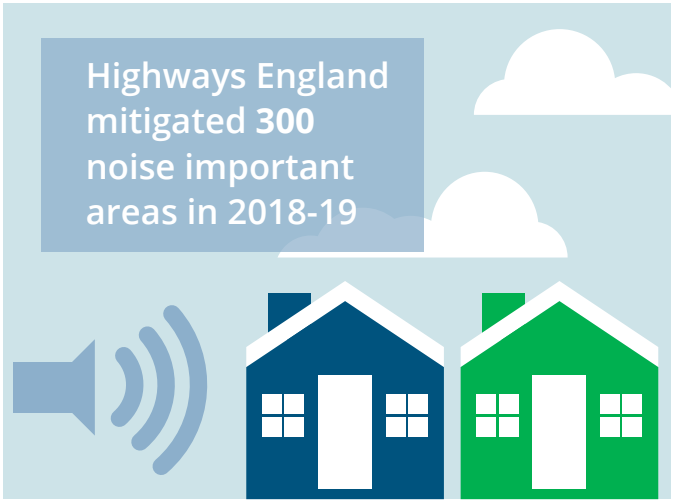
Responding to formal planning applications: In 2018-19, Highways England responded to 99.9% of planning applications within 21 days. This is above the company's internal target of 99%.

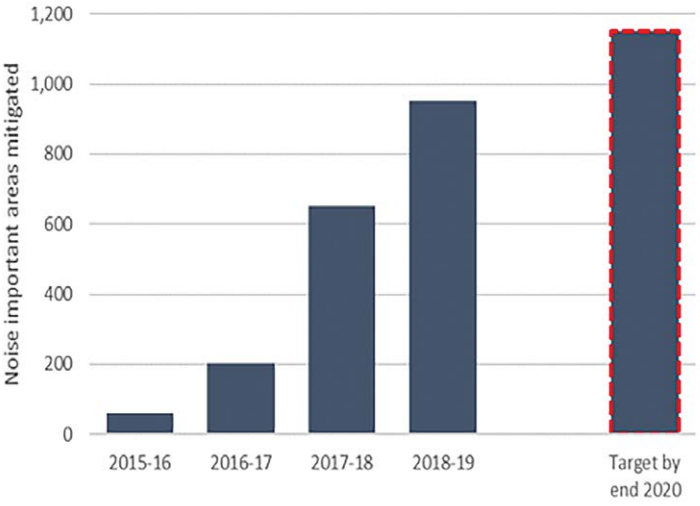
Spend on small and medium sized enterprises (SMEs): Highways England estimates that its expenditure on goods and services from SMEs was 26%. The government target for spend on SMEs is 25%.

Outcome: Delivering better environmental outcomes

Key performance indicator: Highways England must mitigate at least 1,150 noise important areas over the first road period	
2018-19 status: Green	RIS1 status: Green

Figure A12: Mitigating noise important areas

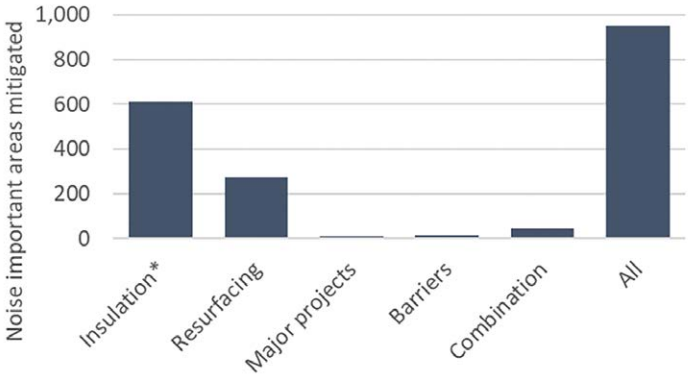




Highways England has a target to mitigate 1,150 noise important areas by 2020. In 2018-19, the company mitigated 300 noise important areas, bringing the total to 951 in this road period. It must now mitigate at least 199 further areas in 2019-20 to meet its target for the road period.

The majority of noise important areas have been mitigated through Highways England's noise insulation programme, which offers to install double glazing to affected properties.

Figure A13: number of noise important areas mitigated, by intervention type



*Includes households that have declined/not responded to offer of insulation

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	
2018-19 status: Green	RIS1 status: Green

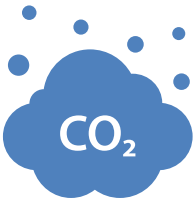
Figure A14: Delivering the biodiversity action plan

Highways England continues to make progress in delivering the commitments set out in its biodiversity action plan. Key areas of progress during the year have included:

- Producing 10 management plans for sites of special scientific interest (SSSIs) on its estate. It has now met its commitment to develop 40 in this road period.
- Completing 25 grassland schemes, delivering almost 100 hectares of grassland.
- Trialling its new biodiversity metric.

Performance indicators

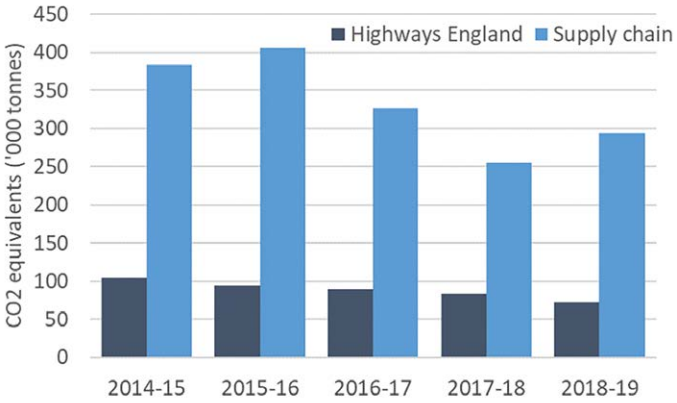
Air quality pilot studies: In 2018-19 Highways England has progressed a scheme with Leeds City Council to encourage uptake of electric vans. The company completed 10 air quality studies in 2017-18, and expects to publish conclusions later in 2019.



Carbon dioxide (Highways England's activities): In 2018-19, Highways England reported that its activities resulted in the emission of 72,302 tonnes of carbon dioxide equivalents. This is 14% lower than in 2017-18, and a 24% reduction from the start of this road period.

Carbon dioxide (supply chain): In 2018-19, emissions from Highways England's supply chain were estimated at 293,684 tonnes of carbon dioxide equivalents. This is 15% higher than reported in 2017-18. However, variability in the completeness of returns means that comparisons between years should be treated with caution.

Figure A15: Carbon dioxide emissions for Highways England and supply chain, 2014-15 to 2018-19

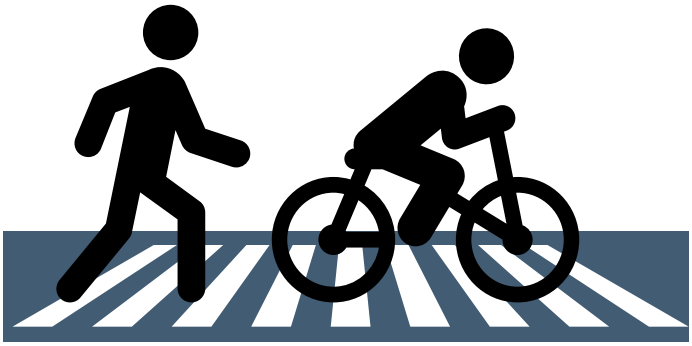


Number of flooding hotspots and culverts mitigated: Highways England mitigated 35 flooding hotspots in 2018-19; no culverts were mitigated. The company has now mitigated 208 flooding hotspots and nine culverts in the first road period.

Number of outfalls and soakaways mitigated: Highways England contributed to improving water quality in watercourses close to the strategic road network by mitigating six outfalls in 2018-19. The company has now mitigated 16 outfalls in this road period. No soakaways have been mitigated in the road period to date.

Outcome: Helping cyclists, walkers and other vulnerable users

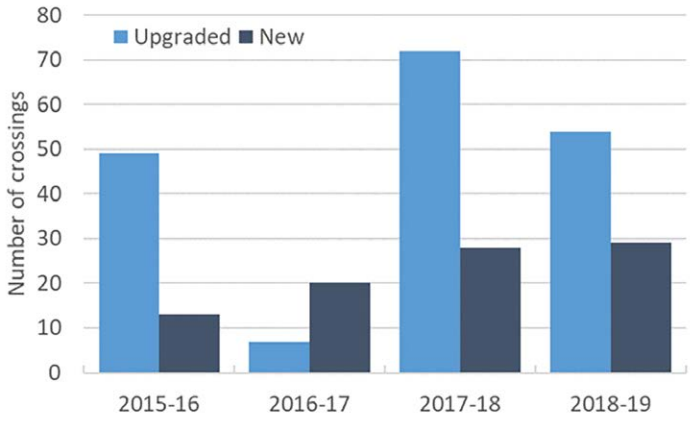
Key performance indicator: Highways England must report on the number of new and upgraded crossings	
2018-19 status: Amber	**RIS1 status: Amber**



29 new and 54 upgraded crossings for vulnerable users delivered in 2018-19.

In 2018-19, Highways England delivered 29 new and 54 upgraded crossings for cyclists, walkers and other vulnerable users. The company has now delivered 90 new and 182 upgraded crossings in the road period.

Figure A16: New and upgraded crossings, 2015-16 to 2018-19.



Performance indicators

Identification and delivery of the annual cycling programme: Highways England delivered 22 cycling schemes during 2018-19. It has now delivered 101 in the road period and expects to meet its commitment of delivering 150 cycle schemes in the first road period.

Vulnerable user casualties: Road casualty data for 2018 are not yet available. Figures for 2015 to 2017 are shown below for reference.

Figure A17: Vulnerable user casualties (all severities), 2015 to 2017

	2015	2016	2017
Motorcyclists	849	864	760
Pedal cyclists	153	152	137
Pedestrians	158	154	153

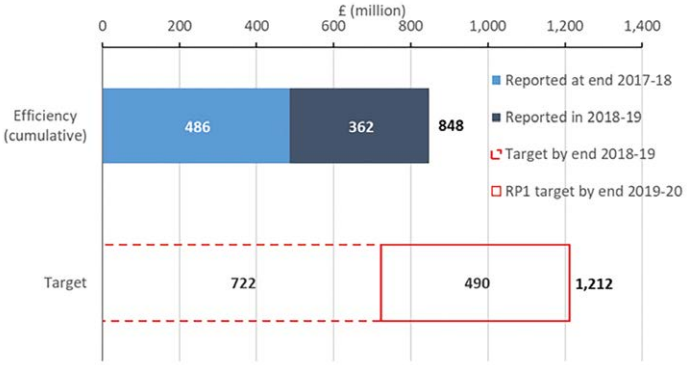
Outcome: Achieving real efficiency

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

2018-19 status: Amber	RIS1 status: Amber

In 2018-19 Highways England reported that it had identified £362m new efficiencies in the road period to date, bringing the cumulative reported efficiency improvements to its capital programme in the first four years of road period 1 to £848m. This is 70% of the KPI target to deliver £1.2bn of efficiencies by 2020, and is £126m (17%) ahead of the company's internal capital efficiency delivery plan milestone for 2018-19.

Figure A18: Efficiency reported to date against target



Highways England reports efficiency improvements as set out in the Efficiency and Inflation Monitoring Manual (EIMM). There are three components to our assessment of Highways England's efficiency improvements. These are analysis of:

1. Highways England's bottom-up description of efficiency improvements;
2. Capital unit cost movements; and
3. Expenditure and delivery compared to the funding assumptions set out in the road investment strategy.

Bottom-up description of efficiency achieved

Highways England has presented case study evidence of the actions it has taken to deliver efficiency. Analysis of the contribution to the efficiency target split by theme and programme type is shown in figures A19 and A20. As in previous years, the scheduling of schemes and adoption of lean techniques account for over half of efficiencies reported, with a combined total of 53% to the end of 2018-19.

We found the case study evidence presented to be of a generally good standard and represents significant effort by the company and its supply chain to deliver efficiency.

Figure A19: Proportion of efficiency reported by theme, at end 2018-19

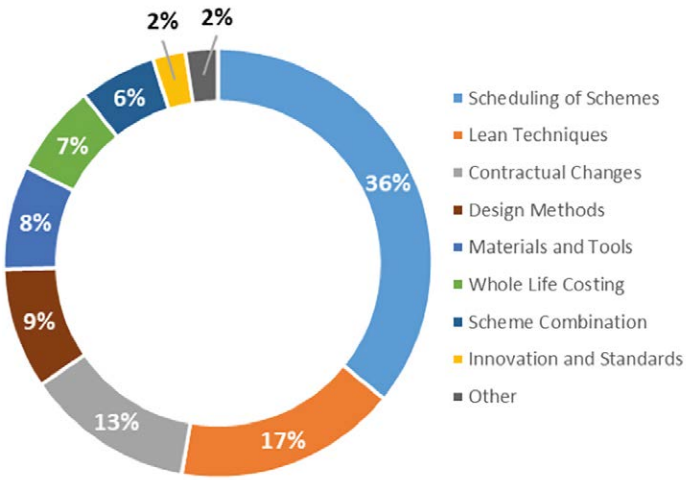


Figure A20: Proportion of efficiency reported by programme type, at end 2018-19

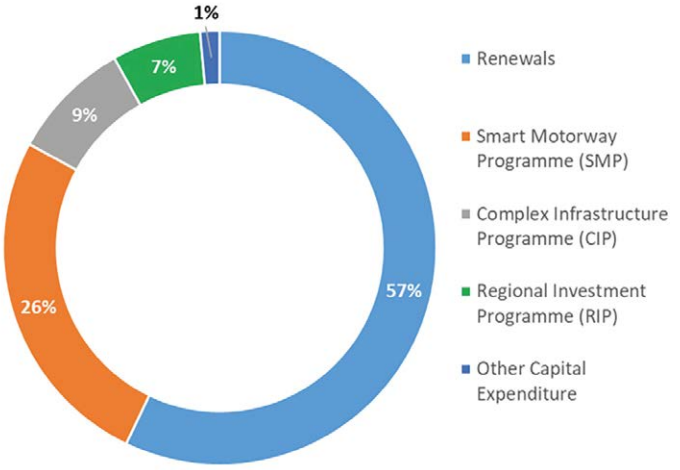


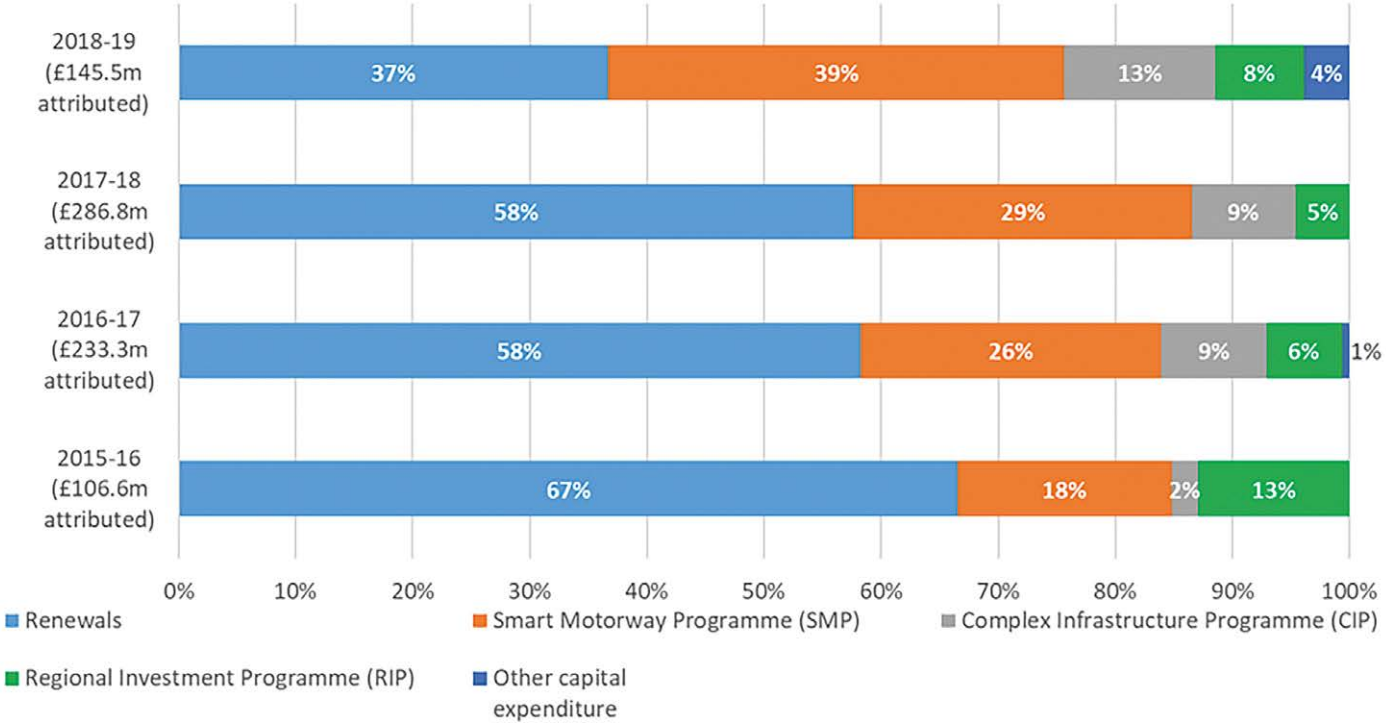
Figure A20 shows 57% of efficiencies reported to date are related to the renewals programme. Figure A21 shows that the proportion of renewals efficiencies contributing to the target is reducing over time. In the first three years of road period 1, renewals efficiencies accounted for at least 56% of the value attributed to each year. In 2018-19 the proportion of efficiencies related to other programmes, such as the Smart Motorway Programme and Complex Infrastructure Programme, increased and the renewals proportion declined to 37%. It is likely that this in part reflects that major schemes makes up an increasingly large part of the company's capital programme (60% in 2018-19 compared to 50% in 2015-16).

Unit costs

Highways England has been working to develop efficiency models based on unit cost information. Its modelling of smart motorway efficiency is the most mature. We are content that this supports the reported £218.8m of efficiency.

The company has also developed a model for renewals efficiency. The model uses an improved unit cost approach which was first introduced in 2017-18, and has now been extended to cover 66% of its renewals spend. Highways England states that the outputs of this model provide evidence for £358m efficiency being generated from renewals thereby supporting the reported £319m renewals efficiency reported bottom-up using case-studies[19] . The company has also carried out an internal assurance review of the model and for the first time in the road period the model's outputs are presented in its performance monitoring statements as compliant with its Licence Framework and Document obligations. However, there is not yet enough information to give a clear long-term trend in renewals unit costs. We will work with Highways England to review the model in more depth to carry out further analysis and validation before the end of the road period.

Figure A21: Contribution to efficiency by programme type (excludes small value claims[18])



[18] From analysis of case-study evidence provided. Excludes £75.5m of 'small claims' below £750,000 for which case-studies are not provided.

[19] Highways England has adjusted the bottom-up value to remove efficiency that does not impact on unit costs and for other factors to enable a like for like comparison with the unit cost generated value.

During 2018-19, Highways England developed similar models for providing unit cost based evidence of efficiency for the regional investment and complex infrastructure programmes (16% of reported efficiencies). The company continues to develop these models, which are not yet sufficiently robust to be used to provide evidence of efficiency.

It is vital that in 2019-20 Highways England continues to progress work on capturing and reporting productivity improvements to support its efficiency reporting. This will also be required to establish better reporting in the second road period.

Delivery of the Road Investment Strategy

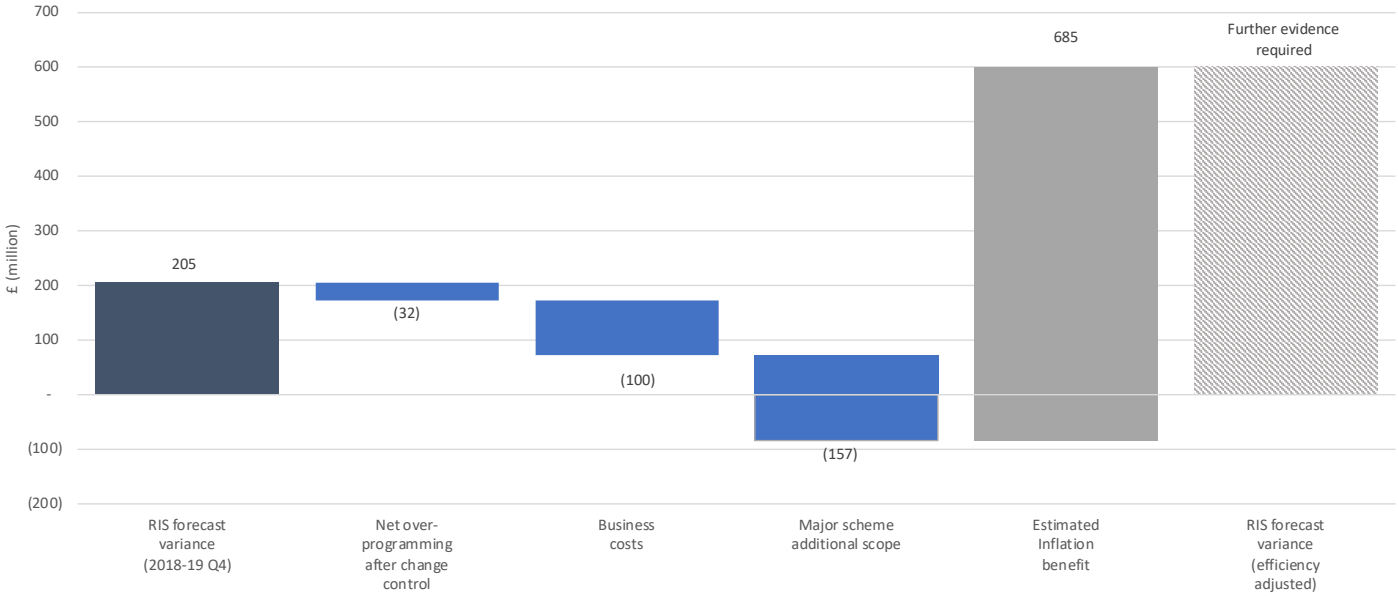
Highways England receives funding after the removal of expected efficiency. It can therefore support its efficiency claims by demonstrating that it has delivered its outputs, outcomes and schemes within the funding provided. However, providing evidence of this is not straight-forward for the following reasons:

- 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 in the expectation of some scheme deferral, or stopping low value for money schemes. The value of overprogramming at the start of road period 1 has been estimated to be £652m. Our monitoring of the actual/forecast costs of schemes that have been deferred or stopped through formal change control suggests there is currently £32m of overprogramming remaining within the RIS1 programme.
- When the RIS was set, several schemes were at very early stage of development (pre-options), and their scope was not well defined. So, while fewer schemes are being delivered than originally expected in road period 1, and outturn costs for schemes have increased, the costs associated with deferred work and stopped schemes are comparable to the under-funding.
- At the end of 2018-19, Highways England's forecast costs for road period 1 exceeded its funding by £205m. It is working to reduce the gap in 2019-20 and the company has identified future risks and opportunities which could reduce the gap to £100m.
- Highways England believes that it has delivered additional scope on some major schemes beyond the level expected for its funding. This takes the form of additional outputs or improved outcomes (e.g. increased specification of a major scheme or measures to improve road user safety). Based on the evidence provided by Highways England to date our assessment is that additional major scheme scope of £157m is being delivered within this road period.
- Highways England considers that it was underfunded by £600m for some of its business costs. This includes approximately £100m for delivering outputs not in RIS1, consisting of: introduction of a revised safe system of access on Smart Motorway schemes; incorporation of emergency refuge areas to Smart Motorways; changes to M6 junctions 16-19 traffic management strategy; HS2 futureproofing work; and support to develop changes to the private finance funding programme. It also includes approximately £500m costs of developing Highways England's capacity and capability to deliver a substantial increase in the capital portfolio). The company has provided reasonable evidence of additional unfunded outputs however the evidence for underfunding of other business costs is more limited. Further work is required with both Highways England and the Department for Transport in 2019-20 to resolve this issue.
- Highways England recognises that it has benefited from lower inflation than was forecast and built into funding levels when RIS1 was established, but has not yet quantified it. Based on information shared by the company to date we consider that it may have benefited by up to £685m. Highways England believes it is less and is preparing further evidence. The degree to which the company has benefited will depend on both the timing of contract renewal and approach to sharing inflation risk in its supplier contracts.

We are working with Highways England to develop its evidence for efficiency from delivery of the RIS. Our analysis of the evidence received to date in this area suggests that the company may deliver approximately £600m of efficiency in the road period but this figure may change significantly, for example if the company provides improved evidence of the additional £500m of business costs.

Both we and Highways England recognise that this analysis needs further refinement to support a more robust view of efficiency for the end of this road period.

Figure A22: ORR provisional assessment of delivery of RIS1 efficiency evidence received to date



Our conclusions on efficiency

When weighing up all of the evidence, we consider that Highways England has more to do to support its reported £848m of efficiency. In particular, it is important that for the end of road period 1 it:

1. continues to progress work on capturing and reporting productivity improvements; and
2. provides further efficiency evidence of delivering the RIS within funding and, where required, to support its case demonstrating with evidence areas of claimed underfunding and the impact of inflation on its costs.

Learning from the uncertainties set out above, it is essential that a better, fully-funded baseline plan is developed for RIS2, built on a clear understanding of scheme costs, timings and scope.

Input price effects

Highways England's funding for capital projects in 2018-19 included an additional 5% for forecast increases in the costs of the company's inputs (i.e. materials and labour costs). It has since commissioned work to provide a long-term inflation profile specific to the work contained in the RIS. The company used this to produce its own cost indices for actual year on year inflation in 2018-19 of 3.0% for enhancements and 3.5% for renewals. The degree to which Highways England has benefited from lower inflation than assumed in its funding will depend on both the timing of contract renewal and approach to sharing inflation risk in its supplier contracts.

As discussed above, for the purposes of assessing efficiency evidence related to delivery of the RIS we have estimated that Highways England has benefited by up to £685m. We will work with Highways England to review the inflation benefit and impact on efficiency before the end of the road period 1.

Performance Indicators

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

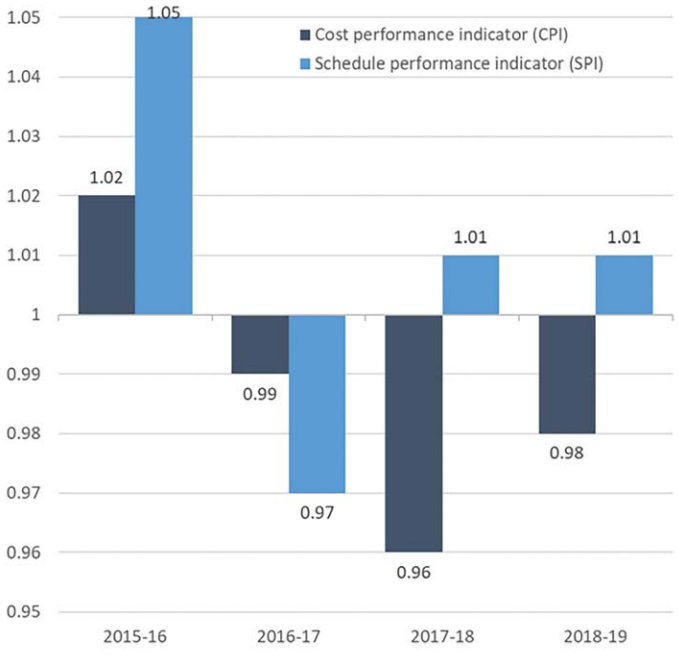
Cost performance index

The cost performance index (CPI) is commonly used in the construction industry as a measure of earned value. It is the ratio of budgeted cost of work performed to date to actual cost to date. In 2018-19 Highways England reported a CPI of 0.98 (0.96 in 2017-18) which is an indication that overall, projects in construction are progressing slightly above target cost.

Schedule performance index

The schedule performance index (SPI) is a similar measure of progress against the agreed schedule. It measures the relationship between the budgeted cost of work to date and the value scheduled to be delivered to date. In 2018-19 Highways England reported a SPI of 1.01 consistent with the level supported in 2017-18 which indicates that overall projects in construction are ahead of schedule.

Figure A23: Cost Performance Indicator and Schedule Performance Indicator



In 2018-19, Highways England reviewed how it collects CPI and SPI data. Following this, the company has put improved processes in place, and expects to report more robust data in 2019-20.

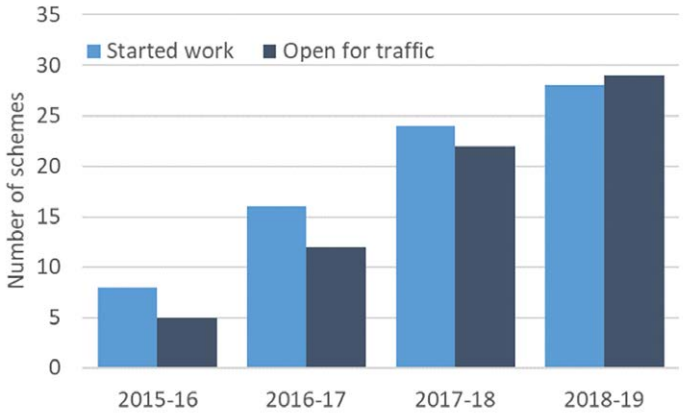
Key performance indicator: Progress of work, relative to delivery plan	
2018-19 status: Amber	**RIS1 status: Amber**

In 2018-19, Highways England started works on four major improvement schemes. It originally had a commitment to start work on six, but this was revised to four through the Department for Transport's formal change control process.

The company completed six of the seven schemes that were planned to open in 2018-19; the delayed scheme is now expected to open in 2019 20.

In the first four years of this road period, Highways England has started work on 28 schemes, and opened 29 schemes to traffic.

Figure A24: Cumulative number of schemes started work and opened for traffic, 2015-16 to 2018-19

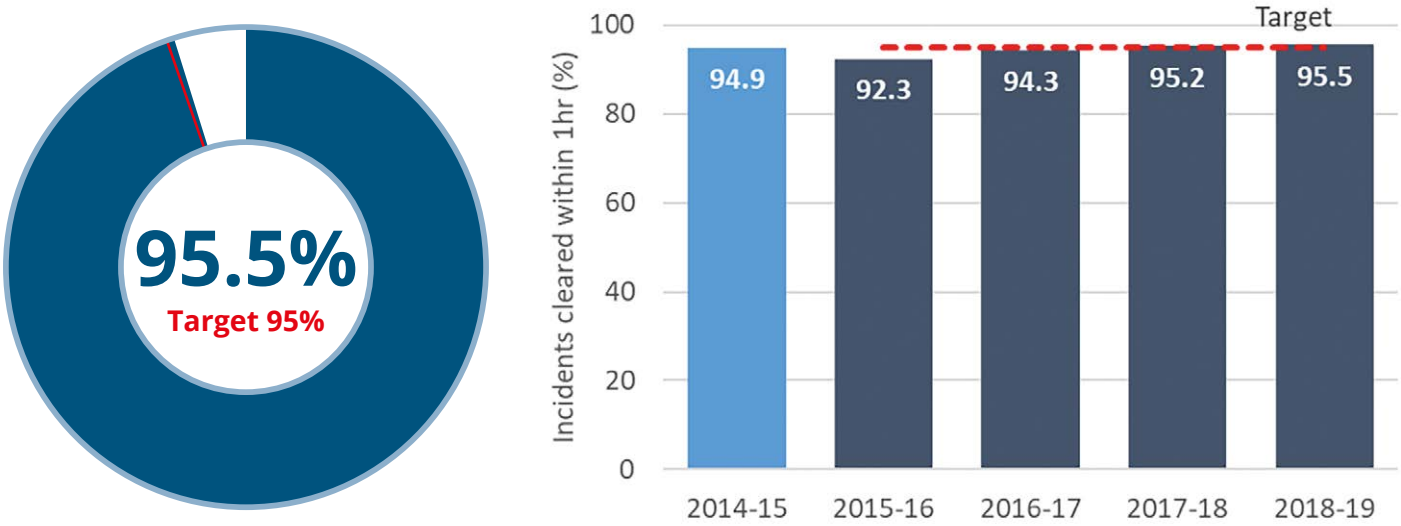


Our full assessment of Highways England's progress relative to its delivery plan is set out in chapter 3, and annex C of this report.

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	
2018-19 status: Green	RIS1 status: Green

Figure A25: Pavement condition



At the end of 2018-19, Highways England reports that 95.5% of its pavement (road) asset did not require further investigation for maintenance. This is above the target of 95%, and an improvement on the score of 95.2% recorded in 2017-18.

Performance indicators

Structures assets: Highways England has continued to improve its structures inventory information, which is now 98.3% complete. This is an improvement of 0.1 percentage point from 2017-18.

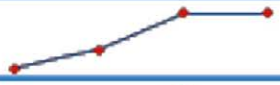
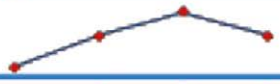
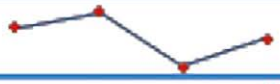
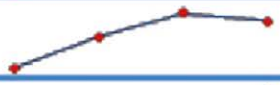
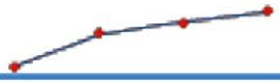
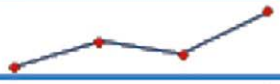
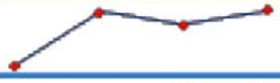
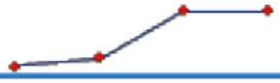
The condition of Highways England's structures is measured by three performance indicators. The first two – the average condition of the stock (SCav), and the condition of the assets' most critical elements (SCcrit) – show a slight improvement in 2018-19, compared to 2017-18. The third indicator – the percentage of structures which have been inspected and rated as 'good' (SCI) – is similar to last year's score.

Geotechnical assets: Highways England reports that 97.2% of its geotechnical assets do not require (and are not recommended for) remedial interventions at the end of 2018-19. This is similar to the position reported at the end of 2017-18.

Drainage assets: Highways England reports that it has drainage inventory data for 91% of its network, which is an improvement of 3 percentage points from its 2017-18 position. The percentage of the network with drainage condition data is 33% in 2018-19, down from 34% in 2017-18.

Technology asset availability: The availability of operational technology assets is measured by the percentage of time lost by service affecting faults. During 2018-19 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.

Figure A26: Summary of asset performance indicators in 2018-19 and trend for road period 1

Asset	PI	2018-19		RP1 Trend
Geotech	Condition	97.2%	▶	
	Inventory	12,987 km	▼	
Technology Availability	Control Centre	99.97%	▶	
	National Roads Telecommunications Services	99.99%	▶	
	Roadside	98.60%	▲	
Drainage	Inventory Coverage	91%	▲	
	Condition Coverage	33%	▼	
Structures	Inventory	98.3%	▲	
	Condition average (SCav)	85.35	▲	
	Condition critical (SCcrit)	63.38	▲	
	Rating of 'good' (SCI)	79.8%	▶	

Key: Relative to position in 2017-18 - ▲ increase ▶ no change ▼ decrease

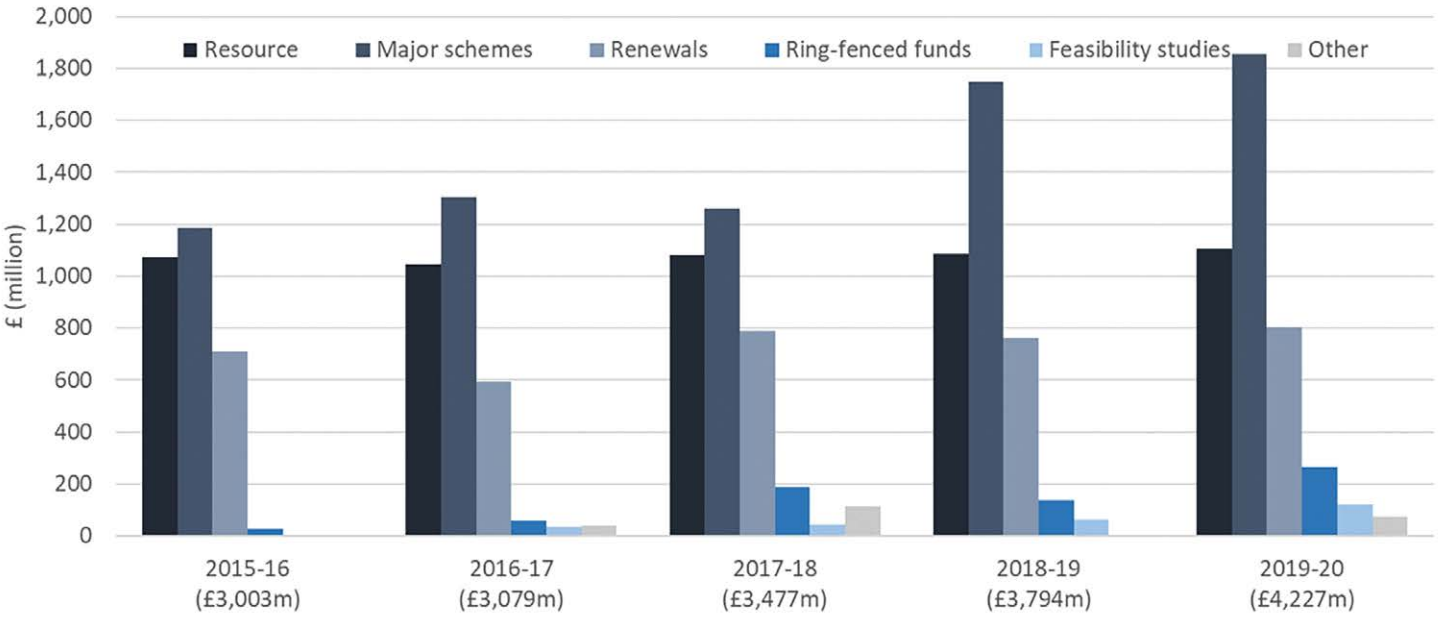
ANNEX B: FINANCIAL PERFORMANCE

This annex sets out a summary of our assessment of Highways England's financial performance during 2018-19.

Financial performance

In 2018-19 Highways England's agreed baseline funding was £3,794m, with £1,086m allocated to operational expenditure and £2,708m capital expenditure. Funding for major schemes increased by 38% reflecting several large smart motorway schemes moving in to construction in March 2018.

Figure B1: Highways England funding: Delivery plan update 2018-19



Capital

Highways England ended 2017-18 with a gap of £438m between its forecast expenditure for RIS1 and the available funding. The company developed plans to reduce this gap to £274m, of which £266m related to expenditure pressure in 2018-19.

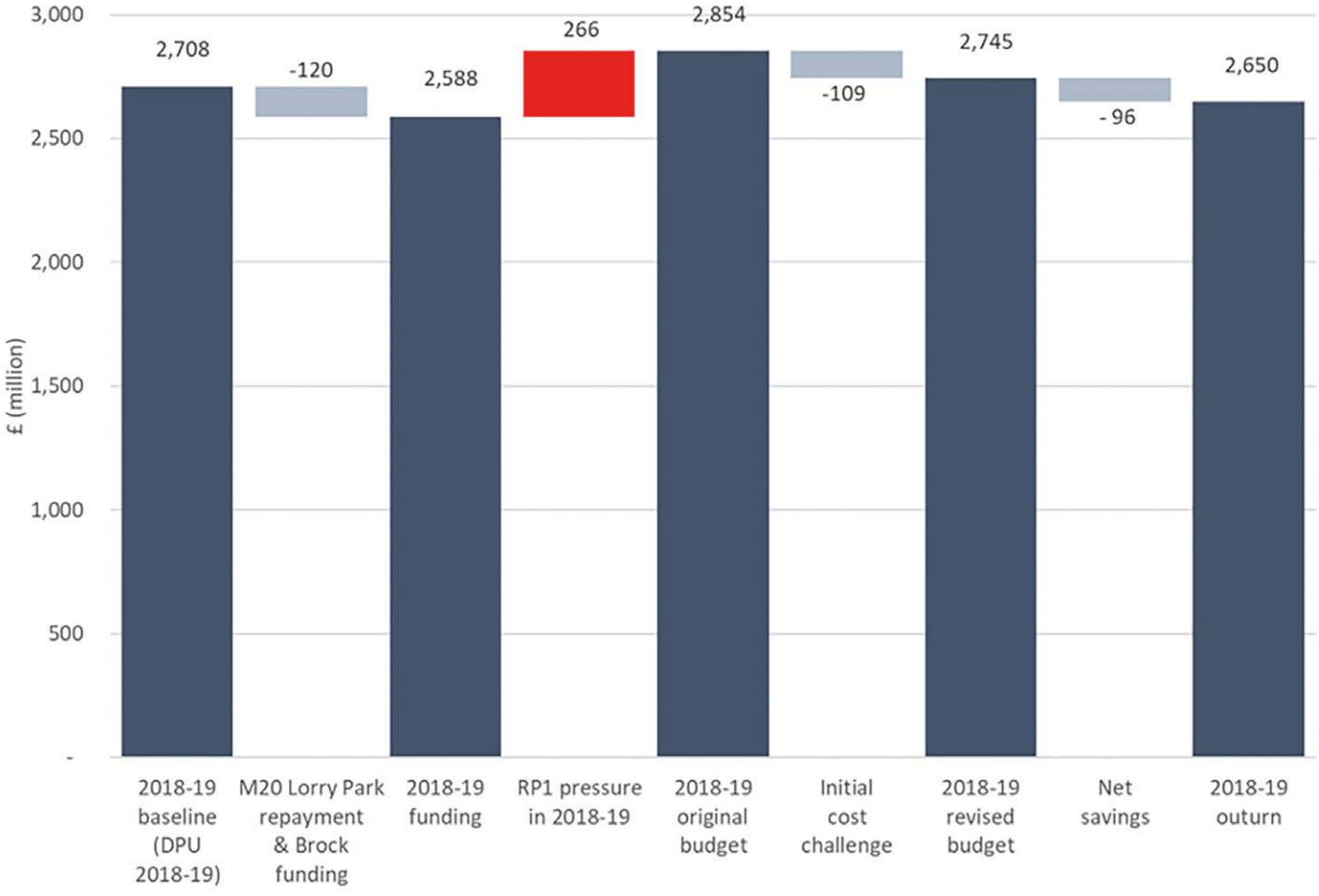
In 2018-19 the Department for Transport adjusted Highways England capital baseline funding from £2,708m to £2,588m. This reflected a repayment of unused funding for the cancelled M20 Lorry Park and additional funding for Operation Brock[20] . However, the company set its capital budget at £2,854m, reflecting its latest plans. Therefore it was necessary for the company to spend below this level to help close the RIS funding gap.

In early 2018-19 Highways England set a cost challenge to its Operations and Major Projects directorates and successfully reduced capital expenditure by £109m by quarter 2 allowing it to set a revised capital budget of £2,745m in November 2018. Through further management of expenditure in-year the outturn capital expenditure for the year was £2,650m, £96m below the revised budget, but £62m above the funding allocated for the year. The company had agreed this outturn position with the Department for Transport in setting its revised budget and was consistently forecasting this position since November 2018.

Significant variances compared to revised budget are shown in figure B3 and are summarised below:

- Renewals overspend of £7m (1%) driven in part by cost pressures in Highways England's East and North West regions, and higher than anticipated renewals work on M3 junctions 2-4a project. During the year, Highways England has offset cost pressures from the M5 Oldbury Viaduct, Manchester Smart Motorway Programme and the network recovery programme in the East region through planned reductions in programmes in other regions.
- Improvements underspend of £43m were largely due the effect of differences in timing of scheme delivery compared to budget assumptions

Figure B2: Capital expenditure compared to baseline and budget in 2018-19

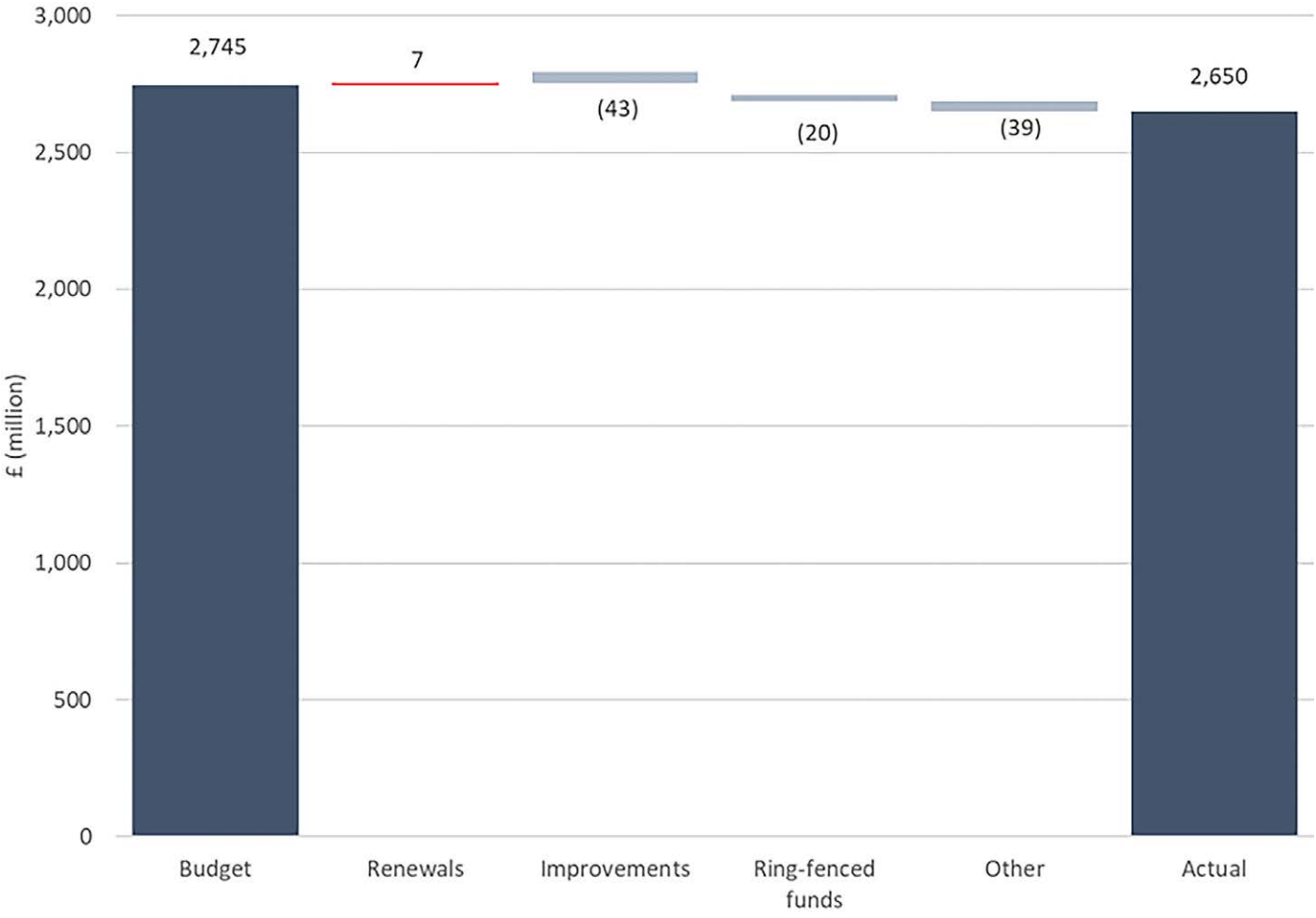


[20] Operation Brock is a set of measures to keep the M20 open in both directions between junction 8 and 9 in the event of disruption to services across the English Channel.

(rescheduling of the A14 Cambridge to Huntingdon and delays on M20 junctions 3-5, M27 junctions 4-11, M62 junctions 10-12). These have been partially offset by acceleration of M4 junctions 3-12, and additional costs to meet the open for traffic commitment date on the A19 Coast Road and M6 junctions 16-19. As in previous years, a high proportion of schemes (58%) reported an overspend or underspend variance greater than 20%.

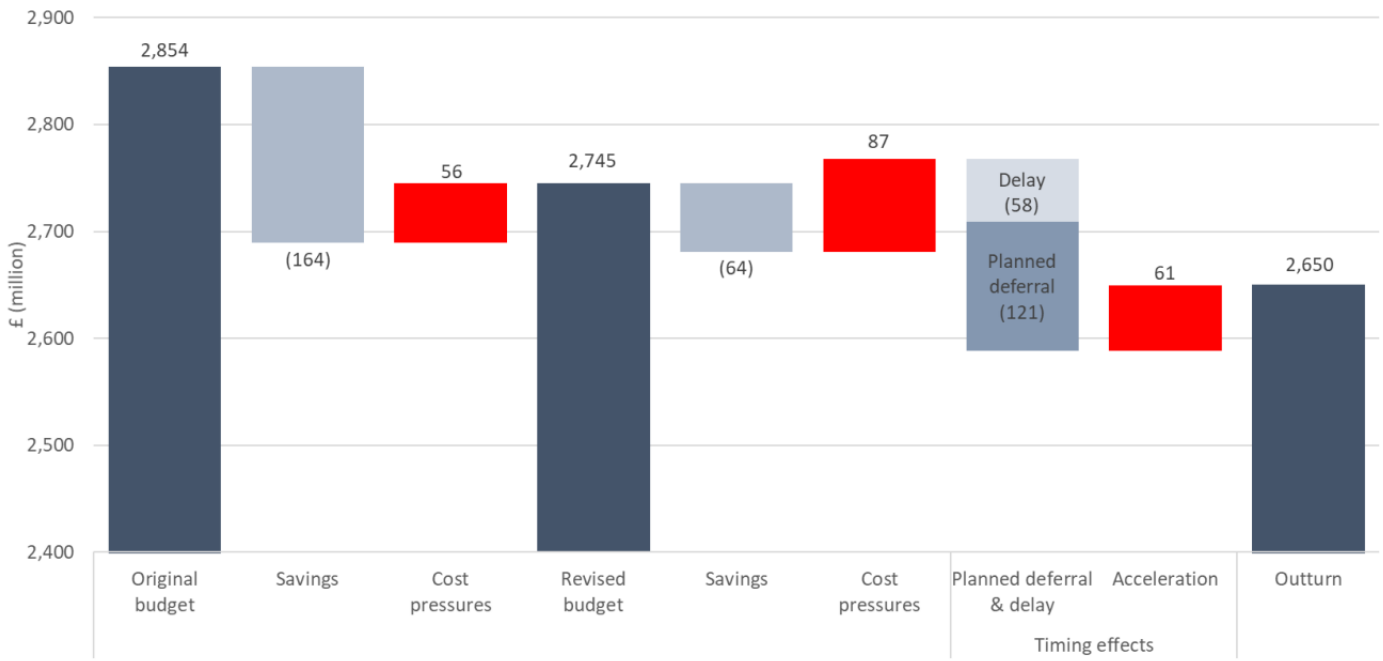
- Ring-fenced funds underspent by £20m, driven by an underspend on the growth and housing fund due to planned deferral of work to 2019-20.
- Other capital underspend of £39m in part due to: deferral and delay of 23 (out of 326) safety programme and congestion relief schemes; savings on the roll out of the asset delivery approach; and delays on purchasing of depots and works on operational buildings.

Figure B3: Capital expenditure compared to revised budget, 2018-19



Highways England's underspend to its revised budget of £96m (3%) and original budget of £204m (7%) has helped reduce the RIS1 funding gap. However it is important to note that the underspend has been delivered in part because of delay or planned deferral of £179m work to 2019-20. Whilst £61m of work was accelerated by bringing it forward from 2019-20, the net impact of these effects is £118m of the 2018-19 funding gap pressure moving in to 2019-20.

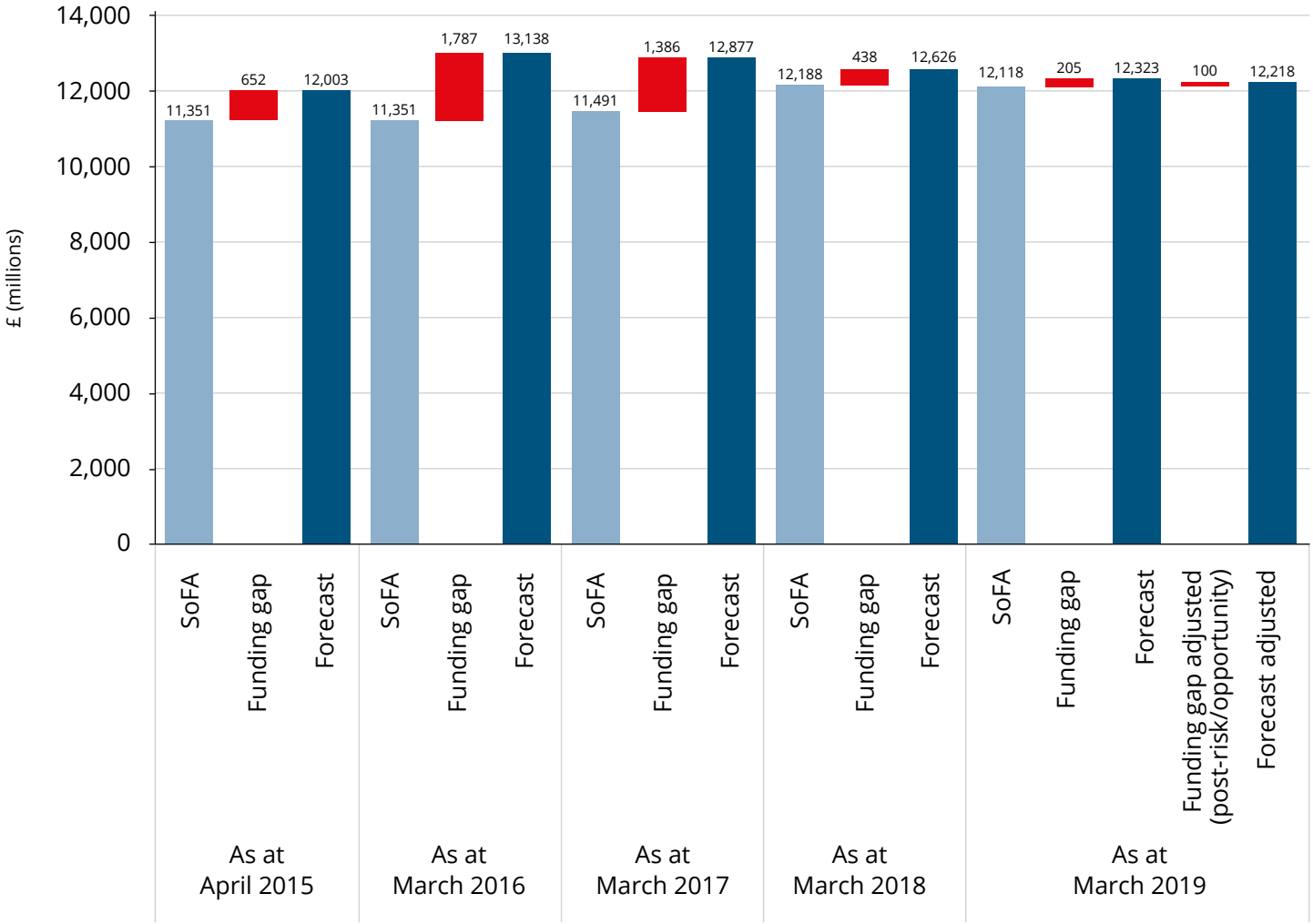
Figure B4: Impact of timing effects within 2018-19 underspend



The programmes making the largest contribution to the timing effects are planned deferral of safety and congestion relief schemes, the growth and housing fund projects and 14 major schemes. There have also been unplanned delays on 11 smart motorways, junction widening and bypass schemes. This has been offset by acceleration of M4 junctions 3-12 and Lower Thames Crossing.

Highways England has reduced the RIS1 funding gap from £438m in 2017-18 to £205m in 2018-19. After reflecting forecast risks and opportunities the expected gap reduces further, to £100m. We estimate that £86m of the reduction from 2017-18 is a result of net savings in 2018-19. The remainder is due to the impact of changes to the major schemes programme, agreed with the Department for Transport.

Figure B5: Difference between forecast capital costs and funding for road period 1



Resource

In 2018-19, Highways England identified a resource spending need of £1,106m. However, the Department for Transport set a budget challenge of £20m and provided baseline funding of £1,086m. After identifying internal savings in-year, the department reduced the budget challenge by £9m and provided £1,096m resource funding. Highways England set its budget at £1,107m and worked to underspend the budget to align with its funding.

Highways England spent £1,101m during 2018-19, underspending its budget by £6m (0.6%). The Department for Transport was content with the outturn position at £5m (0.4%) above its funding. The outturn reflected overspends of £31m on maintenance due to lower income and higher electricity costs, and £21m on support costs including unrecoverable VAT. This was offset by underspends on PFI of £29m due to lower traffic volumes and refinancing, and savings on general support of £16m including the Severn Crossing tolling contract.

ANNEX C: NETWORK INVESTMENT DELIVERY

This annex describes Highways England's performance against its investment plan in 2018-19, including ring-fenced funds. It also considers risks to delivery in the remainder of the road period.

The road investment strategy sets the outcomes, outputs and capital investments that Highways England must deliver over the first road period. The Investment Plan, part of the RIS, outlines a five-year capital funding package of £12.2 billion for Highways England to invest in maintaining, renewing and improving the strategic road network. This includes:

- a programme of major improvement schemes, of more than £7.8 billion;
- a maintenance and renewals programme, of approximately £3.7 billion;
- a £675m programme of ring-fenced investment funds; and
- investment associated with strategic studies.

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

Delivery of major improvement schemes in 2018-19

Highways England's progress in delivery of its capital programme during 2018-19 is shown in figure C1.

The company started construction on four schemes in 2018-19. It originally had a commitment to start work on six but this was revised to five through the Department for Transport's formal change control process. Of the six schemes originally planned to start in 2018-19, two started construction on schedule, and one, the M27 junctions 4-11 scheme, started two quarters ahead of schedule. Of the remaining three:

- two schemes were formally deferred to minimise road user disruption around the Manchester area – the M56 junctions 6-8 and M6 junctions 21A-26. Highways England is now planning to start construction of the M56 junctions 6-8 in 2019-20 and the M6 junctions 21A-26 scheme will start in the next road period.
- One scheme (A47 and A12 junction enhancements) did not start as planned and is under review due to the impact of the construction of the third river crossing in Great Yarmouth by Norfolk County Council (but no change has been formally agreed).

During 2018-19, Highways England also started construction of one further scheme that had been re-scoped and had its start of works revised to 2018-19 – the A1 North of Ellingham.

Of the seven schemes that were planned to open for traffic in 2018-19, five were delivered on schedule and one (A50 Uttoxeter) was completed one quarter ahead of schedule. The M20 junction 10a, which was expected to open in 2018-19, is delayed due to an extended construction programme to carry out significant gas mains diversion works. This scheme is forecast to open in 2019-20 quarter 3.

One scheme that was delayed from 2017-18 (M60 junction 8 to M62 junction 20 smart motorway) was opened for traffic in July 2018, 10 months later than planned due to scope extensions, including improvement to asset condition to avoid subsequent maintenance.

Figure C1: Major scheme delivery in 2018-19

2018-19 commitments	Committed date	Actual date
Major schemes start of works		
M27 junctions 4-11	2018-19 Q3	2018-19 Q1 (ahead of schedule)
A1 (North of Ellingham)	2018-19 Q4	2018-19 Q3 (ahead of revised schedule)
A500 Etruria widening	2018-19 Q4	2018-19 Q4
A19 Testos	2018-19 Q4	2018-19 Q4
M56 junctions 6-8	2018-19 Q4	formally deferred within RP1 through change control
M6 junctions 21A-26	2018-19 Q4	formally deferred within RP2 through change control
A47 and A12 junction enhancements	2018-19 Q4	under review and therefore missed its committed date
Major schemes open for traffic		
A50 Uttoxeter	2018-19 Q4	2018-19 Q3 (ahead of schedule)
M1 junctions 24-25	2018-19 Q3	2018-19 Q3
M1 junctions 23A-24	2018-19 Q3	2018-19 Q3
A19 Coast Road	2018-19 Q4	2018-19 Q4
M6 junctions 16-19	2018-19 Q4	2018-19 Q4
M5 junctions 5, 6 & 7 junction upgrades	2018-19 Q4	2018-19 Q4
M60 junction 8 to M62 junction 20: Smart Motorway	2017-18 Q2	2018-19 Q2
M20 junction 10a	2018-19 Q4	delayed, forecast 2019-20 Q3

Key:
- Milestone due or achieved on schedule or ahead of schedule
- Milestone due or achieved one quarter behind schedule
- Milestone due or achieved more than one quarter behind schedule
- Milestone changed

Highways England's expenditure against its budget for major schemes in construction stages in 2018-19 is shown in figure C2. This shows an underspend of £48.7m for schemes under construction, mostly due to planned deferral and delay on several schemes, and also cost savings on the A14 Cambridge to Huntingdon scheme. This was a result of works being rescheduled in year, which removed weather-related delays and the need for winter earth works.

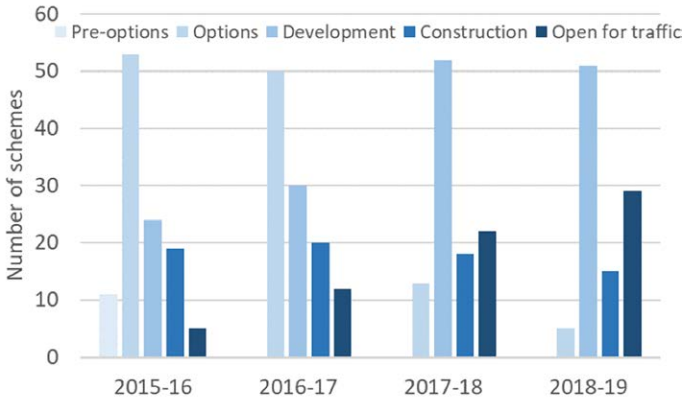
Figure C2 also shows an overspend of £38.3m against schemes which opened for traffic during the year. This is largely due to additional costs associated with achieving the planned opening date for a number of schemes.

Figure C2: Major schemes costs against budget in 2018-19, £m

Scheme stage (end of 2018-19)	Budget 2018-19	In-year costs 2018-19	Variance	% over / (under)
Under construction	1,003.3	954.6	(48.7)	-5%
Open for traffic	207.3	245.5	38.3	18%

During 2018-19, Highways England has made progress in developing schemes prior to construction. The company has progressed eight schemes from options into development. In the first four years of road period 1, Highways England has started construction of 28 schemes and opened 29 for traffic. At the end of March 2019, there were 15 schemes under construction on the network. Figure C3 shows progress of major schemes in the first four years of RP1.

Figure C3: Progress of schemes through development and construction in RP1



Delivery of major improvement schemes in the rest of road period 1

Since the start of road period 1 Highways England has improved its scheduling of major schemes, with particular focus on their scope, value for money and impact on road used experience. In 2017-18 Highways England made changes to optimise its enhancement 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 2018-19 Highways England continued to review its capital plan.

As a result, some major improvement schemes are now programmed for delivery in future road periods, while other schemes have been brought forward within road period 1. Further changes were introduced for other reasons. The following two schemes have been stopped:

- A27 Chichester – due to no clear consensus on the preferred options.
- A628 Climbing Lanes – due to the detrimental environmental impacts of the proposed scheme within the Peak District National Park.

Highways England has also identified four schemes that, due to delays with the statutory planning process, will miss the RIS1 commitments to start construction during this road period.

The company has agreed the changes to its commitments in the RIS and delivery plan with government and has taken these through the Department for Transport's formal change control process. Figures C4 and C5 summarise the changes to the major improvements programme agreed to the end of 2018-19.

Figure C4: Projected start of works in road period 1

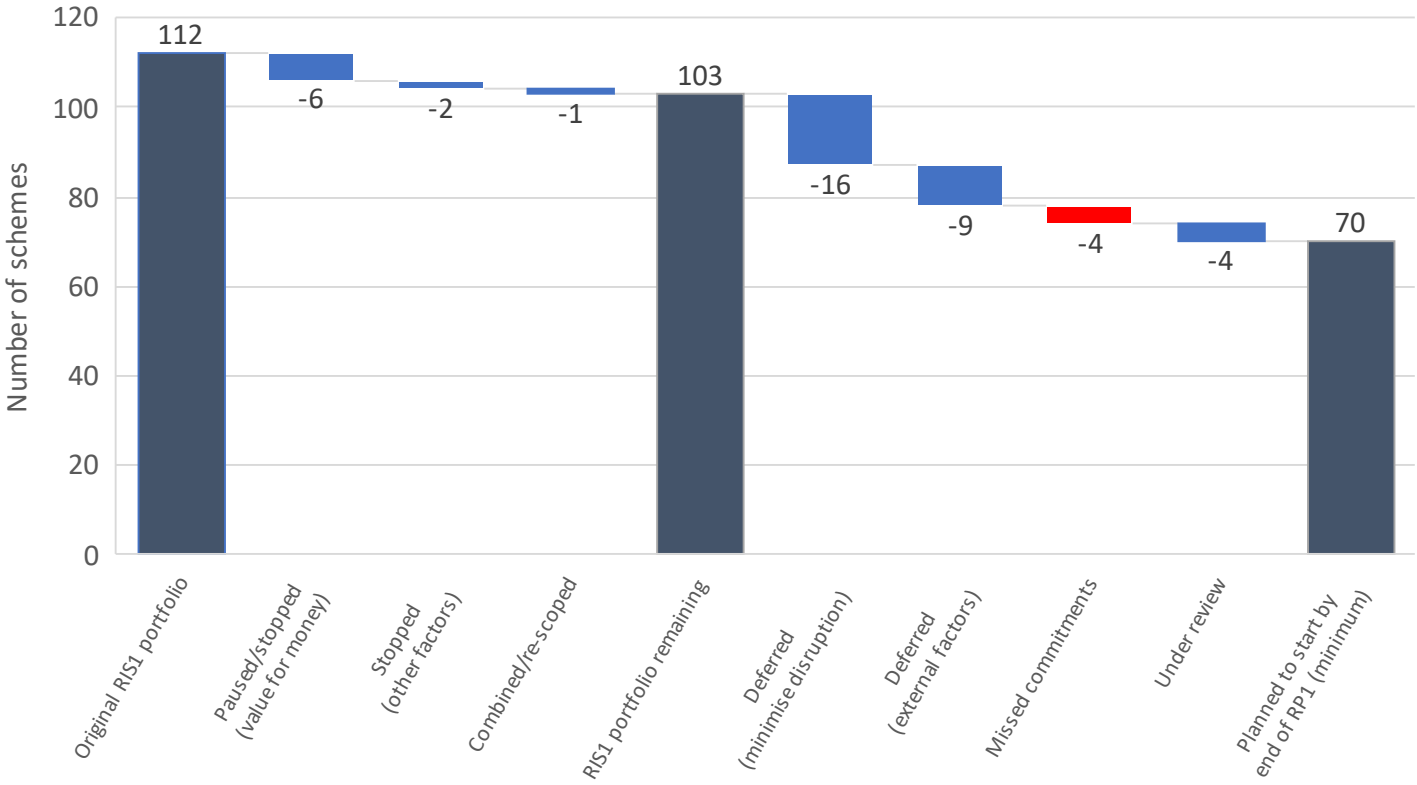


Figure C5: Changes to the major improvements programme

Schedule impact	Number of schemes	Remarks
Schemes paused that do not currently demonstrate value for money (formally agreed)	6	A1 & A19 Technology enhancements M62/M606 Chain Bar M53 Junctions 5-11: smart motorway M11 Junctions 8 to 14 - technology upgrade A12 whole-route technology upgrade A14 Junction 10a
Stopped (formally agreed) due to lack of stakeholder support	2	A27 Chichester A628 Climbing Lanes
Under review and we consider them unlikely to go ahead in their current form (but not yet formally changed)	4	A27 Worthing and Lancing improvement A47 and A12 junction enhancements M56 new junction 11a M6 junction 22 upgrade
Start of works deferred from road period 1 to road period 2 to minimise road user disruption	16	15 road corridor schemes M6 junctions 21A-26
Start of works deferred from road period 1 to road period 2 due to other factors, for example an outcome of public consultations and schemes' options appraisals	9	M54 to M6 / M6 Toll, A38 Derby junctions A303 Amesbury to Berwick Down A428 Black Cat to Caxton Gibbet M5 Bridgwater junctions A5036 Princess Way - access to Port of Liverpool A19 Down Hill Lane junction improvement A358 Taunton to Southfields M27 Southampton junctions
Missed commitments – schemes that will miss the RIS1 commitments to start construction during RP1 and have been deferred to the next road period	4	A1 Morpeth to Ellingham Mottram Moor link road A57(T) to A57 link road A27 Arundel bypass
Schemes re-scoped and combined	1	A34 Oxford improvements (previously A34 Oxford junctions and A34 technology enhancements)

The six schemes that the Department for Transport has agreed to pause, the two it has agreed to cancel, and two that have been combined into a single scheme, result in the RIS1 major schemes programme being reduced from 112 to 103 projects. Four further schemes are under review and we consider them unlikely to go ahead in their current form. Highways England is now planning to have started at least 70 schemes by the end of March 2020.

The company is expecting to start construction of 26 schemes during the last year of road period 1 which includes two schemes - the M11 junction 7a upgrade and A5 Towcester improvement schemes - which are dependent on third parties. In 2019-20, Highways England is also planning to open for traffic eight schemes, including the scheme delayed from 2018-19 (M20 junction 10a).

The likely major scheme delivery status for the remainder of the first road period is summarised in figure C6.

Figure C6: Major scheme delivery – first road period, construction phase

Phase	Original delivery plan commitments (2015-20)	Progress	No.	Details	Status
Start of works	112	Started	44	16 started construction prior to road period 1 28 started in the first four years of road period 1	
		On schedule	26	24 as planned 2 schemes subject to third party schedule of works	
		Under review	4	4 schemes under review (not yet formally changed) and we consider unlikely to go ahead in their current form	
		Missed commitments	4	4 schemes forecast to miss RP1 commitments	
		Approved changes	34	1 scheme progressing on the A34 as a result of combining and re-scoping 2 existing schemes on the road 6 low VfM schemes - paused 2 schemes stopped 25 deferred from RP1 to RP2	
Open for traffic	37	Opened	29	29 opened for traffic in the first four years of the road period	
		On schedule	7	as planned	
		Delayed	1	M20 Junction 10a (delayed from 2018-19)	

Key:
- Milestone due or achieved on schedule or ahead of schedule
- Milestone due or achieved one quarter behind schedule
- Milestone due or achieved more than one quarter behind schedule
- Milestone changed

The company has taken steps during road period 1 to smooth the profile of RIS1 projects. However, it plans to start construction on 26 schemes[21] during 2019-20, of which a high proportion will be in the final quarter of the road period. This is a considerable increase compared with typical delivery during the road period. There are risks around Highways England starting work on all of these projects to the planned timescales. For example, for many of these projects, the planned length of the development phase required to start construction is shorter than the typical development period duration. Any delays to the start of work for these projects could have knock-on effects during road period 2, in terms of the planned expenditure profile and enhancement project completion dates.

Maintenance and renewals

Highways England is taking a more structured approach to managing its assets and has improved how it manages and reports maintenance and renewals. The company has maintained the condition of its network in 2018-19, as measured by the RIS metrics. The score for its key performance indicator on road condition has improved, and the condition of other asset types, where measured, is broadly stable.

[21] This may increase depending on the outcome of the four schemes under review.

Maintenance and inspections

Highways England's performance monitoring statements for 2018-19 have, for the first time, included data showing the company's performance in maintaining the strategic road network. These statements help inform whether the company is doing enough maintenance and renewal on the network to counter degradation of its assets over time and managing its assets sustainably. It is a positive step that additional reporting on maintenance activity has been published. However, we asked for the published statement to include defects, such as potholes, and it does not yet do this. Reporting of defects would give transparency to the sort of issues that might affect the safety and satisfaction of road users and improve the line of sight between maintenance delivery and network condition. We will continue to work with the company during 2019-20 to resolve the challenge of defect reporting.

In a typical year, Highways England completes around 11,000 inspections of its structures assets. During 2018-19 we raised our concern at the significant number of overdue detailed structures inspections – approximately 3,500 in August 2018. The company put in place a plan to address the backlog, and managed the number of overdue inspections down to 21 by the end of March. It has provided assurance that the outstanding overdue assets have received visual inspections and do not present a risk to users, as well as improvements to its processes and procedures for managing and monitoring inspection performance going forward. Highways England has also shared progress against inspections for other assets, which we will monitor during 2019-20.

Asset management

We completed an in-depth review into Highways England's management of roadside technology assets in June 2019. The objective of the review was to determine whether the company manages its roadside technology assets safely, robustly, sustainably and efficiently.

The review looked at how Highways England operates over 100,000 roadside technology assets, worth £4bn, across the strategic road network through national and regional control centres, its telecommunications network and its regional maintenance operations. It found that the company recognises the increasing importance of roadside technology as an asset to support its network operator role, its Digital Roads agenda and three imperatives: safety, customer service and delivery. The review identified that it should continue to develop its whole life cycle processes to manage roadside technology assets and makes a number of recommendations to support its objectives.

The completion of our review of Highways England's asset management approach to technology assets completes our review of its main asset types over the last three years. We will work with the company in 2019-20 to understand how it is responding to the recommendations made across all the reviews and to map out its approach to continued asset management maturity.

Renewals

In 2018-19, Highways England delivered renewal volumes that more closely reflected its plans at the start of the year. The company met its planned volumes against all but two asset types, bridge waterproofing and bridge bearings. This is shown in figure C7 below.

Figure C7: volumes of renewals delivered compared to plan in 2018-19

2018-19 Commitments		Planned Output	Actual Output	Output Variance
Renewal of roads - pavement	Pavement (lane kilometres)	1,800	1,940	+8%
Renewal of roads	Traffic Signs (number)	1,000	1,829	+83%
	Guardrail (kilometres)	0.625	1.0	+58%
	Kerbs (kilometres)	26.8	39.8	+48%
	Boundary Fencing (kilometres)	35.8	48.2	+35%
	Road Markings (kilometres)	2,850	3,694.5	+30%
	Lighting (number)	1,720	2,147	+25%
	Vehicle Restraint System (VRS) (kilometres)	188	204.5	+9%
	Geotechnical (kilometres)	3	3.2	+7%
	Drainage (kilometres)	165	174.5	+6%
Renewal of structures	Bridge Joint (number)	355	634	+79%
	Parapet (kilometres)	1.3	1.7	+29%
	Waterproofing (square metres)	118,100	112,763	-5%
	Bridge Bearing (number)	192	98	-49%
Renewal of technology	Winter Resilience (number of completed schemes)	40	58	+45%
	Network Resilience (number of completed schemes)	33	43	+30%
	Renewals and Improvements (number of technology assets renewed or improved)	343	429	+25%
	Motorway communications equipment (number of new or replaced items)	157	177	+13%

Figure C8 (below) shows the volume of renewals delivered compared to plan in the first four years of this road period for selected asset types. The size of the variances shows an improvement in delivering renewals that more closely reflect its asset plans in 2018-19. Highways England has improved reporting of its Operations, Maintenance and Renewals (OMR) plans and explanation of changes to plans and delivery during the year. In-year forecasting of renewals outputs have shown reduced variability across all asset types. The company has commitmed to continue developing and improving its OMR reporting during 2019-20.

In 2018-19, Highways England delivered renewals volumes more evenly throughout the year. In previous years, delivery was disproportionately high in quarter 4, which led us to raise concerns with the company about the inefficiency of this profile. Winter weather conditions may lead to higher costs due to difficulty completing work, and also reduce the lifespan of the work, increasing whole life costs. In quarter 4 of 2018-19 it spent approximately half the amount of the same period in 2017-18. This improved planning and delivery, and efforts to close the funding gap, are likely to have influenced the flatter spend profile for renewals, as shown in figure C9.

Figure C8: volumes of renewals delivered compared to plan 2015-16 to 2018-19

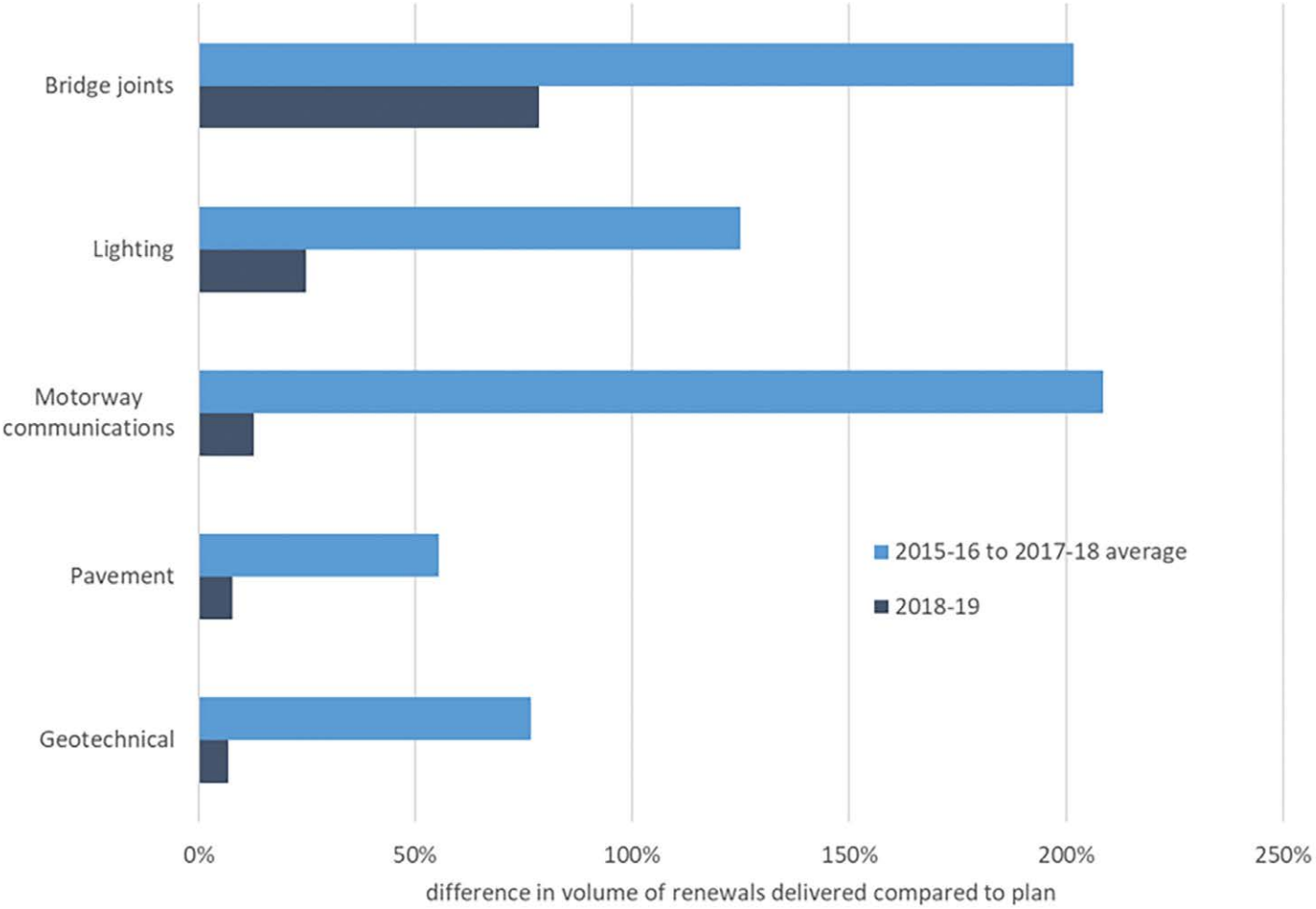


Figure C9: volumes of renewals delivered compared to plan 2015-16 to 2018-19

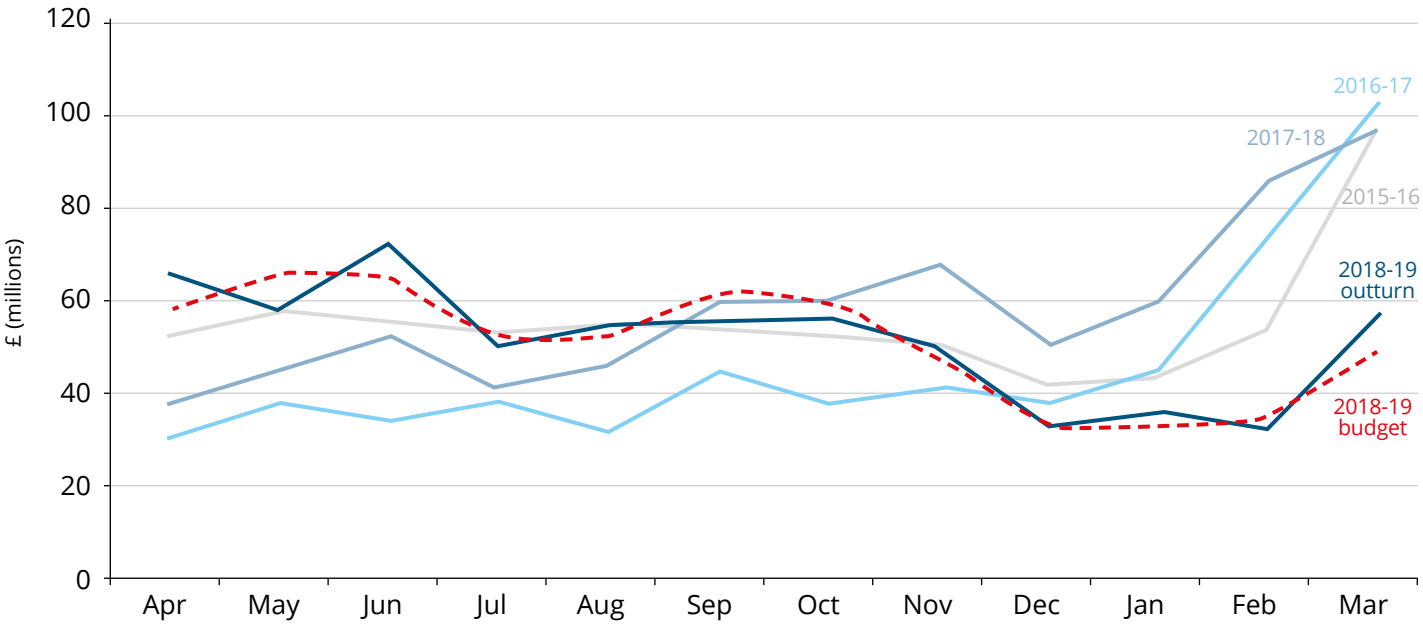
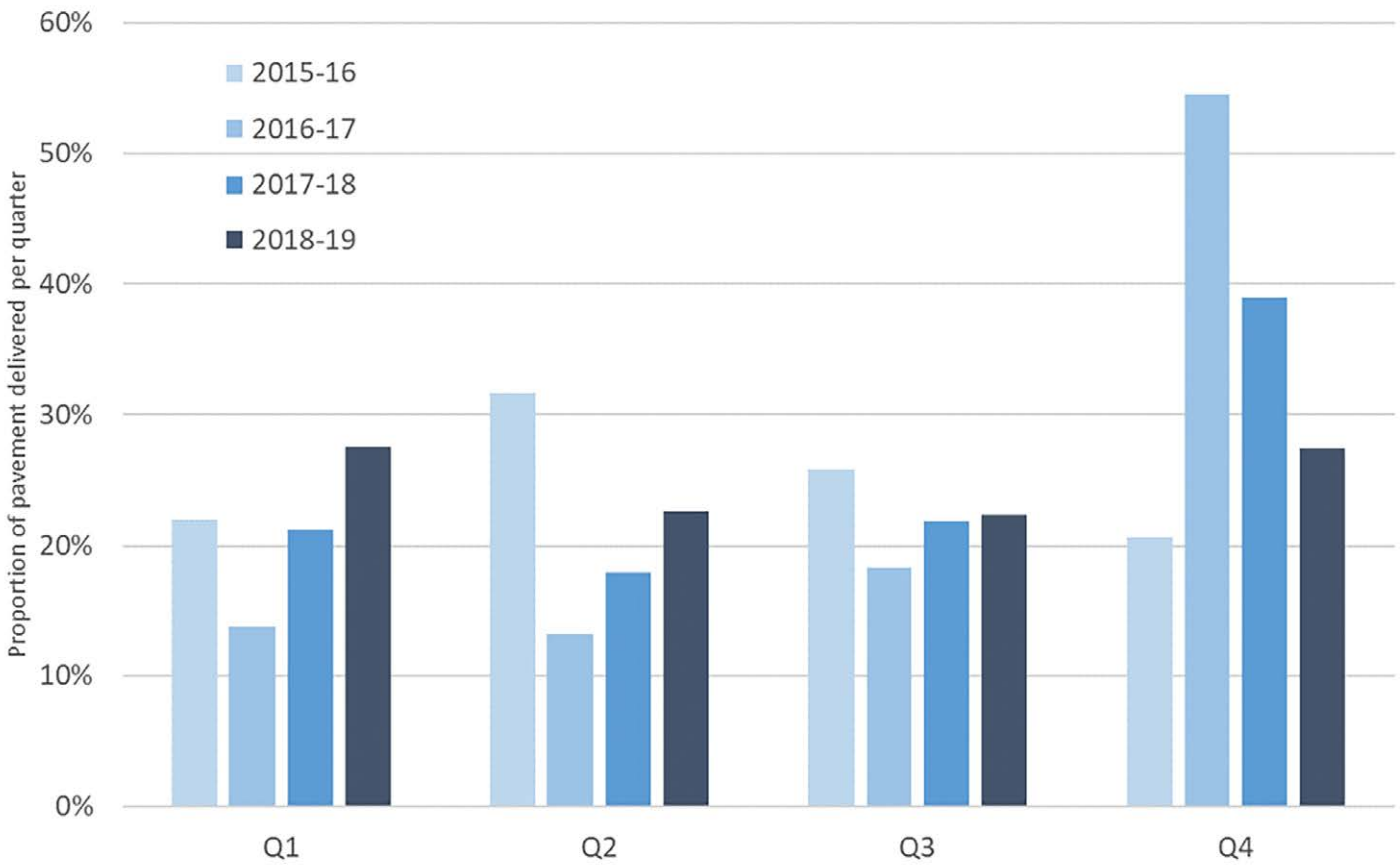


Figure C10 shows the proportion of pavement renewals delivered each quarter, which also demonstrates how the company has improved planning and delivery.

Figure C10: percentage of pavement renewals per quarter, 2015-16 to 2018-19

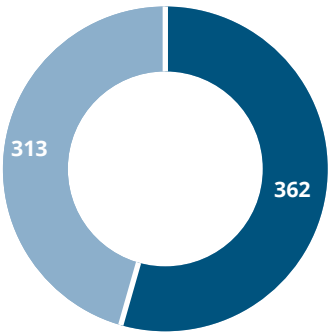


Ring-fenced funds

Highways England's investment plan includes a set of ring-fenced funds, worth £675m in road period 1, aimed at addressing a range of issues beyond the traditional focus of roads investment. Delivery of projects through these funds is covered in chapter 2, and also figure C11, below, which provides an update on each fund at the end of 2018-19.

Figure C11: Ring-fenced funds delivery in 2018-19

All

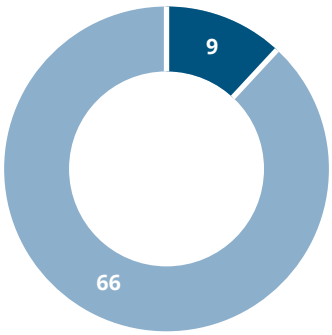


Value in RISI: £675m

2018-19 performance

- £363m spent to date, of which £181m spent in 2018-19.
- Pace of delivery has significantly increased in 2018-19.
- However, overall programme remains heavily back-end loaded.
- The level of underspend in the air quality fund, in particular, is a risk to the success of the funds .

Air quality

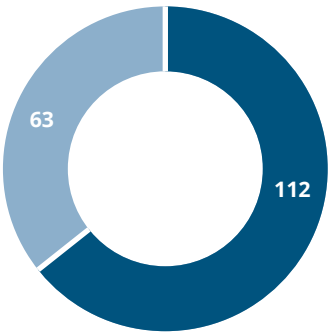


Value in RISI: £75m

2018-19 performance

- 17 air quality projects active in 2018-19.
- Continuing to roll out a network of air quality monitor ing stat ions; 48 stations now operational.
- Further feasibility work is underway on a programme of national air quality barriers.
- The volume of work required in the final year of the RIS is a risk to the air quality fund successfully delivering its objectives.

Cycling, safety and integration

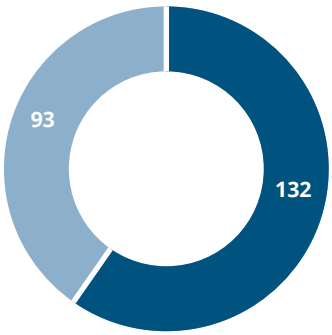


Value in RISI: £175m

2018-19 performance

- Cycling: Detailed design on 19 schemes, and construction completed on 22.
- Safety: Detailed design completed on 38 schemes and construction completed on 21.
- Integration : Detailed design completed on 26 schemes and construction completed on 28.

Environment

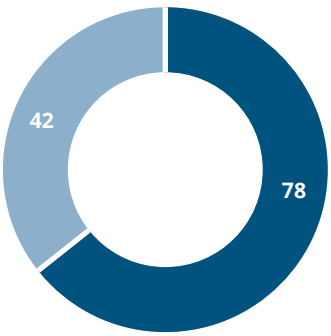


Value in RISI: £225m

2018-19 performance

- Water: 12 schemes completed
- Noise: 232 noise important areas mitigated by insualtion scheme.
- Carbon: 816 lighti ng units and 90 traffic signals converted to LED.
- Landscape: 45 schemes completed.
- Biodiversity: 25 projects, creating additional 99 hectares of grassland.
- Cultural heritage: Enhancements made at seven sites.
- Legacy: No schemes reported in 2018-19.

Innovation

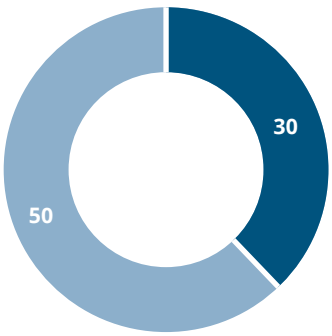


Value in RISI: £120m

2018-19 performance

- 109 projects active during 2018-19.
- Safety: 3 projects developed and 3 delivered.
- Infrastructure: 3 projects developed.
- Data and information : 2 projects developed and 1 delivered.
- New technologies: 1 project developed.
- Sustainable operation: 3 projects developed and 1 delivered.

Growth and housing



Value in RISI: £80m

2018-19 performance

- Programme now closed to new schemes.
- 28 schemes now approved, of which: 7 completed, 1 in progress, and 20 due to commence.
- Once completed, the package is expected to help enable up to 45,000 homes and 45,000 jobs.

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