OFFICE OF RAIL AND ROAD

ANNUAL ASSESSMENT OF HIGHWAYS ENGLAND'S PERFORMANCE

APRIL 2016 - MARCH 2017

HC 232

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1. EXECUTIVE SUMMARY

Introduction

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

1.2 In the Road Investment Strategy[1] (RIS), government has set out 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). We hold Highways England to account for its performance and efficiency targets that are specified in the RIS. Our focus is on securing better performance and value for money from the strategic road network, to benefit road users and the wider public.

1.3 This is our annual assessment of Highways England's performance in 2016-17. We have found that, despite facing challenges from record levels of traffic on the network, Highways England has performed well, and largely met its requirements.

Four key messages for 2016-17

1. Highways England's performance remains good across a range of measures.

Compared to other road networks casualty rates are low, and it is keeping traffic flowing while delivering major improvements. It is starting to be more efficient in the way it delivers.

1.4 Highways England continues to focus on safety as a priority. It has a comprehensive five-year health and safety plan, which it is delivering. Figures for the number of people killed or seriously injured (KSI) on the network in 2016 have not yet been published. However, changes to how road casualty data are recorded are likely to cause an increase in the number of reported serious injuries when the figures are published in September 2017. This will impact Highways England's ability to meet its target of achieving a 40% reduction in the number of KSIs on the strategic road network by 2020. Despite this, the strategic road network has lower casualty rates than other roads in England. It is also one of the safest road networks internationally.

1.5 In 2016-17, Highways England performed well in keeping traffic flowing. It has kept 98.4% of its network open to traffic against a target of 97%, similar to last year's performance. It has cleared 85.9% of incidents within an hour, which is slightly lower than in recent years, but still above the target of 85%.

1.6 Highways England spent £3.1bn in 2016-17, including £2bn of capital investment. The company has reported £135m of capital efficiencies during the year, bringing the total to £169m for Road Period 1, which is more than it had targeted. The company has developed its plans for how it will deliver the £1.2bn RIS1 target and the evidence supporting reported efficiencies, though developing the evidence base remains work in progress.

1.7 In 2016-17, Highways England started construction on eight major road improvement schemes, against a plan to start on four. It has opened seven major schemes for traffic, against a plan to open eight.

2. Highways England has missed its targets on road user satisfaction and network condition.

It is putting in place plans to address shortfalls. These and other areas of performance need continued focus to deliver future targets.

1.8 Road user satisfaction with the strategic road network was 89.1% in 2016-17. This is below the target of 90%, but in line with performance in the previous year. Highways England has demonstrated commitment to improve user satisfaction through actions taken in 2016-17 and must now set out clearer plans to maximise its chances of delivering the target.

1.9 At the end of 2016-17, the proportion of network in good condition was at 94.3%, against a target of 95%. We investigated this issue and found that Highways England is managing any safety

1. https://www.gov.uk/government/publications/road-investment-strategy-for-the-2015-to-2020-road-period

impact, and is now taking appropriate action to improve network condition.

1.10 At the end of 2016-17, Highways England had mitigated 121 noise important areas towards its target of 1,150 by 2020. Over the next year, it will produce updated plans for how it will meet this target. It also has more work to do to set out clearly how many crossings for pedestrians, cyclists and other vulnerable road users it will deliver, and when.

3. Highways England has improved its planning of major improvements.

It is in the process of proposing a revised baseline to government.

1.11 During 2016-17, Highways England has reviewed how it will deliver capital investment during the remainder of the road period. It is developing better plans, which are aimed at reducing disruption for road users and delivering better value for money. As a result, some major improvement schemes may now be considered for delivery in the next road period, while other schemes may be brought forward.

1.12 Highways England is now proposing its revised plans to government through the formal change control process. Its engagement with this process has improved during the year, but the rigour of its evidence on the need for, and impact of, change needs continued focus. Once its revised baseline plan is agreed, we expect it to be made publicly available.

1.13 Highways England needs to ensure it can deliver this portfolio of enhancements whilst limiting any adverse impact on the performance targets. It is developing an improved approach to understanding and mitigating risks to delivery of the portfolio. Highways England will provide further evidence to us on its work to assess delivery risk during summer 2017 and we will report on its progress.

1.14 We have carried out a review of how Highways England and its supply chain are positioned to deliver the RIS. This has identified areas of good progress but also opportunities, such as reviewing whether the company can contract with the supply chain further in advance of scheme delivery to allow better resource planning.

4. Highways England has further work to do to improve its asset management.

It must demonstrate that it is efficiently planning and delivering the right maintenance and renewals work to keep its network in good condition.

1.15 Highways England is developing improved maintenance and renewals planning processes, which it will need to embed. It has reviewed its renewals reporting and identified the need to improve the assurance of its data. We completed an in-depth review into Highways England's asset management delivery for pavement and structures in March 2017. Highways England is now developing a plan to respond to issues and recommendations made in this review.

1.16 Highways England continues to have challenges in delivering a stable programme of renewals. In 2016-17, there was again a large increase in renewals activity in the final quarter of the year, when the company sought to catch up on under-delivery earlier in the year, and make use of funding available from paused work on the M20 lorry park. The company recognises that there is scope for further efficiency improvements through smoothing its monthly profile of work and has taken account of this in its 2017-18 business planning.

Summary of performance

1.17 We measure Highways England's performance against the outcome in the RIS[2]. This sets out eight outcome areas, each with one or more key performance indicator as well as a number of performance indicators[3]. Delivery against each key performance indicator in 2015-16 and 2016-17, and our assessment for the remainder of the road period, is summarised in the table below using a red, amber, green (RAG) status.

2. See annex A for more detail on how we measure Highways England's performance

3. 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 2016-17	RAG 2015-16	RAG 2016-17	RAG RP1
Making the network safer	**Killed or seriously injured** ●Target: 40% reduction by end of 2020	2016 figures delayed to September 2017. Change to data collection likely to increase recorded KSIs.	Amber	**Awaiting data**	Amber
Improving user satisfaction	**Road user satisfaction** ●Target: 90% by March 2017	89.1% satisfaction.	Amber	**Amber**	Amber
Supporting the smooth flow of traffic	**Network availability** ●Target: 97% lane availability	98.4% availability.	Green	**Green**	Green
	Incident clearance ●Target: 85% of motorway incidents cleared within one hour	85.9% cleared within one hour.	Green	**Green**	Green
Encouraging economic growth	**Average delay (secs per vehicle mile)** Target: No target set	9.0s delay, which is slightly higher than in 2015-16.	Amber	**Amber**	Amber
Delivering better environmental outcomes	**Noise important areas mitigated** ●Target: Mitigate at least 1,150 noise important areas by 2020	73 mitigated in 2016-17 (bringing RP1 total to 121). Uncertainties around future delivery.	Amber	**Amber**	Amber
	Improved biodiversity ●Target: Publish biodiversity action plan	Management plans produced for 15 SSSIs. New biodiversity metric proposed.	Green	**Green**	Green
Helping cyclists, walkers and other vulnerable users	**Number of new and upgraded crossings** Target: No target set	20 new and 7 upgraded crossings delivered in 2016-17.	Amber	**Amber**	Amber
Achieving real efficiency	**Capital expenditure savings** ●Target: Savings of at least £1.212 billion on capital expenditure by 2019-20	£135m of efficiencies in 2016-17. £169m in RIS1 to date, which is 14% of the target.	Green	**Green**	Amber
	Progress of work, relative to delivery plan Target: No target set	Work started on 8 schemes (target of 4). 7 schemes open to traffic (target of 8).	Green	**Green**	Amber
Keeping the network in good condition	**Pavement condition** ●Target: 95% of pavement requiring no further investigation for possible maintenance	94.3% requires no further investigation.	Green*	**Amber**	Amber

Key: ● = Delivery on track/clear plans in place for RP1 ● = Some risk to delivery of target/plans not fully established for RP1 ● = High risk to delivery of target/plans not in place for RP1
*In our 2015-16 assessment, we reported pavement condition as green. However, this was based on incorrect data received from Highways England and was subsequently revised to amber.


Tracture

2. HIGHWAYS ENGLAND'S PERFORMANCE

Highways England's performance remains good across a range of measures

Compared to other road networks casualty rates are low, and it is keeping traffic flowing while delivering major improvements. It is starting to be more efficient in the way it delivers

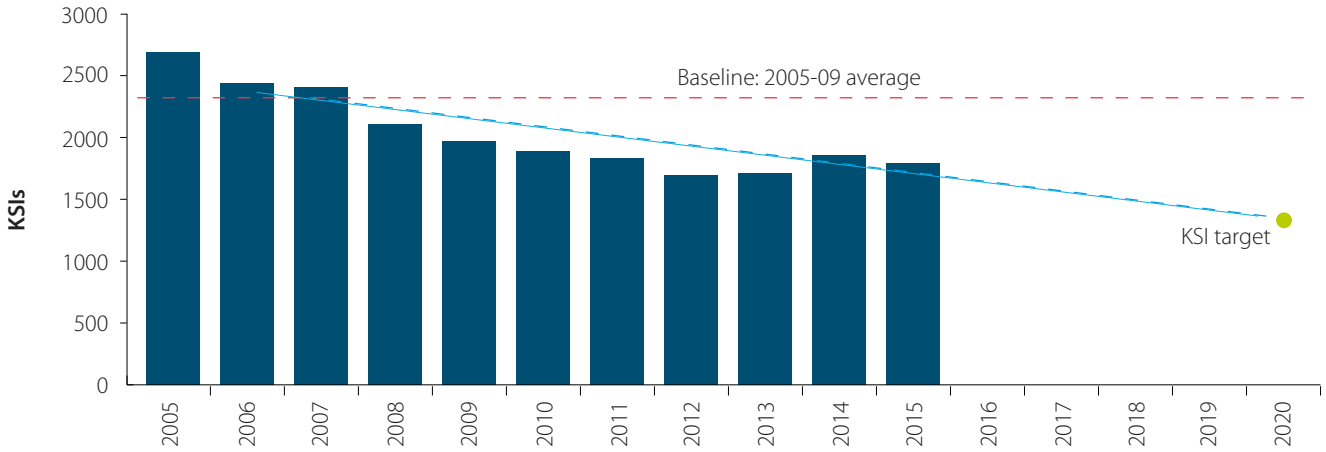
Safety

2.1 A key priority for Highways England is to improve safety for road users and workers on the strategic road network. It has shown strong commitment to improved safety throughout the organisation and it consistently identifies safety as one of its three imperatives. In 2016-17, the company demonstrated its continued focus on safety.

- It has a comprehensive five-year health and safety plan[4], which includes 122 actions. It is delivering well against the plan. For example, it has rolled out health and safety leadership and behavioural training across the company.
- Our engagement with road safety stakeholders has shown a broad consensus that Highways England is applying an appropriate focus to road safety.
- It has delivered 20 safety schemes through its cycling, safety and integration ring-fenced fund in 2016-17, and plans to increase the pace of delivery in 2017-18.
- Road casualty rates for 2015 (the most recent year available) show that Highways England's roads are the safest nationally, and amongst the safest internationally.

2.2 Highways England has a key performance indicator target to achieve a 40% reduction in the number of people killed or seriously injured on its network by 2020, compared to the 2005-09 average baseline. The Department for Transport, which is responsible for producing road casualty statistics, has delayed publication of its 2016 road casualty statistics, which are now expected to be available in September 2017[5].

Figure 2.1: Killed or seriously injured on the strategic road network, 2005-2015 (data for 2016 not yet available)



4. https://www.gov.uk/government/publications/highways-england-health-and-safety
5. https://www.gov.uk/government/collections/road-accidents-and-safety-statistics#publications-2017

2.3 In the last year, many police forces have moved to a new system for reporting road casualty data. The new system automatically defines the severity of injury (slight or serious) suffered by a casualty, based on the type of injury recorded by police officers. These changes have improved the quality of information, but are likely to result in more injuries being classified as serious, and therefore an increase in the reported number of people killed or seriously injured on the network.

2.4 Provisional figures published by the Department for Transport in February 2017[6] show this increase in the reported number of killed or seriously injured, but more work is required to understand the underlying trend. The department estimates that police forces which have moved to the new system have had an increase in the number of serious injuries that is 10 to 15 per cent higher than those that have not. It will publish more detailed analysis on this change later in 2017. We will work closely with the department and Highways England to understand the conclusions from this work and how it impacts Highways England's ability to meet its safety target for RIS1.

2.5 The target of reducing the number of people killed or seriously injured on the network by 40% remains challenging. Highways England needs to continue to build its understanding of how its actions contribute to improved safety on the network, and use this knowledge to prioritise future interventions.

2.6 In 2016-17, Highways England has made progress against other safety performance indicators. It has completed work to assess the safety of its network, based on a star rating system, and is on track to achieve 90% of travel on 3-star roads by 2020.

2.7 Accident frequency rates for both Highways England and supply chain staff have improved in 2016-17, although they remain above the company's internal targets. Highways England's five-year health and safety plan includes a number of actions relating to road worker safety. For example, the company is undertaking work to understand how better signage and protection can reduce the risk to workers from vehicle incursions to roadworks.

6. https://www.gov.uk/government/statistics/reported-road-casualties-great-britain-provisional-estimates-july-to-september-2016

Supporting the smooth flow of traffic

2.8 A smooth flowing strategic road network is vital to the economic health of the country and supports the timely movement of people and goods. The volume of traffic using the network means that we cannot expect free flowing conditions all of the time. However, Highways England must minimise the impact of roadworks and incidents on users.

2.9 The company's performance in supporting the smooth flow of traffic is measured by two key performance indicators: network availability and incident clearance. In 2016-17, the company has performed well against both of these indicators, which are both rated as 'green'.

2.10 Highways England has a target to ensure that lane availability does not fall below 97% in any rolling year. At the end of 2016-17, lane availability on the network was 98.4%, similar to performance last year (figure 2.2). Highways England forecasts that performance will remain above target for the remainder of the first road period.

2.11 Highways England must also clear at least 85% of incidents on the motorway within one hour. Year-end performance for this key performance indicator was 85.9% (figure 2.3), which is slightly lower than last year, but still above the target. In 2016-17, approximately 49,000 incidents were recorded on the network, 5% more than in 2015-16. Despite this increase, Highways England cleared 2,100 more incidents in under one hour than it did in the previous year. The challenges associated with ongoing traffic growth on the network mean that the company should continue to build its understanding of how incident management can minimise delays for road users.

Figure 2.2: Network availability, 2012-13 to 2016-17

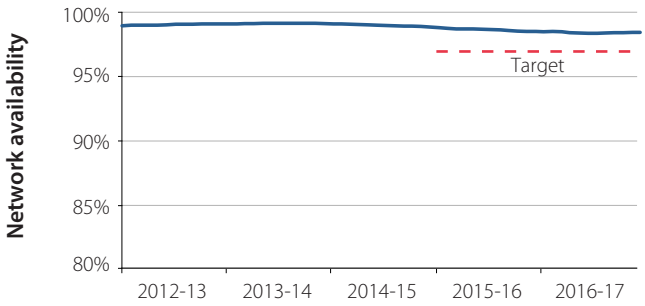
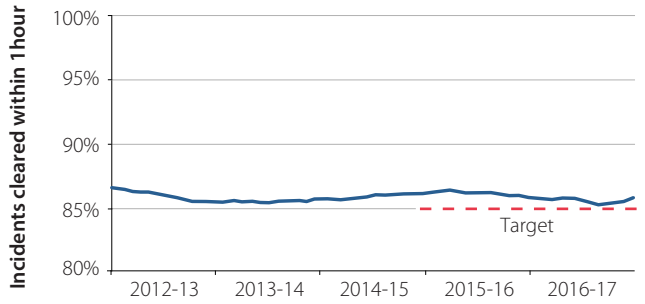
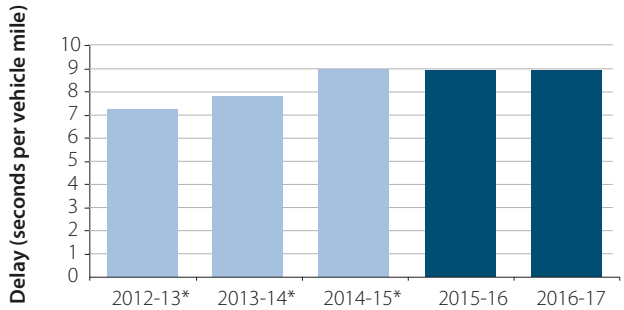


Figure 2.3: Incident clearance, 2012-13 to 2016-17



2.12 Highways England's impact on economic growth is monitored by a key performance indicator which measures average delay per vehicle mile. Performance has been stable throughout 2016-17, at 9 seconds per vehicle mile, despite increased traffic on the network. There is no target for average delay, but because it has shown a small increase since 2015-16 (8.9 seconds per vehicle mile), this key performance indicator is rated as 'amber'.

Figure 2.4: Average delay on the strategic road network, 2012-13 to 2016-17



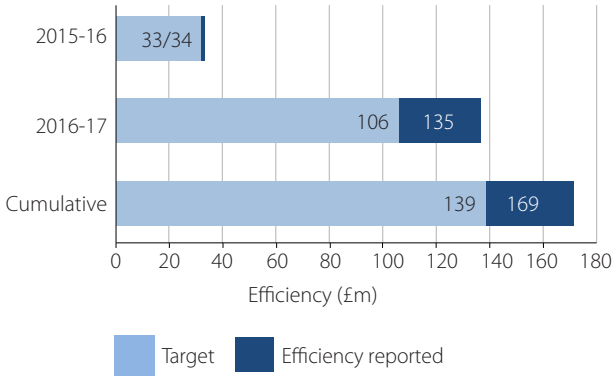
* adjusted historical data (comparison with latest data is illustrative)

Achieving real efficiency

2.13 Highways England spent £3.1bn in 2016-17, including £2.0bn of capital investment mainly on improvements to the network (£1.3bn) and renewals of infrastructure (£0.6bn). This was 2.4% higher than expenditure in 2015-16 and was £42m (1%) lower than funding agreed with the Department for Transport. The company has reported £135m of efficiencies in 2016-17, bringing the cumulative efficiency improvements to its capital programme in the first two years of this road period to £169m. This exceeded the company's internal target by £30m.

2.14 Highways England must deliver at least £1.2bn of efficiency improvements by 2020. Reported efficiencies in the first two years represent 14% of this target so considerable work remains to achieve the key performance indicator requirement. The key performance indicator is rated 'amber' for Road Period 1 because of the challenging level of efficiencies that remain to be delivered and risks associated with schemes that start construction at the end of Road Period. This has an impact on the certainty of the company's plans to deliver the more stretching efficiency improvements required in later years of the Road Period.

Figure 2.5: Efficiency reported to date



2.15 We have worked with Highways England to develop the evidence to support its efficiency reporting over the past year. We discuss this in more detail in Annex C.

Major investment delivery

2.16 Highways England must progress 112 major improvement schemes during the first road period. In 2016-17, it planned to start construction on four schemes and open eight to traffic.

2.17 The company has started works on the four schemes as planned, one of which started ahead of schedule. In addition, it started construction on four schemes which were previously scheduled to start in 2019-20. This includes combining two adjacent schemes which were originally planned with different timetables but which will now be delivered as one to reduce the impact and delays caused by roadworks.

2.18 Highways England opened six of the planned eight schemes to traffic during the year. Two were delayed. It also opened an additional scheme, which was originally planned for completion in 2017-18. Table 2.1 presents a summary of major schemes delivery in 2016-17.

Table 2.1: Summary of major schemes delivery in 2016-17

Construction phase	2016-17 Delivery Plan Commitment	Delivery in 2016-17	Details	RAG
Start of works	4 schemes to start works during 2016-17	8 schemes started	3 schemes on schedule	
			1 scheme ahead of its delivery plan commitment for 2016-17	
			4 schemes brought forward from 2019-20 commitments	
Open for traffic	8 schemes to open for traffic during 2016-17	7 schemes opened for traffic (including one delivered early)	6 schemes on schedule	
			1 scheme brought forward from 2017-18 commitment	
			2 schemes delayed	

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

2.19 In March 2017, we completed an in-depth review of a sample of Highways England's major schemes. The sample consisted of ten major schemes and two "corridors" of multiple schemes. The work focused on identifying how the company is managing risks to delivery of its major schemes and identifying programme-wide risks and opportunities.

2.20 The review identified areas of good practice, but also opportunities for Highways England to improve. For example:

- Highways England has robust processes for managing delivery of individual schemes, but it does not yet have robust processes for managing programmes or portfolios of schemes;
- Highways England is focused on delivering schemes on schedule, but this emphasis may be leading to behaviours which increase risks during delivery – for example, for some schemes in the sample it had procured construction works while design work was still in progress (with mitigating actions in place); and
- Highways England has robust cost estimating processes but a number of the projects in the sample had significant variances in cost, value for money and schedule for a variety of reasons.

2.21 Highways England engaged positively in our review and helped to make sure that it resulted in useful recommendations that it could put into action. It has now developed a draft plan to address the recommendations.

2.22 In January 2017, we visited one of the schemes in the sample – the A21 Tonbridge to Pembury – to see first-hand some of the issues raised.

Major scheme case study – A21 Tonbridge to Pembury

- The A21 Tonbridge to Pembury scheme is widening the route between the M25 and Hastings. This section of the A21 carries 35,000 vehicles per day – significantly higher than its original designed capacity. It also has a high accident frequency rate.
- The solution being delivered by Highways England completes the missing dual carriageway link and provides better flowing (grade-separated) junctions. It also provides improved cycle routes.
- The improvements aim to increase safety, reduce congestion and improve reliability of journey times.
- During our visit to the scheme, Highways England highlighted to us the importance of pre-construction surveying and investigation to help reduce the risk of delays when on site. For example, the sensitive wooded site meant that it was difficult to undertake comprehensive ground investigations before construction. As a result, Highways England had to carry out significant extra work to address environmental concerns with contaminated land and to respond to on-site ground conditions.
- This has had an impact on the scheme's costs and completion date. Despite this, the scheme will be completed this summer and will deliver real benefits to road users.

Highways England has missed its targets on road user satisfaction and network condition

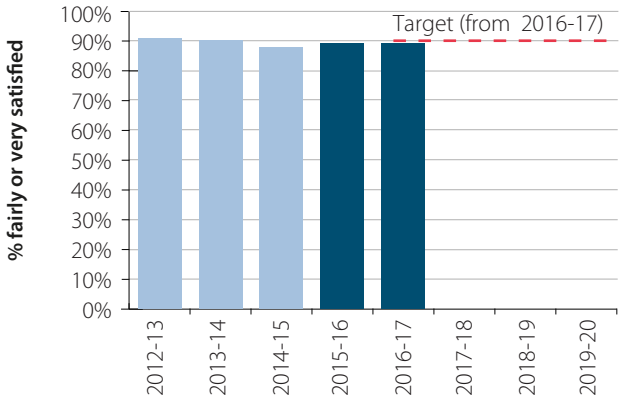
It is putting in place plans to address shortfalls. These and other areas of performance need continued focus to deliver future targets

User satisfaction

2.23 It is important that Highways England delivers a service that meets road users' needs, and maintains high levels of satisfaction. Satisfaction is measured through regular surveys and is a key indicator of how the company is performing for the users of the network.

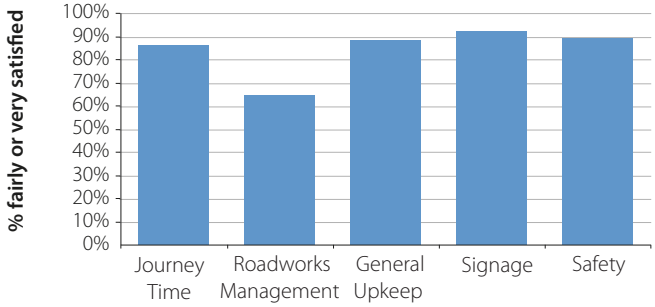
2.24 Road user satisfaction with using the strategic road network was 89.1% in 2016-17. This is below the target of 90%, and also below last year's score of 89.3%.

Figure 2.6: Road user satisfaction, 2012-13 to 2016-17



2.25 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 2.7: Road user satisfaction with different journey elements, 2016-17



2.26 The question about satisfaction with roadworks management is only asked of respondents who experienced roadworks on their most recent trip, and it consistently scored the lowest of the five elements in the satisfaction score. This poses a challenge for Highways England as more investment, and therefore more roadworks, is planned later in the road period.

2.27 We have worked closely with Highways England on a review of how it manages roadworks. This project considered the end-to-end process of how roadworks are planned, communicated and delivered. It looked for areas of internal (to Highways England) and external (from other road authorities or infrastructure providers) best practice that could be applied to further strengthen Highways England's approach. Highways England is considering the recommendations from the report, which we plan to publish alongside our annual benchmarking report later in the year.

2.28 Highways England also focused on this area in 2016-17 and its actions to improve roadworks satisfaction included:

- improving the accuracy of roadworks information on the Traffic England website;
- introducing customer-focused checklists of roadworks for traffic officers;
- performing customer audits of all major project roadworks between January and March 2017; and
- trialling higher speed limits through some roadworks.

2.29 Despite these actions, satisfaction with roadworks fell slightly in 2016-17 from the previous year. This could be caused by a lag between Highways England's actions and their impact on user satisfaction.

2.30 There are other instances where Highways England has used insight from its user surveys to try to improve user satisfaction, like the improvements it has made to variable message signs (see the case study below for more details).

2.31 The company is committed to becoming more customer-focused. For example, it has embedded Customer Service Directors across the business to help deliver its customer service strategy and has taken steps to improve its public correspondence. These are important for improving the overall customer experience, but are less likely to affect the key performance indicator directly.

2.32 Highways England has worked with Transport Focus to understand what its customers want, but it does not currently have a clear understanding of what drives the user satisfaction score, or the expected impact of its actions. Therefore, this key performance indicator is rated 'amber' for Road Period 1. Highways England plans to develop its capability in this area during 2017-18. This should help it target its actions to improve user satisfaction, as part of its wider strategy to improve overall customer service across the organisation. It needs to produce a recovery plan setting out what actions it is taking by when to improve performance compared to the target level of 90%, and maintain this improved level of satisfaction.

Case study: Improving variable message signs

- Highways England has used comments received from the National Road User Satisfaction Survey to identify improvements to its variable message signs (VMS) to provide clearer information to its customers.
- For example on its larger VMS, the company has replaced messages which state that there are 'minor' or 'long' delays with automated estimates of the length of delays. It also now automatically includes place names on VMS so that users can more easily understand where there is disruption on the network.
- The survey shows that VMS has a positive impact on user satisfaction. This is a good example of how Highways England can use insight from user surveys to identify and develop further improvements that benefit its users. It plans to build on this work by:
  - rolling out estimated length of delay to smaller VMS;
  - further improving travel time information – showing journey times to multiple destinations or by multiple routes on one sign;
  - trialling different signage for unconfirmed incidents (for example, where there has been an accident reported, but this has not been confirmed by a traffic officer); and
  - reviewing the amount of time that queue protection speed restrictions remain in place after a queue has cleared.

Previous Signage

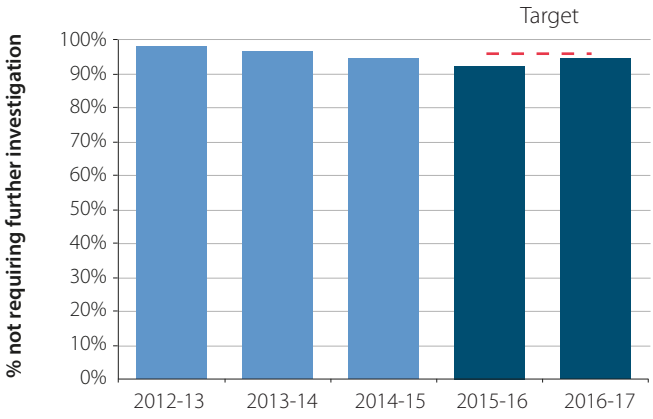
Improved Signage

Network condition

2.33 Highways England must keep its existing assets in a safe and serviceable condition to deliver the service that road users and wider stakeholders require. Network condition is a key performance indicator for the first road period, and measures the percentage of road surface that does not require further investigation for possible maintenance.

2.34 In March 2017, the network condition key performance indicator was at 94.3% against a target of 95%. Although this measure has increased from 92.3% at the start of the year, this means that company has missed its target in both 2015-16 and 2016-17.

Figure 2.8: Network condition, 2012-13 to 2016-17



2.35 During 2016-17, Highways England provided updated information which showed that network condition at the end of 2015-16 was 92.3% - not 95.4% as it had previously reported. The figure was below the target of 95% primarily due to low skid resistance measurements. We reported this in our "Update on Highways England's capital planning and asset management" report in February 2017[7].

2.36 We worked with Highways England to investigate why network condition was below target and why the delay in reporting had occurred. We communicated the findings from our investigation to Highways England.

2.37 Our investigation found that the company was managing any safety impact of lower skid resistance. For example, it provided evidence that it was applying its standards which require mitigations such as putting up warning signs on sites where skid resistance is low and may result in an increased risk of collision.

2.38 As a result of the investigation, Highways England has put in place a range of actions to improve its management of network condition and to improve the quality of its reporting. Its improvement plans include carrying out additional volumes of road renewal works to improve network condition. Our investigation found that Highways England had provided evidence of suitable plans to address the shortfall in network condition and the concerns over timely reporting.

2.39 Our investigation also found that Highways England has recognised the need to report high quality and timely information and has put in place additional assurance processes to achieve this. For example, Highways England's Board now signs off the performance data it publishes each year.

2.40 Our investigation has led to Highways England and ORR achieving an improved understanding of the network condition metric, and Highways England has improved its processes for planning and managing road condition.

2.41 Whilst Highways England has taken forward many of its actions, it did not fully deliver its planned volumes of additional renewals in 2016-17. It has now updated its plan for 2017-18, setting out its trajectory for reaching the target and the additional renewals that it is targeting at the worst performing part of its network. We are carrying out additional monitoring of its network condition improvement plans to make sure they are delivered. Network condition is rated 'amber' for Road Period 1.

7. http://www.orr.gov.uk/highways-monitor/publications/update-on-highways-englands-capital-planning-and-asset-management

Delivering better environmental outcomes

2.42 Highways England has the opportunity to minimise the impact of the strategic road network on the environment, delivering better outcomes for those that live near the network and the population more widely.

2.43 In 2016-17, Highways England has made progress in delivering the commitments set out in the Biodiversity Action Plan, which it published in June 2015. During 2016-17, it has worked closely with environmental stakeholders to develop a biodiversity metric. This was completed ahead of schedule. It has also produced management plans for 15 sites of special scientific interest on its estate and approved around 300 biodiversity schemes through the biodiversity technical working group. This progress means that this key performance indicator is rated as 'green'.

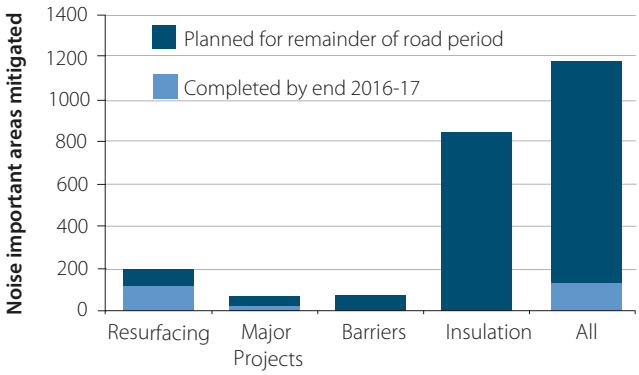
2.44 Highways England has a key performance indicator target to mitigate at least 1,150 noise important areas by 2020. At the end of 2016-17, the company had mitigated 121 noise important areas on its network, leaving a further 1,029 to be addressed in the next three years.

2.45 In addition to resurfacing and noise barriers, Highways England plans to use noise insulation (fitting double glazing to noise affected properties) to mitigate around 850 noise important areas in the remainder of this road period. However, there are uncertainties around the timing and cost of this approach.

2.46 At the end of March 2017, the company began a pilot scheme to fit noise insulation to properties in 100 noise important areas. We consider this key performance indicator target to be at risk until Highways England is able to use the results from this pilot to produce a more robust plan for how it will meet the target.

2.47 The company has also informed us that resurfacing works carried out as part of the smart motorways programme will mitigate fewer noise important areas than originally expected. We have asked the company to provide us with more details of how it will address this shortfall. As a result of these uncertainties, and the large proportion of noise important areas that still have to be mitigated by 2020, we assess this key performance indicator as 'amber' – delivery is at risk for Road Period 1.

Figure 2.9: Noise important areas mitigated by end 2016-17



2.48 In 2015-16, we identified a number of actions Highways England should take to improve its performance in relation to litter on the network. It has responded to these actions in 2016-17. For example, the company published its updated litter strategy[8] in June 2016. It has also provided us with evidence that it is working with stakeholders, such as Keep Britain Tidy, and has increased its focus on clearing litter 'hot-spots' on the network.

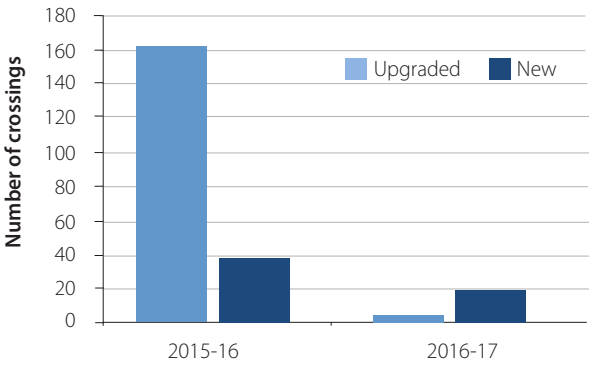
Helping cyclists, walkers and other vulnerable users

2.49 The strategic road network impacts both those that use the network directly, and its neighbouring communities. The design and operation of the network can influence the extent to which vulnerable users, such as cyclists, walkers, equestrians and motorcyclists can cross the network safely.

2.50 Highways England has a key performance indicator to report the number of new and upgraded crossings it delivers. There is no target for this measure. In 2016-17, Highways England delivered 20 new and 7 upgraded crossings on the network. This takes the total number of crossings delivered in the first two years of this road period to 231, of which 59 are new and 172 upgraded. The company also reports that it is on track to meet its commitment to deliver 150 cycling facilities and crossing points on the network in this road period.

2.51 However, Highways England has yet to set out a clear plan for delivering crossings for the rest of this road period. The company also recognises that it has further work to do to improve the consistency and accuracy of the information it reports for this measure. This key performance indicator is therefore rated 'amber' for Road Period 1.

Figure 2.10: Number of new and upgraded crossings, 2015-16 and 2016-17



Case study: Delivering cycling improvements

- The A64 Askham Bryan cycle scheme in Yorkshire has been delivered using the ring-fenced fund for cycling, safety and integration. It provides an improved environment for cycling by upgrading the verge path between Tadcaster and Copmanthorpe and is part of the national cycle route linking Leeds and York.
- The scheme was completed in advance of the Tour de Yorkshire in April 2017, which was expected to increase the use of cycling facilities in the area. It forms part of the cycling network near Askham Bryan College and its 1,100 students. The scheme includes tactile paving to assist visually impaired pedestrians, and eight new crossings which benefit walkers and other vulnerable users.

8. https://www.gov.uk/government/publications/highways-agency-litter-strategy

Highways England has improved its planning of major improvements

It is in the process of proposing a revised baseline plan to government

2.52 Highways England's original delivery plan (2015-2020) committed to starting 112 schemes by end of the first road period. In our annual assessment for 2015-16 we raised concerns that the company needed to do more to demonstrate that its plans for these schemes were robust and deliverable.

2.53 During 2016-17, the company has been reviewing its baseline plan for its 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 (Highways England has called this the "corridor" approach).

2.54 In February 2017, we published our report "Update on Highways England's capital planning and asset management"[9] which set out the progress it had made in developing a more robust capital baseline plan.

2.55 Highways England has progressed its review and is likely to propose changes to its baseline plan, possibly including:

- deferral of schemes where they do not currently demonstrate value for money. These would be reconsidered as options for delivery in the next road period; and
- changes to the schedule of schemes specified in the RIS and / or Delivery Plan based on the corridor approach. A number of schemes may start earlier than originally planned, and others may start later, the majority of which would then begin construction in the next road period.

2.56 Highways England is now reviewing its revised plans with government and is taking them through the formal change control process. Once its revised plans are agreed, we expect them to be made publicly available.

2.57 The company needs to ensure it can deliver this portfolio of enhancements whilst limiting the impact on the performance targets. It has established a capital portfolio management office which is working to establish greater transparency and assurance around delivery of the portfolio. The office has implemented a programme of improvements to produce a draft revised baseline. We have also seen evidence that its work is improving understanding of risks to delivery and driving mitigating actions.

2.58 In our Update Report, we reported that the company's forecast costs for its capital portfolio delivery were approximately £0.8bn higher than its funding for the road period. This difference included over-programming and contingency reserves, as part of the company's approach to managing risks. Following Highways England's review of its plans, the gap between forecast costs and funding is likely to reduce significantly.

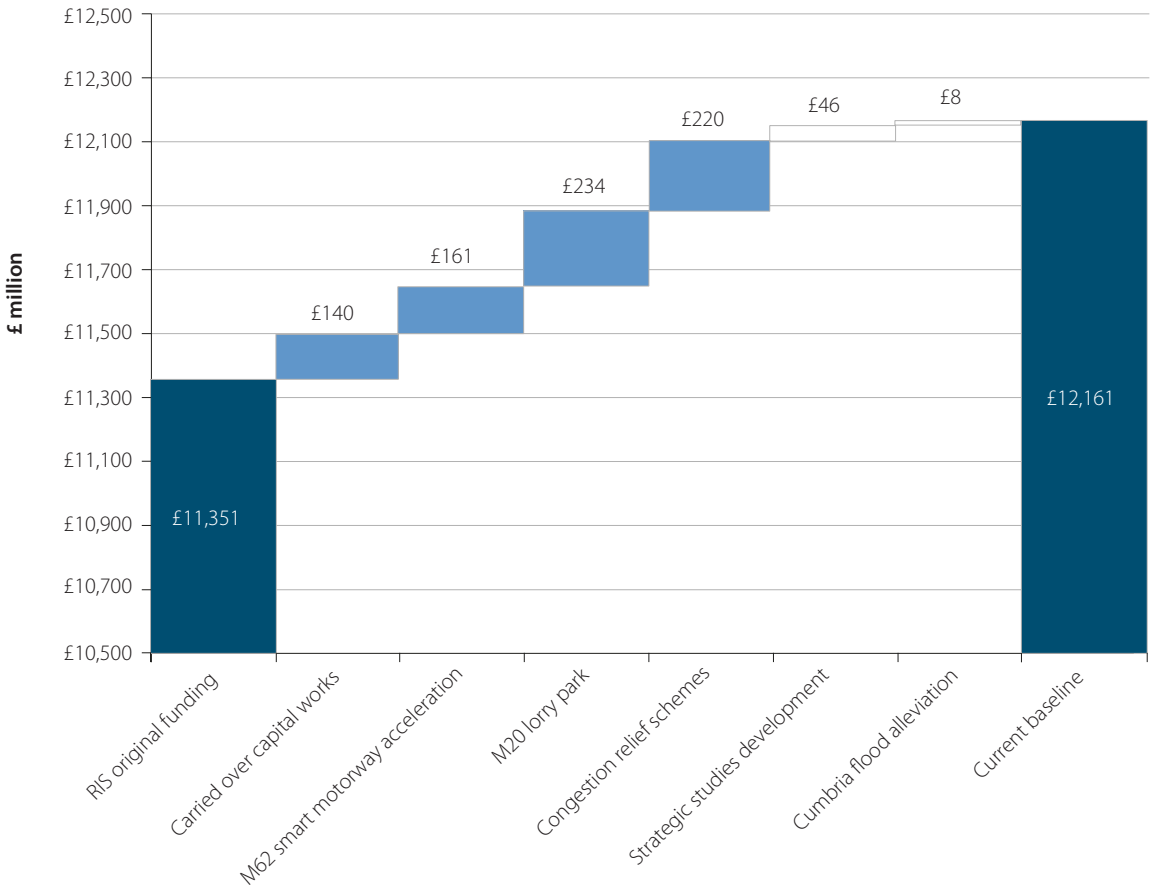
2.59 Highways England will provide further evidence to us on its work to assess delivery risk during summer 2017 and we will report on its progress.

Agreed changes to the RIS

2.60 Highways England must agree all changes to the RIS through the Department for Transport's change control process. Our role is to review the proposed changes and provide advice to the department on their acceptability. We have been keen to promote the importance of a rigorous change control process. The company's engagement with this process has improved during the year, but the rigour of its evidence on the need for, and impact of, change needs continued focus. Figure 2.11 shows those agreed changes which have increased the company's baseline funding to date.

9. http://www.orr.gov.uk/highways-monitor/publications/update-on-highways-englands-capital-planning-and-asset-management

Figure 2.11: Impact of agreed changes to Highways England's funding (£m)



Future delivery in the first road period

2.61 Of the 80 schemes that are planned to start construction between April 2017 and the end of the road period, Highways England reports that 77 are on, or ahead of, schedule and three are delayed. Of the 19 schemes that are planned to open for traffic, 16 are on schedule, two are delayed and one has changed.

Table 2.2: Major scheme delivery – remainder of first road period, construction phase

Phase	2016-17 delivery plan commitment (remainder of RP1)	Progress	RAG
Start of works	80*	77 schemes forecast to start works on schedule or ahead of schedule (subject to changes following revisions to the capital baseline plan)	
		3 schemes forecast to start works behind schedule or at risk	
Open for traffic	19*	16 schemes forecast to open for traffic on schedule or ahead of schedule (subject to changes following revisions to the capital baseline plan)	
		2 schemes forecast to open for traffic behind schedule	
		1 scheme changed (and 1 further scheme to open)	

*Detailed explanation given in Annex D, table D3

Highways England's supply chain

2.62 Building on the work that we carried out last year, we have recently concluded our review of how Highways England is engaging its supply chain to minimise risks to delivery of the RIS.

2.63 The review found that Highways England has made good progress against previous recommendations, for example it has:

- taken measures to improve its understanding of supply chain demand and capacity: improving its modelling of demand, carrying out a survey of supply chain skills and introducing contractual requirements on the number of apprenticeships;
- updated its procurement plan, providing the supply chain with added visibility of its future work; and
- taken action to align its procurement more closely with suppliers' ability to bid, including through its asset delivery contracts and its emerging approach to future major scheme procurement ("routes to market").

2.64 The review also recommended areas for further improvement, including:

- reviewing whether the company can contract with the supply chain further in advance of scheme delivery to allow better resource planning;
- considering ways to smooth the profile of work, both across operational and capital works, and with adjacent industries; and
- doing more to attract skilled people to the sector, for example by showcasing high profile projects.

2.65 We valued the strong engagement of both Highways England and members of its supply chain in carrying out this review. Highways England has accepted the recommendations and is now developing its plans to address them.

Highways England has further work to do to improve its asset management

It must demonstrate that it is efficiently planning and delivering the right maintenance and renewals work to keep its network in good condition

2.66 Highways England is developing improved maintenance and renewals planning processes, which it will need to embed. It has reviewed its renewals reporting and identified the need to improve the assurance of its data.

2.67 We completed an in-depth review into Highways England's asset management delivery for pavement and structures in March 2017. The review focused on understanding whether Highways England was managing these assets to deliver its performance outcomes safely, sustainably and efficiently.

2.68 The review identified some areas of good practice. For example, it found that Highways England's contractors have a well developed knowledge of the network and a good understanding of the need to maintain the safety of road users and road workers. It also identified a number of opportunities for improvement. For example, it found that the company:

- needs to demonstrate a clear line of sight between its maintenance and renewals plans and its performance outcomes (such as network condition);
- should consider developing a more robust approach to planning, delivering and reporting renewals volumes;
- should consider developing improved strategic oversight of regional plans to balance risk across its network and minimise changes to budget allocations; and
- should consider the potential benefits of an independent assurance process to satisfy itself that performance, risk and costs are being reported accurately.

2.69 Highways England engaged with the review constructively and is now developing a plan to respond to its recommendations.

2.70 In 2016-17, Highways England continued to face challenges in delivering its renewals work in the most efficient way. During the year, it again spent significantly more on renewals in the final quarter (40% of annual expenditure), with a particular spike in March 2017. This is likely to lead to inefficiency in the delivery of renewals because poor weather means that supply chain costs in winter are higher than in summer. Also, road surfaces that are laid in cold winter months are unlikely to last as long, therefore increasing whole life costs.

2.71 Highways England has delivered significantly greater volumes of renewals of key asset types than it planned at the start of the year. This may reflect a lack of robustness in the original volume plans - which would explain how this was achieved while only spending 4% above budget.

Figure 2.12: Monthly spend on renewals, 2015-16 and 2016-17

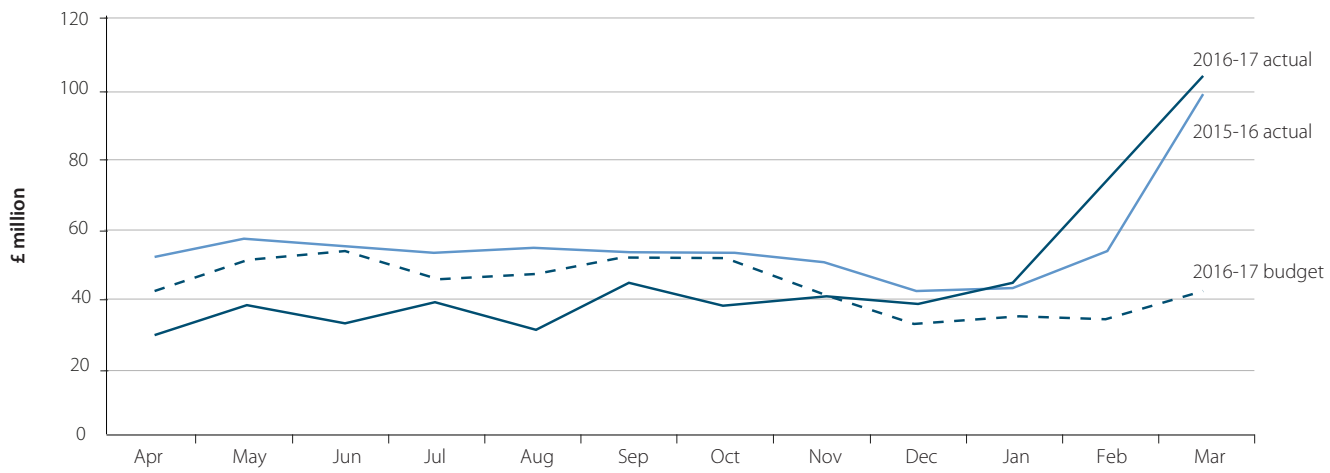
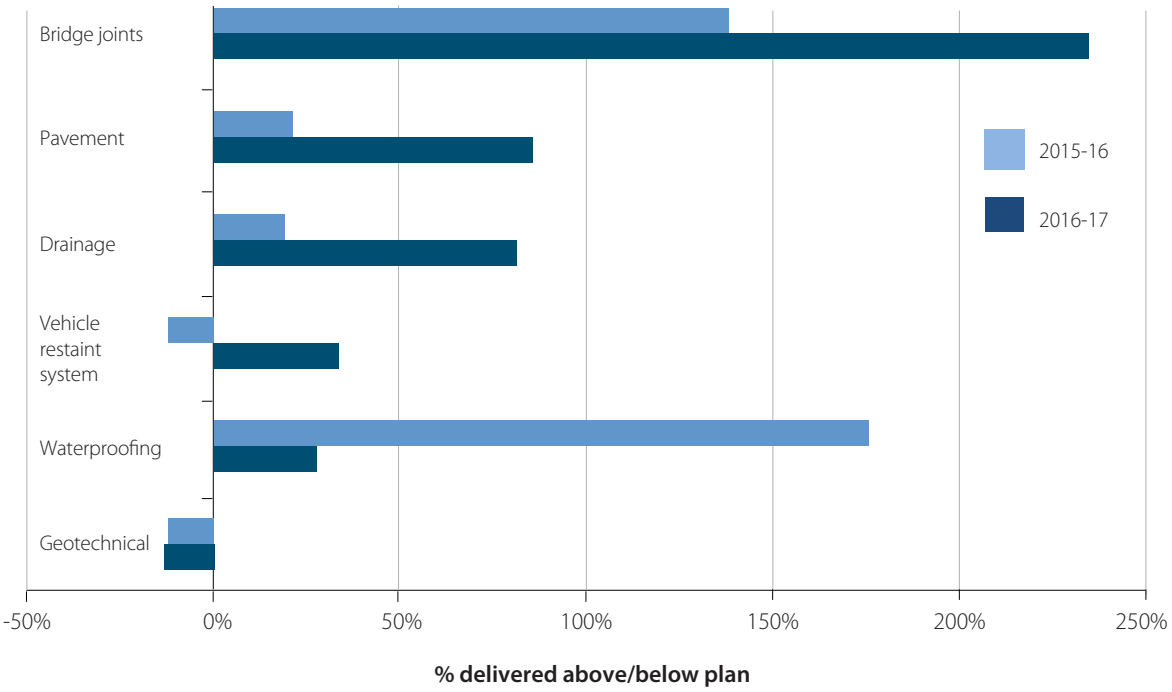
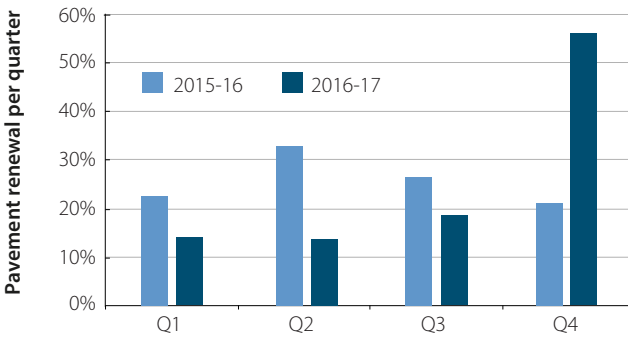


Figure 2.13: Volumes of renewals delivered compared to plan, 2015-16 and 2016-17[10]



2.72 The profile of volumes delivered compared to plan also shows a large increase in the final quarter of the year. Figure 2.14 shows the volume of pavement renewals in each quarter of 2016-17 as an example of this. The profiles for many other asset categories show a similar trend.

Figure 2.14: Volume of pavement renewals delivered per quarter, 2015-16 and 2016-17



2.73 The uneven monthly renewals profile demonstrates that Highways England has more to do to move away from an annual planning and delivery approach and realise the full benefits of its five-year funding settlement. It also indicates that the company needs to improve its capability in planning, contract management and forecasting for the remainder of the road period. The company has estimated that delivering a smoother monthly renewals profile could deliver efficiency savings of around £30m in Road Period 1 from reducing lost time due to adverse weather and from lower contractor costs.

2.74 Highways England recognises that it can make greater use of the funding flexibility provided by roads reform to improve efficiency through the smoothing of its monthly profile of work. For 2017-18, Highways England has again set a flatter budget profile and believes its gradual rollout of the Asset Delivery model, which sees it taking greater direct control of renewals, will help it deliver in line with the plan. In future, we would like the company to examine, with the Department for Transport, what cultural and financial control barriers may still exist to the company delivering renewals efficiently across the year.

10. Figure 2.13 reports a subset of renewals volumes

Priorities for 2017-18

2.75 During 2016-17, Highways England has delivered its performance requirements in a number of areas and has taken steps to improve its capital baseline plan. But performance and plans in a number of areas can improve and there will need to be particular focus on making sure that plans for RIS2 are robust. In 2017-18, Highways England should focus on the following.

Performance improvements

2.76 Highways England should make sure that it delivers its pavement condition improvement plan and brings network condition back to the target level. It should ensure that it is implementing plans which are targeted at improving user satisfaction. It will also need to deliver its pilot study to inform its plans for noise important areas.

Capital baseline delivery

2.77 Highways England must now finalise its revised capital plan and agree it with government. It must take forward its review of deliverability and affordability and continue to take action to manage costs of the plan both in the first road period and beyond.

2.78 The company should also make sure it delivers on its plans to respond to the recommendations of our in-depth review of its major scheme delivery.

Improving asset management

2.79 Highways England is implementing plans to improve its asset management capability and is taking forwards workstreams to address the issues identified in our in-depth review of its asset maintenance and renewals. It must deliver these plans and make progress in improving the profile of its renewals volumes and expenditure.

Data quality and assurance

2.80 To make informed assessments about Highways England's performance we need to have confidence that the information contained within the company's annual monitoring reporting statements is accurate and reliable. As explained within this report, we had concerns about the quality of some of the information within the 2015-16 statements, in particular, the network condition key performance indicator. Last year's statements also did not include sign-off by Highways England's Board, as had previously been agreed with the company.

2.81 Highways England has developed improvement plans for its reporting and management of network condition. It has also made improvements to the assurance of the 2016-17 monitoring reporting statements, including Board sign-off. We remain concerned about aspects of Highways England's performance reporting, in particular that the published statements do not include some statements that we have required, including renewals unit costs. We will look to Highways England's Board to continue to focus on ensuring the quality of reporting of the company's performance as specified in our monitoring reporting guidelines.

Planning for RIS2

2.82 Our focus will increasingly turn towards the development of the second Road Investment Strategy. A key area for us is ensuring that the strategy is supported by a robust evidence base. The key priority for Highways England in 2017-18 will be the production of the SRN Initial Report and the stakeholder engagement, research and analysis required to complete it.

Our monitoring

2.83 We will continue to apply a risk-based approach to our monitoring and will focus our activity in priority areas including those identified above. Our other priorities for 2017-18 are:

- reviewing Highways England's "asset delivery" approach to managing its assets. Under this approach, it takes greater ownership of its asset management plans. The asset delivery model is being rolled out as current asset service contracts reach their end;
- reviewing Highways England's use of its ring-fenced investment funds through an in-depth review; and
- embedding a robust put proportionate approach to monitoring licence compliance.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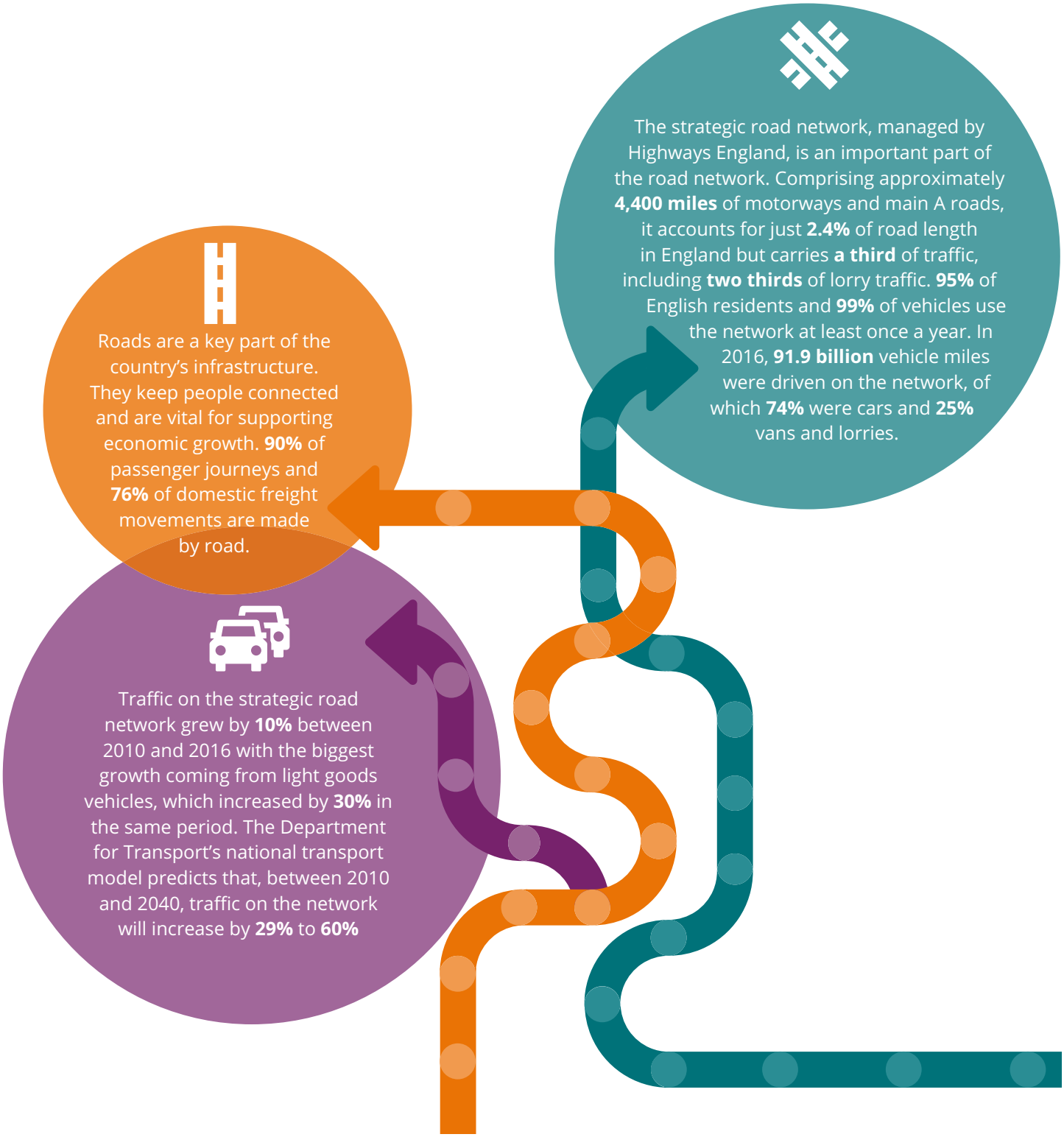
ANNEX A: BACKGROUND AND CONTEXT

The strategic road network



Highways England is the government-owned company which manages the motorways and main A roads in England (the strategic road network). In 2014, government published its Road Investment Strategy (RIS). This specified a set of outcomes and investments that Highways England is required to deliver over the first road period, from April 2015 to March 2020 (Road Period 1).

The Office of Rail and Road (ORR) independently monitors Highways England's performance against these requirements.

Our annual assessment of Highways England provides transparency to stakeholders on the company's performance and delivery against:

- the RIS performance specification;
- the RIS investment plan; and
- its licence conditions.

Our assessment recognises that Highways England is in the process of implementing a significant change programme as it adjusts to its new role as a government-owned company.

How we measure Highways England's performance

We measure Highways England's performance against the outcomes in the RIS Performance Specification. This sets out eight outcomes areas[11], each with one or more key performance indicators (KPIs) as well as a number of performance indicators (PIs).

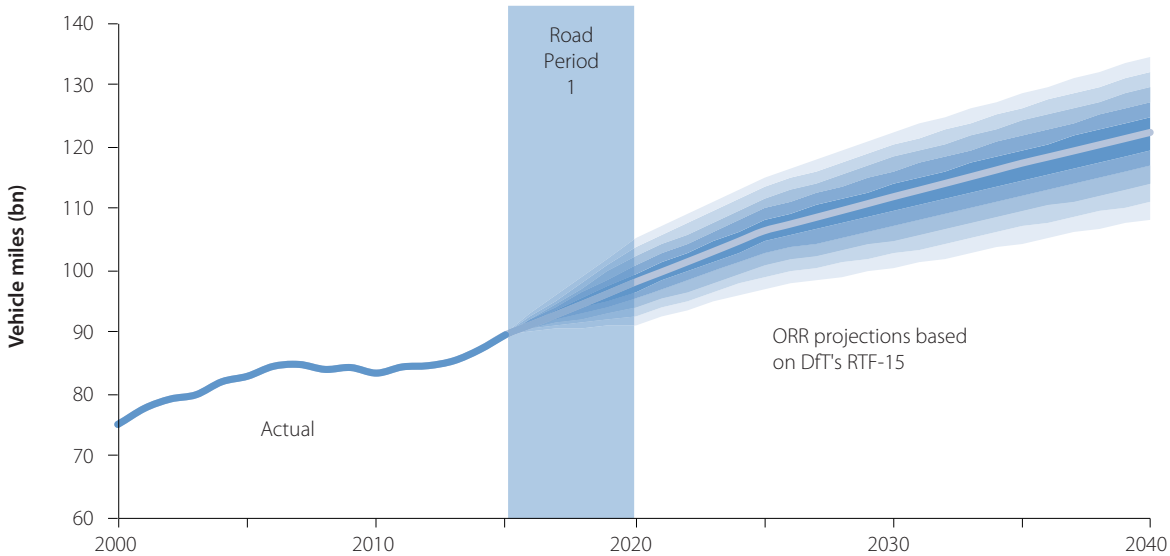
Traffic growth

Traffic is at record levels, and continuing to grow. Following a pause during the recession, traffic on the strategic road network has grown by over 10% between 2010 and 2016 – double the growth rate on local roads.

Despite the challenge presented by traffic growth, Highways England is continuing to manage, operate and deliver major improvements to its 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. This presents a challenge to Highways England in delivering its commitments in the first road period and the company must manage the impacts on its outcome.

Figure A1: Vehicle miles travelled on the strategic road network[12]



11. 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

12. The projected traffic presented in this chart is based on the high and low scenarios from the Department for Transport's road traffic forecasts, 2015: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/411471/road-traffic-forecasts-2015.pdf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ANNEX B: KEY PERFORMANCE INDICATORS

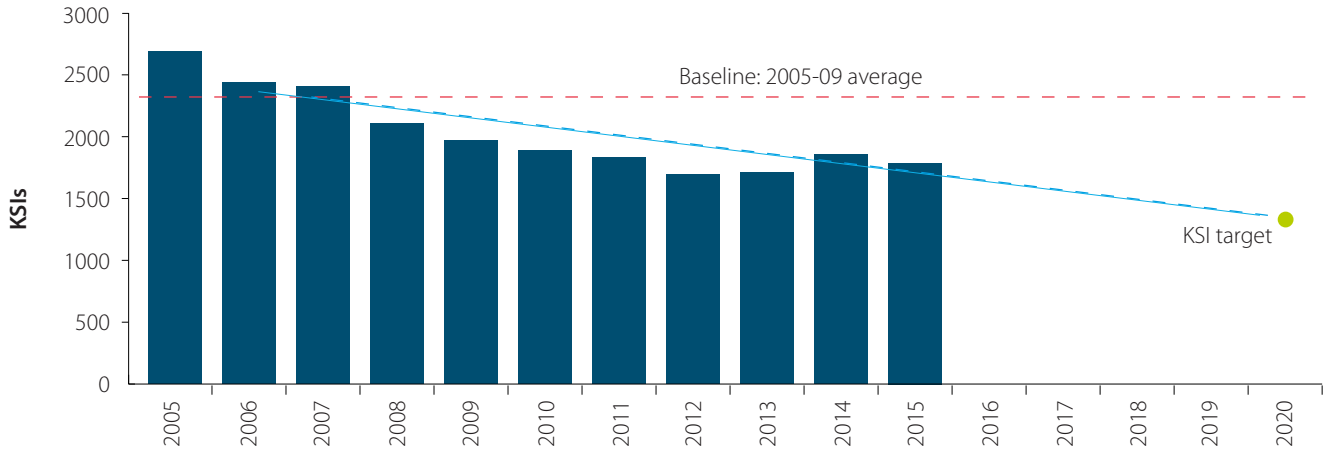
Outcome: Making the network safer

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	
2016-17 status: Awaiting data	**RIS1 status: Amber**

The Department for Transport has delayed publication of its road casualty statistics until September 2017. Therefore, we are unable to show performance against this key performance indicator in 2016. The chart below shows road casualty data up to 2015, when there were 1,784 KSIs on the strategic road network, including 226 deaths.

We are aware that there has been a change in the way that police forces record road casualty data (discussed in chapter 2 of this report). The department will publish more detailed analysis on this change later in 2017. We will work closely with the department and Highways England to understand the implications of this work and how it impacts on Highways England's ability to meet its safety key performance indicator for RIS1.

Figure B1: Killed or serious injured on the SRN, 2005-2015

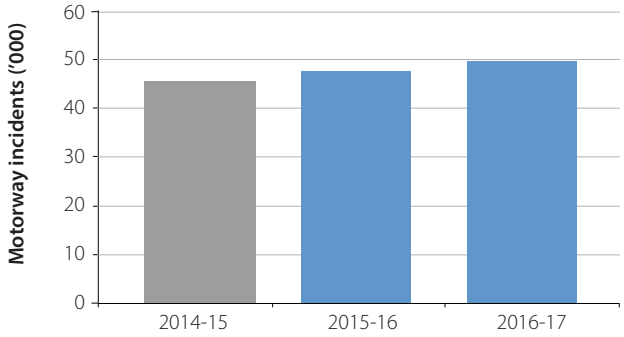


Performance indicators

Casualty numbers for all-purpose trunk roads: The Department for Transport's road casualty statistics are used to monitor this performance indicator. Therefore, figures for 2016 are not yet available. In 2015, there were 7,988 casualties (of all severities) recorded on Highways England's A-roads.

Incident numbers on motorways: In 2016, there were 49,130 incidents recorded on Highways England's motorway network. This is 5.5% higher than the total recorded in the previous year. The growth of traffic on the network is likely to have contributed, at least in part, to this increase.

Figure B2: Motorway incidents, 2014-15 to 2016-17



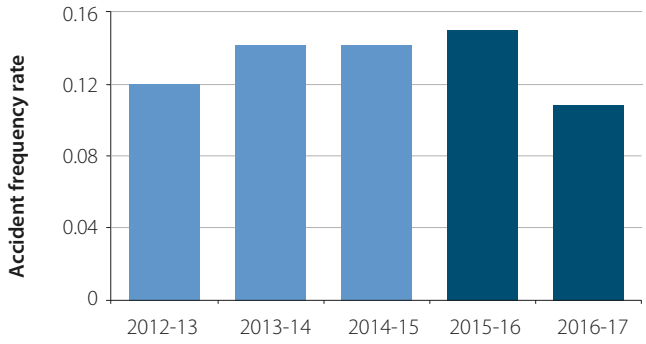
Road safety investigations: In 2016-17, Highways England completed work to assess the safety of its network, based on a star rating system. It expects to meet its target of achieving 90% of travel on 3-star roads by 2020.

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

Accident frequency rates for both Highways England and supply chain staff have improved in 2016-17. However, they remain above Highways England's internal targets.

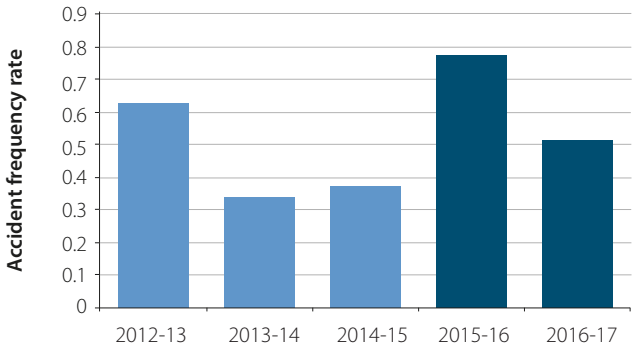
For construction and maintenance workers in Highways England's supply chain, the accident frequency rate fell from 0.15 in 2015-16 to 0.11 in 2016-17.

Figure B3: Accident frequency rate for construction and maintenance workers, 2012-13 to 2016-17



In Highways England's customer operations directorate – which covers the Traffic Office Service – the accident frequency rate fell from 0.77 in 2015-16 to 0.51 in 2016-17.

Figure B4: Accident frequency rate for customer operations directorate, 2012-13 to 2016-17



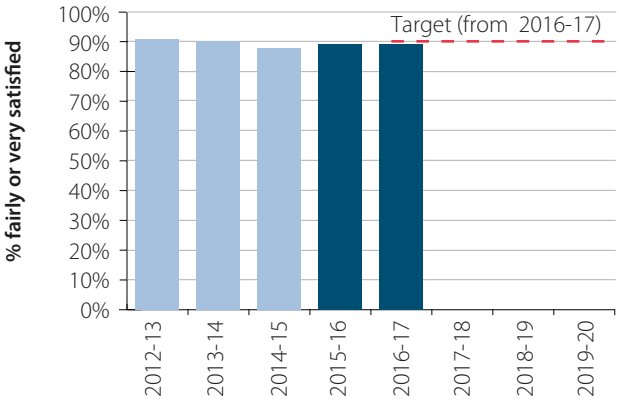
Accident frequency rates for Highways England's customer operations directorate include a relatively small number of workers and figures are therefore subject to considerable fluctuation between years.

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	
2016-17 status: Amber	**RIS1 status: Amber**

Overall user satisfaction was 89.1% in 2016-17, below the target of 90% and lower than the 89.3% recorded in 2015-16.

Figure B5: User satisfaction, 2012-13 to 2016-17



Performance indicators

Satisfaction with the journey elements in NRUSS: The satisfaction scores come from the National Road Users Satisfaction Survey (NRUSS). Respondents are asked about their satisfaction with five elements of their most recent trip on the SRN:

- journey times;
- roadworks management;
- general upkeep;
- signage; and
- safety.

Figure B6 shows the satisfaction scores for these journey elements since 2012-13. Satisfaction with roadworks management is consistently lower than the other journey elements. Of the other four elements, journey time satisfaction has consistently been below 90%, while satisfaction with general upkeep, signage and safety has been above, or close to, 90%.

This pattern was repeated in 2016-17. Satisfaction with signage and safety was above 90% but satisfaction with journey times, roadworks management and general upkeep was below 90%.

Figure B6: Satisfaction with journey elements from 2012-13 to 2016-17

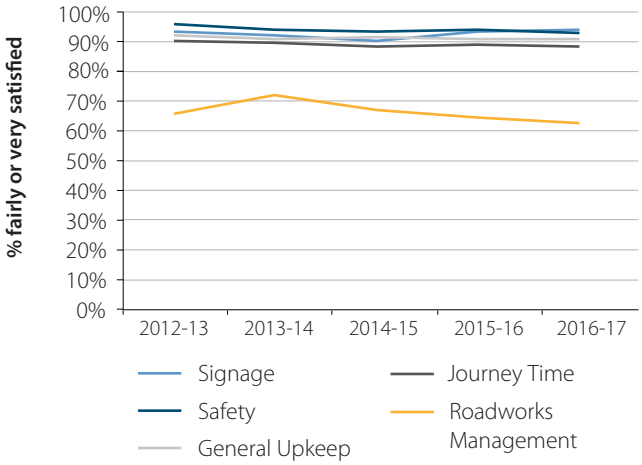


Table B1 shows changes in satisfaction with the five journey elements from 2015-16 to 2016-17 and estimates of how they affected the overall score. The biggest individual change was in roadworks management but this has a smaller effect on the overall score because only respondents that experienced roadworks on their most recent trip answer that question.

Table B1: Changes in user satisfaction, 2015-16 to 2016-17

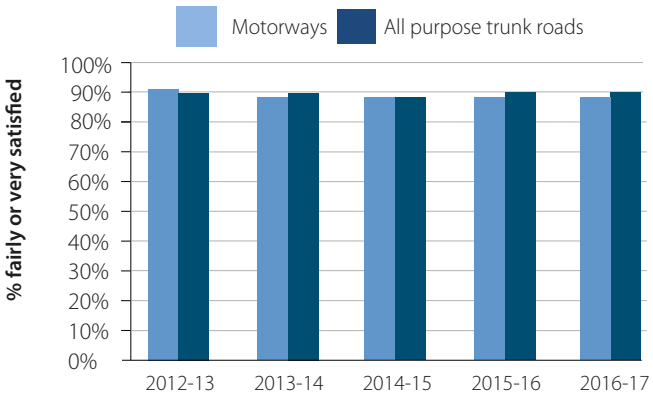
Journey elements	Change 2015-16 to 2016-17	Estimated impact on overall satisfaction
Journey time	-0.7%	-0.2%
Roadworks	-2.2%	-0.1%
General upkeep	+0.3%	+0.1%
Signage	+0.6%	+0.1%
Safety	-0.8%	-0.2%

NRUSS scores by location: The map in figure B7 shows a regional breakdown of NRUSS satisfaction scores. Satisfaction was above 90% in the East and the South West, but was below 90% in all of the other regions. The North West had the lowest satisfaction for the fourth consecutive year.

Figure B7: User satisfaction by region, 2016-17

NRUSS scores for motorways and all purpose trunk roads: Satisfaction with all purpose trunk roads increased 0.8 percentage points to 90.3% in 2016-17. But satisfaction on motorways fell 1 percentage point to 88.1%.

Figure B8: User satisfaction with motorways and all purpose trunk roads, 2012-13 to 2016-17



Outcome: Supporting the smooth flow of traffic

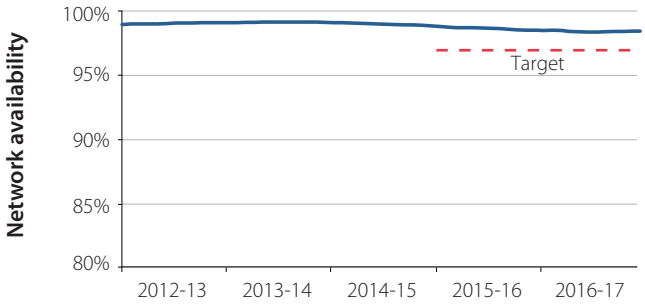
Key performance indicator: Highways England must maximise lane availability so that it does not fall below 97% in any rolling year	
2016-17 status: Green	**RIS1 status: Green**

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

At March 2017, lane availability on the strategic road network was 98.4%, above the target of 97%, and similar to performance in 2015-16.

Highways England forecasts that availability will remain above 97% for the remainder of the road period

Figure B9: Network availability by rolling year, 2012-13 to 2016-17

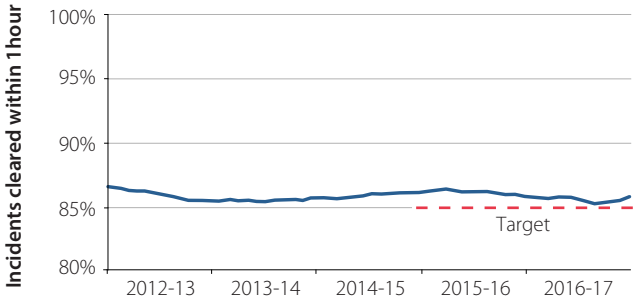


Key performance indicator: Highways England must clear at least 85% of incidents on the motorways within one hour	
2016-17 status: Green	**RIS1 status: Green**

In the rolling year to March 2016, Highways England cleared 85.9% of motorway incident within an hour. This is similar to last year's performance, and above the target of 85%.

This target will become increasingly challenging if traffic growth causes the number of incidents on the network to increase over time. Highways England has undertaken further work during 2016-17 to better understand the reasons for incidents missing the one hour target so it can best target its interventions to ensure that performance remains above target.

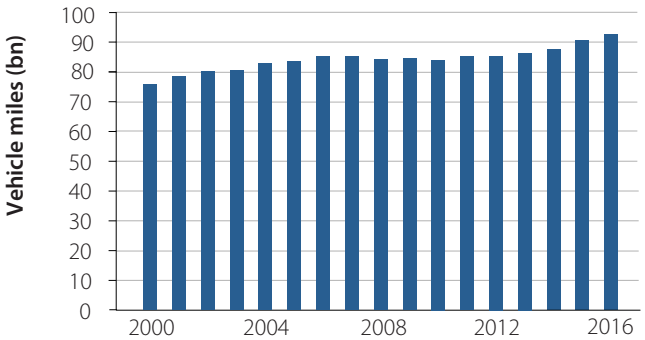
Figure B10: Incident management, 2012-13 to 2016-17



Performance indicators

Traffic on the strategic road network: The volume of traffic on the strategic road network is at record levels, and increasing. In 2016, 91.9bn vehicle miles were travelled on the network, 2.5% more than in 2015. Since a pause in traffic growth during the economic downturn, volumes on the strategic road network have increased in each of the past seven years.

Figure B11: Traffic on the strategic road network, 2000 to 2016



Planning time index: The planning time index measures the additional time that road users would have to allow for their journey to arrive on time in 19 out of 20 journeys. It is measured by taking the ratio of the 95th percentile journey time to the free-flow journey time. In 2016-17, the planning time index was 1.68, which is higher than was recorded in 2015-16 (1.66). This indicates that the most delayed journeys on the network were worse in 2016-17 than in 2015-16.

Acceptable journeys: This performance indicator measures the percentage of journeys that are above 75% of free-flowing speed. In 2016-17, 83.5% of journeys on the strategic road network were above 75% of the free-flow speed. This is slightly less than in the previous year, when 83.6% of journeys were above 75% of free-flow speed.

Average speed: In 2016-17, the average speed for all journeys on the strategic road network was 59.5 miles per hour. This is faster than in 2015-16, when the average speed was 59.3 miles per hour.

Outcome: Encouraging economic growth

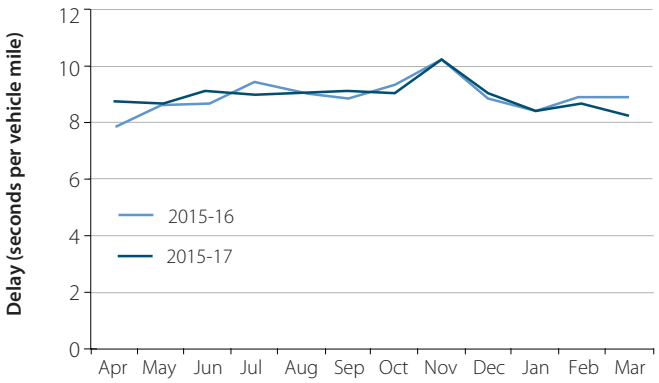
Key performance indicator: Highways England must report on average delay – time lost per vehicle mile	
2016-17 status: Amber	**RIS1 status: Amber**

Average delay on the network is used to measure Highways England's impact on economic growth. There is no target associated with this indicator.

In the rolling year to March 2017, average delay was 9 seconds per vehicle mile. This is equivalent to a trip of 100 miles taking 15 minutes longer than if the network has no congestion.

Delay on the network in the latest year is slightly higher than in 2015-16, when a figure of 8.9 seconds per vehicle mile was recorded. The monthly pattern of delay between the two years was very similar, as shown in figure B12.

Figure B12: Monthly delay in seconds per vehicle mile, 2015-16 and 2016-17



Increasing traffic on the network, and delivery of the capital investment programme, present a challenge to managing delay throughout the remainder of this road period. During 2016-17, Highways England has continued to build a better understanding of the causes of delay on the network, and how its interventions can minimise the impact on road users.

Performance indicators

Average delay on gateway routes: Delay is also measured on gateway routes – a subset of the strategic road network which includes connections linking major population centres, or business and manufacturing sites, with the most important ports and airports, and rail freight services. Delay on gateway routes has also remained fairly constant since last year, although slightly lower than overall delay, at 8.2 seconds per vehicle mile.

Responding to formal planning applications: Highways England's role as a major statutory consultee is monitored by the percentage of planning applications that it responds to within 21 days. In 2016-17, the company's performance was 99.8%; above the company's internal target of 99%.

Spend on small and medium sized enterprises: In 2016-17, Highways England estimates that its expenditure on goods and services from small and medium sized businesses was 25.5%; above the government target of 25%.

Outcome: Delivering better environmental outcomes

Key performance indicator: Highways England must mitigate at least 1,150 noise important areas over the first road period	
2016-17 status: Amber	**RIS1 status: Amber**

In 2016-17, Highways England mitigated traffic noise from the strategic road network in 73 noise important areas[13], bringing the total for the first road period to 121. Highways England must mitigate a further 1,029 in the final three years of the road period to meet the target of 1,150.

Figure B13: Cumulative number of noise important areas mitigated

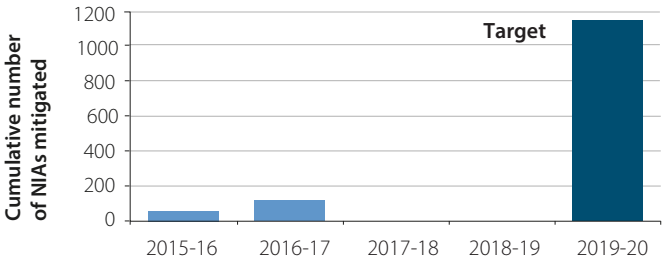


Table B2 summarises the interventions (delivered and planned) that Highways England will use to meet this target during the first road period. This shows that insulation (fitting double glazing to noise affected properties) is expected to account for the majority of noise important areas.

Highways England awarded a contract to deliver this work in March 2017. As part of this, an initial pilot study is expected to mitigate approximately 100 noise important areas during 2017-18. We consider this target to be at risk until Highways England is able to use the results from this pilot to produce a more robust plan for how it will meet the target.

The company has recently informed us that resurfacing works carried out as part of the smart motorways programme will mitigate fewer noise important areas than originally expected. We will work with the company to understand how this affects its plans to deliver the target.

Table B2: Noise important areas mitigated, and forecast for RP1

	Complete	Forecast	Total
Resurfacing	113	84	197
Major projects	7	52	59
Barriers*	1	74	75
Insulation*	-	850	850
Total	121	1,060	1,181

*Delivered through environment ring-fenced funds

13. Areas containing residents exposed to the highest noise levels, as designated by Defra as part of the noise action planning process

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	
2016-17 status: Green	**RIS1 status: Green**

In 2016-17, Highways England has made progress in delivering the commitments set out in the Biodiversity Action Plan, which it published in June 2015. Key areas of progress during the year have included:

Developing a biodiversity metric: The company has developed a biodiversity metric ahead of schedule. It has worked closely with environmental stakeholders to ensure that the metric is appropriate and draws on best practice. We will now monitor progress as the metric is introduced in 2017-18.

Management plans for sites of special scientific interest (SSSIs): Highways England has committed to producing management plans for the 40 largest sites of SSSIs on its estate. At the end of 2016-17, the company had successfully put the first 15 of these in place.

Planning of biodiversity projects: Around 300 schemes to deliver biodiversity improvements on and around the network have been approved by the biodiversity technical working group, which Natural England also sits on. These schemes spent £850,000 in 2016-17 and delivery is expected to accelerate in 2017-18.

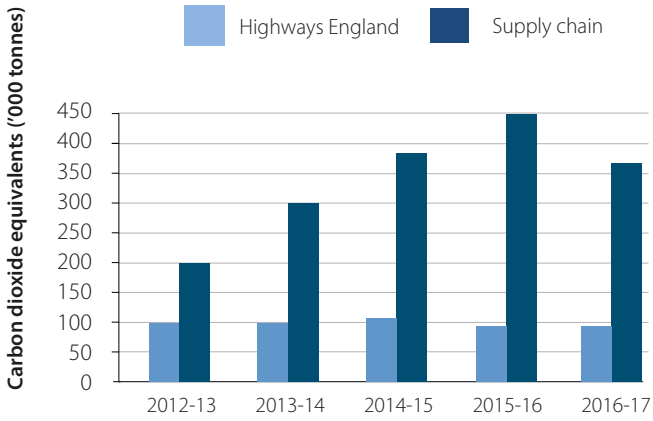
Performance indicators

Air quality pilot studies: In 2016-17, Highways England began work on four air quality pilot studies, bringing the total in this road period to ten. The conclusions from these pilots will help inform how the ring-fenced funds for air quality will be used.

Carbon dioxide (Highways England's activities): In 2016-17, Highways England reported that its activities resulted in the emission of 89,346 tonnes of carbon dioxide equivalents. This is 6% lower than the total recorded in 2015-16.

Carbon dioxide (supply chain): In 2016-17, emissions from Highways England's supply chain were estimated at 361,987 tonnes of carbon dioxide equivalents, which is 11% lower than recorded in 2015-16. However, the latest figures are still subject to validation and may be subject to change as they are finalised.

Figure B14: Carbon dioxide emissions for Highways England and supply chain, 2012-13 to 2016-17



Number of flooding hotspots and culverts mitigated: In 2016-17, Highways England mitigated 61 flooding hotspots and one culvert. The company has worked to improve the quality of data used to report progress against this performance indicator during the year. This has resulted in the total number of flooding hotspots and culverts that were reported as mitigated during 2015-16 being revised down from 124 to 75. Despite this reduction in reported mitigations, it is positive that Highways England is reviewing data quality and putting in more robust systems for monitoring its assets.

Number of outfalls and soakaways mitigated: Outfalls and soakaways are parts of the drainage system on the strategic road network which discharge to a watercourse, or enable water to soak into the ground. In 2016-17, Highways England mitigated five very high or high risk outfalls and no soakaways. Four of the outfalls were delivered through major projects that completed during the year. This represents an improvement from 2015-16, when no outfalls were mitigated.

Table B3: summary of environmental performance indicators, 2015-16 and 2016-17

	2015-16	2016-17
Air quality pilot studies commissioned	6	4
Carbon dioxide equivalents – Highways England's activities (tonnes)	95,373	89,346
Carbon dioxide equivalents – supply chain activities (tonnes)	406,523	361,987
Flooding hotspots and culverts mitigated	75	62
Outfalls and soakaways mitigated	0	5

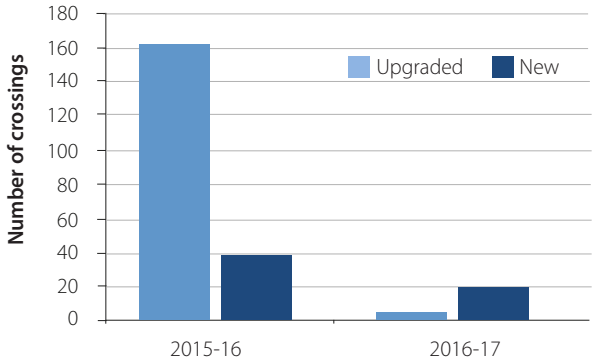
Outcome: Helping cyclists, walkers and other vulnerable users

Key performance indicator: Highways England must report on the number of new and upgraded crossings	
2016-17 status: Amber	**RIS1 status: Amber**

In 2016-17, Highways England delivered 20 new and seven upgraded crossings for cyclists, walkers and vulnerable users. The company has now delivered 59 new and 172 upgraded crossings in the first road period (figure B15).

There is no target for this indicator. However, Highways England has yet to set out a clear plan for delivering new and upgraded crossings for the rest of this road period. Highways England also recognises that it has further work to do to improve the consistency and accuracy of the information it reports for this measure.

Figure B15: New and upgraded crossings, 2015-16 and 2016-17



Performance indicators

Identification and delivery of the annual cycling programme: As part of its cycling programme, Highways England is committed to delivering 150 cycling schemes in the first road period. In 2016-17 it has delivered 32, bringing the total in the past two years to 57. Highways England reports that it is on track to meet its commitment. However, we would like to see greater clarity around its plans for delivery of schemes in future years.

Vulnerable user casualties: Highways England must also report on the number of vulnerable road user casualties, of all severities, on the network as a performance indicator. As highlighted previously, road casualty data for 2016 is not yet available. Figures from 2014 and 2015 are shown below for reference.

Table B4: Vulnerable user casualties (all severities), 2014 and 2015

	2014	2015
Motorcyclists	917	849
Pedal cyclists	179	153
Pedestrians	182	158

Outcome: Achieving real efficiency

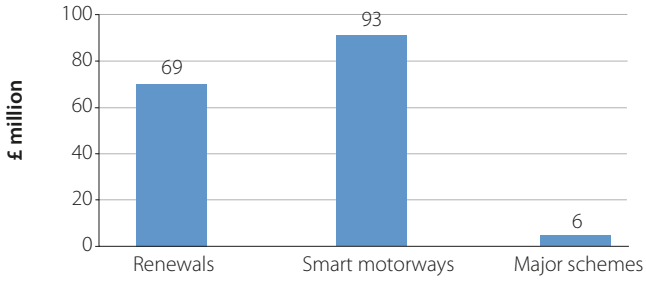
Key performance indicator: Highways England must deliver total capital expenditure savings of at least £1.212bn over the first road period.

2016-17 status: Green

RIS1 status: Amber

In the first two years of Road Period 1, Highways England's cumulative capital expenditure was £6.1bn. The company has reported £169m of cumulative efficiency improvements to its capital programme over this period. This exceeds its internal target by £30m and represents 14% of the RIS target.

Figure B16: Efficiency by type of capital scheme



Highways England has reported renewals efficiencies from a range of initiatives. These include reducing traffic management and other operational costs by aligning renewals schemes with major projects, contractual changes including more efficient approaches to applying road markings, and more collaborative working with the supply chain.

Efficiencies on the company's Smart Motorway Programme include reducing overheads through reducing the time taken to deliver schemes, design standardisation (for example, of overhead gantries) and other process improvements.

Highways England published its *Capital Efficiency Delivery Plan*[14] during the year. This document summarises the company's processes to deliver efficiency improvements and the related controls designed to ensure that it meets the key performance indicator.

Highways England has developed its evidence supporting reported efficiencies. However, the company needs to do more to strengthen its reporting of renewals unit costs and the top-down evidence of delivering work to plan.

Performance indicators

Highways England measures its performance against its Cost Performance Indicator and Schedule Performance Indicator, which measure whether the capital programme is being delivered in a timely and efficient manner. These indicators are close to 1, which shows that its capital programme is broadly on track in terms of cost and schedule compared to the delivery plan.

Table B5: Cost performance indicator (CPI) & Schedule performance indicator (SPI)

	2016-17
Cost performance indicator	0.99
Schedule performance indicator	0.97

Our analysis of financial performance and efficiency is set out in Annex C.

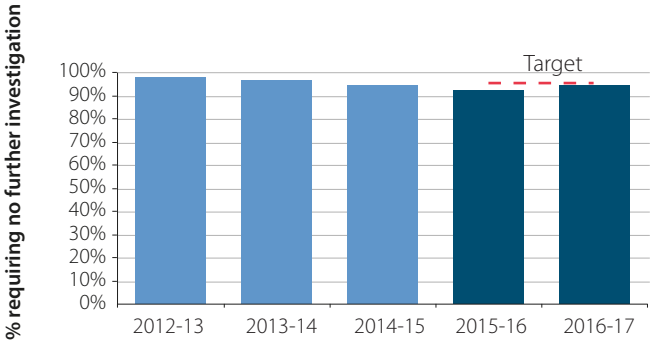
14. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/600019/N160284_HE_Capital_Efficiency_Delivery_Plan.pdf.

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	
2016-17 status: Amber	**RIS1 status: Amber**

In March 2017, the percentage of pavement (road) that did not require further investigation for possible maintenance was 94.3%. This measure has improved from 92.3% in 2015-16 but it remains below the target of 95%.

Figure B17: Pavement condition, 2012-13 to 2016-17



Highways England has provided evidence that it is taking appropriate action to manage any safety implications of lower road condition.

It has developed, and is implementing, a range of actions aimed at improving its management of network condition. This includes a plan to deliver additional road renewal volumes to improve the condition of the network and achieve its target.

Whilst Highways England has taken forwards many of its actions, it did not deliver its planned volumes of additional renewals in 2016-17. It has now updated its plan for 2017-18, setting out its trajectory for reaching the target and the additional renewals that it is targeting at the worst performing part of its network. We are carrying out increased monitoring to ensure these plans are delivered.

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 is improving its structures inventory information, which is now 98.1% complete. This is an improvement of 0.3 percentage points on the position in 2015-16 (97.8%). The company continues to report that the overall condition of its structures assets is good, with a high average structural condition score.

Geotechnical assets: Highways England reports that 96.8% of its geotechnical assets do not require (and are not recommended for) remedial interventions at the end of 2016-17. This is 0.2 percentage points higher than the position in 2015-16 (96.6%).

Drainage assets: The percentage of Highways England's drainage asset for which it has inventory data coverage increased to 88% in 2016-17, from 87% in the previous year. The percentage of the network with drainage condition data also increased, to 31% in 2016-17, up from 27% in 2015-16.

Technology asset availability: At the end of 2016-17, Highways England's technology metrics were all reported to be above target with its roadside technology at 98.8% availability, up from 98.7% in 2015-16.

Table B6: Summary of asset performance indicators, 2015-16 and 2016-17

	2015-16	2016-17
Structures inventory information	97.8%	98.1%
Geotechnical - intervention not required	96.6%	96.8%
Drainage inventory coverage	87%	88%
Drainage condition data coverage	27%	31%
Technology asset availability	98.7%	98.8%

The RIS Performance Specification requires that Highways England develops new condition metrics for pavements and structures for agreement by 31 March 2017. Highways England has shown some progresss in the development of the new metrics but more work is required. These will be validated over the next two years and may be considered for use in the next road period.

ANNEX C: FINANCIAL AND EFFICIENCY PERFORMANCE

This annex sets out our analysis of Highways England's financial performance and efficiency in 2016-17, and our review of its plans for the first road period.

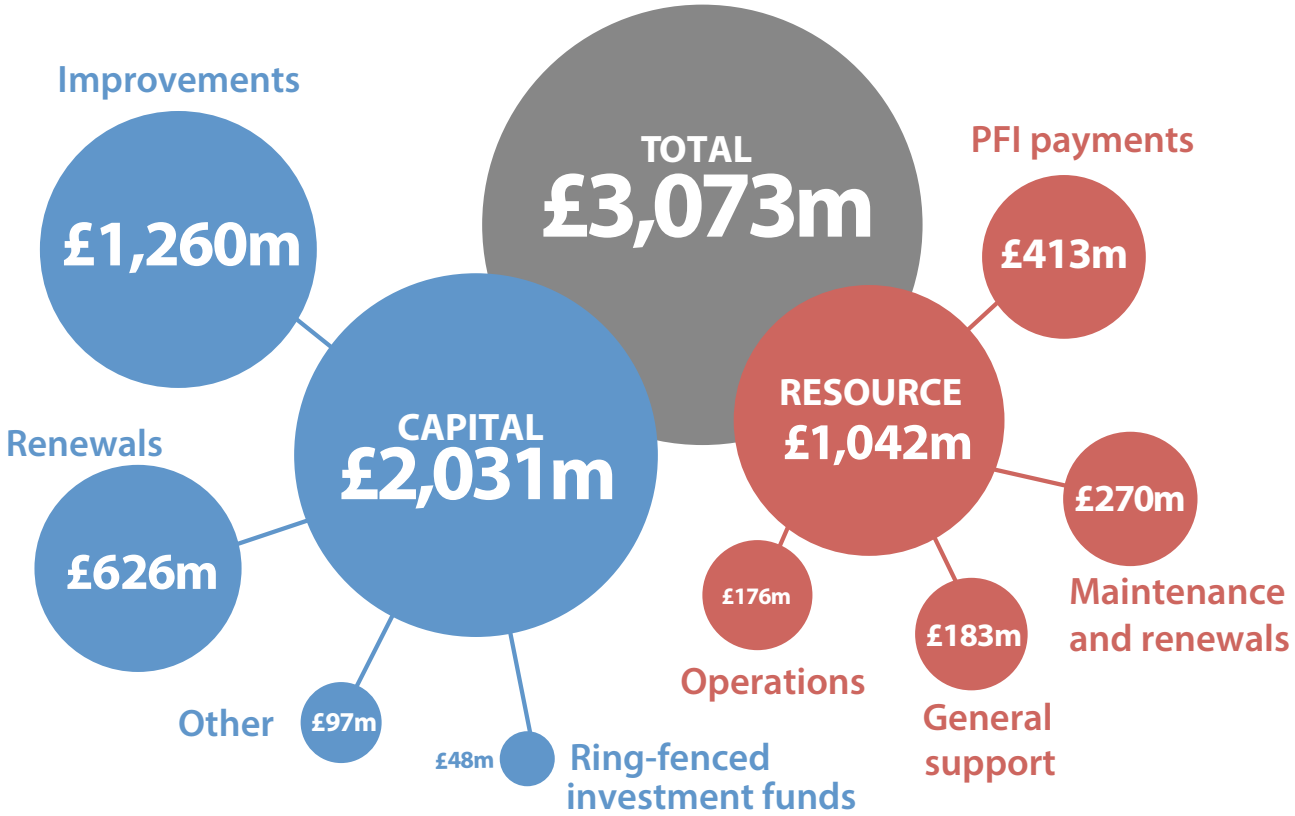
Financial performance

Expenditure compared to budget

As shown in figure C1, Highways England spent £3.1bn in 2016-17, split two thirds on capital investment (renewals and improvements to the network) and a third on resource expenditure (operating and maintenance of the network). This was 2.4% higher than expenditure in 2015-16 and was £42m (1%) lower than funding agreed with the Department for Transport.

Highways England published an updated Delivery Plan in June 2016[15] which included a budget of £1,977m for capital expenditure in 2016-17. The company originally intended to make use of its ability to flex its capital funding with an increase of £150m compared to its original delivery plan to increase funding for improvement schemes.

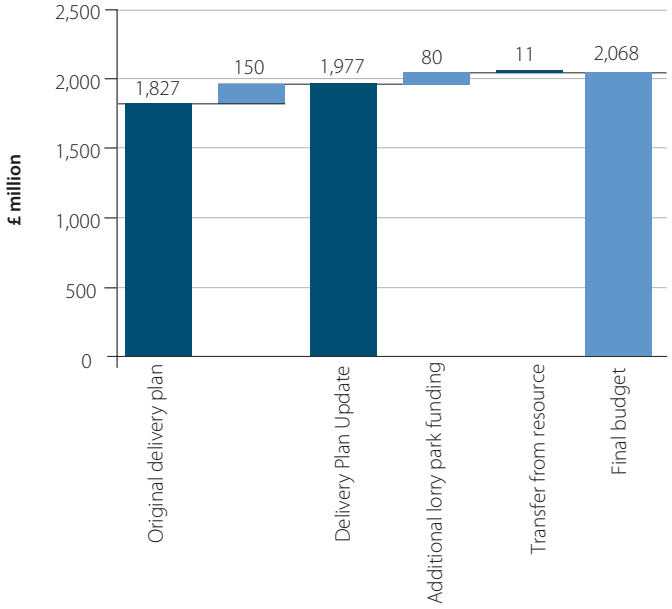
Figure C1: Highways England's expenditure in 2016-17



15. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/538130/S160049_Highways_England_Delivery_Plan_2016_Final_-_Digital_version.pdf

The department subsequently agreed to provide £230m of additional funding for development of the M20 Lorry Park. As only £80m was expected to be required for this scheme in 2017-18, the department agreed for Highways England to use the remaining £150m to fund the planned increase in expenditure on improvement schemes rather than using the capital flex. As such, the final capital budget for 2016-17 (£2,068m) included an additional £80m for spending on the Lorry Park along with an £11m budget transfer from resource for a revision to accounting treatment of research and development expenditure. The change in capital funding for 2016-17 is shown in figure C2.

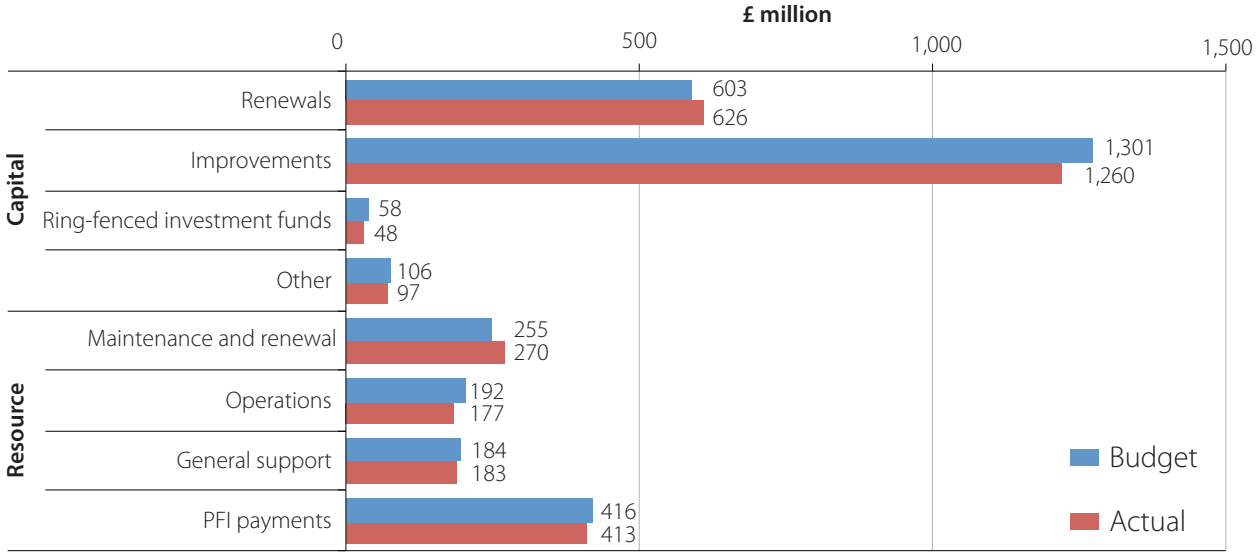
Figure C2: Change in 2016-17 capital funding



Capital expenditure (£2,031m) was £37m (1.8%) below budget and resource expenditure (£1,042m) was £5m (0.5%) below budget. Significant variances compared to the budget are shown in Figure C3 and are summarised below:

- Renewals expenditure was £23m higher than budget[16]. Highways England decided to bring forward some renewals activity from 2017-18 in order to reduce the overall capital underspend.
- Expenditure on improvement schemes was £41m lower than budget. The M20 lorry park scheme underspent by £69m due to delays in developing the scheme. There were also underspends on other schemes which are paused awaiting value for money assessments. These underspends were partially offset by overspends on some major projects.
- Ring-fenced investment funds (air quality, environment and innovation funds) underspent by £10m (17%) due to delays in developing these work programmes.
- Other Capital was underspent by £9m due to delays in IT projects and projects to improve programme management capability.
- Resource expenditure was £5m below budget due to slower recruitment than anticipated and favourable settlement of contractual claims.

Figure C3: Highways England's expenditure compared to budget in 2016-17



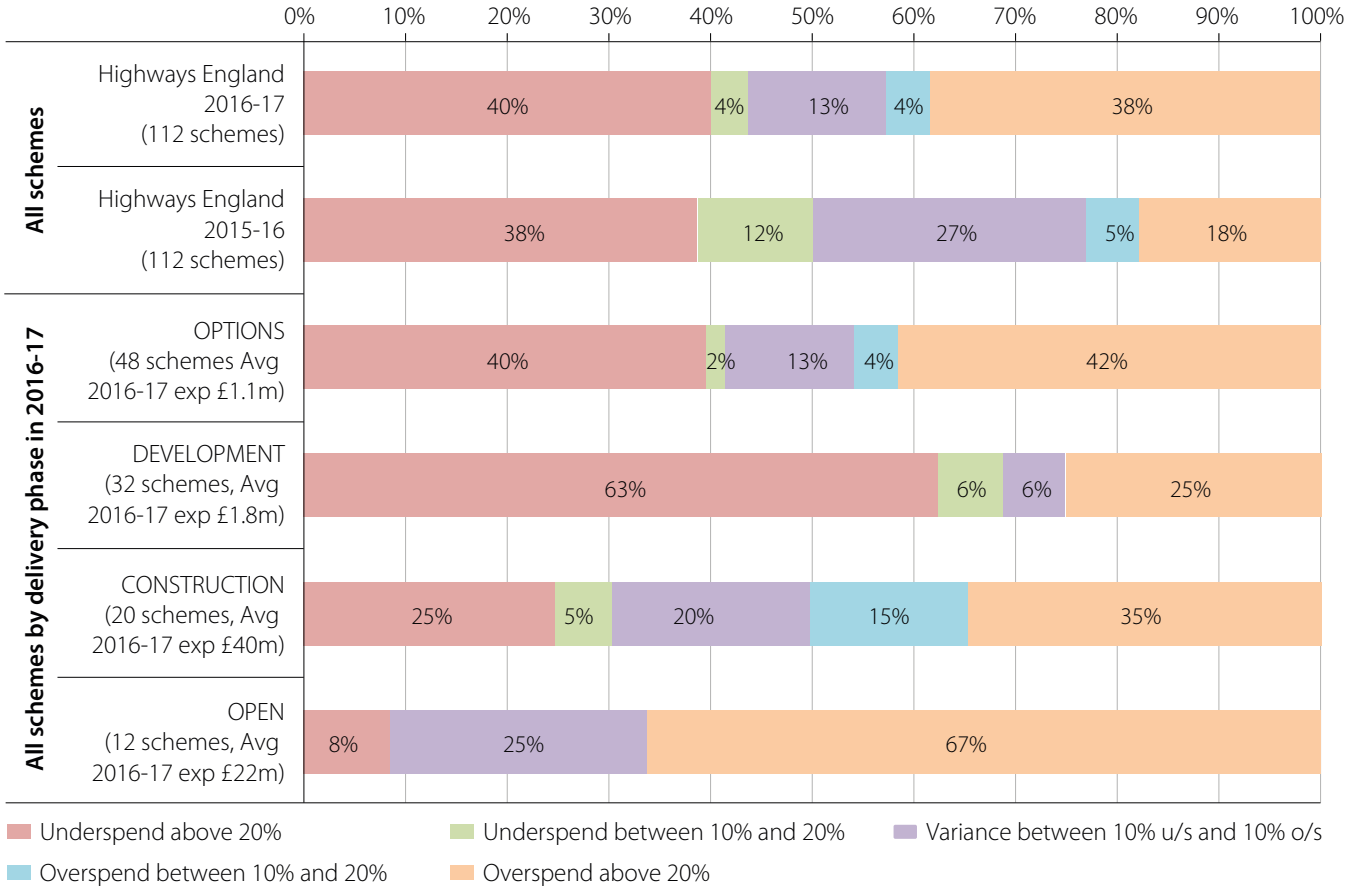
Expenditure variances within the capital portfolio

Our analysis shows that actual expenditure varied significantly from the baseline for a high proportion of improvement schemes in 2016-17. Figure C4 shows the proportion of the 112 major schemes with large variances.

16. Specifically capital renewals expenditure. Some renewals activities such as inspections are accounted for separately as resource expenditure.


A57
Sheffield (SE)
Rotherham (S)
31
1m

Figure C4: Proportion of major schemes with large in-year variances in 2015-16 and 2016-17



In 2016-17, 78% of major schemes had underspends or overspends 20% greater than baseline. For schemes that were in construction, 60% underspent or overspent by 20% more than the baseline.

Whilst overall the major scheme portfolio was progressing broadly on budget, a high proportion of individual schemes have large in-year variances. In some cases, this reflects the reprogramming of schemes for reasons of efficiency (e.g. delivering a 2017-18 scheme early when another scheme is delayed). However, it will be important for the company to have a good understanding of the reasons for these variances and apply any lessons learned from this analysis in delivering future schemes.

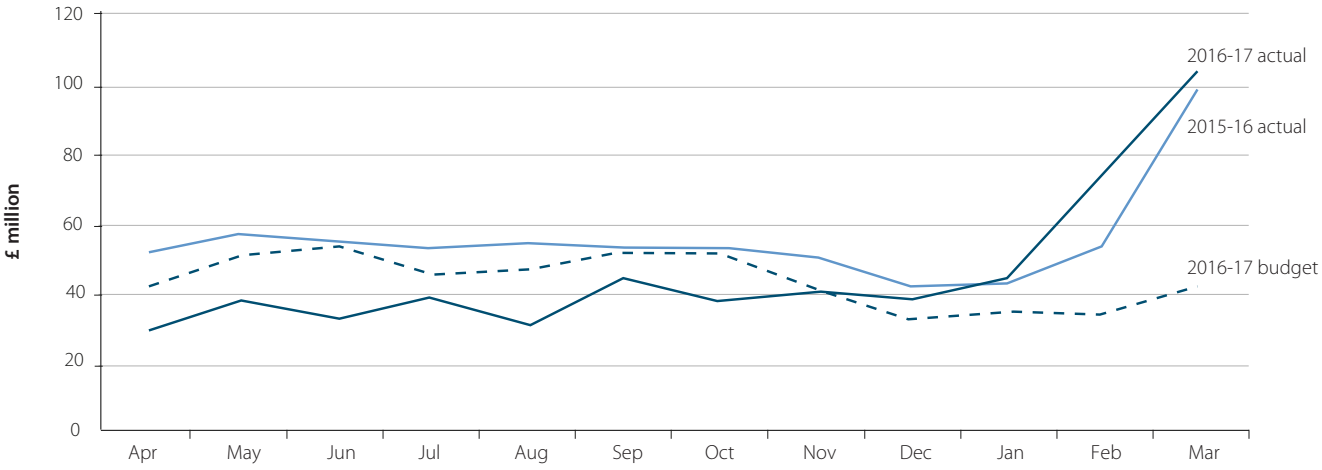
Monthly renewals expenditure variances

Figure C5 shows that Highways England's expenditure on renewals increased significantly in the final three months of both 2015-16 and 2016-17.

Winter working is typically less efficient due to lost time from severe weather and higher contractor rates. We have discussed this with Highways England who recognise that this is not the most efficient profile given the funding certainty provided by the RIS. As shown in figure C5, the 2016-17 budget had a smoother profile and the company has examined the main factors that resulted in higher expenditure in the final quarter.

For 2017-18, Highways England has again set a flatter budget profile and believes its gradual rollout of the asset delivery model, which sees it taking greater direct control of renewals, will help it deliver in line with the plan. In future we would like the company to examine, with the Department for Transport, what cultural and financial control barriers may still exist to the company delivering renewals efficiently across the year.

Figure C5: Highways England's monthly renewals expenditure



Efficiency improvements

The company has reported £135m of efficiencies in 2016-17, bringing the cumulative efficiency improvements to its capital programme in the first two years of Road Period 1 to £169m. This exceeded the company's internal target by £30m.

Highways England reports efficiency improvements as set out in the Efficiency and Inflation Monitoring Manual (EIMM)[17]. There are three components of our assessment of Highways England's efficiency improvements:

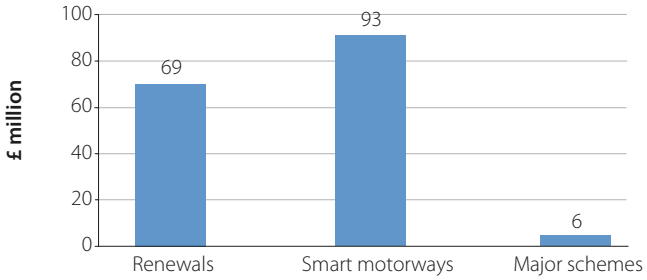
1) analysis of Highways England's bottom-up description of efficiency improvements;

2) unit cost movements; and

3) expenditure and delivery compared to the funding assumptions set out in the Road Investment Strategy;

Our review has shown that Highways England has improved the evidence supporting its efficiency reporting over the past year, but has further work to do in some areas.

Figure C6: Efficiency by type of capital scheme



Efficiency improvements in 2016-17

Highways England has reported renewals efficiencies from a range of initiatives. These include reducing traffic management and other operational costs by aligning renewals schemes with major projects, contractual changes including more efficient approaches to applying road markings, and more collaborative working with the supply chain.

Efficiencies on the company's Smart Motorway Programme (SMP) include reducing overheads through reducing the time taken to deliver schemes, design standardisation (for example, of overhead gantries) and other process improvements.

17. The monitoring approach set out in the EIMM was jointly developed by Highways England and us. See https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/464887/Efficiency_Manual_v5_spreads.pdf

Delivering the £1.2bn RIS1 efficiency requirement

Highways England must deliver at least £1.2bn of efficiency improvements in Road Period 1. Efficiencies delivered in the first two years represents 14%, in line with their delivery plan. Considerable work remains to achieve the KPI requirement.

Highways England published a *Capital Efficiency Delivery Plan*[18] during the year. This document summarises the company's processes to deliver efficiency improvements and the related controls designed to ensure that it meets the KPI requirement. We consider that this delivery plan provides increased confidence about the company's ability to deliver the £1.2bn requirement. However, there is still some risk associated with schemes that start construction at the end of Road Period 1. This has an impact on the certainty of the company's plans to deliver the more stretching efficiency improvements required in later years of the road period.

Efficiencies from the smart motorway programme

In our 2015-16 annual assessment, we raised concerns about the robustness of the company's analysis of efficiency improvements from its smart motorway programme.

During 2016-17, Highways England developed a more robust approach to assessing these efficiency improvements. The approach is based on a detailed unit cost analysis and addresses the concerns that we previously raised.

Highways England is currently developing its approach for assessing efficiency for other parts of its improvement programme, in particular, its Regional Improvement Programme. We expect the company to progress this work over the next few months in consultation with us.

Renewals unit cost analysis

Highways England does not consider that its renewals unit cost information is as robust as it would anticipate. As a result, its Board was unable to assure the costs published in the company's Monitoring Reporting Statements. We recognise the complexity of calculating and reporting renewals unit costs for Highways England, particularly where contractors may undertake a number of different activities within one scheme of works. However, we consider that Highways England needs to strengthen its reporting of renewals unit costs. We will work with the company to address this over the next year.

Cost Performance Index

The Cost Performance Index is a measure of earned value which is often used 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 0.99, which indicates that overall, projects are slightly above target cost. The financial performance section of this annex provides details of individual scheme variances.

Schedule Performance Index

The Schedule Performance Index 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 0.97, which indicates that overall projects are slightly behind schedule.

Input price effects

Highways England's funding for capital projects in 2016-17 included an additional 4% for forecast increases to the costs of the company's inputs, i.e. materials and labour costs. Whilst there is no single index that adequately tracks Highways England's specific expenditure, the company's analysis of a range of measures suggests that the input prices may have increased by 4.8%, compared to 0.5% in 2015-16.

Lower overall input prices may have saved the company around £20-30m on its capital programme over the past two years. Because of Highways England's differing approaches to the sharing of inflation risk in their supplier contracts, it is likely that the actual impact could be significantly lower than this because the potential savings may only realise as contracts expire and are renewed.

18. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/600019/N160284_HE_Capital_Efficiency_Delivery_Plan.pdf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ANNEX D: NETWORK INVESTMENT DELIVERY

This annex describes Highways England's performance against its investment plan in 2016-17, 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 £11.4 billion for Highways England to invest in maintaining, renewing and improving the strategic road network. This includes:

- a programme of major improvement schemes, of more than £7 billion;
- a maintenance and renewals programme, of approximately £3.7 billion;
- a £675m programme of ring-fenced investment funds; and
- investment associated with strategic studies.

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

Delivery of major improvement schemes in 2016-17

Highways England's progress in delivery of its capital programme during 2016-17 is shown in table D1. It has started construction works on all four schemes that were planned to start, one of which started ahead of schedule. In addition, four schemes scheduled to start construction in 2019-20 started early, ahead of the timescales in Highways England's delivery plan. This includes combining two adjacent schemes (M1 junctions 24-25 and M1 junctions 23A-24), originally planned with different timetables that will now be delivered as one scheme to reduce the impact and delays to road users.

Highways England planned to open eight schemes to traffic during 2016-17, six of which were completed on schedule. The remaining two schemes are delayed.

The A30 Temple to Higher Carblake scheme is being delivered by Cornwall County Council and delays are primarily due to changes in the traffic management strategy to deal with peak summer traffic. This scheme is forecast to be delayed by seven months to quarter 2 of 2017-18.

The A21 Tonbridge to Pembury is also reported to be delayed by seven months, to quarter 3 of 2017-18. The delay is due to unforeseen ground conditions which required Highways England to deal with large volumes of hazardous waste contamination and ground water. It has reported that lessons learnt from this scheme are being applied across the network enhancement programme.

The company opened one additional scheme to traffic which was originally planned for completion in 2017-18.

Table D1: Major schemes delivery in 2016-17

2016-17 commitments	Committed date	Actual date
Major schemes starting construction		
A14 Cambridge to Huntingdon	2016-17, Q3	2016-17, Q3
A19 Coast Road	2016-17, Q2	2016-17, Q1 Ahead of schedule
M4 Junctions 3-12	2016-17, Q4	2016-17, Q4
M1 Junctions 24-25	2016-17, Q4	2016-17, Q4 Combined schemes
M1 junctions 23A-24	2019-20	
M1 Junction 45 Improvements	2019-20	2016-17, Q4 Ahead of schedule
A47 Acle Straight	2019-20	2016-17, Q4 Ahead of schedule
A52 Nottingham junctions[19]	2019-20	2016-17, Q4 Ahead of schedule
Major schemes opened for traffic		
A1 Coal House to Metro Centre	2016-17, Q1	2016-17, Q1
M1 Junction 19 improvement	2016-17, Q3	2016-17, Q3
A45-A46 Tollbar End	2016-17, Q3	2016-17, Q3
A30 Temple to Higher Carblake	2016-17, Q3	Forecast 2017-18, Q2
A556 Knutsford to Bowdon	2016-17, Q4	2016-17, Q4
M1 Junctions 32-35A	2016-17, Q4	2016-17, Q4
A160/A180 Immingham	2016-17, Q4	2016-17, Q4
A21 Tonbridge to Pembury	2016-17, Q4	Forecast 2017-18, Q3
M25 Junction 30	2017-18, Q1	2016-17, Q3 Ahead of schedule

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 2016-17 is shown in table D2. The company has spent 10% more than it budgeted on those schemes in construction and 6% more than budgeted on those schemes which have opened for traffic.

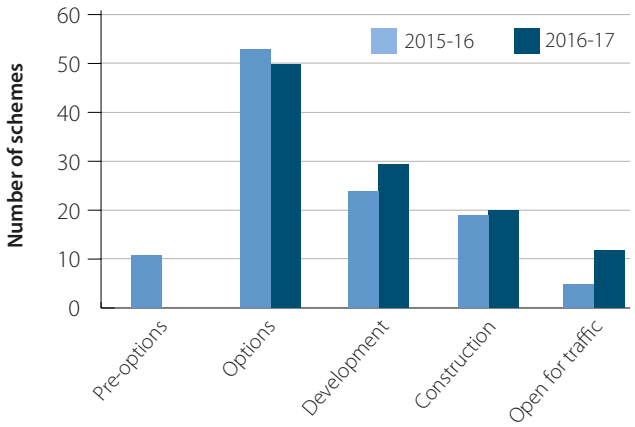
19. Highways England is adopting a phased approach to deliver this programme of junction improvements along the length of the A52 in Nottingham. The first two junctions started in 2016-17.

Table D2: Major schemes costs against budget in 2016-17

Scheme stage (end of 2016-17)	Budget (2016-17)	Outturn costs (2016-17)	Variance	% over / (under)
Under construction	£734.2m	£804.4m	£70.2m	10%
Open for traffic	£245.6m	£259.2m	£13.6m	6%

During 2016-17, Highways England has made progress in developing schemes prior to construction. The company has progressed 11 schemes from pre-options into options stages and 14 schemes have started development. By the end of March 2017, 20 schemes were under construction exceeding Highways England's delivery plan. A breakdown of the major schemes' progress in 2015-16 and 2016-17 is shown in figure D1.

Figure D1: Progress of schemes through development and construction in 2016-17



Highways England has provided us with its assumptions for the dates when its major schemes will progress through the stages of development and construction that are outlined in the chart above. We will continue to monitor progress against these in the remainder of the road period.

Delivery of major improvement schemes in the remainder of the road period

Highways England's original delivery plan (2015-2020) included starting all 112 major improvement schemes by the end of the first road period. During 2016-17, it has taken forwards a review of its 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 (Highways England has called this the "corridor" approach).

As a result, Highways England is proposing a range of changes that are being taken through the Department for Transport's formal change control process. The proposals may include:

- deferral of schemes where they do not currently demonstrate value for money. These would be reconsidered as options for delivery in the next road period; and
- changes to the schedule of schemes specified in the RIS and / or Delivery Plan based on the corridor approach. A number of schemes may start earlier than originally planned, and others may start later, the majority of which would begin construction in the next road period.

For the remainder schemes, Highways England reports that three schemes' planned starts during the road period are at risk.

For those schemes which are planned to open for traffic, two are delayed.

The M1 junctions 24-25 scheme is being combined with the M1 junctions 23a-24 and both will now be opened for traffic in the road period. By combining these two schemes Highways England expects to reduce the impact caused by roadworks and the benefits of the M1 junctions 23a-24 scheme are planned to be delivered 36 months ahead of schedule.

The major scheme delivery status for the remainder of the first road period is summarised in table D3.

Table D3: Major scheme delivery – remainder of first road period, construction phase

Phase	2016-17 delivery plan commitment (remainder of RP1)	Progress	No.	Details	Status
Start of works	80*	On schedule	77	As planned (Subject to changes following revisions to the capital baseline plan)	
		Delayed	3	M621 Junctions 1-7 improvements – start of works commitment of 2019-20 delayed to April 2020 A27 Chichester Bypass – stopped, to be change controlled M54 to M6/M6 Toll link road – start of works commitment of 2018-19 at risk	
Open for traffic	19*	On schedule	16	As planned (subject to changes following revisions to the capital baseline plan)	
		Delayed	2	A1 Leeming to Barton – open for traffic commitment of 2017-18 quarter 1 delayed to quarter 3 M60 Junction 8 to M62 Junction 20: Smart Motorway – open for traffic commitment of 2017-18 quarter 2 delayed by to quarter 4	
		Changed	1	M1 Junctions 24-25 will now open in 2018-19 (scheme combined with M1 Junctions 23A-24). (The M1 Junctions 23A-24 is now also to open in 2018-19 – a new commitment for the road period.)	

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

*Highways England's delivery plan update 2016-17 committed to have started works on all 112 major schemes by the end of the first road period. Of these, 16 started works before the road period, eight started in 2015-16, eight started in 2016-17 and we report on the remaining 80 here. Highways England's delivery plan update 2016-17 committed to open 33 major schemes for traffic in the first road period. Of these, five opened for traffic in 2015-16, seven opened in 2016-17, two were scheduled for 2016-17 but were delayed and we report on the remaining 19 here.

In-depth review of major projects

To support our work in monitoring Highways England's delivery of its major improvement programme, we have carried out an in-depth review of a sample of its major schemes. The company has given strong support to this work. The sample consisted of ten major schemes and two routes, and was selected to be broadly representative of the major schemes portfolio in terms of project complexity, development, type and size.

The purpose of the review was to understand the robustness of the processes which Highways England is using to manage its schemes, and to identify any systemic or common themes in development, management and delivery of its major improvement programme.

The review made recommendations including:

- Highways England should undertake a comprehensive review of its capital baseline considering cost, schedule and risk;
- guidance should be developed for projects to improve coordination between project teams and central functions – for example in the way lessons are learned and communicated;
- use of procurement frameworks and template arrangements should be considered alongside other options so that scheme specific factors drive commercial and procurement strategies;
- portfolio management should be strengthened to improve data and reporting, and coordinate major project and renewals work better;
- speed of adopting programme management processes should increase; and
- future resource and capability requirements should be assessed to reduce risk to investment delivery.

Highways England has accepted these recommendations. It has developed an action plan to address them, which includes identifying the change programmes that are already underway and which will contribute to the plan.

Maintenance and renewals delivery

In 2016-17, Highways England reviewed its initial maintenance and renewals programme. It re-profiled expenditure compared to its budget, resulting in significantly higher expenditure in the final quarter of the year. Figure D2 shows the profile of renewals by quarter.

Highways England has identified three main reasons for the profile of renewals expenditure in 2016-17:

- contractual changes in three regions/areas leading to delays in delivery in the early part of the year;
- £30m of additional works in quarter 4 to counter-balance an underspend on the M20 Lorry Park; and
- conditioning related to many years of working within annual funding envelopes.

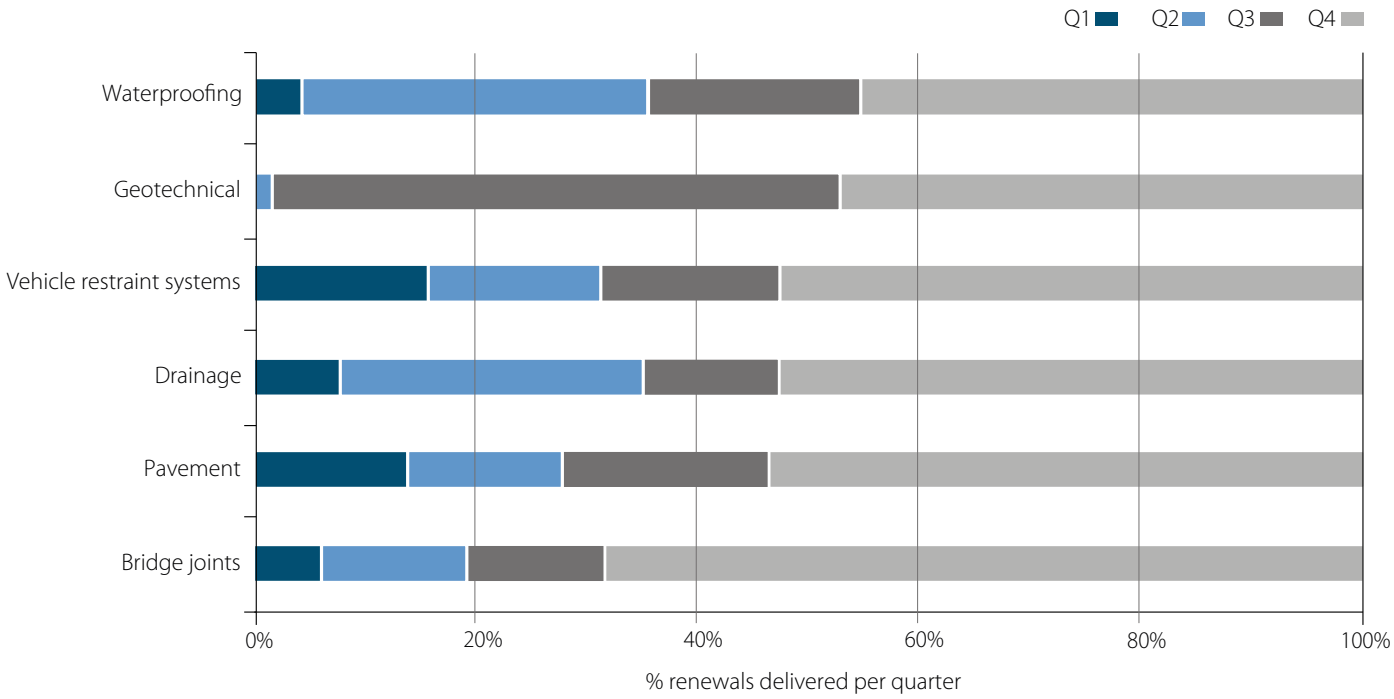
Our analysis has shown that the company has more work to do to improve its forecasting of renewals expenditure. In its monthly reporting Highways England has in every month except March spent less (5-24%) than it was forecasting to in the previous month's report.

The company has delivered significantly greater volumes on the majority of the main assets types than it had planned (with the exception of geotechnical) and the profile of volumes delivered compared to plan also show a large increase in the final quarter of the year.

Table D4: Volumes of renewals delivered compared to plan in 2016-17

2016-17 commitments		Planned Volume	Actual volume
Renewals			
Renewal of roads	Pavement (lane kilometres)	1,200	2,234
	Road Markings (linear metres)	1,952,868	4,381,958
	Kerbs (linear metres)	8,088	21,151
	Vehicle restraint system (VRS) - Concrete (linear metres)	10,000	12,354
	Vehicle restraint system (VRS) - Non Concrete (linear metres)	85,910	116,209
	Drainage (linear metres)	177,295	323,832
	Geotechnical (linear metres)	11,884	10,212
	Traffic Signs (number)	1,140	1,500
	Guardrail (linear metres)	147	926
	Boundary Fencing (linear metres)	28,544	40,271
	Footways (linear metres)	2,014	25,233
	Lighting (number)	2,332	6,474
	Soft Estate (number)	6	16
Renewal of structures	Bridge Joint (number)	231	783
	Bridge Bearing (number)	159	191
	Parapet (linear metres)	2,202	4,221
	Waterproofing (square metres)	27,067	34,588
Renewal of technology	Motorway Coms Equipment (number)	96	407
	Renewals and improvements (number)	256	810
	Winter Resilience (number)	55	62
	Network Resilience (number)	24	19

Figure D2: Volumes of renewals delivered per quarter for selected asset categories, 2016-17



As set out in chapter 2, we have carried out an in-depth review of Highways England's management of pavement and structures assets. It is now developing a plan to make improvements to its planning, delivery and reporting of maintenance and renewals work.

Ring-fenced investment funds

The Investment Plan for the first road period includes a series of ring-fenced funds (also known as designated funds), worth £675 million. These funds, which are used to address a range of issues that are over and above the traditional focus of road investment, are split into five areas: air quality; cycling, safety and integration; environment; innovation; growth and housing.

Table D5, below, sets out the value of each fund, the total spent at the end of 2016-17, and examples of outputs from each fund.

Table D5: Ring-fenced funds delivery in 2016-17

Fund name	Funding (first road period)	Cumulative spend at end 2016-17	% of funds spent at end 2016-17	Schemes delivered in 2016-17
Air quality	£75m	£2m	3%	National air quality monitoring network: 24 stations operations by end 2016-17 Mineral polymer barrier pilot underway
Cycling, safety and integration	£175m	£34.6m	20%	32 cycling schemes 20 safety schemes 2 integration schemes
Environment	£225m	£16.6m	7%	6 flood mitigation schemes 2 noise schemes 2 LED lighting schemes 6 landscape schemes 4 biodiversity schemes
Innovation	£120m	£11.5m	10%	Construction started on motorway to motorway traffic management system
Growth and housing	£80m	£5.3m	7%	12 schemes approved in 2016-17, of which work has begun on three.

To date, progress in delivering projects through ring-fenced funds has been slow, with a small proportion of the available funding being spent. This is partly due to the need for the company to focus on developing plans for each fund, before it can deliver outputs.

Highways England has engaged well with stakeholders as it develops its plans for each ring-fenced fund. For example, during 2016-17, the company held two stakeholder events, which have helped improve transparency. Despite this, there is still a lack of robust plans in some areas, particularly air quality and innovation, and this represents a risk to these funds successfully meeting their objectives.

During 2017-18 we will be undertaking an in-depth review of the management of the ring-fenced funds, and will report our findings.

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