



# ANNUAL ASSESSMENT OF HIGHWAYS ENGLAND'S PERFORMANCE

APRIL 2017 - MARCH 2018





# ANNUAL ASSESSMENT OF HIGHWAYS ENGLAND'S PERFORMANCE

APRIL 2017 - MARCH 2018

Presented to Parliament pursuant to section  
10(8) of the Infrastructure Act 2015

Ordered by the House of Commons to be  
printed 16 July 2018



© Crown copyright 2018

This publication is licensed under the terms of the Open Government Licence v3.0 except where otherwise stated. To view this licence, visit [nationalarchives.gov.uk/doc/open-government-licence/version/3](http://nationalarchives.gov.uk/doc/open-government-licence/version/3)

Where we have identified any third party copyright information you will need to obtain permission from the copyright holders concerned.

This publication is available at [www.gov.uk/government/publications](http://www.gov.uk/government/publications)

Any enquiries regarding this publication should be sent to us at One Kemble Street, London, WC2B 4AN

ISBN 978-1-5286-0576-2

CCS0618909730 C

07/18

Printed on paper containing 75% recycled fibre content minimum

Printed in the UK by the APS Group on behalf of the Controller of Her Majesty's Stationery Office

# CONTENTS

---

---

<b>1. Executive Summary</b> .....	<b>7</b>
Introduction .....	7
Key messages for 2017-18 .....	7
Summary of performance .....	9
<b>2. Highways England's performance</b> .....	<b>11</b>
Performance in operating the network has remained steady.....	11
It is delivering more improvements, but must manage costs.....	20
Condition of the strategic road network has improved .....	25
It is delivering efficiencies, but more evidence is required .....	29
Priorities for 2018-19 .....	30
<b>Annex A: Performance against outcome areas</b> .....	<b>32</b>
Outcome: Making the network safer .....	32
Outcome: Improving user satisfaction .....	34
Outcome: Supporting the smooth flow of traffic .....	36
Outcome: Encouraging economic growth .....	39
Outcome: Delivering better environmental outcomes .....	40
Outcome: Helping cyclists, walkers and other vulnerable users .....	42
Outcome: Achieving real efficiency.....	43
Outcome: Keeping the network in good condition.....	45
<b>Annex B: Financial and efficiency performance</b> .....	<b>47</b>
<b>Annex C: Network investment delivery</b> .....	<b>55</b>
<b>Annex D: Note on revisions to previously reported data</b> .....	<b>66</b>



# 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.
- 1.3 This is our assessment of Highways England's performance in 2017-18. Overall, we have found that the company continues to operate a road network which is safe and serviceable, and has largely met its performance targets. Highways England is improving its management of its major schemes. Its forecast costs for the road period remain above funding, partly reflecting delivery of additional scope and planned over programming. It must continue to take action to manage this position and reconcile it with claimed efficiencies.

## Key messages for 2017-18

### 1. Highways England's performance in operating the network has remained steady in 2017-18.

In the context of increased traffic it has kept the network flowing. Road user safety remains good compared to other road networks, although the challenging target for 2020 is at risk. Highways England is becoming more customer-focused, and has plans for further improvement. Road user satisfaction remains high, but is below target.

- 1.4 Highways England has demonstrated a strong focus on safety, and in this area the strategic road network in England compares well to other road networks. The company is not yet delivering the reduction in the number of killed or seriously injured required to meet

its challenging target of 40% improvement by 2020. One reason for the reported increase in the number of people killed or seriously injured is a change to how police forces record road casualty data.

- 1.5 Traffic on the network has grown over the last year. In spite of this, average congestion is broadly stable in this road period and Highways England remains above its targets for smooth flow of traffic – keeping 98.3% of the network open to traffic and clearing 87.9% of incidents within an hour.
- 1.6 During 2017-18, Highways England has demonstrated its improved customer focus through reviewing road users' experience of unplanned disruption caused by major incidents. It has identified lessons learnt and developed action plans to improve future performance. However, Highways England's user satisfaction is 88.7%, slightly below its target of 90%. It is developing an improvement plan for 2018-19 which must reflect road users' priorities. It is also setting out its customer service strategy, recognising the longer-term ambition of improving customer focus and satisfaction.
- 1.7 The company has made progress in delivering its environmental targets on biodiversity and noise. It has helped vulnerable users by completing 100 new and upgraded crossings, which is higher than the number completed last year.

### 2. Highways England is delivering more improvements on its roads but it must manage costs.

The company has improved its planning and management of major schemes, and is delivering the majority of these on time. It has demonstrated improved management of its capital portfolio. Its forecast costs for the road period have reduced, but remain above its funding, partly reflecting delivery of additional scope and planned over programming. It must continue to take action to manage this position. Investment through its ring-fenced funds has increased, but is slower than originally planned.

- 1.8 Highways England continues to deliver most of its major schemes to schedule and has improved its scheduling of major schemes for the remainder of the road period. It started work on all seven schemes in its 2017-18 delivery plan, and an additional scheme brought forward from 2019-20. It also opened to traffic eight of the nine schemes which were planned in 2017-18.
- 1.9 The company has strengthened its capital portfolio management capability and, as a result, now has better information about scheme timings, costs and risks. This should support improved planning and delivery in the long-term.
- 1.10 The majority of major schemes completed to date have cost more than the original funding assumptions. Highways England now expects to start 85 schemes in the first road period, down from 112 originally planned. The company's forecast total costs for its RIS1 major schemes is now £2.9bn higher in road period 1 and road period 2 than originally assumed. This partly reflects increased scope for some schemes and immature scheme estimates when RIS1 funding was set.
- 1.11 Highways England forecasts capital costs that are £438m higher than its funding in the road period. It is taking action to manage costs, but there is risk that some work will need to be deferred to the next road period and / or additional funding used in road period 1 (for example through its ability to bring funds forward from the next road period).
- 1.12 Highways England has made good progress to date on its flagship schemes. The A14 Cambridge to Huntingdon scheme is currently on schedule to meet its planned completion date, and the company has made progress with planning for the A303 Stonehenge tunnel and Lower Thames Crossing.
- 1.13 Highways England's delivery through its ring-fenced funds is slower than planned, although the pace of delivery has picked up in 2017-18. There is particular risk to delivering the intended investment through the air quality fund. We propose that it should now review options for addressing this with government.

### 3. Highways England is improving the condition of the strategic road network.

Network condition has improved during the year, and is now on target. The company has set out long-term plans for improving the identification, planning and delivery of asset maintenance and renewal works.

- 1.14 Highways England is moving towards a more structured approach to managing its assets - including assuring that it is identifying and delivering the right work. It has recognised the concerns we raised previously and has set out plans for improvement which will support better maintenance and renewal of the network in this road period, and beyond.
- 1.15 Highways England has improved the condition of its road network during the year and it is meeting its target to have at least 95% of the network in good condition. The timing of the surveys used to collect road condition data mean that these figures do not reflect the impact of the recent winter; this will be reflected in 2018-19 data. We are working with the company to understand what effect this has had on road surfaces, and how it is addressing any resultant impact on network condition.
- 1.16 The company has spent 24% more on renewals in 2017-18 than in 2016-17 and delivered more road surface renewals. However, user satisfaction with upkeep has reduced by one percentage point this year, to 89%.
- 1.17 In 2017-18, Highways England spread its expenditure on maintenance and renewals slightly more evenly throughout the year than it has done in previous years – but there remain opportunities to deliver more efficiently.



#### 4. Highways England is delivering efficiencies but more evidence is required that its road period target is on track.

It has reported £486m of cost savings in the road period to date (40% of its target), £226m of which are in 2017-18. This is supported by clear evidence of specific improvements made. The company needs to continue to develop its evidence that reported savings are supported by its capital portfolio delivery and its unit costs.

- 1.18 Highways England has presented strong evidence of the actions it has taken to deliver more efficiently and the savings these have realised. It has started to develop improved unit cost information to provide context for its reported efficiency – this needs further work.

- 1.19 Highways England's current capital portfolio expenditure forecast is £438m higher than its funding, partly reflecting delivery of additional work and planned over programming. This is after agreed changes to the RIS, including from the optimisation process, which have removed scope from road period 1. The company has identified plans to reduce the difference between its expenditure forecast and funding to £274m by the end of the road period. Any remaining difference will need to be managed through use of additional funds in road period 1 or deferral of work into road period 2.

#### Summary of performance

- 1.20 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<sup>1</sup>. Delivery against each key performance indicator, and our assessment for the remainder of the road period, is summarised in the table below using a red, amber, green (RAG) status.

<sup>1</sup>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 2017-18	RAG 2016-17	RAG 2017-18	RAG road period 1
<b>Making the network safer</b>	<b>Killed or seriously injured</b> ●Target: 40% reduction by end of 2020	2017 figures delayed until September 2018. Killed or seriously injured increased by 12% in 2016.	Amber	<b>Amber</b>	Amber
<b>Improving user satisfaction</b>	<b>Road user satisfaction</b> ●Target: 90% by March 2017	88.7% satisfaction. Remains below 90% target.	Amber	<b>Amber</b>	Amber
<b>Supporting the smooth flow of traffic</b>	<b>Network availability</b> ●Target: 97% lane availability	98.3% availability. Remains above target, although slightly down from 98.4% in 2016-17	Green	<b>Green</b>	Green
	<b>Incident clearance</b> ●Target: 85% of motorway incidents cleared within one hour	87.9% cleared within one hour. Remains above target, and improved from 85.9% last year.	Green	<b>Green</b>	Green
<b>Encouraging economic growth</b>	<b>Average delay (secs per vehicle mile)</b> Target: No target set	9.2 seconds delay per vehicle mile, an increase of 0.2 seconds from 2016-17.	Amber	<b>Amber</b>	Amber
<b>Delivering better environmental outcomes</b>	<b>Noise important areas mitigated</b> ●Target: Mitigate at least 1,150 noise important areas by 2020	448 mitigated during the year, bringing total for the road period to 651. Improved delivery during 2017-18.	Amber	<b>Green</b>	Amber
	<b>Improved biodiversity</b> ●Target: Publish biodiversity action plan	Management plans produced for 15 SSSIs, bringing the total for the road period to 30.	Green	<b>Green</b>	Green
<b>Helping cyclists, walkers and other vulnerable users</b>	<b>Number of new and upgraded crossings</b> Target: No target set	28 new and 72 upgraded crossings delivered in 2017-18.	Amber	<b>Amber</b>	Amber
<b>Achieving real efficiency</b>	<b>Capital expenditure savings</b> ●Target: Savings of at least £1.212 billion on capital expenditure by 2019-20	£226m of efficiencies reported in 2017-18. £486m in RIS1 to date, which is 40% of the target.	Green	<b>Amber</b>	Amber
	<b>Progress of work, relative to delivery plan</b> Target: No target set	Work started on 8 schemes (target of 7). 8 schemes open to traffic (target of 9).	Green	<b>Green</b>	Amber
<b>Keeping the network in good condition</b>	<b>Pavement condition</b> ●Target: 95% of pavement requiring no further investigation for possible maintenance	95.2% requires no further investigation. Performance improved after target missed in 2016-17.	Amber	<b>Green</b>	Amber

**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. HIGHWAYS ENGLAND'S PERFORMANCE

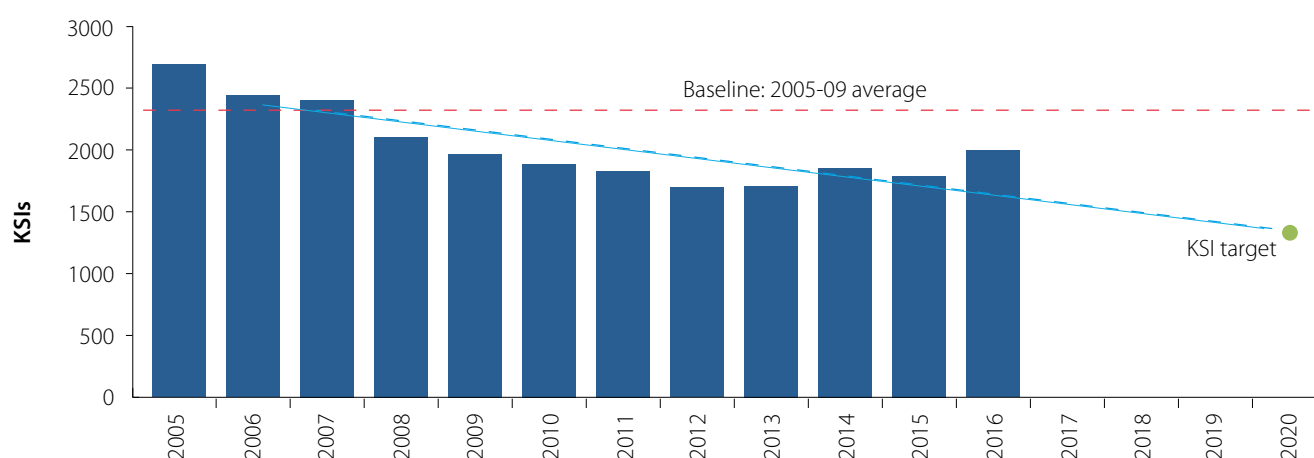
Highways England's performance in operating the network has remained steady in 2017-18.

In the context of increased traffic it has kept the network flowing. Road user safety remains good compared to other road networks, although the challenging target for 2020 is at risk. Highways England is becoming more customer-focused and has plans for further improvement. Road user satisfaction remains high, but is below target.

### Safety

- 2.1 One of Highways England's key objectives is to improve safety on the strategic road network for road users and workers. In 2017-18, the company has demonstrated a strong focus in this area. However, it is at risk of missing its key performance indicator target to reduce the number of people killed or seriously injured on the network by 40% by 2020, compared to the 2005-09 average baseline.
- 2.2 The latest available statistics show that 2,005 people were killed or seriously injured on the strategic road network in 2016<sup>2</sup> – a 12% increase on the previous year. This included 231 fatalities, which is 3% higher than in 2015.
- 2.3 One reason for the reported increase in the number of people killed or seriously injured is a change to how police forces record road casualty data. Approximately half of English police forces adopted a new system (CRASH - collision recording and sharing) between the end of 2015 and early 2016<sup>3</sup>. Forces that adopted the new system reported a 20% increase in killed or seriously injured on the strategic road network in 2016, compared to a 5% increase for those forces that did not.
- 2.4 More generally, the trend in the number of killed or seriously injured on all roads, prior to the introduction of the new system, had been broadly flat since 2010. This highlights the challenge of achieving the target by 2020.

**Figure 2.1: Killed or seriously injured (KSI) on the strategic road network, 2005-2016**



Note: number of KSIs are affected by changes to data collection from 2012, with the biggest impact in 2016.

<sup>2</sup> The Department for Transport, which is responsible for producing road casualty statistics, has postponed publication of 2017 data until September 2018.

<sup>3</sup> The Department for Transport has published further information on the changes to road casualty statistics: <https://www.gov.uk/government/collections/road-accidents-and-safety-statistics>

2.5 In 2017-18, Highways England delivered a broad range of activities aimed at improving safety on the network. These included:

- **Safety schemes.** The company has delivered 45 safety schemes through its ring-fenced funds, and completed detailed design on a further 61. These schemes focus on the sections of the network where accident rates are highest, which are typically single carriageway A-roads.
- **Driver education.** Highways England has worked with organisations including the Driver Vehicle and Licensing Agency (DVLA), Driver and Vehicle Standards Agency (DVSA), road safety partnerships and the police to deliver better driver training and education to higher risk groups such as new drivers and motorcyclists.
- **Smart motorways.** The company has worked with road users, recovery organisations and freight operators to develop improved signage, communications and training for smart motorways.
- **Suicide prevention.** Highways England launched its suicide prevention strategy in November 2017, which sets out how it will contribute to delivering government's national strategy for suicide prevention.
- **Vehicle roadworthiness.** Highways England has worked with partners to run information campaigns to encourage drivers to check that their vehicles are roadworthy before starting a journey.
- **Road worker safety.** The company has strengthened checks to ensure its contractors are appropriately trained for working on the strategic road network, and is developing better systems for reporting workforce incidents.

## Case study – new driver programme

- Highways England's new driver programme aims to improve safety on the network by increasing the knowledge of new drivers, and driving instructors when driving on motorways or high-speed roads.
- This is a joint initiative with partners, including Department for Transport, DVLA, DVSA and driving instructor groups.
- It includes online resources ([www.drivinghub.co.uk](http://www.drivinghub.co.uk)) for learner drivers, approved driving instructors and parents and guardians covering various elements such as vehicle checks, driving to the conditions, and what to do if you break down on a high-speed road.
- This supports a change in legislation which allows learner drivers to take lessons on motorways from June 2018.





- 2.6 Highways England published an update to its 5 year health and safety plan in 2017-18, and has now delivered 108 of the 130 actions in the plan. It also developed regional incident and casualty reduction plans, which set out the actions and planned interventions that will contribute to improved safety in each region, and the company's longer-term ambition that no one should be harmed whilst travelling or working on the network by 2040.
- 2.7 The company has developed its work to assess the safety of the network, based on a star rating system. In 2017-18, it completed work to model the star rating of the network to reflect the improvements made in the first road period. It expects to publish further detail of this work later in 2018. It is on track to achieve 90% of travel on 3-star roads by 2020.
- 2.8 Accident frequency rates for the supply chain have increased slightly over the past year, while rates for Highways England's own staff have improved. However, accident rates for both remain worse than the company's internal targets.
- 2.9 In 2017-18, the company delivered 14 actions in its 5 year health and safety action plan that are specifically aimed at improving road worker and traffic officer safety. This included

ensuring all tier one contractors have plans to address health, safety and wellbeing for second and third tier contractors. The company also worked with the supply chain to ensure all those working on the network are provided with appropriate training, and reviewed contractors' management of occupational health risks.

- 2.10 Highways England has provided training for managers in its customer service directorate to understand and identify stress in the workforce. It has also developed an improved system for reporting accidents and incidents, which covers contractors and Highways England employees.

### Supporting the smooth flow of traffic

- 2.11 The strategic road network fulfils a vital role in supporting our local and national economies by facilitating the movement of people and goods. As network operator, Highways England must minimise the impact of roadworks and incidents on customers. The company's performance in this area is measured by two key performance indicators, covering network availability and incident clearance. In 2017-18, Highways England met its targets for these indicators.

Figure 2.2: Network availability, 2013-14 to 2017-18

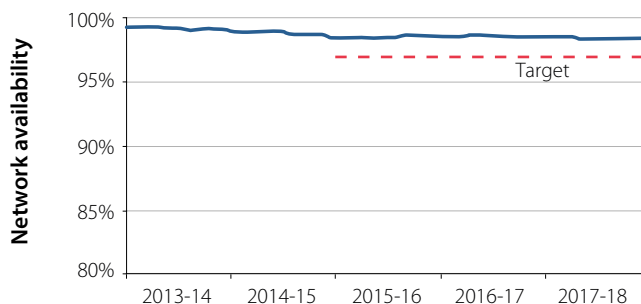
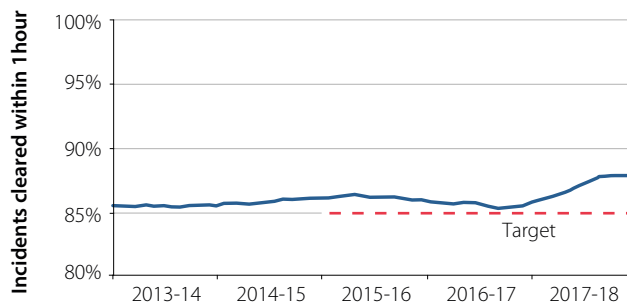


Figure 2.3: Incident clearance, 2013-14 to 2017-18



2.12 Lane availability on the strategic road network was 98.3% in 2017-18, which is above the target of 97%. Highways England expects availability to reduce during the road period, but remain above target. This reflects the increased work on the network as the RIS1 investment plan gathers pace.

2.13 During 2017-18, Highways England took a number of actions aimed at reducing the impact of roadworks on road users. These included undertaking more work at night, working more efficiently during lane closures, and closing shorter sections of roads during works. We will continue to work with the company to understand how it is maximising lane availability as the volume of major roadworks on the network increases.

2.14 The company also met its incident clearance target in 2017-18 – clearing 87.9% of motorway incidents within one hour, against a target of 85%. This is an improvement on performance in 2016-17, when it cleared 85.9% of incidents within one hour.

2.15 During 2017-18, Highways England has rolled out a number of interventions, aimed at increasing the capability of the traffic officer service to respond to incidents on the network. This has included training traffic officers to tow vehicles of up to 12 tonnes from the carriageway, better coverage of the network through more single-crewed vehicles, and better targeting of known 'hot-spots'. The company has also undertaken more detailed analysis of incidents that are not cleared within one hour, and shared this intelligence across the business to improve performance.

## Case study – increasing the capability of the traffic officer service

- In the past year, Highways England has trialled initiatives to support the smooth flow of traffic by increasing the coverage and capability of the traffic officer service.
- During the 2018 Easter holiday period, traffic officer patrols were extended to the A30 in Cornwall for the first time.
- Patrolling the A30 supports Devon and Cornwall Police and helps address increased traffic volumes and related incidents on the road. As part of this, the traffic officers are also at hand to provide assistance on the A38.
- The extra patrols will also take place over the summer months, when this part of the strategic road network is particularly busy.
- In the East Midlands, the traffic officer service has also been allocated some inspection duties. This aims to: allow asset inspectors to spend more time on condition inspections; speed up repairs; and improve decision making on asset intervention.



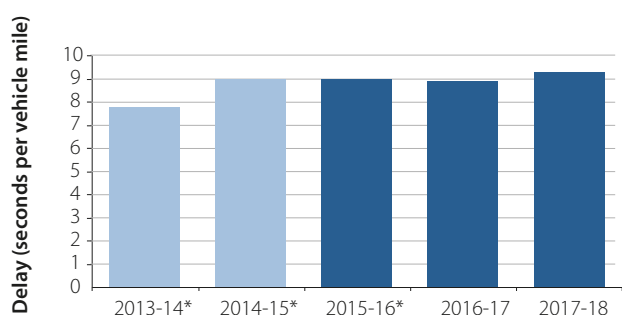
## Supporting economic growth

2.16 Highways England's contribution to supporting economic growth is monitored by a key performance indicator that measures average delay per vehicle mile. In 2017-18, average delay was 9.2 seconds per vehicle mile. This is the highest level of average delay recorded in the road period so far – up from 9 seconds per vehicle mile in 2016-17.

2.17 Traffic is at record levels, and is continuing to grow. In 2017, 94.1bn vehicle miles were travelled on the strategic road network, which is 2.1% higher than in 2016. This is a key cause of increased delay.

2.18 Analysis of performance data from 2017-18 shows a particularly large increase in delay in March 2018, compared to March 2017. This coincides with two periods of heavy snow that affected the network in March 2018.

**Figure 2.4: Average delay on the strategic road network, 2013-14 to 2017-18**



\* adjusted historical data (comparison with latest data is illustrative)

2.19 Many of the actions taken by Highways England to improve lane availability and incident clearance also help to reduce delays on the network. Examples of other actions it has taken to support the smooth flow of traffic in 2017-18 include:

- Responding to advance warning of severe winter weather by positioning recovery vehicles at strategic locations on the network based on previous snow events.
- Working with emergency services and other road responders at a regional level to improve coordination in responding to incidents.
- Running a national driver education campaign on using smart motorways.

2.20 The winter of 2017-18 presented challenging conditions across the strategic road network, including heavy snow in February and March 2018. As a result, Highways England used more than double the amount of salt compared to the previous year. A key challenge in 2017-18 was traction of larger vehicles at vulnerable locations and the impact of drifting snow, particularly on A-roads. The company used location-specific plans, based on prior experience, to support road users during these periods of severe weather. Highways England's regional teams have used the lessons learnt from last winter to strengthen its plans for future years.

2.21 Increasing traffic, and delivery of the capital investment programme, continue to present a challenge to managing delay on the network. The Department for Transport forecasts that traffic on the strategic road network will continue to grow, by between 29% and 60%, between 2010 and 2040. Continuing to build its understanding of the impact of traffic growth will help Highways England deliver interventions that have the greatest impact on minimising delays on its network.

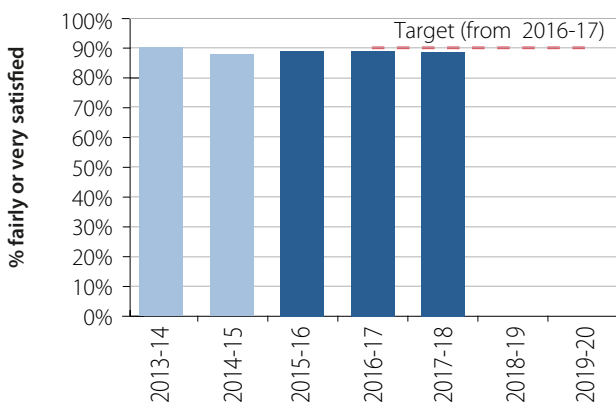


## Satisfaction

2.22 It is important that Highways England delivers a service that meets road users' needs, and maintains high levels of satisfaction. Satisfaction is measured through a regular survey of drivers and other road users by Transport Focus – the National Road User Satisfaction Survey (NRUSS).

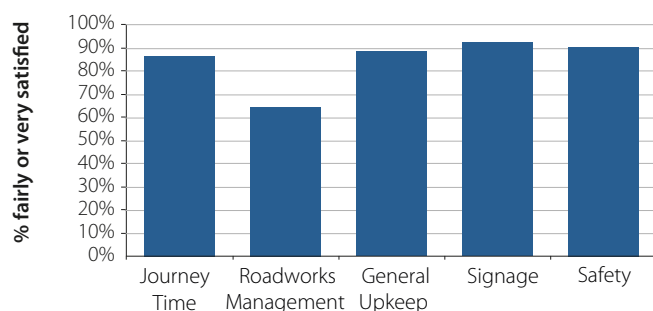
2.23 Road user satisfaction with using the strategic road network was 88.7% in 2017-18. This is below the target of 90%, and also below last year's score of 89.1%.

**Figure 2.5: Road user satisfaction, 2013-14 to 2017-18**



2.24 The overall satisfaction score is calculated by combining five separate elements of satisfaction. Satisfaction with signage and safety were above 90%, while satisfaction with the upkeep of the network, journey times and roadworks management were all below 90%.

**Figure 2.6: Road user satisfaction with different journey elements, 2017-18**



2.25 Analysis of regional data shows that satisfaction in the North West fell from 83.0% to 77.8% in the last year, and is considerably lower than other regions. Highways England attributes this to the high concentration of (and delays to) major schemes; above average levels of commuters (who tend to have lower satisfaction); and fewer variable message signs in the region.

2.26 Highways England has produced plans to improve customer satisfaction in 2018-19. These are informed by insight from a range of sources, including the NRUSS. Many of the actions it has developed to improve satisfaction are targeted at aspects of performance which attract the lowest NRUSS scores. For example, it has taken action to address users' experience of roadworks, including length of roadworks, quality of information, and visible activity. It has also worked with Transport Focus to improve its understanding of issues affecting road user satisfaction in the North West of England, where scores are consistently below other areas of the country.

2.27 In 2017-18, Highways England's customer service plan focussed on:

- Roadworks – providing information to help people make the best choices and reinforcing customer service through the company and its supply chain;
- Maintenance and upkeep on the network and reducing litter;
- Signage – improving variable message sign availability and the user-friendliness of information; and
- Improving diversionary route signage.

2.28 There are also a number of factors affecting customer satisfaction that are less within Highways England's control, such as the behaviour of other motorists, and volumes of traffic. This was reinforced in 2017-18 by suspected terrorist-related incidents on the M3 and M1 motorways. These caused significant disruption for users and presented new challenges to the company in relation to its control over when roads are re-opened for traffic. Following a lessons-learned exercise, Highways England has put a series of actions in place to mitigate the impact on road users of similar incidents in the future.

2.29 During 2017-18, Highways England has worked with Transport Focus, and us, to develop the new Strategic Road User Survey which will provide more robust information on customer satisfaction in the future. Transport Focus began a period of dual running of the new survey from April 2018. The 90% target for road user satisfaction will continue to be measured by the existing NRUSS in 2018-19.

### Delivering better environmental outcomes

2.30 The road investment strategy requires Highways England to deliver better environmental outcomes through its management of the strategic road network. The company's progress in this area is monitored by two key performance indicators, covering noise and biodiversity.

2.31 For its key performance indicator on noise, Highways England has a target to mitigate at least 1,150 noise important areas by 2020. In 2017-18, it mitigated 448 noise important areas, bringing the total to 651<sup>4</sup> for this road period.

2.32 The number of noise important areas mitigated in 2017-18 is significantly greater than in previous years, which is largely due to the company rolling out a programme to fit noise insulation (double-glazing) to affected properties close to the network.

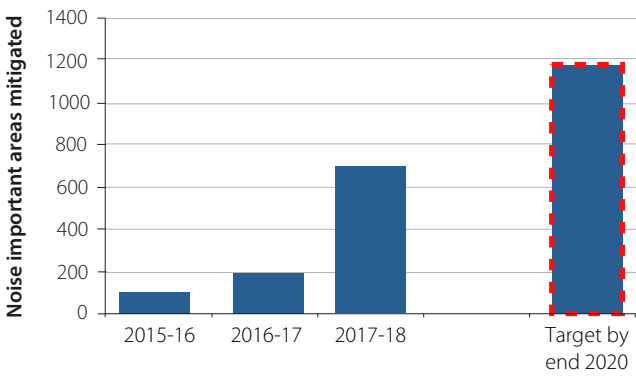
2.33 In 2017-18, 386 noise important areas were mitigated through insulation. This includes installations at 274 individual properties. Some noise important areas have been counted as mitigated where double glazing was offered to households, and the homeowner either refused, or did not respond to at least three letters sent by Highways England<sup>5</sup>.

2.34 Of the remaining noise important areas mitigated in 2017-18, 47 were delivered through low-noise resurfacing, eight by major scheme bypasses, two were delivered through noise barriers and five through a combination of insulation and resurfacing. Highways England expects to meet its target of 1,150 by the end of this road period, with the majority of these delivered through the insulation scheme. We will continue to monitor progress against the target closely.

2.35 Highways England has also made progress in delivering the commitments in its biodiversity action plan. The company has approved 61 biodiversity schemes to be taken forward in 2018-19. It has undertaken testing of a newly developed biodiversity metric, and expects to trial it in 2018-19. It has also produced a further 15 management plans for sites of special scientific interest on its estate – bringing the total number of plans to 30, against a commitment to develop 40 in this road period.

2.36 In May 2018, Highways England published a report setting out its progress against the biodiversity action plan during 2016-17. It expects to publish another report later this year, covering performance in 2017-18. This is a positive step in increasing transparency around Highways England's environmental performance.

**Figure 2.7: Cumulative noise important areas mitigated, 2017-18**



<sup>4</sup> The number of noise important areas reported as mitigated in 2015-16 and 2016-17 has been revised since our last annual assessment. See annex D for further details.

<sup>5</sup> ORR and the Department for Transport have agreed that Highways England can count noise important areas as mitigated where every reasonable attempt has been made to offer double glazing to the home owner. The offer of double-glazing also remains open to those who have initially refused. Highways England has noted an increasing number of households asking to be included in the scheme after initially declining.



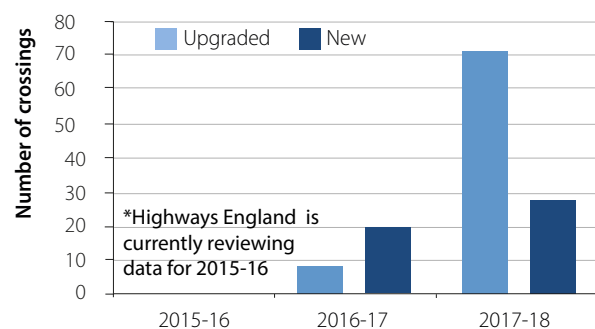
2.37 During 2017-18, Highways England continued to take steps to tackle litter on the strategic road network. As part of this, the company has committed to focus on 25 priority hotspots where litter is particularly evident, and appointed 'litter champions' in each of its 13 operational areas to monitor litter management. It collected more than 10,000 bags of litter from the network in 2017, and has trialed new bins at service areas, which allow drivers to deposit waste without leaving their vehicle. In January 2018, Highways England held a workshop with stakeholders to generate innovative ideas for further actions that it could take.

## Vulnerable users

2.38 In addition to those who use it directly, the strategic road network has an impact on its neighbouring communities. For instance, the network can act as a barrier to vulnerable users, such as cyclists, walkers and equestrians. Highways England has a key performance indicator to report the number of new and upgraded crossings it delivers for vulnerable users.

2.39 In 2017-18, the company delivered 28 new and 72 upgraded crossings on the network. This is an increase on the previous year, when it delivered 20 new and seven upgraded crossings. Highways England has identified an error in the number of crossings that it previously reported as delivered in 2015-16<sup>6</sup>. It is currently validating a revised figure, which we will report in our next annual assessment.

**Figure 2.8: Number of new and upgraded crossings, 2015-16 to 2017-18**



2.40 Highways England completed construction on 22 cycling schemes in 2017-18, bringing the total delivered in this road period to 79. The company reports that it is on track to meet its commitment of delivering 150 cycling facilities and crossing points on the network in this road period.

<sup>6</sup>See annex D for further details.

## Highways England is delivering more improvements on its roads but it must manage costs.

The company has improved its planning and management of major schemes, and is delivering the majority of these on time. It has demonstrated improved management of its capital portfolio. Its forecast costs for the road period have reduced, but remain above its funding, partly reflecting delivery of additional scope and planned over programming. It must continue to take action to manage this position. Investment through its ring-fenced funds has increased, but is slower than originally planned.

### Major investment delivery

2.41 Highways England is delivering the majority of its major improvement schemes on time. In 2017-18, the company started work on all seven schemes in its delivery plan, and an additional scheme brought forward from 2019-20. It also completed eight schemes this year against a plan to complete nine.

2.42 Of the eight schemes which were opened for traffic in 2017-18, six were delivered on time, one was completed one quarter ahead of schedule, and one opened three quarters behind schedule. One scheme has missed its delivery date for 2017-18 and will open in 2018-19. In addition, the company also opened to traffic the two schemes that were delayed from 2016-17.

**Table 2.1: Summary of major scheme delivery in 2017-18**

Construction phase	2017-18 commitment	Delivery in 2017-18	Details
Start of works	7 schemes to start work in 2017-18	8 schemes started	All 7 planned schemes started
			1 scheme brought forward from 2019-20
Open for traffic	9 schemes to open for traffic in 2017-18  To open the 2 schemes delayed from 2016-17	10 schemes open for traffic	8 planned schemes opened in 2017-18
			1 scheme delayed and will open in 2018-19
			2 schemes delayed from 2016-17 opened in 2017-18

- 2.43 Highways England has now started work on 24 schemes, and opened 22 schemes for traffic, in this road period.
- 2.44 The majority of major schemes completed to date have cost more than agreed funding assumptions. The 22 schemes that Highways England has opened for traffic by the end of March 2018 are forecasting increased costs of £209m (9%) higher than baseline. This mainly reflects a change in the accounting treatment of land costs, and other scheme specific factors including discovery of hazardous waste, archaeological finds and immaturity of scheme design.
- 2.45 Highways England has made good progress to date on its flagship schemes. The A14 Cambridge to Huntingdon scheme (discussed in the case study below) is currently in line with the company's plans to meet its completion date and is scheduled to open for traffic in December 2020.
- 2.46 The company has also made progress with planning for the A303 Stonehenge Tunnel. In 2017-18, following an extensive public consultation, it announced its preferred route for the tunnel, and construction is currently expected to begin in 2021. On the Lower Thames Crossing, it is currently evaluating options ahead of consulting on a preferred route in late summer 2018.

## Case study – A14 Cambridge to Huntingdon major scheme

- The A14 Cambridge to Huntingdon scheme is Highways England's biggest single project in construction.
- Costing £1.5bn, it is scheduled to open for traffic in December 2020 and will address congestion on the 21 mile stretch of dual carriageway between Cambridge and Huntingdon.
- The scheme will upgrade this part of the A14 to three lanes in each direction. It includes a new 17 mile bypass south of Huntingdon, 34 new bridges and structures, and a 750 metre viaduct crossing of the River Great Ouse.
- Highways England's project team has addressed a number of challenges associated with managing this large and complex project. This has included bringing forward work on a new bridge to accelerate other works, and speeding up delivery by setting up a concrete batching facility to build key components of the bridges on-site.
- It has also demonstrated innovative approaches to improving safety, and sharing best practice, which has led to higher standards being adopted across the site. These, and other examples, provide important learning for delivery of future schemes.

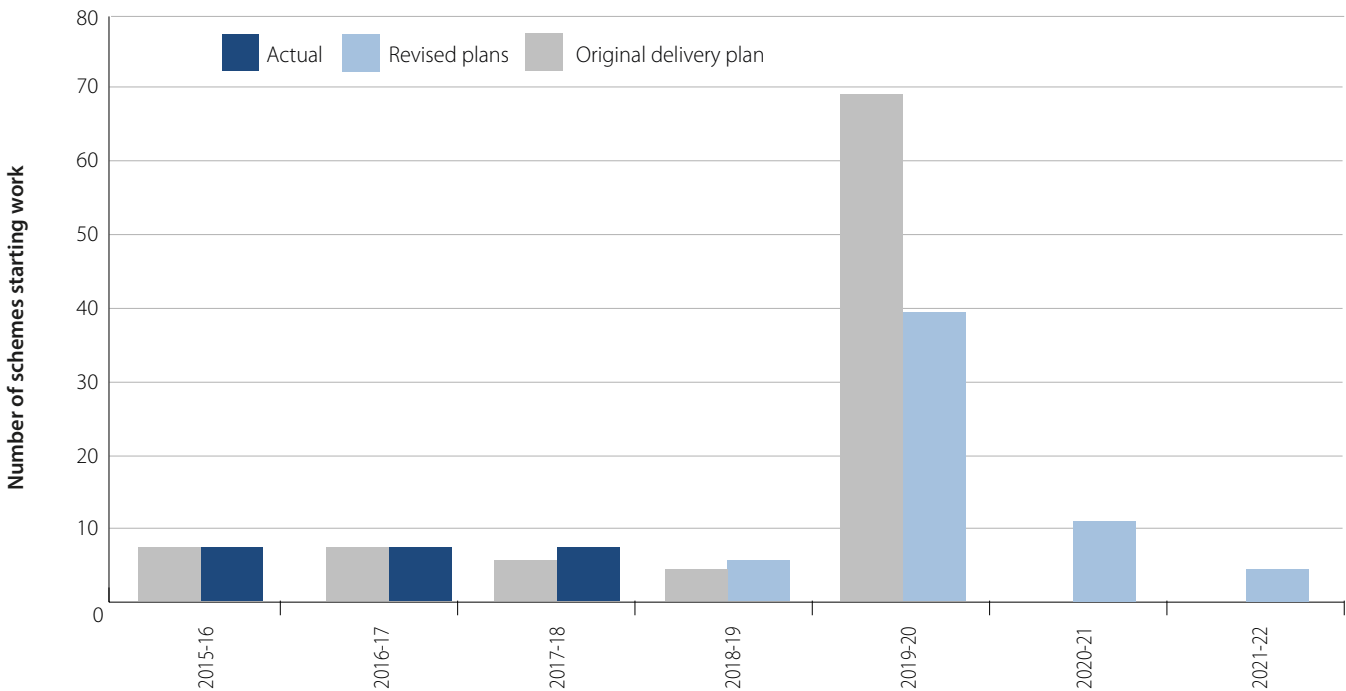


## Highways England's capital plan

- 2.47 In 2017-18 we undertook an in-depth review of Highways England's capital delivery plan. This demonstrated that Highways England has now strengthened its capital portfolio management capability, and as a result has better information about scheme timings, costs and risks.
- 2.48 It has reviewed how it will deliver its capital investment during the remainder of the road period. This has enabled the company to improve its scheduling of major schemes, with a particular focus on their scope, value for money and impact on road user experience. For example, it has considered the best way of scheduling major schemes which impact on the same routes or geographical locations to reduce customer disruption ('road corridors').
- 2.49 As a result, some major improvement schemes are being considered for delivery in the next road period, while other schemes have been brought forward within the reporting period. The revised plans have reduced the number of schemes which are due to start construction in the last year of this road period, from 69 to 39.

- 2.50 Highways England has agreed the changes<sup>7</sup> 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. This includes:
  - deferral of six schemes, and a part of one further scheme, where they do not currently demonstrate value for money. These will be reconsidered as options for delivery in the next road period;
  - 14 schemes are scheduled to start earlier than originally planned, of which 10 schemes were advanced as a result of Highways England's review of schemes within the same 'road corridors';
  - 20 schemes deferred to the next road period, including 15 'road corridors' schemes and five further changes due to other factors – for example as an outcome of public consultations and schemes' options appraisals; and
  - cancellation of one scheme, the A27 Chichester bypass. Following a public consultation, the scheme was cancelled as there was no clear consensus on the preferred option.

**Figure 2.9: Start of works - original delivery plan compared to revised plans<sup>8</sup>**



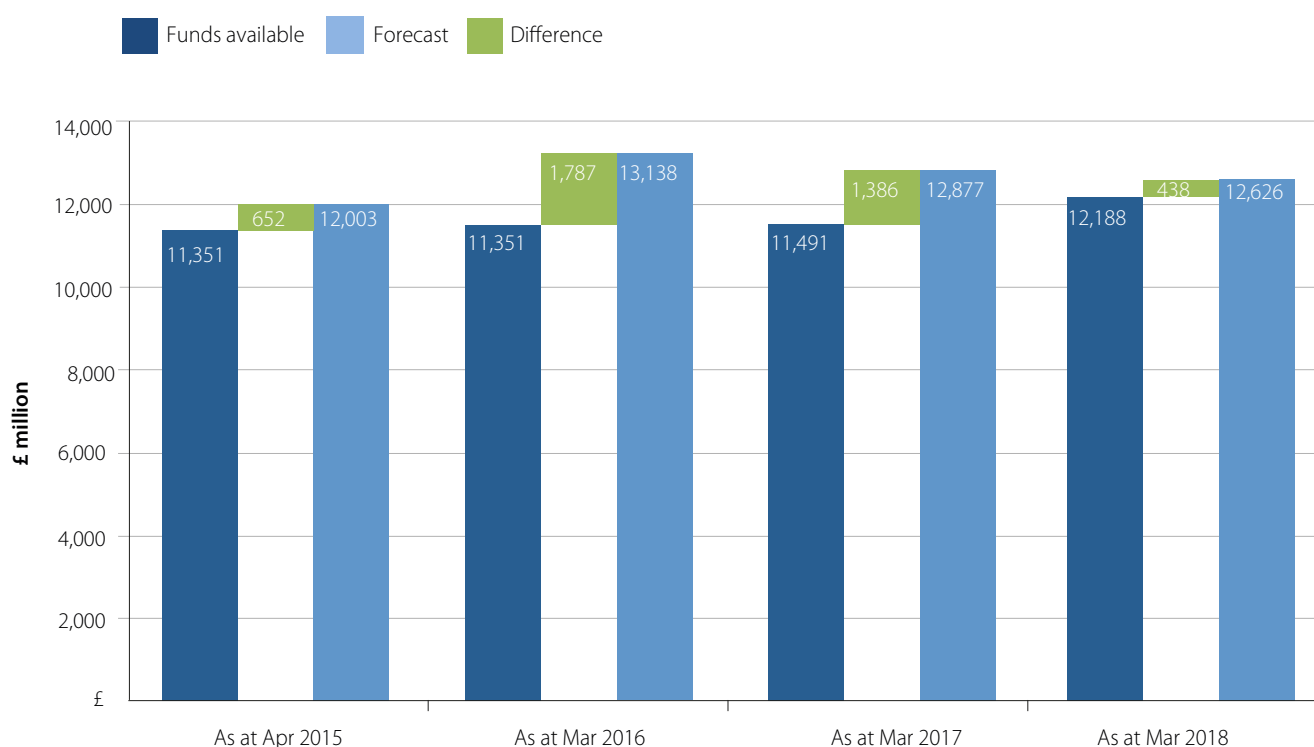
<sup>7</sup>Highways England's delivery plan update for 2018-19

<sup>8</sup> Revised plans refers to changes introduced to Highways England's capital delivery plan during 2017-18

2.51 The revised plans mean that, of the 112 major schemes originally planned to start works in the first road period, 85 are now planned to start by March 2020. Funds released by this process have been retained to offset cost pressures elsewhere in the portfolio. The company's forecast total costs for its RIS1 major schemes are currently £2.9bn higher in road period 1 and road period 2 than originally assumed. This partly reflects increased scope for some schemes and immature scheme estimates when RIS1 funding was set.

2.52 Highways England forecasts capital costs that are £438m higher than its funding for the road period. Its forecast costs have reduced, but remain above funding, partly reflecting delivery of additional work and planned over programming. It is working to manage costs and has instigated a management action plan to address the difference, which has so far identified £164m of potential savings, which will reduce the difference to £274m. However, there is still a risk that some expenditure will need to be deferred to the next road period and / or additional funding used in road period 1 (for example through its ability to bring funds forward from the next road period). It must continue to take action to manage this position.

Figure 2.10: Difference between forecast costs and funding for road period 1

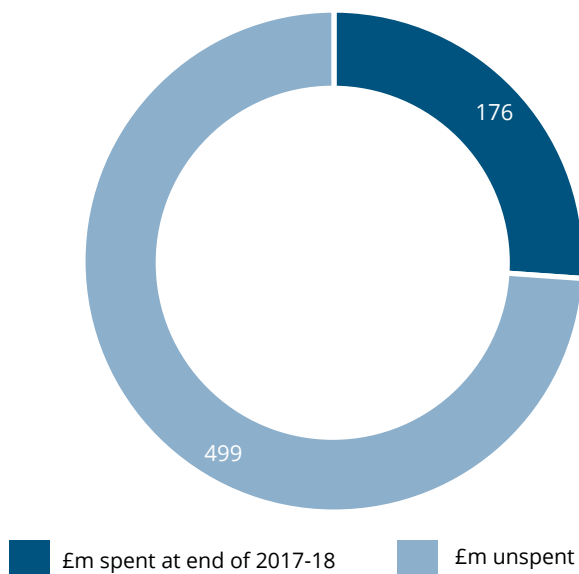


## Ring-fenced funds

2.53 Highways England's investment plan includes a set of ring-fenced funds, which are aimed at addressing a range of issues beyond the traditional focus of roads investment. These funds are worth £675m in the first road period and are split into five areas: air quality; cycling, safety and integration; environment; innovation; and growth and housing.

2.54 At the end of 2017-18, Highways England had spent £176m of its ring-fenced funds, which is 26% of the total available in this road period. The pace of delivery has picked up in 2017-18 compared to last year, but remains behind plan. There is variability in progress between the different funds, with air quality, in particular, having spent proportionately less. We propose that the company should now review options for the air quality fund with government.

**Figure 2.11: Ring-fenced funds spend at end of 2017-18**



2.55 In 2017-18, we undertook an in-depth review into Highways England's management of its ring-fenced funds. The final report is published on ORR's website<sup>9</sup>. The review identified that:

- Whilst progress in delivering projects through the funds has been slow, Highways England now has a more substantial programme of projects planned for the second half of the road period. Although a slow start was always expected, the company is underspent against its original plans.
- The programme is now heavily back-end loaded, which increases the challenge of successful delivery. Increased resources will be required to manage this.
- The programme initially lacked oversight required to control the funds effectively. Data and performance management information is poor and requires focus.
- Highways England has identified issues relating to management and governance through its own internal audits. It has responded by strengthening management of the funds, and as a result, the programme has gained momentum.

2.56 In total, the review makes 21 recommendations for Highways England to consider. The company responded positively to the findings of the review and recognises many of the issues raised. It has implemented changes to support improved delivery through ring-fenced funds.

## Case study – Ring-fenced funds

- Highways England has used its ring-fenced fund for environment to develop a new 'green bridge' on the A38 at Haldon Hill in Devon.
- Green bridges are structures designed to provide wildlife and non-motorised users with easy and safe crossings of main roads and railways.
- The environment fund will provide £10.7m for design and construction of the bridge. In addition to benefits for wildlife, it will also provide improved facilities to walkers and cyclists, and will improve safety at a location which is prone to motorists hitting deer.
- The project is currently in the detailed design phase, but construction has experienced delays associated with securing an agreement with the landowner.
- This demonstrates the benefits which can be delivered to wider communities through ring-fenced funds, but also highlights areas where Highways England can improve its planning and management of these funds.



<sup>9</sup> [http://orr.gov.uk/\\_data/assets/pdf\\_file/0014/28112/highways-england-approach-to-delivering-schemes-through-its-ring-fenced-funds-2018-02-02.pdf](http://orr.gov.uk/_data/assets/pdf_file/0014/28112/highways-england-approach-to-delivering-schemes-through-its-ring-fenced-funds-2018-02-02.pdf)



## Highways England is improving the condition of the strategic road network

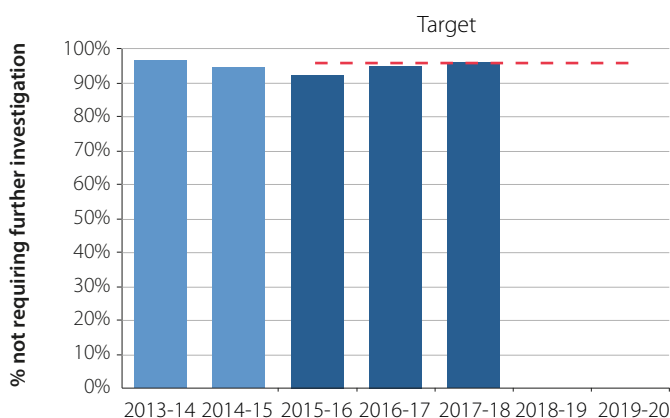
Network condition has improved during the year, and is now on target. The company has set out long-term plans for improving the identification, planning and delivery of asset maintenance and renewal works.

### Network condition

2.57 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 2017-18, 95.2% did not require further investigation. This is above the target of 95%, and an improvement on the 94.3% recorded in 2016-17.

2.58 The timing of the surveys used to collect road condition data mean that these figures do not reflect the impact of last winter. Highways England has reported an increased number of potholes in some regions during the winter. It is identifying and managing these as part of its standard maintenance procedures. Beyond localised damage such as this, the company reports that it does not expect a significant impact on other characteristics that inform network condition. We will review data from the 2018-19 carriageway surveys to understand if last winter has had any lasting impact on its road surfaces.

**Figure 2.12: Network condition, 2013-14 to 2017-18**



2.59 After missing its road condition target in 2016-17, Highways England established an improvement plan for this metric. In 2017-18, the company delivered against its plan to improve network condition, which included undertaking additional resurfacing work. The increased focus on this area has contributed

to an improved understanding of the network condition metric and the issues that affect it. Highways England has also demonstrated improved internal monitoring and assurance of road condition data.

2.60 Highways England is now improving its ability to forecast network condition. We will continue to work closely with the company to understand the actions it is taking to maintain current performance.

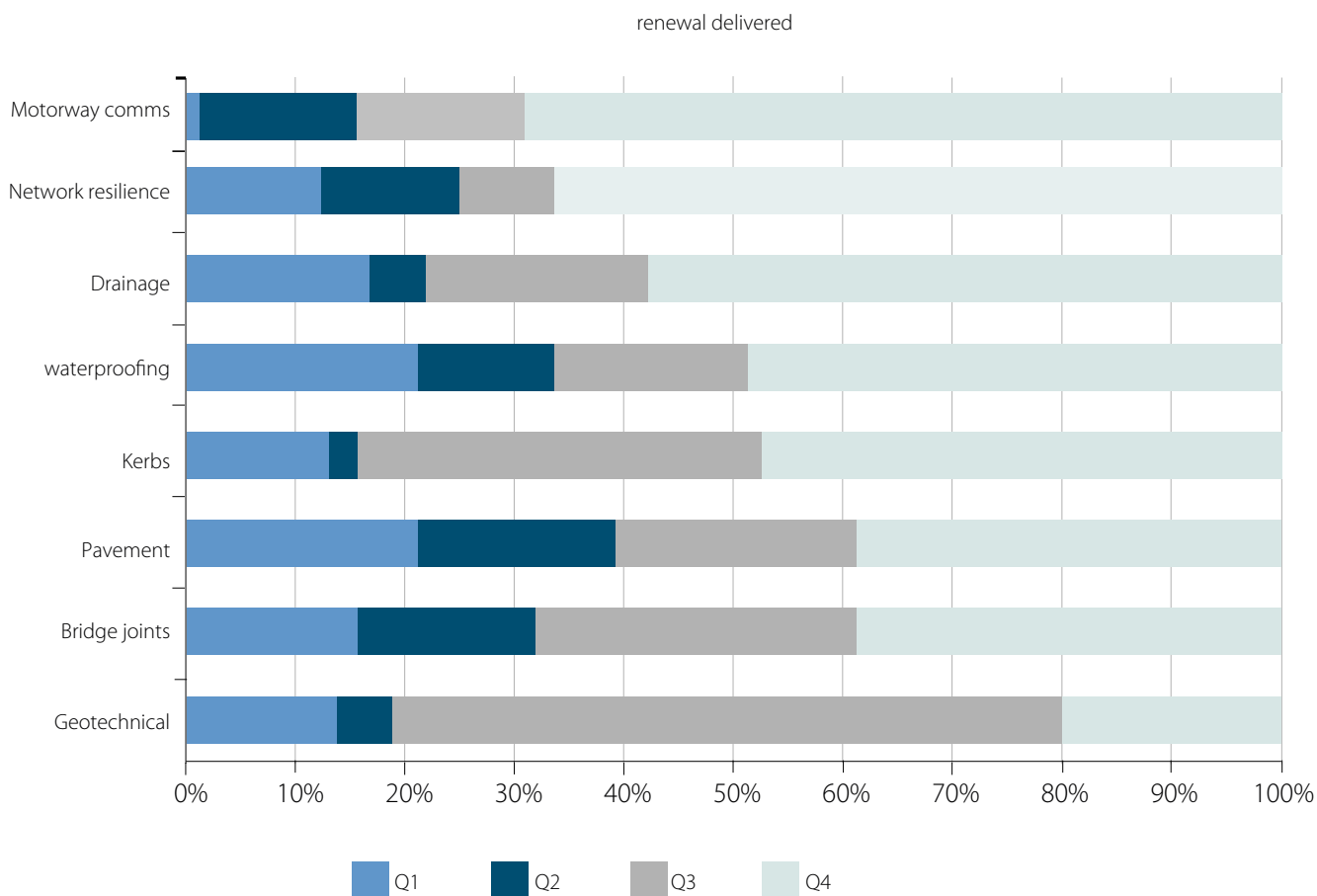
### Maintenance and renewals

2.61 Highways England has maintained the condition of its network in 2017-18. In addition to improvements in road condition, the condition of other asset types is broadly stable.

2.62 The company has recognised that it should take a more structured approach to managing its assets. In preparation for RIS2, the company is developing a wider business transformation programme approach known as 'operational excellence' by building capability, optimising works, and focusing on planning and performance to deliver improved service to its customers. The company has also put in place a long-term action plan aligned to the recommendations in our in-depth review of asset management delivery for pavement and structures. This will support better identification, planning and delivery of asset maintenance and renewal works.

2.63 There remain opportunities for Highways England to improve its management of renewals work. In 2017-18, the company spent 24% more on renewals than in 2016-17, although the volume of outputs did not increase as much. It delivered significantly greater volumes on the majority of asset types than it planned, and in-year forecasts show considerable variability. Its renewals delivery was highest in the last three months of 2017-18. Delivering more during the winter months may impact on the quality and efficiency of work.

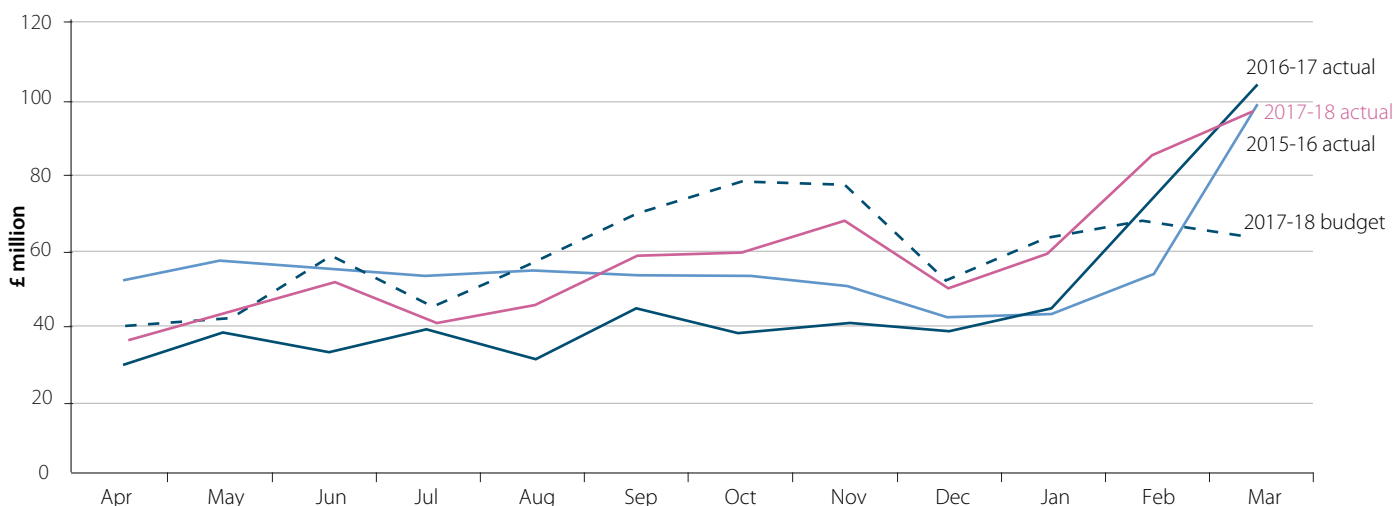
**Figure 2.13: Output of renewals delivered per quarter<sup>10</sup> for selected asset categories, 2017-18**



2.64 The profile of renewals expenditure has improved marginally during 2017-18, with less back-end loading than seen in the previous year. However, Highways England could do

more to ensure expenditure follows its flatter budget profile and improve its efficiency in future years.

**Figure 2.14: Renewals monthly expenditure**



<sup>10</sup> Quarters refer to the financial year. Q1 covers spring (April to June) and Q4 covers winter (January to March).

2.65 In 2017-18, we carried out a review of Highways England's new asset delivery contract model which has been adopted in five areas. This covers the operation, maintenance and renewal of the company's assets. The review focused on whether the model is delivering the expected benefits in road period 1, which include improved financial performance, asset management, efficiency and road user outcomes. It also considered what benefits the model is expected to deliver in the next road period.

2.66 We found areas where the new model is bringing positive changes, for example it has helped Highways England balance delivering long-term solutions and short-term fixes for its assets. The review also highlighted areas where Highways England can strengthen how it collects and monitors information for measuring the benefits of the new model, including cost savings, and embedding lessons learnt.

## Highways England is delivering efficiencies but more evidence is required that its road period target is on track.

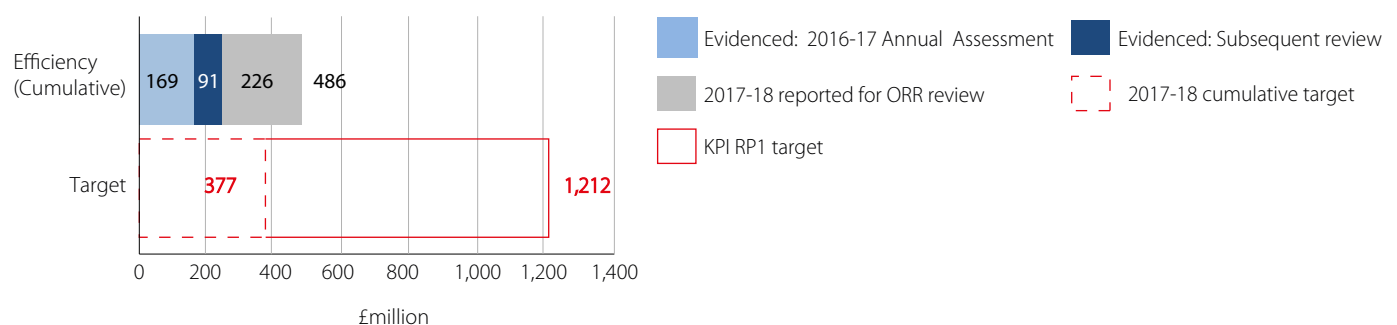
It has reported £486m of cost savings in the road period to date (40% of its target), £226m of which are in 2017-18. This is supported by clear evidence of specific improvements made. The company needs to continue to develop its evidence that reported savings are supported by its capital portfolio delivery and its unit costs.

### Financial performance in 2017-18 and reported efficiency

2.67 Highways England spent £3.4bn in 2017-18, which is largely in line with its agreed baseline funding. Of this, £2.3bn was capital spend, which included improvements to the network (£1.4bn), renewing infrastructure (£776m) and ring-fenced funds (£110m).

2.68 The company has a target to deliver £1.2bn of capital efficiency savings by the end of this road period. It has reported £226m of efficiencies in 2017-18. This would bring the cumulative efficiency improvements to its capital programme in the first three years of the road period to £486m, against an internal milestone of £377m. The efficiency reported to date is 29% ahead of its internal target and represents 40% of the target for the first road period.

Figure 2.15: Efficiency evidenced and reviewed to date



## Evidencing efficiency

2.69 We judge Highways England's efficiency using three approaches:

- **Bottom up evidence.** Highways England has presented case-study evidence of the actions it has taken to deliver efficiency. We found the case-study evidence presented to be of a good standard, and to highlight significant effort by the company and its supply chain to deliver efficiency. An example of this type of evidence is presented in the case study below.
- **Unit costs.** The renewals programme has made the largest contribution to its reported efficiency to date. The company has adopted an improved approach to providing unit cost evidence, although this needs further work. For major schemes we are content that Highways England's model for demonstrating a reduction in unit costs on the smart motorway programme provides reasonable evidence for efficiency. However, this model has not yet been extended to provide unit cost evidence for £70m efficiency claimed under the Regional Investment Programme and Complex Infrastructure Programme.

- **Delivery of the road investment strategy.** Highways England's current expenditure forecast for the road period is £438m higher than its funding, partly reflecting delivery of additional work and planned over programming. This is after agreed changes to the RIS, which have removed scope from road period 1<sup>11</sup>. The company has identified plans to reduce the difference between its expenditure forecast and funding to £274m by the end of the road period. Any remaining difference will need to be managed through use of additional funds in road period 1 or deferral of work into road period 2.

The overall costs of the programme in road period 1 and road period 2 are forecast to be £2.9bn more than the baseline funding. This is partly driven by immature plans when the road investment strategy was set up.

- 2.70 Taking the three approaches together we need to see more evidence over the next year to support the claimed levels of efficiency. Providing this evidence will increase our confidence that Highways England is able to achieve its efficiency target by 2020. Our review of efficiency evidence is discussed in more detail in annex B.

<sup>11</sup> As described earlier in this report, a number of schemes have been cancelled where they did not demonstrate value for money, or rescheduled to improve delivery of the capital portfolio.



## Case study – delivering efficiencies

- The Oldbury viaduct carries 1.8 miles of the elevated sections of the M5 to the west of Birmingham. Constructed in 1970, it now requires major structural repairs.
- Highways England has employed innovative traffic management to reduce the duration of the roadworks, which will shorten the impact on road users, and deliver cost savings.
- The traffic management layout normally employed on this type of scheme would be to maintain three narrow running lanes in each direction, providing two narrow working areas. This would require at least seven phases to complete the works and restrict each concrete repair to a small patch.
- However, running the north and southbound traffic on one carriageway, with two lanes in each direction, enabled the other carriageway to be left free of traffic. This allowed much larger areas of repair works to be carried out, reducing the number of work phases required.
- This is expected to reduce the duration of the work by 153 weeks, and deliver cost savings of £60m. It has also delivered safety benefits to road workers by reducing their proximity to live traffic.



## Priorities for 2018-19

2.71 In 2017-18, Highways England has demonstrated that it is continuing to build its capability in managing the strategic road network. However, the performance requirements are more challenging in the final two years of the road period and there are risks to delivery at the end of the road period. We consider that the following areas require focus from the company in 2018-19:

- **Customer satisfaction.** Implementation and monitoring progress against its customer satisfaction improvement plan for 2018-19.
- **Efficiency evidence.** Further development of top down efficiency evidence to support progress against its key performance indicator.
- **Ring-fenced funds.** Increasing the pace of delivery through ring-fenced funds in 2018-19, continuing to strengthen its management of the funds, and addressing the recommendations that are set out in our in-depth review.
- **Managing costs.** Taking action to address the difference between forecasts capital costs and its funding for the road period.
- **Planning for RIS2.** Continuing work to develop plans for the second road period. In particular, developing a robust strategic business plan, and presenting efficiency evidence. Also continuing to engage closely with stakeholders as it develops more detailed plans.

## Our monitoring

2.72 We will continue to monitor Highways England's delivery of the road investment strategy, and compliance with its licence. Priority areas for ORR in 2018-19 include:

- a continued focus on monitoring RIS1 as Highways England moves into the later stages of delivery;
- focussed engagement with the company in areas of performance that need improvement – for example road user satisfaction;
- further developing our work to benchmark Highways England's performance and efficiency; and
- providing evidence and advice to inform RIS2 development.



# 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**

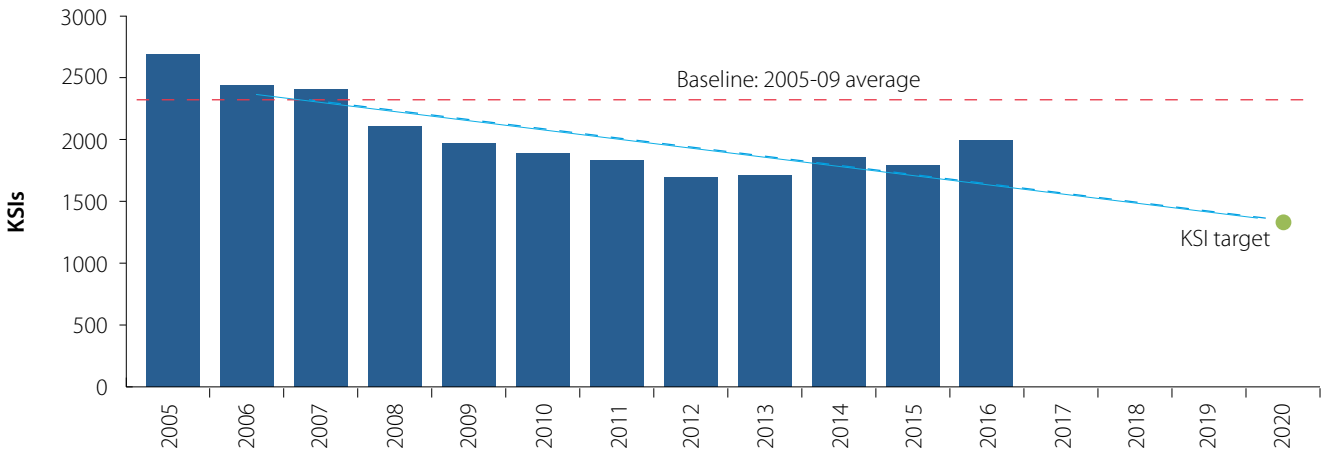
**2017-18 status: Amber**

**RIS1 status: Amber**

The Department for Transport has postponed publication of its reported road casualty statistics until September 2018. Therefore, we are unable to report Highways England's performance against its safety key performance indicator in 2017.

The chart below presents road casualty data up to 2016, when there were 2,005 KSIs on the strategic road network, which is 12% higher than the previous year. This included 231 deaths on the network, a 3% increase on 2015.

**Figure A1: Killed or seriously injured (KSI) on the strategic road network, 2005-2016**



Note: number of KSIs are affected by changes to data collection from 2012, with the biggest impact in 2016.

One reason for the increase in reported KSIs is a change to how some police forces record road casualty data. However, police forces which did not adopt the new reporting system also saw an increase in KSIs in 2016. This highlights the challenge of achieving the target by 2020 and is discussed in more detail in chapter 2.



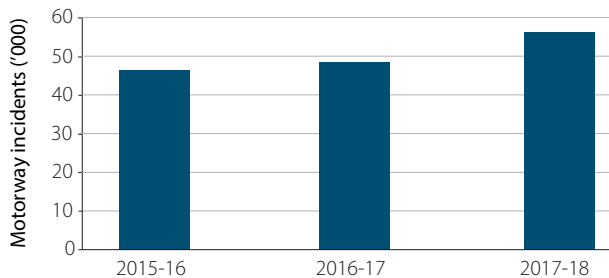
## Performance indicators

### Casualty numbers for all-purpose trunk roads:

The Department for Transport's road casualty figures are used to monitor this performance indicator. 2017 figures are not yet available. In 2016, there were 8,441 casualties of all severities recorded on Highways England's A-roads. This is a 0.6% increase on the previous year.

**Incident numbers on motorways:** Highways England recorded 56,136 incidents on its motorway network in 2017-18. This is a 14% increase on the figure recorded in 2016-17.

**Figure A2: Motorway incidents, 2015-16 to 2017-18**

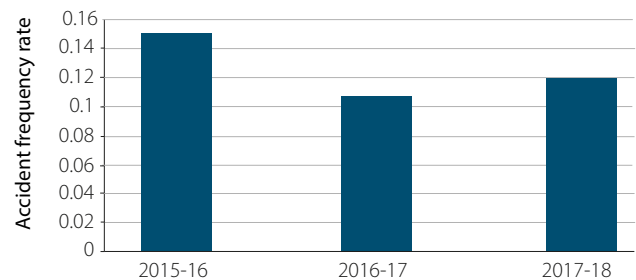


**Road safety investigations:** In 2017-18, Highways England completed work to model the star rating of the network to reflect the improvements made in the first road period. It expects to publish further details of this work later in 2018. It is on track to achieve 90% of travel on 3-star roads by 2020.

**Accident frequency rates:** Highways England reports accident frequency rates through the established 'Reporting of Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR) process.

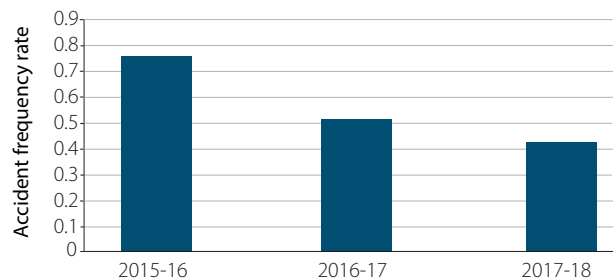
For construction and maintenance workers in Highways England's supply chain, the accident frequency rate was 0.12 in 2017-18, an increase from 0.11 in the previous year. This remains above the company's internal target.

**Figure A3: Accident frequency rate for construction and maintenance workers, 2015-16 to 2017-18**



For Highways England's operations directorate – which covers the traffic officer service – the accident frequency rate was 0.43, which is an improvement from 0.51 in the previous year. This also remains above the company's internal target.

**Figure A4: Accident frequency rate for customer operations directorate, 2015-16 to 2017-18**



In 2017-18, Highways England delivered 14 actions in its 5 year Health and Safety Plan which are aimed at improving the safety of road workers and traffic officers. These actions included a focus on ensuring workers have the appropriate training for working on the strategic road network, and developing better systems for reporting incidents.

## Outcome: Improving user satisfaction

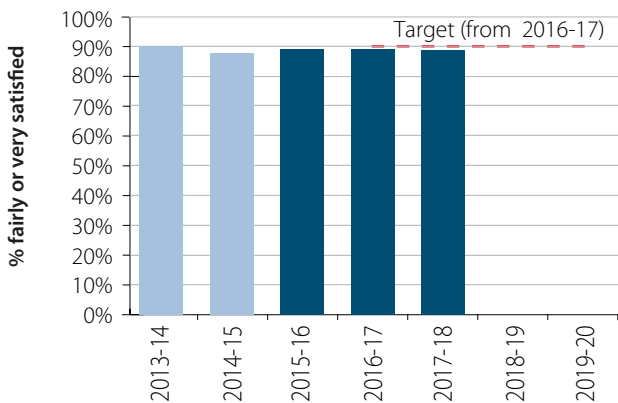
**Key performance indicator: Highways England must achieve a score of 90% of respondents who are very or fairly satisfied by 31 March 2017 and then maintain or improve it**

**2017-18 status: Amber**

**RIS1 status: Amber**

Highways England's satisfaction scores are calculated from the National Road Users Satisfaction Survey (NRUSS). The overall satisfaction measure was 88.7% in 2017-18, below the target of 90% and lower than the 89.1% recorded in 2016-17.

**Figure A5: Road user satisfaction, 2013-14 to 2017-18**



### Performance indicators

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.

Figure A6 shows the satisfaction scores for these journey elements since 2013-14. Satisfaction with roadworks management is consistently lower than the other journey elements, and has shown the greatest decline in the past five years.

In 2017-18, satisfaction with signage and safety was above 90% but satisfaction with journey times, roadworks management and general upkeep was below 90%.

**Figure A6: Satisfaction with journey elements from 2013-14 to 2017-18**

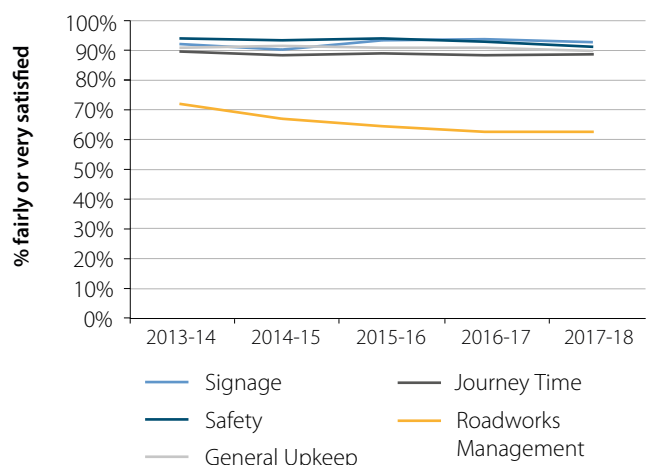


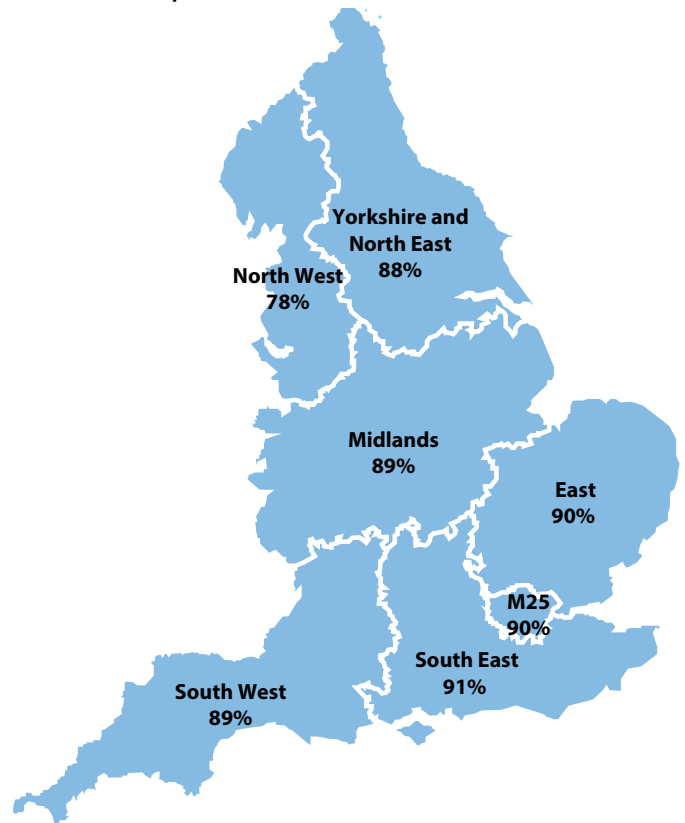
Table A1 shows changes in satisfaction with the five journey elements from 2016-17 to 2017-18.

**Table A1: Changes in user satisfaction, 2016-17 to 2017-18**

Journey elements	Change 2016-17 to 2017-18	Estimated impact on overall satisfaction
Journey time	+0.7%	+0.1%
Roadworks	0	0
General upkeep	-1.1%	-0.3%
Signage	-0.6%	-0.1%
Safety	-1.1%	-0.3%

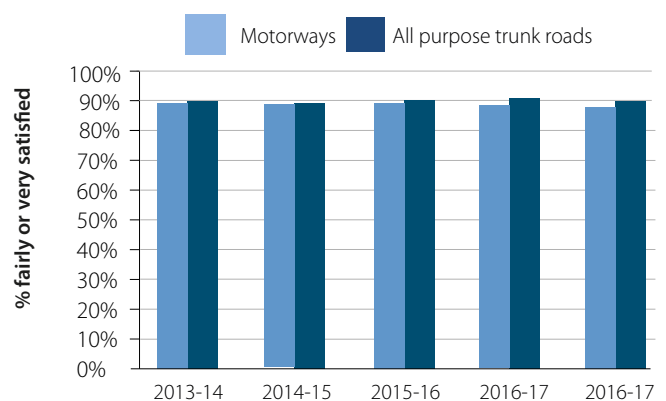
**NRUSS scores by location:** The map in figure A7 shows a regional breakdown of NRUSS satisfaction scores. Satisfaction was above 90% in the East and the South East, but was below 90% in all of the other regions. The North West had the lowest satisfaction for the fourth consecutive year.

**Figure A7: Regional variation in user satisfaction, 2017-18**



**NRUSS scores for motorways and all purpose trunk roads:** Satisfaction with all purpose trunk roads fell 0.2 percentage points to 90.1% in 2017-18. Satisfaction on motorways fell 0.6 percentage points to 87.5%.

**Figure A8: User satisfaction with motorways and all purpose trunk roads, 2013-14 to 2017-18**



## 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**

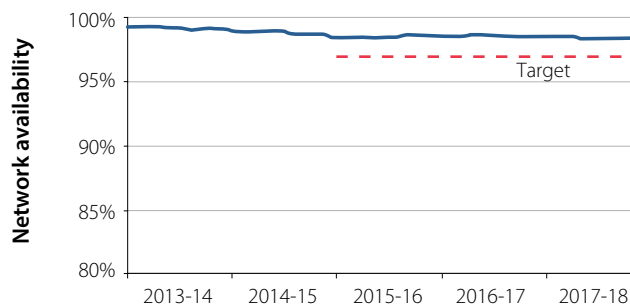
**2017-18 status: Green**

**RIS1 status: Green**

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 2017-18, network availability on the strategic road network was 98.3%, which is above the target of 97%.

**Figure A9: Network availability by rolling year, 2013-14 to 2017-18**



Network availability has been relatively stable during this road period, and is 0.1 percentage point lower than the figure recorded in the previous year. Highways England expects availability to reduce further during the road period, but remain above target. This reflects the increased work on the network as the RIS1 investment plan gathers pace.

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

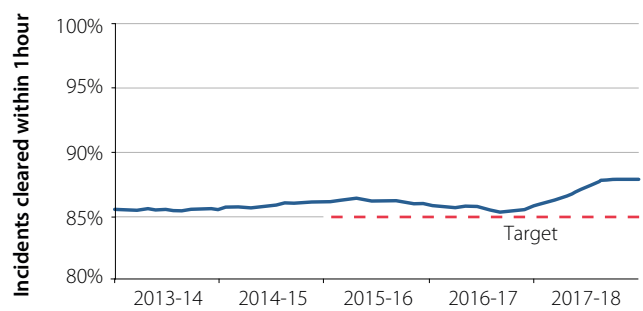
**2017-18 status: Green**

**RIS1 status: Green**

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 2017-18, the company cleared 87.9% of motorways incidents within an hour. This is above the target of 85%, and represents an improvement on last year's score of 85.9%.

**Figure A10: Incident management, 2013-14 to 2017-18**

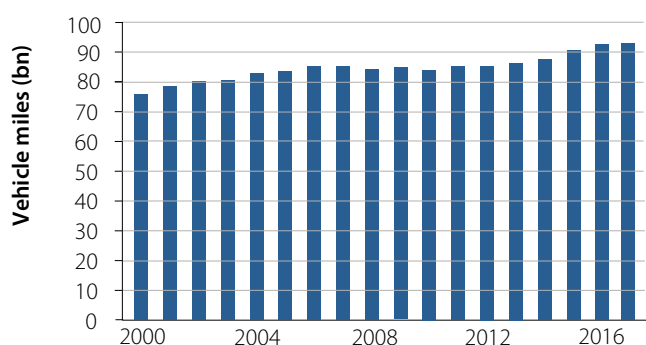


Highways England has rolled out a number of interventions in 2017-18 aimed at increasing the capacity of the traffic officer service to respond to incidents on the network. These are discussed in more detail in chapter 2, and have contributed to improved performance against this target.

## Performance indicators

Traffic on the strategic road network: In 2017, 94.1bn vehicle miles were travelled on the strategic road network. This is 2.1% higher than in 2016, and the highest total ever recorded. Since a pause in traffic growth during the economic downturn, volumes on the strategic road network have increased in each of the past eight years.

**Figure A11: Traffic on the strategic road network, 2000 to 2017**



**Planning time index:** The planning time index measures the additional time that road users should allow for their journey to arrive on time in 19 out of 20 journeys. It is calculated by taking the ratio of the 95th percentile journey time to the free-flow journey time.

In 2017-18, the planning time index was 1.67, which is slightly lower than the figure recorded in 2016-17. This indicates that the most delayed journeys on the network were slightly better in 2017-18 than in 2016-17.

**Acceptable journeys:** This measures the percentage of journeys that are above 75% of free-flow speed. In 2017-18, 82.5% of journeys were above this threshold. This is less than the previous year, when 83.5% of journeys were above 75% of free-flow speed.

**Average speed:** In 2017-18, average speed for all journeys on the strategic road network was 59.2 miles per hour. This is slower than in 2016-17, when the average speed was 59.5 miles per hour.



## Outcome: Encouraging economic growth

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

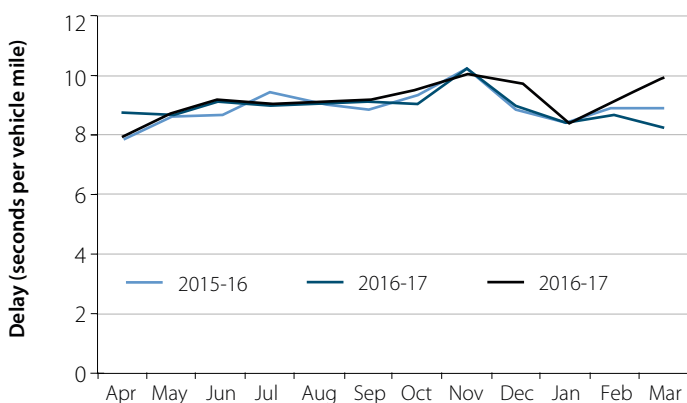
**2017-18 status: Amber**

**RIS1 status: Amber**

Average delay on the strategic road network is used to measure Highways England's contribution to supporting economic growth.

In the year to March 2018, average delay was 9.2 seconds per vehicle mile. This is equivalent to a trip of 100 miles taking almost 17 minutes longer than on a free-flowing network. This is a higher level of delay than in 2016-17, when the average delay figure was 9 seconds per vehicle mile, and the equivalent 100 mile trip would have taken 15 minutes longer compared to free-flow conditions.

**Figure A12: Average delay by month during first road period**



This chart shows that monthly delay on the strategic road network has been relatively constant during the first three years of this road period. However, delays in March 2018 – the last month of 2017-18 – are higher than in the previous year. This may reflect two periods of heavy snow during that month.

Increasing traffic, and delivery of the capital investment programme, continue to present a challenge to managing delay on the network. Actions that Highways England has taken to address this in 2017-18 are discussed in more detail in chapter 2.

### Performance indicators

**Average delay on gateway routes:** Gateway routes are a subset of the strategic road network, comprising key connections linking major population centres, or business and manufacturing sites, with the most important ports and airports, and rail freight services. Delay on these routes in 2017-18 was 8.7 seconds per vehicle mile – an increase from the figure of 8.2 seconds in 2016-17.

**Responding to formal planning applications:** In 2017-18, Highways England responded to 100% 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 small and medium sized businesses was 30.8%<sup>12</sup> in 2017-18. The government target for spend on SMEs is 25%.

<sup>12</sup>Highways England has changed some of the assumptions used to calculate SME spend since our last annual assessment, and the reported figure is provisional. See annex D for further details.

## Outcome: Delivering better environmental outcomes

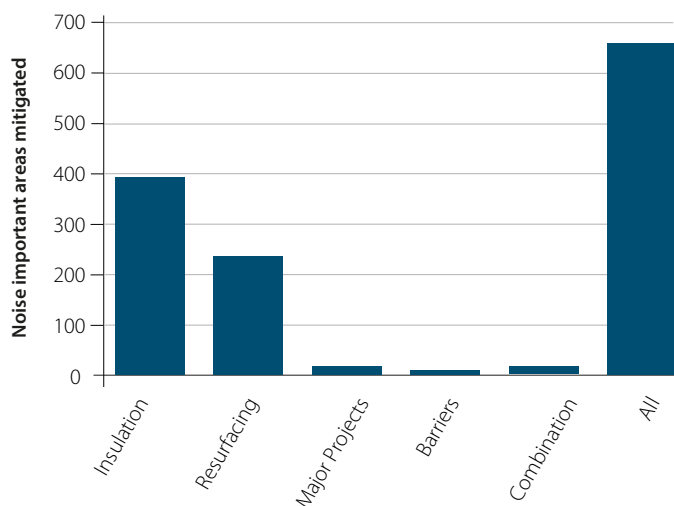
**Key performance indicator: Highways England must mitigate at least 1,150 noise important areas over the first road period**

**2017-18 status: Green**

**RIS1 status: Amber**

Highways England has a target to mitigate 1,150 noise important areas by 2020. In 2017-18, the company mitigated 448 noise important areas, bringing the total to 651<sup>13</sup> for this road period.

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



Highways England has increased the rate at which it is able to mitigate noise important areas in 2017-18 through its scheme to fit insulation (double-glazing) to noise affected households. The company must now mitigate a further 500 noise important areas in the last two years of the road period. It expects the majority of these will be delivered through the insulation scheme.

Highways England expects to meet its target of 1,150 by the end of this road period and we will continue to monitor progress closely.

<sup>13</sup> The number of noise important areas mitigated in 2015-16 and 2016-17 has been revised since our last annual assessment. See annex D for further details.



**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**

**2017-18 status: Green**

**RIS1 status: Green**

In 2017-18, Highways England has continued to make progress in delivering the actions in its biodiversity action plan. Key areas of progress during the year have included:

- Further testing of the new biodiversity metric.
- Producing a further 15 management plans for sites of special scientific interest, bringing the total for this road period to 30.
- 61 schemes approved through Highways England's biodiversity technical working group.
- Publishing a biodiversity annual report, covering performance in 2016-17.

## Performance indicators

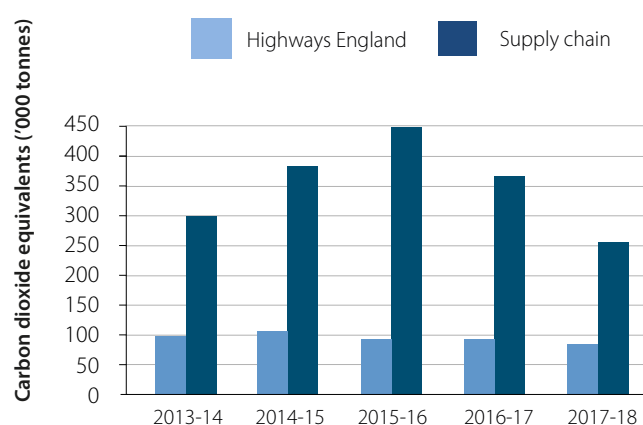
**Air quality pilot studies:** Highways England has now completed the 10 air quality pilot studies it had committed to deliver in this road period. The findings from these are being used to consider potential future mitigations.

### Carbon dioxide (Highways England's activities):

In 2017-18, Highways England reported that its activities resulted in the emission of 83,659 tonnes of carbon dioxide equivalents. This is 7% lower than in 2016-17, and is a 12% reduction from the start of this road period.

**Carbon dioxide (supply chain):** In 2017-18, emissions from Highways England's supply chain were estimated at 255,115 tonnes of carbon dioxide equivalents. This is 22% lower than reported in 2016-17, and a 37% reduction since the start of the road period. However, we are aware that these figures may be based on incomplete returns, and therefore, any comparison between years should be treated with caution.

**Figure A14: Carbon dioxide emissions for Highways England and supply chain, 2013-14 to 2017-18**



### Number of flooding hotspots and culverts mitigated:

Highways England mitigated 40 flooding hotspots, and one culvert in 2017-18. This brings the total number of flooding hotspots mitigated in the first road period to 173, and culverts to nine.

### Number of outfalls and soakaways mitigated:

Highways England has contributed to improved water quality in watercourses close to the strategic road network by mitigating five outfalls in 2017-18, bringing the total number in this road period to ten. It has not mitigated any soakaways in this road period to date.

## Outcome: Helping cyclists, walkers and other vulnerable users

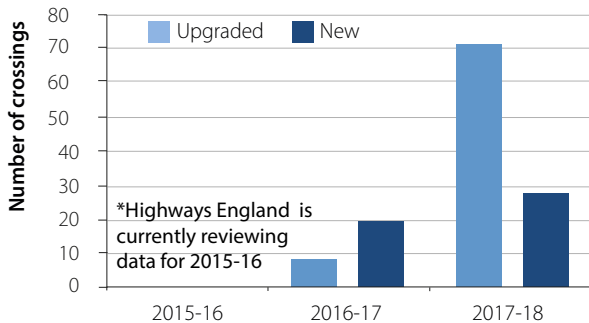
**Key performance indicator: Highways England must report on the number of new and upgraded crossings**

**2017-18 status: Amber**

**RIS1 status: Amber**

In 2017-18, Highways England delivered 28 new and 72 upgraded crossings for cyclists, walkers and other vulnerable users. This is an increase on the previous year, when it delivered 20 new and seven upgraded crossings. Highways England has identified an error in the number of crossings that it previously reported as delivered in 2015-16<sup>14</sup>. It is currently validating a revised figure, which we will report in our next annual assessment.

**Figure A15: New and upgraded crossings, 2015-16 to 2017-18**



### Performance indicators

**Identification and delivery of the annual cycling programme:** Highways England delivered 22 cycling schemes during 2017-18. This brings the total number of schemes delivered in this road period to 79. It expects to meet its commitment of delivering 150 cycle schemes in the first road period.

**Vulnerable user casualties:** Highways England also reports vulnerable road user casualties, of all severities, as a performance indicator. Road casualty data for 2017 are not yet available. Figures for 2015 and 2016 are shown below for reference.

**Table A2: Vulnerable user casualties (all severities), 2015 and 2016**

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

<sup>14</sup> See annex D for further details.

## Outcome: Achieving real efficiency

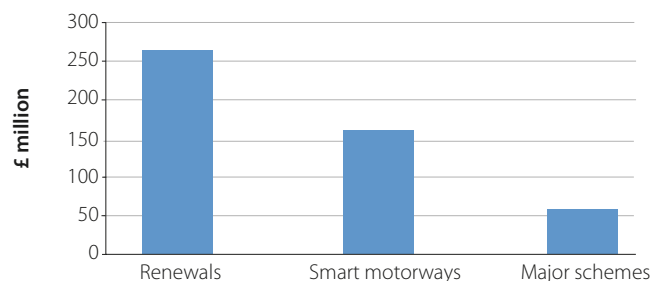
**Key performance indicator: Highways England must deliver total capital expenditure savings of at least £1.2bn over the first road period**

**2017-18 status: Amber**

**RIS1 status: Amber**

Highways England has a target to deliver £1.2bn of capital efficiencies by the end of the road period. The company has reported £226m of efficiencies in 2017-18. This would bring the cumulative efficiency improvements to its capital programme in the first three years of the road period to £486m, against an internal milestone of £377m. The efficiency reported to date is 29% ahead of its internal target and represents 40% of the target for the first road period.

**Figure A16: Efficiency by type of capital scheme**



We consider that more evidence is required that reported savings are supported by its capital portfolio delivery and its unit costs. Our assessment of Highways England's efficiency is set out in more detail in chapter 2, and annex B, of this report.

## 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.** This is the ratio of budgeted cost of work to date to actual cost to date and a value less than 1 indicates costs are currently above the target price. Performance on the cost performance indicator has dropped in the past year from 0.99 to 0.96. Through our monitoring of network investment delivery we are working to understand the reasons for this change and measures the company is taking to improve performance.

**Scheduled performance index.** This is the ratio of budgeted cost of work to date to value scheduled to be delivered to date. A value less than 1 indicates progress on projects is behind schedule. This indicator is close to 1 in 2017-18, indicating that the capital programme is on track in terms of schedule compared to the delivery plan.

**Table A3: Cost Performance Indicator and Schedule Performance Indicator**

	2016-17	2017-18
Cost performance indicator (CPI)	0.99	0.96
Schedule performance indicator (SPI)	0.97	1.01

**Key performance indicator: Progress of work, relative to delivery plan**

**2017-18 status: Green**

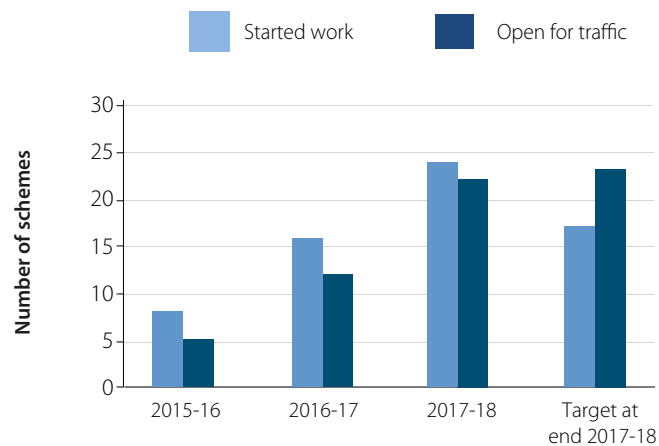
**RIS1 status: Amber**

In 2017-18, Highways England started works on eight major improvement schemes against a target of seven.

The company opened eight schemes for traffic in 2017-18, against its plan of nine. One scheme has missed its delivery plan commitment and will open in 2018-19. In addition, the company opened to traffic the two schemes that were delayed from 2016-17.

In the first three years of the road period, Highways England has started work on 24 schemes, against a target of 17. It has also opened 22 schemes to traffic, against a target of 23.

**Figure A17: Cumulative number of schemes started work and opened for traffic, 2015-16 to 2017-18**



Our full assessment of Highways England's progress relative to its delivery plan are set out in chapter 2, and annex C of this report.



## Outcome: Keeping the network in good condition

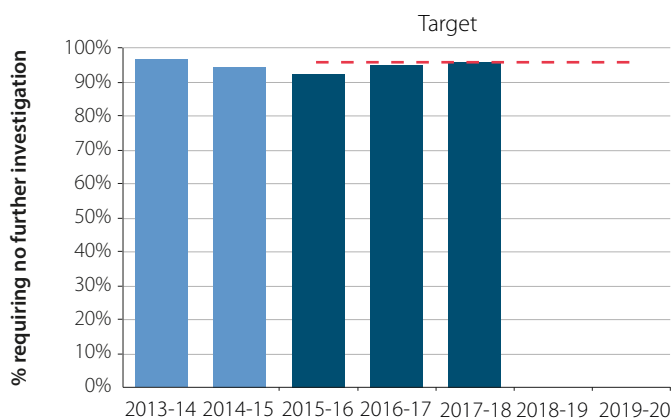
**Key performance indicator: Highways England must maintain the pavement asset such that at least 95% of it does not require further investigation for possible maintenance**

**2017-18 status: Green**

**RIS1 status: Amber**

At the end of 2017-18, the percentage of pavement (road) that did not require further investment for maintenance was 95.2%. This is above the target of 95%, and an improvement on the 94.3% recorded in 2016-17 year, when the target was missed.

**Figure A18: Pavement condition, 2013-14 to 2017-18**



### Performance indicators

As well as pavement, Highways England also manages other physical assets on the network, including structures (such as bridges), geotechnical works (for example embankments), drainage assets (such as gullies and drains) and technology assets (such as overhead message signs).

**Structure assets:** Highways England has continued to improve its structures inventory information, which is now 98.2% complete. This is an improvement of 0.1 percentage point from 2016-17. The company reports that the two measures of stock condition for structures have dropped this year from their reported positions in 2016-17. The drop is considered statistically insignificant and may reflect the lag in uploading inspection and maintenance data as well as a delay in undertaking inspections. Highways England has shared with us the reasons for this and we will monitor performance in this area in the year ahead. However, stock conditions remain higher than their positions in 2015-16 and the percentage of structures with a rating of 'good' is reported as 79.8% which represents a 0.6% improvement from 2016-17.

**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 2017-18. This is higher than the position in 2016-17 (96.8%).

**Drainage assets:** Highways England has reported no change from 2016-17 in the percentage of network that it has drainage inventory data for (88%). The percentage of the network with drainage condition data has increased, to 34% in 2017-18, up from 31% in 2016-17.



**Technology asset availability:** Highways England reports the availability of operational technology assets using the percentage of time lost by service affecting faults. During 2017-18 performance has been reported as above target for all three technology systems: control centre technology, national roads telecommunications services technology and roadside technology. Whilst performance has been reported as above target for roadside technology, its availability has reduced to 98.4% (from 98.8%) in the last year.

The RIS Performance Specification requires that Highways England develops new condition metrics to be considered for use in the next road period. Highways England has developed a pavement indicator that is currently being validated and is expected to be completed in 2018-19. It has developed a new enhanced structures asset condition indicator and will carry out further calibration during 2018-19. It has also developed an enhanced geotechnical asset condition indicator and has shown some progress in the development of condition indicators for technology and drainage assets. These will be validated in 2018-19 and are expected to be completed by March 2020.

**Table A4: Summary of asset performance indicators in 2017-18 and trend for road period 1**

Asset	PI	2017-18	RP1 Trend
Geotech	Condition	97.2% ▲	
	Inventory	12994 km ▲	
Technology Availability	Control Centre	99.97% ►	
	National Roads Telecommunications Services	99.99% ►	
	Roadside	98.40% ▼	
Drainage	Inventory Coverage	88% ►	
	Condition Coverage	34% ▲	
Structures	Inventory	98.2% ▲	
	Condition (Average)	84.56 ▼	
	Condition (Critical)	62.76 ▼	
	SCI Rating of 'Good'	79.8% ▲	

Key: Relative to position in 2016-17

- increase ▲
- no change ►
- decrease ▼

## ANNEX B: FINANCIAL AND EFFICIENCY PERFORMANCE

This annex sets out a summary of our assessment of Highways England's financial performance during 2017-18.

We monitor Highways England against its licence requirement to achieve efficiency and value for money in operating and managing the strategic road network. Our work to assess the company's financial performance and efficiency also informs our:

- view of delivery of the investment plan in this road period;
- work to support development of RIS2; and
- view of the efficiency evidence presented.

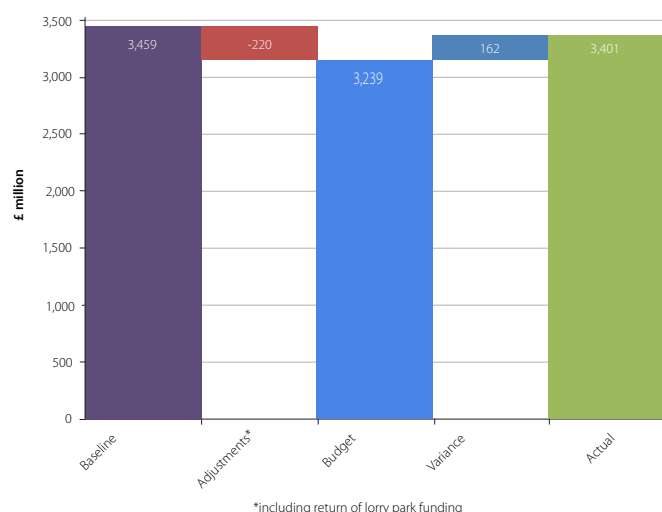
### Financial performance

#### Expenditure compared to baseline and budget

In 2017-18 Highways England spent £3.4bn, which is 2% below its agreed baseline funding of £3.5bn.

However, the company set a budget of £3.2bn (£200m lower than baseline<sup>15</sup>), reflecting its latest delivery plans and the expected return of £220m in unspent funds for the cancelled M20 lorry park development. The Department for Transport subsequently agreed to Highways England repaying the balance in a future year meaning there was no change to the baseline in 2017-18.

**Figure B1: Change in baseline and budget**

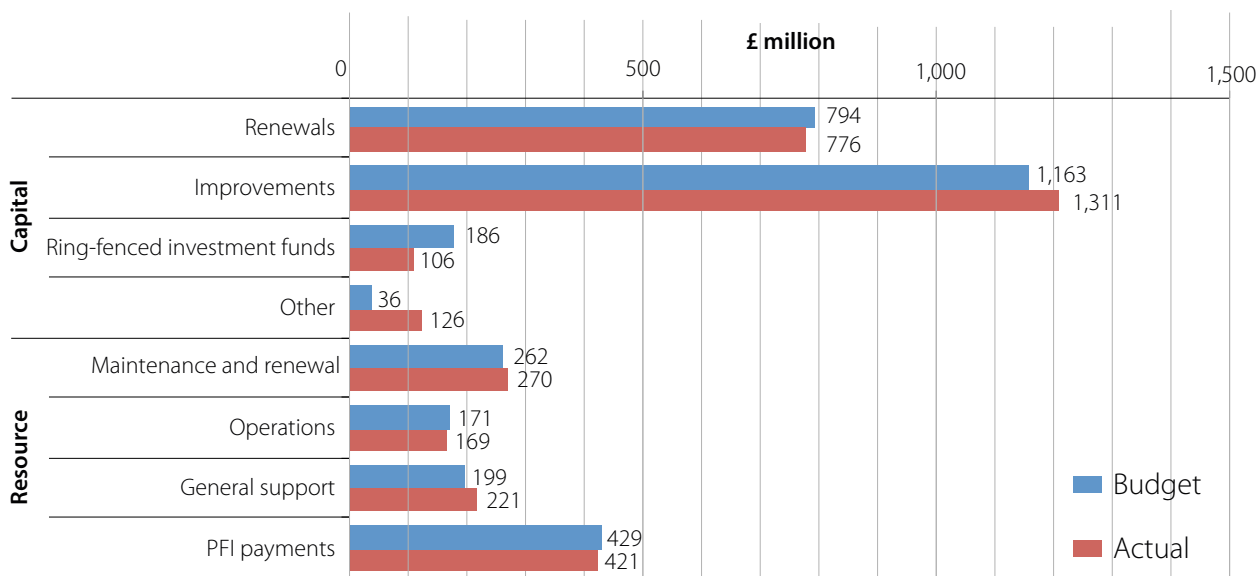


Overall expenditure was £162m (5%) above budget. This was mainly due to capital spend of £2.3bn being £141m (6%) above budget. Significant variances compared to budget are shown in figure B2 and are summarised below:

- Resource expenditure was £21m above budget, mainly due to an overspend on the Dart Charge arising from lower protocol funding than required. The Department for Transport provided additional funding for this during the year.
- Renewals expenditure was £18m (2%) lower than budget which is partly due to slower than expected mobilisation of new contractors. Adverse weather in February and March 2018 also contributed to the reduced spend.
- Expenditure against the improvement schemes budget was £148m (13%) higher than planned. This is due to additional project delivery costs and some acceleration.
- Ring-fenced investment funds underspent by £80m (43%) because of delays on these work programmes, particularly for the air quality fund.
- 'Other' capital overspent by £90m due to known pressures within the capital programme which the company had expected to manage out during the year or use its ability to bring forward capital funding from 2018-19.

<sup>15</sup> For financial monitoring purposes, the company also sets a budget reflecting expected agreed changes in its funding and latest delivery plans. Therefore the baseline and budget can differ.

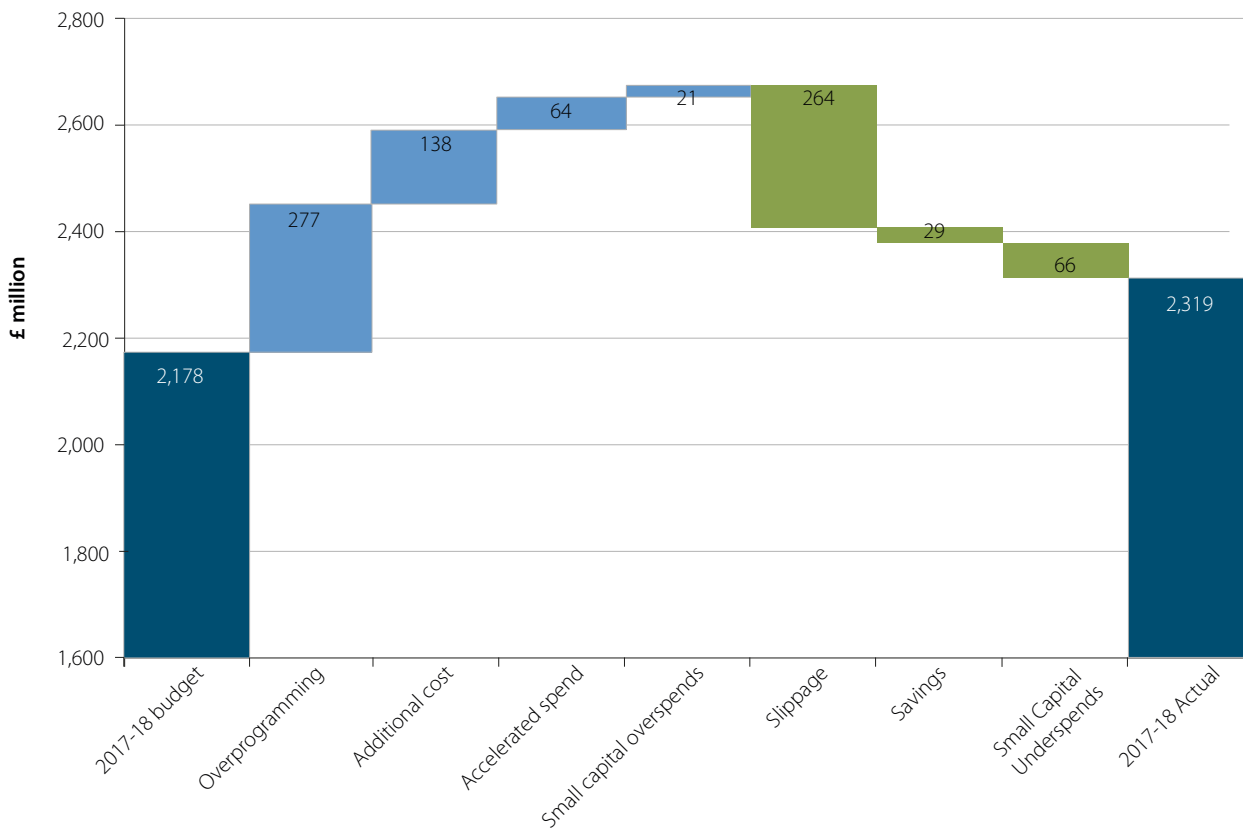
**Figure B2: Highways England's expenditure compared to budget in 2017-18**



**Expenditure variances in the capital programme**

When setting its capital budget for 2017-18, Highways England identified that its spending plans exceeded in-year funding by £277m.

**Figure B3: Highways England's capital budget variance in 2017-18**





Higher project costs led to the enhancement programme costing £138m more than planned in 2017-18. There was also accelerated spend on schemes, totalling £64m. The funding pressure was reduced due to the expected slippage in some schemes and delays in projects delivered through ring-fenced funds (totalling £264m), and smaller savings (£29m).

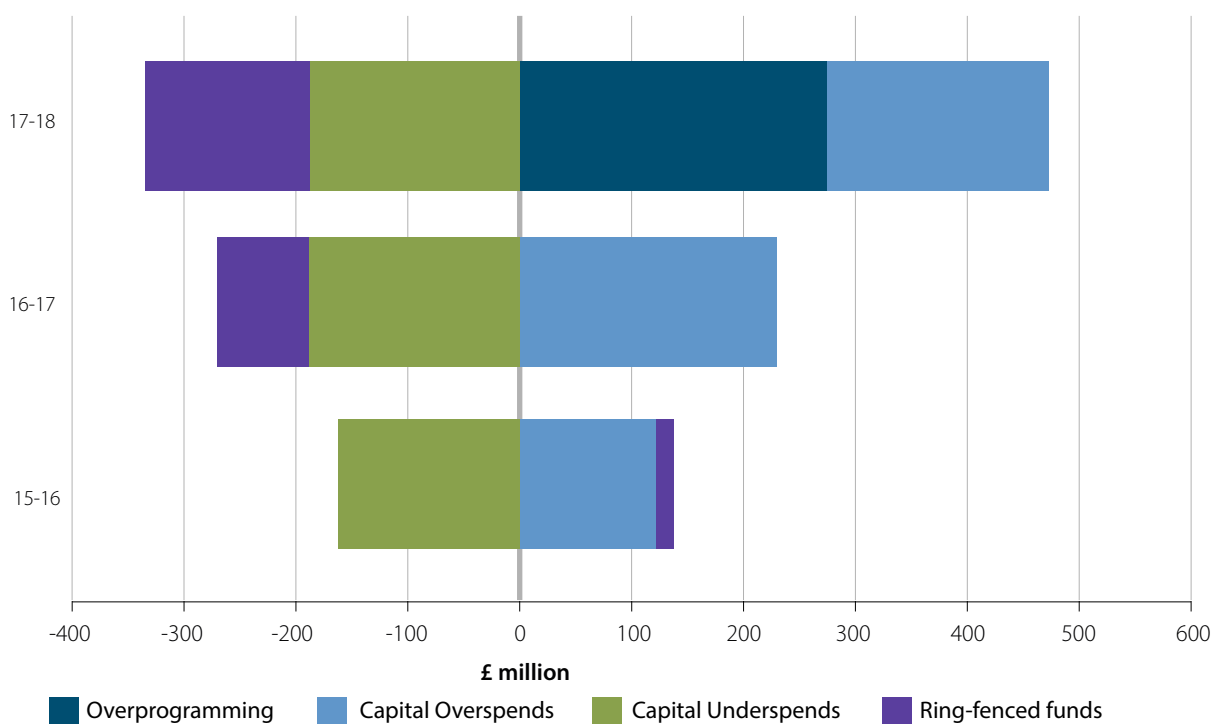
As highlighted in annex C, RIS1 project cost forecasts have increased and the portfolio is now expected to cost £17.6bn across road periods 1 and 2 (£2.9bn more than originally estimated). This partly reflects increased scope for some schemes and immature scheme estimates when RIS1 funding was set.

### Variability in scheme financial performance in 2017-18

Highways England's overall capital overspend of £141m consists of individual overspends totalling £500m that are partially offset by underspends of £359m.

In 2017-18 the company reported greater variances above and below budget than in previous years. After taking over-programming into account, this is mainly due to the higher underspend on ring-fenced funds.

**Figure B4: Capital variance in 2017-18: outturn composition**

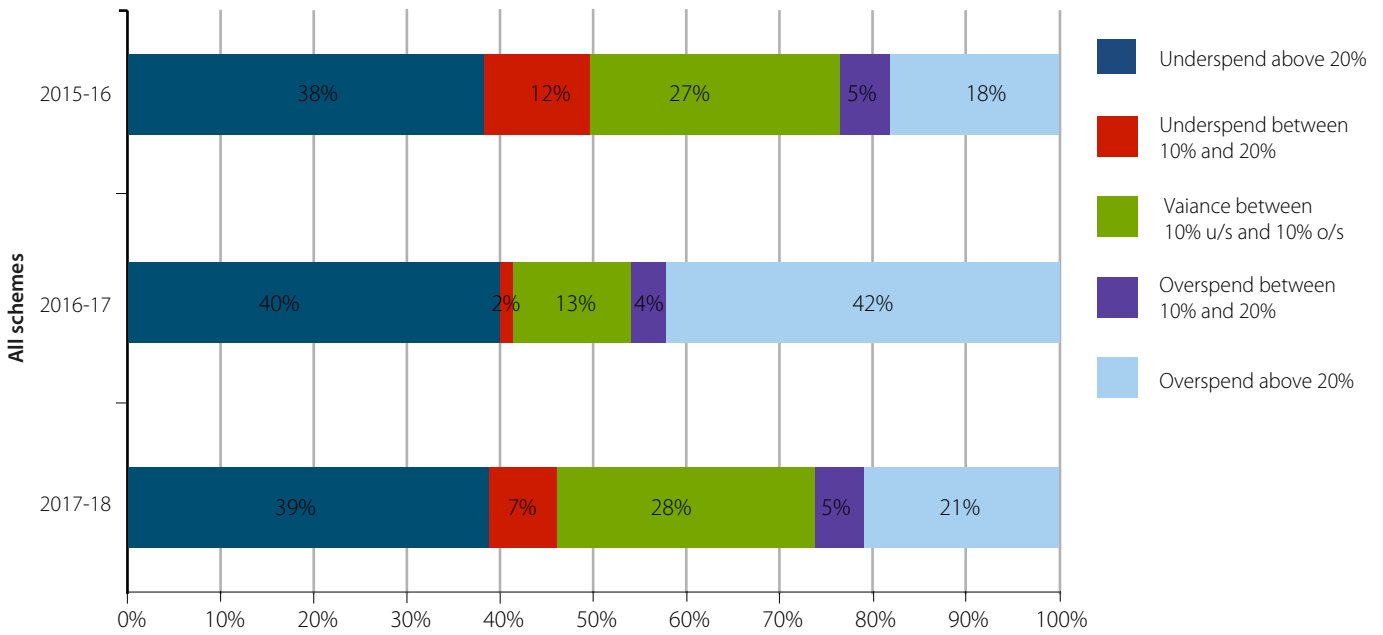


As shown in figure B4 the overspend primarily reflects cost pressures, rather than higher outputs. Similarly, underspends mainly reflect planned deferral of work or slippage, rather than budget savings. This is supported by Highways England's cost performance index of 0.96, which indicates that schemes in construction are slightly above budget. This is discussed later in the annex.

Our analysis of 2017-18 budget variances for major schemes in figure B5 below has shown that 60% of schemes have budget variances greater than 20%. This is an improvement on 2016-17 where 82% had variances greater than 20%.<sup>16</sup>

<sup>16</sup> Based on 112 major schemes, including those affected by changes to the RIS in 2017-18 described in annex C.

**Figure B5: Proportion of schemes with under/overspends against 2017-18 budget**



The variability and reasons for the variances are important when considering Highways England's future cost forecasts, risks to delivery of the RIS and efficiency.

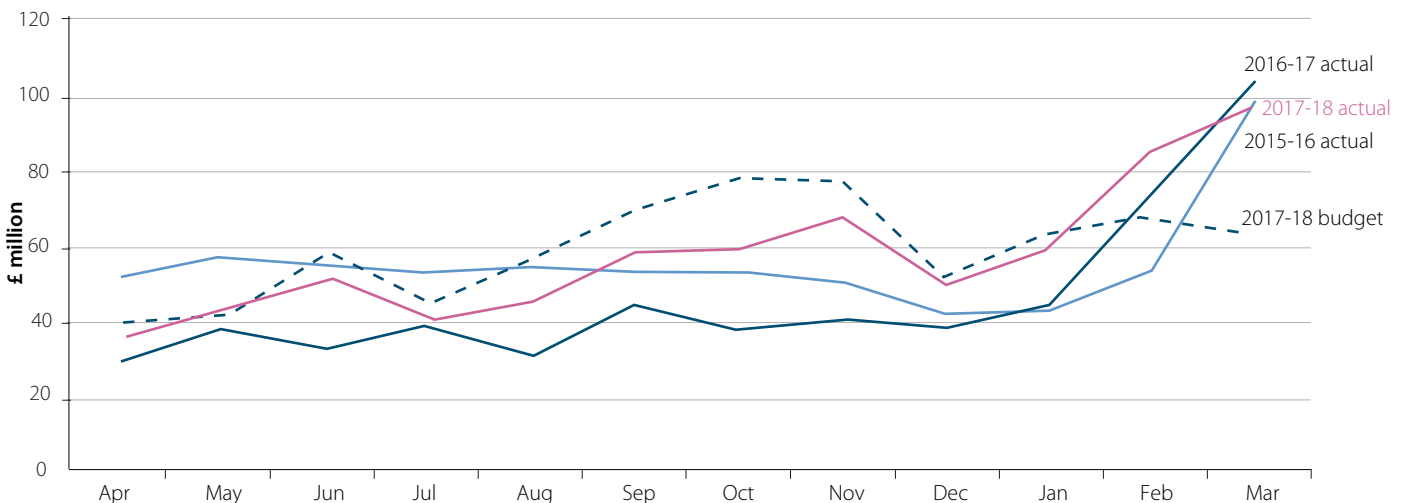
**Improved short-term capital forecasting**

At portfolio/programme level our analysis has shown there has been some improvement in the quality of Highways England's short-term forecast of capital expenditure. The company has been more consistent in its forecast of the year-end position through the year. Also, in its monthly reporting, the company has been accurate to within 4% on average in forecasting the following month's expenditure, compared to 10% in 2016-17.

**Renewals profile**

We have highlighted in the past the apparent inefficiency of Highways England's renewals expenditure profile. This has seen the greatest level of activity in the final months of the year where costs tend to be higher due to adverse weather. Despite some marginal improvements, the profile of expenditure still shows greater activity in winter months. This may have been partly a result of the company facing a challenging year with more work, changes in suppliers and new contractual approaches.

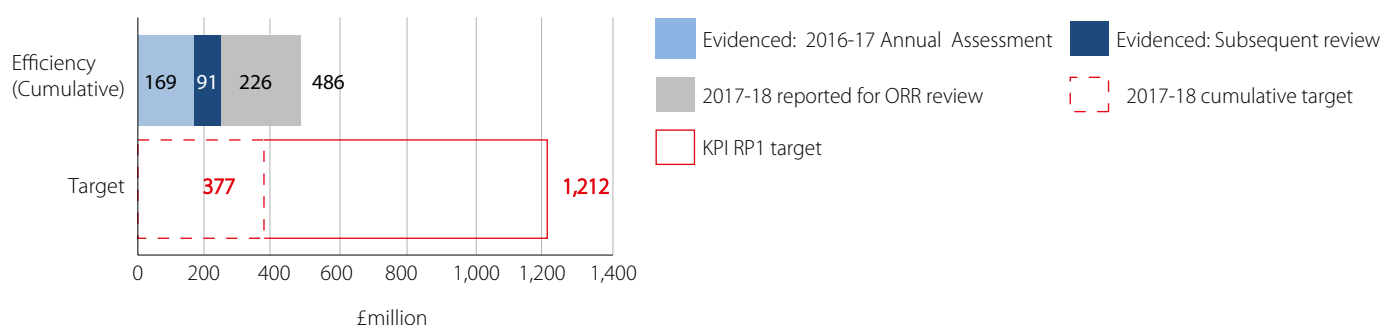
**Figure B6: Renewals monthly expenditure**



## Efficiency

Highways England has reported £226m of efficiencies in 2017-18, bringing the cumulative efficiency improvements to its capital programme in the first three years of road period 1 to £486m. This is 40% of the target to deliver £1.2bn of efficiencies by 2020, and £109m ahead of the company's capital efficiency delivery plan milestone for 2017-18.

**Figure B7: Efficiency evidence and reviewed to date**



Highways England reports efficiency improvements as set out in the Efficiency and Inflation Monitoring Manual (EIMM)<sup>17</sup>. 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.

The following sections provide a more detailed commentary on our view of the evidence submitted:

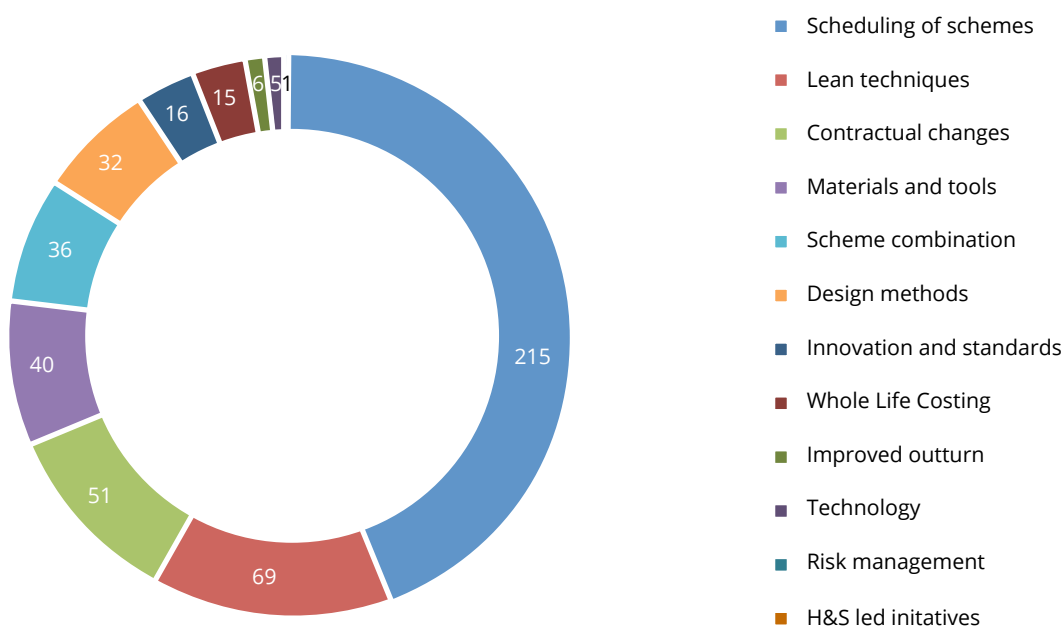
### Bottom-up description of efficiency achieved

Highways England has presented case study evidence of the actions it has taken to deliver efficiency. Figure B8 provides an analysis of the contribution of different themes to the cumulative reported figure. Scheduling of schemes makes the largest contribution and includes £29m in 2017-18 from innovative traffic management on the M5 junctions 1-2 Oldbury Viaduct scheme (discussed as a case study in chapter 2) and £63m from acceleration of the smart motorway programme.

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

<sup>17</sup> The monitoring approach set out in the EIMM was jointly developed by Highways England and ORR. See [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/464887/Efficiency\\_Manual\\_v5\\_spreads.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/464887/Efficiency_Manual_v5_spreads.pdf).

**Figure B8: Efficiency reported to date by theme (£ million)**



### Unit costs

Highways England has developed a new approach for evidencing improvement in renewals unit costs, in response to our concerns about the previous methodology. The new approach is an improvement on previous reporting. However, Highways England reports limitations to this approach, including only 33% of relevant data has been available for use in the model. It expects that, over time, changes in contractual arrangements will mean that this will increase. On balance we believe the new approach provides better evidence. However its limitations (recognised by the company) affect the weight it is given in our review.

High-level analysis indicates that the increase in Highways England's renewals expenditure in 2017-18 (24%) was not matched by increased volume of renewals delivery. Volumes increased by a greater percentage than expenditure in only three out of 18 asset types<sup>18</sup>.

For major schemes we are content that Highways England's model for demonstrating a reduction in unit costs on the smart motorway programme provides reasonable evidence of efficiency. This model has not yet been extended to provide unit cost evidence for the £60m efficiency claimed under the Regional Investment Programme and Complex Infrastructure Programme.

### Expenditure and delivery compared to the RIS

While Highways England has largely made good progress in delivering its investment plan to schedule so far in the road period, the company's current expenditure forecast for road period 1 is £438m higher than its funding. This is after agreed changes to the RIS, which have removed scope from road period 1. It has identified plans to reduce this to £274m by the end of the road period.

The overall costs of the programme in road period 1 and road period 2 are forecast to be £2.9bn more than originally planned. The increased costs partly reflect immature plans when the road investment strategy was set up, delivery of additional work and planned over-programming. It will need to manage any remaining difference, potentially through the use of additional funds in road period 1 or deferral of work into road period 2.

When the RIS was announced DfT and Highways England estimated that capital costs would exceed available funding by £652m as a result of over-programming<sup>19</sup>. Early in the road period Highways England identified further business costs of £409m which were not funded in the RIS. This £1.1bn pressure is reported in the NAO's 2017 study 'Progress with the Road Investment Strategy'. As discussed above, during 2017-18 DfT agreed changes to the RIS reducing scope in the remainder of road period 1 by £616m, leaving a remaining pressure due to over-programming and unfunded costs of £445m.

<sup>18</sup> Geotech, guardrail and boundary fencing

<sup>19</sup> This approach of 'over-programming' (planning more work than there is funding to pay for) is used by Highways England to mitigate the risk that project delays or cancellations would mean the company underspending its funding allocation.

Our review of the deliverability of the investment plan has also helped inform our view of efficiency. It found no evidence of the forecast variance being due to a systemic problem with Highways England's delivery plan or its project performance. Emerging scope/cost uncertainty and change have been the most influential factors as the portfolio has developed.

On balance across the three areas of efficiency evidence we consider that Highways England has more work to do to support the additional reported efficiency against the KPI. Over the next year we will work with the company to: (a) understand how it can improve assurance of its renewals unit cost evidence; and (b) provide further evidence of how scope change of major schemes has impacted the forecast outturn.

## Cost and schedule performance indicators

### Cost performance index

The cost performance index (CPI) is commonly used as a measure of earned value in the construction industry. It is a measure of the relationship between target and actual cost for work completed. Highways England has reported a CPI of 0.96 (0.99 in 2016-17), which indicates 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 is a measure of the relationship between budgeted cost of work delivered and scheduled to be delivered. The company has reported a SPI of 1.01 (0.97 in 2016-17), which indicates that overall projects in construction are ahead of schedule.

### Input price effects

Highways England's funding for capital projects in 2017-18 included an additional 4% for forecast increases to 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 2017-18 of 2.7% for enhancements and 3.2% for renewals. The degree to which Highways England has benefited from lower inflation than assumed in its funding will also depend on both the timing of contract renewal and approach to sharing inflation risk in its supplier contracts.





## ANNEX C: NETWORK INVESTMENT DELIVERY

This annex describes Highways England's performance against its investment plan in 2017-18, including ring-fenced funds. It also considers risks to delivery in the remainder of the road period.

The RIS 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 £12.2bn 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 £7.8bn;
- a maintenance and renewals programme, of approximately £3.7bn;
- 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 2017-18

Highways England's progress in delivery of its capital programme during 2017-18 is shown in table C1. The company has started construction on all seven schemes that were planned to start during the year. It also started construction of one further scheme brought forward from 2019-20 commitments (M49 Avonmouth junction).

Highways England opened eight schemes to traffic against a target of nine during 2017-18. Of these, seven were on schedule, and one, the A1 Leeming to Barton scheme, opened three quarters behind schedule in March 2018. This was mainly due to extensive archaeological finds that resulted in an extension to the construction programme.

The M60 junction 8 to M62 junction 20 smart motorway, which was expected to open in 2017-18, is delayed by 10 months due to additional work required on the existing assets. Part of this scheme (junctions 18 to 20) opened for traffic in December 2017, and it is forecast to be fully open in July 2018.

The two schemes that were delayed from 2016-17 – the A30 Temple to Higher Carblake and the A21 Tonbridge to Pembury – opened for traffic in quarter 2 of 2017-18.

**Table C1: Major schemes delivery in 2017-18**

2017-18 commitments	Committed date	Actual date
Major schemes starting construction		
M20 junction 10a	2017-18, Q4	2017-18, Q4
M6 junctions 2-4	2017-18, Q4	2017-18, Q4
M6 junctions 13-15	2017-18, Q4	2017-18, Q4
M20 junctions 3-5	2017-18, Q4	2017-18, Q4
M23 junctions 8-10	2017-18, Q4	2017-18, Q4
M62 junctions 10-12	2017-18, Q4	2017-18, Q4
M4 Heathrow slip road	2017-18, Q2	2017-18, Q2
M49 Avonmouth junction	2019-20	2017-18, Q3 Ahead of schedule
Major schemes opened for traffic		
A1 Leeming to Barton	2017-18, Q1	2017-18, Q4
A5-M1 link road	2017-18, Q1	2017-18, Q1
M3 junctions 2-4A	2017-18, Q1	2017-18, Q1
A43 Abthorpe junction	2017-18, Q1	2017-18, Q1
M60 junction 8 to M62 junction 20: smart motorway	2017-18, Q2	Forecast 2018-19, Q2
M5 junctions 4A-6	2017-18, Q2	2017-18, Q1 Ahead of schedule
M1 junction 45 improvements	2017-18, Q4	2017-18, Q4
A47 Acle Straight	2017-18, Q4	2017-18, Q4
M4 Heathrow slip road	2017-18, Q4	2017-18, Q4
A30 Temple to Carblake	2016-17, Q3	opened 2017-18, Q2
A21 Tonbridge to Pembury	2016-17, Q4	opened 2017-18, Q2

**Key**

- Milestone on schedule or ahead of schedule
- Milestone one quarter behind schedule
- Milestone more than one quarter behind schedule, or year's commitment missed

Highways England's expenditure against its budget for major schemes in construction stages in 2017-18 is shown in table C2. This shows a overspend of £89.9m for schemes under construction which partly reflects acceleration of major project schemes.

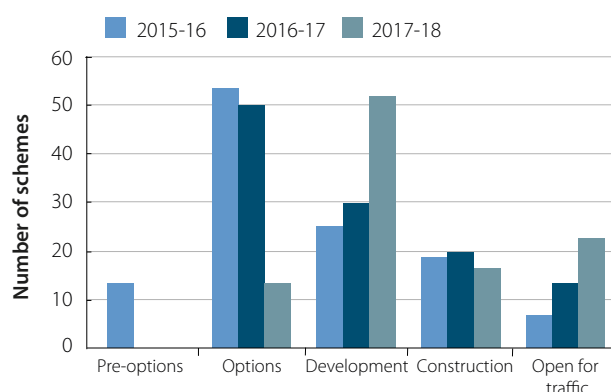


**Table C2: Major schemes costs against budget in 2017-18**

Scheme stage (end of 2017-18)	Budget 2017-18	Outturn costs 2017-18	Variance	% over / (under)
Under construction	£775.4m	£865.3m	£89.9m	12%
Open for traffic	£133.6m	£139.8m	£6.3m	5%

During 2017-18, Highways England has made progress in developing schemes prior to construction. The company has progressed 37 schemes from options into development. By the end of March 2018, there were 18 schemes under construction, and 22 open for traffic. In the first three years of this road period Highways England has started construction of 24 schemes, compared to its plans to start 17. Figure C1 shows progress of major schemes in the first three years of this road period.

**Figure C1: Progress of schemes through development and construction in 2017-18<sup>20</sup>**



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

The company has reviewed how it will deliver its capital investment during the remainder of the road period. It has improved its scheduling of major schemes, with a particular focus on their scope, value for money and impact on road user experience. Highways England refers to this work as optimisation of the portfolio. For example, it has considered the best way of scheduling major schemes which impact on the same routes or geographical locations to reduce customer disruption ('road corridors').

As a result, some major improvement schemes are being considered for delivery in the next road period, while other schemes have been brought forward within this road period. Further changes were introduced for other reasons – for example as an outcome of public consultations and schemes' options appraisals. One scheme – the A27 Chichester bypass – was cancelled as there was no clear consensus on the preferred option.

Highways England has agreed the changes to its commitments to the RIS and delivery plan through the Department for Transport's formal change control process<sup>21</sup>. Table C3 summarises the changes to the major improvements programme agreed during 2017-18.

<sup>20</sup> 2017-18 excludes the deferred and cancelled schemes shown in table C3.

<sup>21</sup> Highways England's delivery plan update for 2018-19.

**Table C3: Changes to the major improvements programme in 2017-18**

Schedule impact	Number of schemes
Schemes to be reconsidered as options for delivery in the next road period	6 schemes that do not currently demonstrate value for money
Scheduled to start earlier than originally planned (within road period 1)	10 road corridor schemes M1 junctions 24-25 M62 junctions 10-12 M62 junctions 20-25 M11 junctions 7a
Start of works deferred from road period 1 to road period 2	15 road corridor schemes M54 to M6 / M6 Toll, A38 Derby junctions A303 Amesbury to Berwick Down A428 Black Cat to Caxton Gibbet M5 Bridgwater junctions
Scheme to start works in a later year in road period 1	A63 Castle Street
Cancelled	A27 Chichester

For the remainder of the schemes, Highways England reports that two which were planned to start during the road period are delayed. The A5036 Princess Way - access to port of Liverpool is delayed following legal challenge on the options presented during consultation. The A358 Taunton to Southfields is delayed due to further analysis of the public consultation responses.

For those schemes planned to open for traffic in the remainder of the road period, all are reported to be on schedule.

**Table C4: Major scheme delivery – first road period, construction phase**

Phase	Original delivery plan commitments (2015-20)	Progress	No.	Details	Status
Start of works	112	Started	40	16 started construction prior to road period 1 24 started in the first three years of road period 1	●
		Changed	27	6 schemes deferred that do not currently demonstrate value for money 1 scheme cancelled 20 deferred from road period 1 to road period 2	●
		On schedule	43	As planned	●
		Delayed	2	A5036 Princess Way - access to Port of Liverpool A358 Taunton to Southfields	●
Open for traffic	33	Opened	22	22 opened for traffic in the first three years of the road period	●
		On schedule	10	As planned	●
		Delayed	1	M60 junction 8 to M62 junction 20 smart motorway (delayed from 2017-18)	●

**Key**

- Milestone on schedule or ahead of schedule
- Milestone at risk, subject to change or one quarter behind schedule
- Milestone more than one quarter behind schedule
- Milestones changed

In December 2017, the company provided us the details of its revised baseline plans which reflect the changes made to schemes through its optimised programme for major improvement schemes. RIS1 funding released by the optimisation process has been retained to offset funding pressures elsewhere in the portfolio.

We have assessed the company's evidence on the deliverability and affordability of its capital delivery plan in road period 1 and the impact on the next road period. The delivery of the RIS1 major improvements programme represents a significant component of Highways England's capital plan. Our review highlighted that:

- The company has strengthened its capital portfolio management capability and, as a result, now has better information about scheme timings, costs and risks. This should support improved planning and delivery in the long-term;
- The majority of major schemes completed to date have cost more than the original funding assumptions;
- The RIS1 major improvements programme was immature (in life cycle development terms) at its starting point, with consequential delivery and cost risk emerging since, so plans have inevitably changed. Highways England now expects to start 85 schemes in the first road period, down from 112 originally planned;

- The company's forecast total costs for its RIS1 major schemes is now £2.9bn higher in road period 1 and road period 2 than originally assumed. This partly reflects immature scheme estimates when RIS1 funding was set; and
- Highways England forecasts capital costs that are £438m higher than its funding in the road period. It is taking action to manage costs, but there is risk that some work will need to be deferred to the next road period and / or additional funding used in road period 1 (for example through its ability to bring funds forward from the next road period).

## Maintenance and renewals

Highways England has maintained the condition of the strategic road network in 2017-18. The condition of its carriageway asset has improved and is above target for the first time during road period 1, whilst the condition of other asset types is broadly stable. Data inventory, for those asset types reported, has generally improved during the year.

### Asset management

Highways England has recognised that it can adopt a more structured approach to asset management to improve its maintenance and renewals planning and delivery. The company has set out plans for improvement which will support better maintenance and renewal of the network in this road period, and beyond.

Highways England has put in place an action plan to address the recommendations made in our in-depth review of asset management delivery for pavement (road) and structures. We met with the company during 2017-18 to review its plans and will monitor implementation of them.

We completed an in-depth review into Highways England's management of geotechnical and drainage assets in June 2018. The review focused on understanding whether Highways England was managing these assets safely and efficiently in the long term.

The review found that Highways England is improving how it manages its assets. It identified that the company has robust, standards-led systems and processes, which drive asset interventions that are safe, add value, and are in keeping with the conditions of its licence. The review identified good practice in its management of geotechnical assets, where the availability of data supports effective long-term and risk-based decision making.

However, the condition of drainage assets can change more rapidly, for example as a result of blockages. This, coupled with limited availability of subsurface asset condition data, limits the extent to which Highways England can carry out works before the asset fails. This is common for similar infrastructure asset organisations. Highways England's approach to bringing more asset capability in-house will help simplify and strengthen the control Highways England has on the decision making process, and will continue to support the positive trend in asset management capability.

We will work with the company in 2018-19 to understand how it is responding to the recommendations made in the in-depth review.

Whilst Highways England's plans to improve its maintenance and renewals planning and delivery are comprehensive, it is likely that many of them will not be implemented until late RIS1 or early RIS2. Until those plans are realised we will work with the company to identify short-term improvements to a number of areas affecting maintenance and renewals.

### Delivery of maintenance and renewals against plan

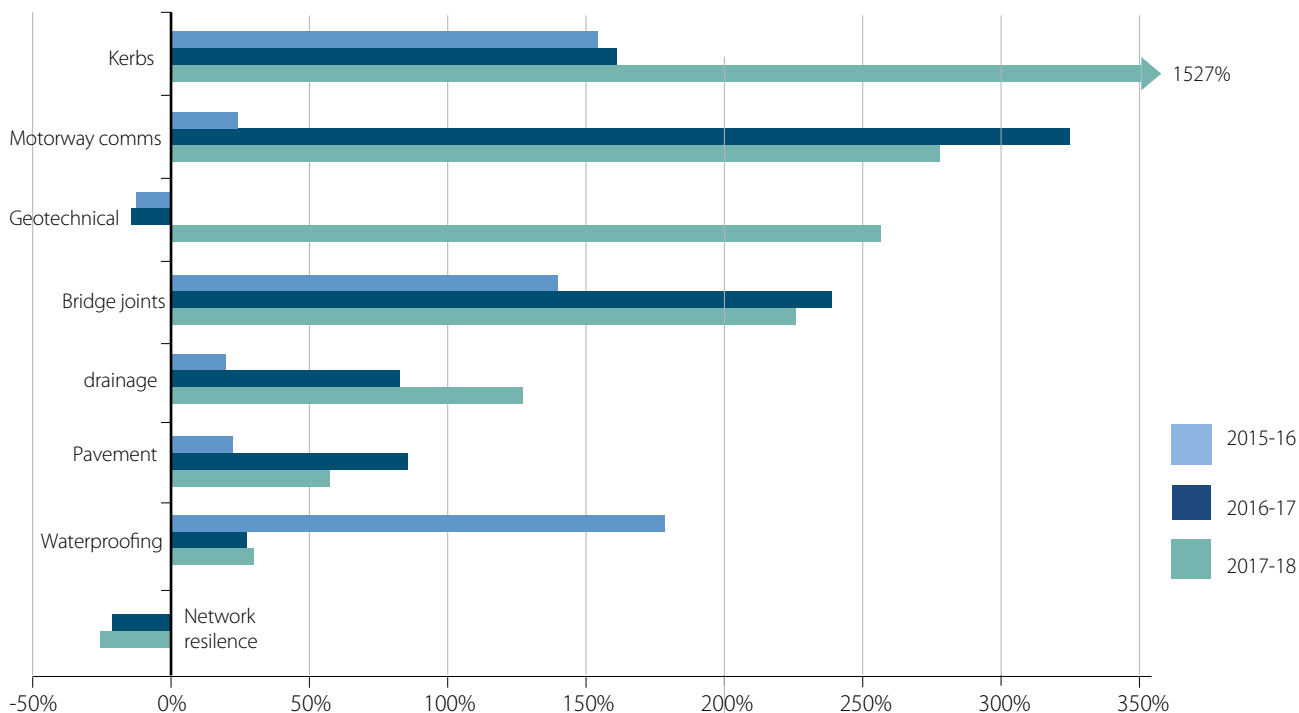
In 2017-18, Highways England delivered greater renewal volumes than it planned at the start of the year for the majority of asset types. This is shown in table C5.

**Table C5: Volumes of renewals delivered compared to plan in 2017-18**

2017-18 Commitments		Planned volume	Actual volume	Output variance
<b>Renewal of roads - pavement</b>	Pavement (lane kilometres)	1,600	2,520	58%
<b>Renewal of roads</b>	Kerbs (kilometres)	1.3	21.2	1527%
	Geotechnical (kilometres)	5.7	20.3	256%
	Boundary fencing (kilometres)	33.9	77.1	128%
	Drainage (kilometres)	141	320.6	127%
	Guardrail (kilometres)	0.8	1.3	63%
	Vehicle restraint system (kilometres)	92.9	139.6	50%
	Road markings (kilometres)	2,966	4289	45%
	Lighting (number)	1,500	1,327	-12%
	Traffic Signs (number)	2,000	1,700	-15%
<b>Renewal of structures</b>	Bridge joint (number)	153	499	226%
	Bridge bearing (number)	110	186	69%
	Parapet (kilometres)	1.9	2.9	53%
	Waterproofing (square metres)	29,400	38,397	31%
<b>Renewal of technology</b>	Motorway communication equipment (number)	190	717	277%
	Renewals and improvements (number)	160	370	131%
	Winter resilience (number)	37	71	92%
	Network resilience (number)	32	24	-25%

Figure C2 shows the volume of renewals delivered compared to plan in the first three years of the road period for selected asset types. The size of the variances suggests that the company can improve its asset plans, and therefore how it prioritises interventions across the network. In-year forecasting of renewals outputs also shows considerable variability across all asset types.

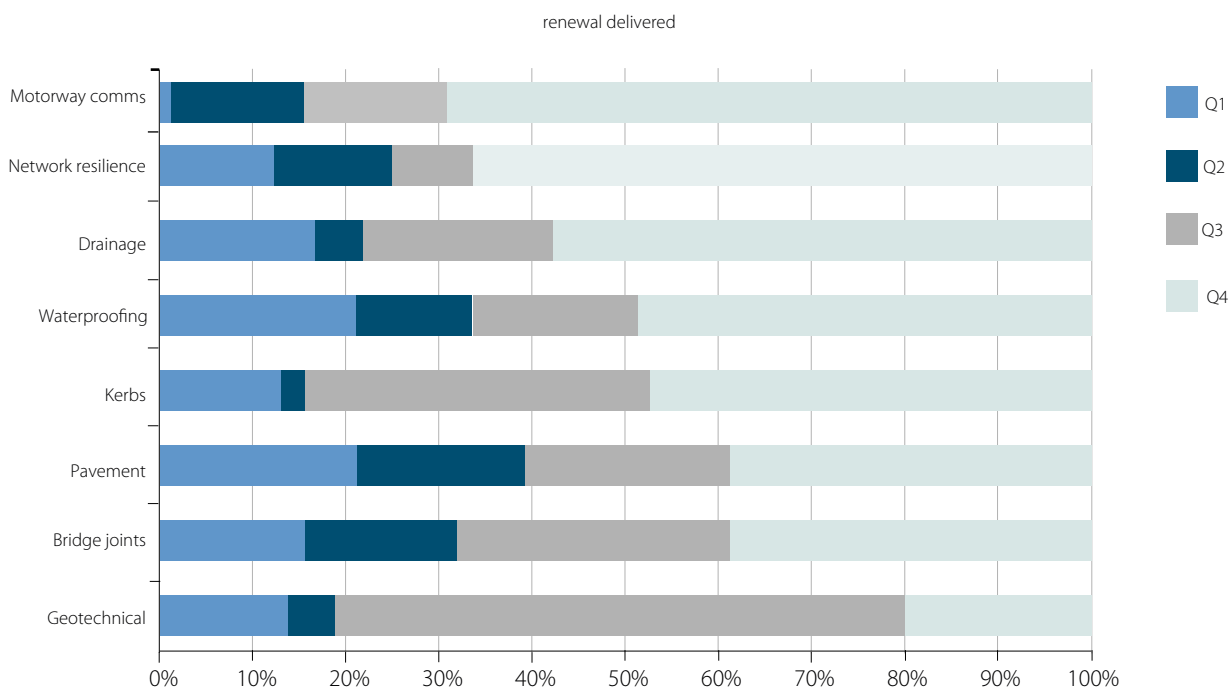
**Figure C2: Volumes of renewals delivered compared to plan, 2015-16 to 2017-18<sup>22</sup>**



Highways England has delivered more than 25% of renewals during quarter four for nearly all assets (16 out of 18), with half of all asset types having more than 50% delivered in quarter four. The proportion of renewals delivered in the last three months of

the year, particularly during the disruptive weather in February and March 2018, is likely to impact the quality and efficiency of work. The quarterly output of renewals for selected asset categories is shown in figure C3.

**Figure C3: Output of renewals delivered per quarter<sup>23</sup> for selected asset categories, 2017-18**

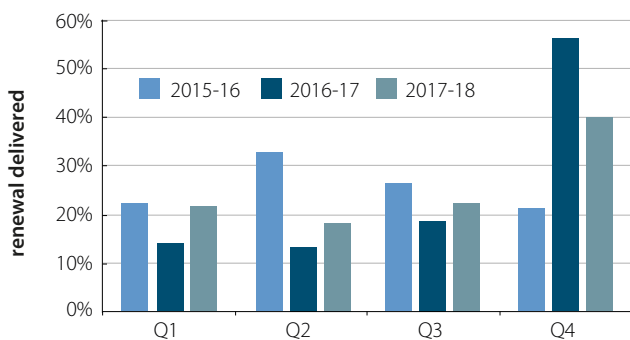


<sup>22</sup> Figure C2 reports a subset of renewals volumes

<sup>23</sup> Quarters refer to the financial year. Q1 covers spring (April to June) and Q4 covers winter (January to March).

In 2017-18, Highways England delivered a higher proportion (39%) of pavement renewals in quarter four than in any other quarter. This is lower than the proportion it delivered in the fourth quarter of 2016-17 (55%). It is not clear whether this is a result of improved planning or due to the disruptive weather in the final quarter of 2017-18.

**Figure C4: Percentage of pavement renewals per quarter, 2015-16 to 2017-18**



## Maintenance and renewals expenditure

In 2017-18, Highways England spread its expenditure on maintenance and renewals more evenly throughout the year than in than previous years (as shown in figure B6). The profile of renewals expenditure has improved marginally, with a lower proportion of expenditure in the winter than seen in previous years. Highways England could do more to ensure expenditure follows a flatter profile (as budgeted), which should contribute to improved efficiency in future years.

As set out in annex B, renewals expenditure was lower than budgeted in 2017-18.

We have established a review group with the company which will meet quarterly to discuss progress against its plans to improve the planning and reporting of renewals delivery.

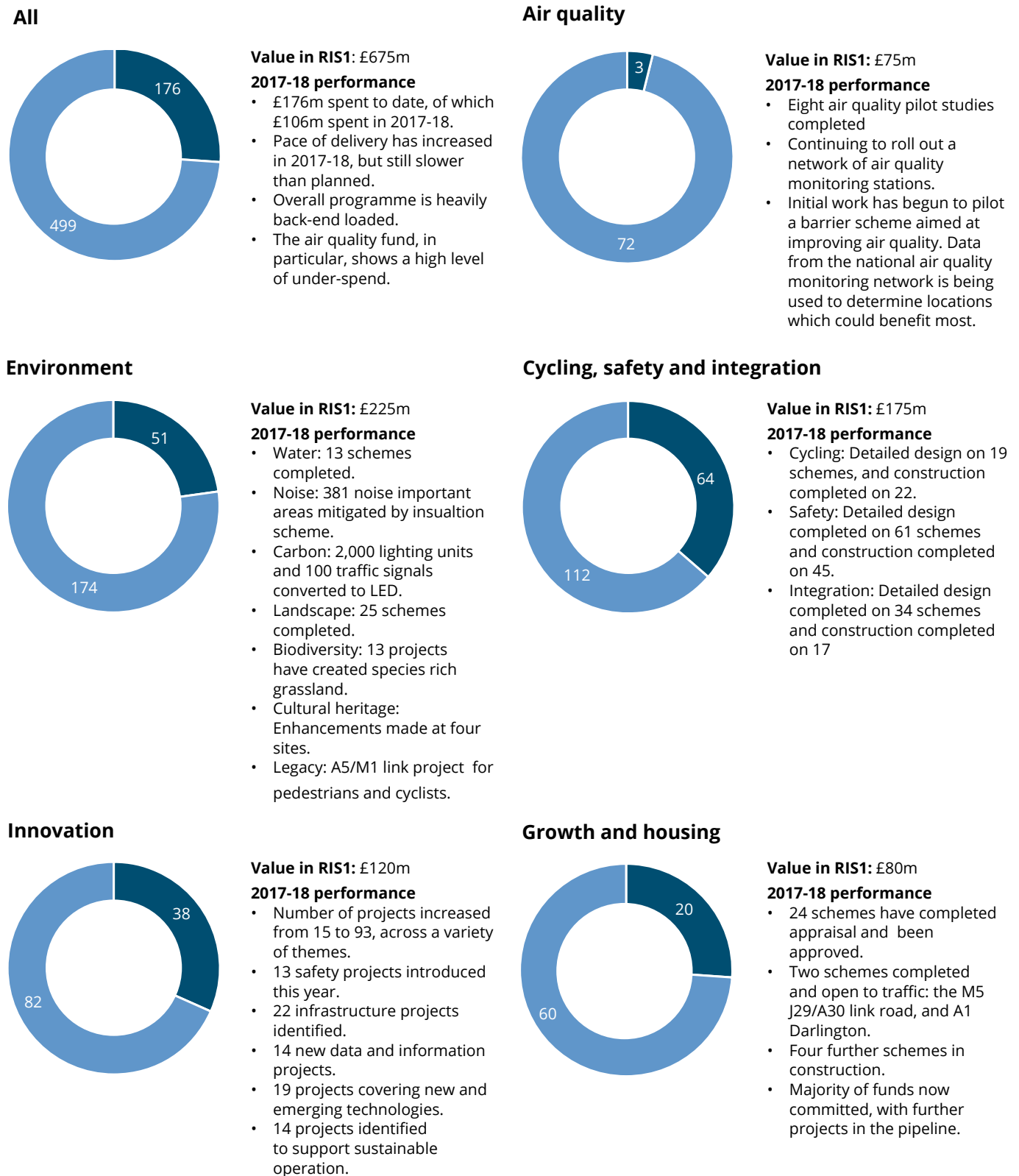


## Ring-fenced funds

Delivery of projects through ring-fenced funds is covered in chapter 2, and also in our in-depth review of ring fenced funds, which was published in July 2018<sup>24</sup>. Figure C5, below, provides an update on each fund at the end of 2017-18.

**Table C5: Ring-fenced funds delivery in 2017-18**

■ £m spent at end 2017-18 ■ £m unspent



<sup>24</sup> [http://orr.gov.uk/\\_data/assets/pdf\\_file/0014/28112/highways-england-approach-to-delivering-schemes-through-its-ring-fenced-funds-2018-02-02.pdf](http://orr.gov.uk/_data/assets/pdf_file/0014/28112/highways-england-approach-to-delivering-schemes-through-its-ring-fenced-funds-2018-02-02.pdf)





## ANNEX D: NOTE ON REVISIONS TO PREVIOUSLY REPORTED DATA

During 2017-18, Highways England has worked with ORR and DfT to agree changes to how it reports data against some of its performance indicators and key performance indicators. This has resulted in revisions to some performance data which were previously reported in 2015-16 and 2016-17. This affects two key performance indicators, covering noise and vulnerable user crossings, and one performance indicator, covering spend on small and medium-sized enterprises (SMEs). All performance data presented in this report uses the revised data, where available. Further details are set out below.

**Noise important areas.** In 2015-16 and 2016-17 Highways England reported a noise important area as mitigated only if all practical methods to mitigate noise had been completed. For example, where it was practical to provide a barrier and undertake resurfacing, both measures were required to be installed before the noise important area was counted as mitigated. Highways England has subsequently agreed with ORR, DfT and other stakeholders, that it is appropriate to claim a noise important area as mitigated if it has delivered one appropriate intervention measure (i.e. insulation or barrier or resurfacing). This has caused the number of noise important areas reported as mitigated in 2015-16 and 2016-17 to increase. The difference between the figures reported previously, and those in this report as set out below.

**Table D1: Comparison of number of noise important areas mitigated**

Year	Noise important areas mitigated (previously reported)	Noise important areas mitigated (revised figures)
2015-16	48	62
2016-17	73	140

**Vulnerable user crossings.** In 2015-16, Highways England reported the number of crossings it had delivered on the network in such a way that a single crossing was counted multiple times (to represent different user types). For example, one crossing would have been counted as two if it was suitable for pedestrians and equestrians. In 2016-17, the company changed its methodology so that a crossing

is only counted once, irrespective of the number of user types that can use it. ORR and DfT have agreed with Highways England that the latter method is the most appropriate for reporting performance. This will result in a reduction in the number of crossings reported as completed in 2015-16. Highways England is currently validating the revised figure for 2015-16, which we will report in our next annual assessment.

**Table D2: Comparison of number of vulnerable user crossings**

Year	Number of vulnerable user crossings (previously reported)	Number of vulnerable user crossings (revised figures)
2015-16	39 new, 165 upgraded	*figure awaiting validation
2016-17	20 new, 7 upgraded	20 new, 7 upgraded (unchanged)

**Spend on small and medium-sized enterprises (SMEs).** When calculating the proportion of its expenditure on SMEs, Highways England has historically used an assumption of 10% to apply to its private finance initiative (PFI) contracts. However, following an internal review by the company, it has concluded that there is insufficient evidence to support this assumption. Therefore, it has agreed

with DfT and ORR to remove PFI contracts from its calculation of the proportion of spend on SMEs. This has increased the historically reported figure for SME spend in 2015-16 and 2016-17. The table below sets out the previously reported, and revised data. These figures should be treated as provisional, as work is ongoing to agree the revised methodology. Government has a target of 25% direct and indirect spend on SMEs.

**Table D3: Comparison of SME spend**

Year	% of spend on SMEs (previously reported)	% of spend on SMEs (provisional figures)
2015-16	26.5%	30.9%
2016-17	25.5%	27.0%





ISBN 978-1-5286-0576-2

CCS0618909730 C