



OFFICE OF RAIL AND ROAD

Annual Assessment of Highways England's Performance

April 2015 – March 2016



Annual assessment of Highways England's performance April 2015 – March 2016

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

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Executive Summary

Background and context

1. Highways England is the government-owned company which manages the motorways and main A roads in England (the strategic road network).
2. In late 2014, the government 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). These requirements were specified in the Road Investment Strategy (RIS).
3. Highways England was formed in April 2015 at the same time as wide-reaching reforms were made to the way the sector works. The company is implementing a significant change programme to adapt to its new operating environment. It is managing, operating and delivering improvements to its network at a time when traffic is at record levels and growing. This presents challenges for the company in almost all of its outcome areas – including keeping traffic flowing and maintaining user satisfaction whilst delivering network investment.
4. The Office of Rail and Road (ORR) independently monitors Highways England's performance in the delivery of the outcomes and investments (such as road improvements) in the RIS. Highways England has set out how it will deliver these objectives in its Delivery Plan, which it updates each year.
5. As this is the first road period there are some aspects of the framework which continue to be developed and further work must be completed over the coming year, in particular to refine the company's capital investment plan.

Purpose of this report

6. This is ORR's first annual assessment of Highways England's performance since taking on the role of Highways Monitor in April 2015. It focuses on Highways England's performance and delivery against:
 - the RIS Performance Specification, including eight key outcome areas;
 - the RIS Investment Plan, including ongoing management of the network and delivery of improvements; and
 - Highways England's licence conditions.
7. The report aims to provide all stakeholders with a clear understanding of how Highways England is performing and how the company is placed to deliver its commitments over the remainder of the road period.

Three key messages

1

Highways England has made a good start to delivery in the first road period. It has met its performance targets and delivered its investment commitments in 2015-16.

2

Highways England now needs to implement robust plans to make sure that it delivers targets in the rest of the road period, including improving safety performance, customer service and environmental mitigations.

3

There is an opportunity for Highways England to improve its management of risks to network investment delivery over the road period. In particular, there is more to do in planning and delivering investment efficiently and in demonstrating that network condition is being managed sustainably.

Highways England's operational performance

8. The RIS Performance Specification sets the outcomes that Highways England must deliver during the road period in eight areas. It sets 11 Key Performance Indicators (KPIs) for measuring performance, eight of which have targets.
9. Highways England has met its Performance Specification targets for 2015-16. It has supported the smooth flow of traffic by maintaining network availability and motorway incident clearance metrics above its targeted levels. The company has exceeded its target for pavement (carriageway) condition. It has also progressed its environmental strategies and plans, including publishing its biodiversity action plan.
10. For other outcome areas Highways England has been set targets for later in the road period. For example, the company must make the network safer, including reducing the number of people killed and seriously injured by 40% by the end of 2020. Data for 2015 show a reduction in the number of people killed and seriously injured on the network compared to the previous year but continued focus is needed to deliver the target.
11. Highways England must achieve 90% user satisfaction by March 2017. User satisfaction for 2015-16 was 89.3%, an improvement from the previous year. The company will need to develop and implement a clear plan to deliver the required improvement in user satisfaction over the next year.
12. In several other outcome areas we consider that Highways England needs to provide more assurance that it has robust plans in place to meet its targets. This is discussed further in the body of this document.

Highways England's capital investment delivery

13. The RIS Investment Plan sets out the £11.4bn capital investment portfolio which Highways England must deliver during the road period.
14. Highways England has delivered its major scheme commitments for 2015-16, including opening five schemes to traffic as planned. These are now delivering benefits to road users. It has started construction of eight further schemes, exceeding its plans to start seven.
15. For those schemes that have opened for traffic, expenditure for the year was £4m (4%) higher than baseline estimates. This is primarily due to the inclusion of additional renewals work in the schemes.
16. Whilst delivery of the major scheme programme so far has met committed milestones we are concerned that Highways England has not yet fully demonstrated how it is managing risks to delivery of the Investment Plan in the remainder of the road period. The company acknowledges this, is engaging us openly, and is working on improvements to its plans, and to the management of its portfolio of capital investment more broadly. The company's improvement plans should:
 - set clear, agreed baseline assumptions for the scope, cost and timing of major schemes, and demonstrate how the company has assured that the baseline is deliverable;
 - set out current delivery forecasts and explain how the portfolio will be delivered within the funding available; and
 - demonstrate a portfolio approach to managing investment – for example integrating its asset management and network improvement programmes.
17. Highways England will need to manage some specific strategic risks to the delivery of the capital investment portfolio during the first road period. For example, there are potential risks associated with the availability of a skilled workforce and with the impact of air quality thresholds.
18. We expect the company to demonstrate that its portfolio management capability improves in 2016-17 and will report on its progress.
19. In April 2016 we published a report reviewing the capability and capacity of Highways England's supply chain to deliver the RIS¹. This highlighted the need for the company to identify and monitor the strategic risks to its major projects portfolio, and engage better with the supply chain on the forward programme of investment. Highways England accepted these recommendations and developed its response².
20. Highways England's Delivery Plan set out the volumes of renewals work it planned to carry out in 2015-16. The company's reported volumes for the year show significant variances from its plans. Highways England has provided only high level explanations for these variances. There was also a significant re-profiling of renewals work during the year, resulting in a 35% increase in renewals expenditure in the final quarter compared to the previous three months. Taken together, these suggest that Highways England has more to do to plan and deliver its renewals work efficiently and effectively.
21. For the first road period, Highways England has designated funding to carry out environmental, cycling, safety, integration, innovation, air quality and growth and housing improvement works – beyond its business-as-usual activities. In 2015-16, the company has carried out preparatory work on the governance and processes for identifying and delivering improvements using these funds.

¹ Highways England's supply chain capability: <http://orr.gov.uk/highways-monitor/publications/highways-englands-supply-chain-capability>

² Highways England's response to ORR's report on supply chain capability: <https://www.gov.uk/government/news/highways-england-response-to-the-office-of-rail-and-road-orr-report-on-their-supply-chain-capability>



Highways England's financial performance

22. Overall Highways England spent £3.0bn including £1.9bn on its capital programme which was in line with its funding in 2015-16. The funding was £144m higher than the original RIS funding due to the Department for Transport providing an additional £140m to meet the cost of capital projects carried over from previous years and an additional £4m for development work for a major lorry park in Kent.
23. Highways England has identified £55m of efficiency improvements across its capital programme during 2015-16. Our assessment is that the company has achieved its internal efficiency target of £33m, though further evidence is required about an additional £21m, in relation to savings on the company's smart motorway programme. We recognise the challenges in evidencing efficiency in this area and we will continue to work with Highways England in 2016-17 as it develops the evidence base. The efficiency reported by the company for 2015-16 may be adjusted at a future date.
24. Highways England needs to deliver more than £1.2bn of efficiency improvements in the first road period and the company's work over the past year on developing its processes for substantiating efficiencies has established good practice for future years. It will be important that the quality of evidence provided is commensurate with the size of the efficiency being reported.

Priorities for 2016-17

25. Whilst Highways England has largely delivered in 2015-16, it must now build on that success to ensure that it delivers in the remainder of the first road period. In 2016-17 it will be important for the company to:
 - establish clear plans for the delivery of future performance targets;
 - establish improved plans for capital investment delivery and for developing portfolio, programme and project management capability;
 - improve data quality (for example asset data and efficiency reporting) by delivering on its coordinated data improvement plan; and
 - improve transparency about its plans and performance, including the transparency of its plans and strategies in the areas of safety and the environment.
26. Over the next year it will be vital that work is progressed to lay solid foundations for RIS2. Highways England will need to make sure that it develops an evidence-based understanding of the needs of the network through its route strategies. It will also need to progress its plans to deliver efficiently.



1

Context for the annual assessment

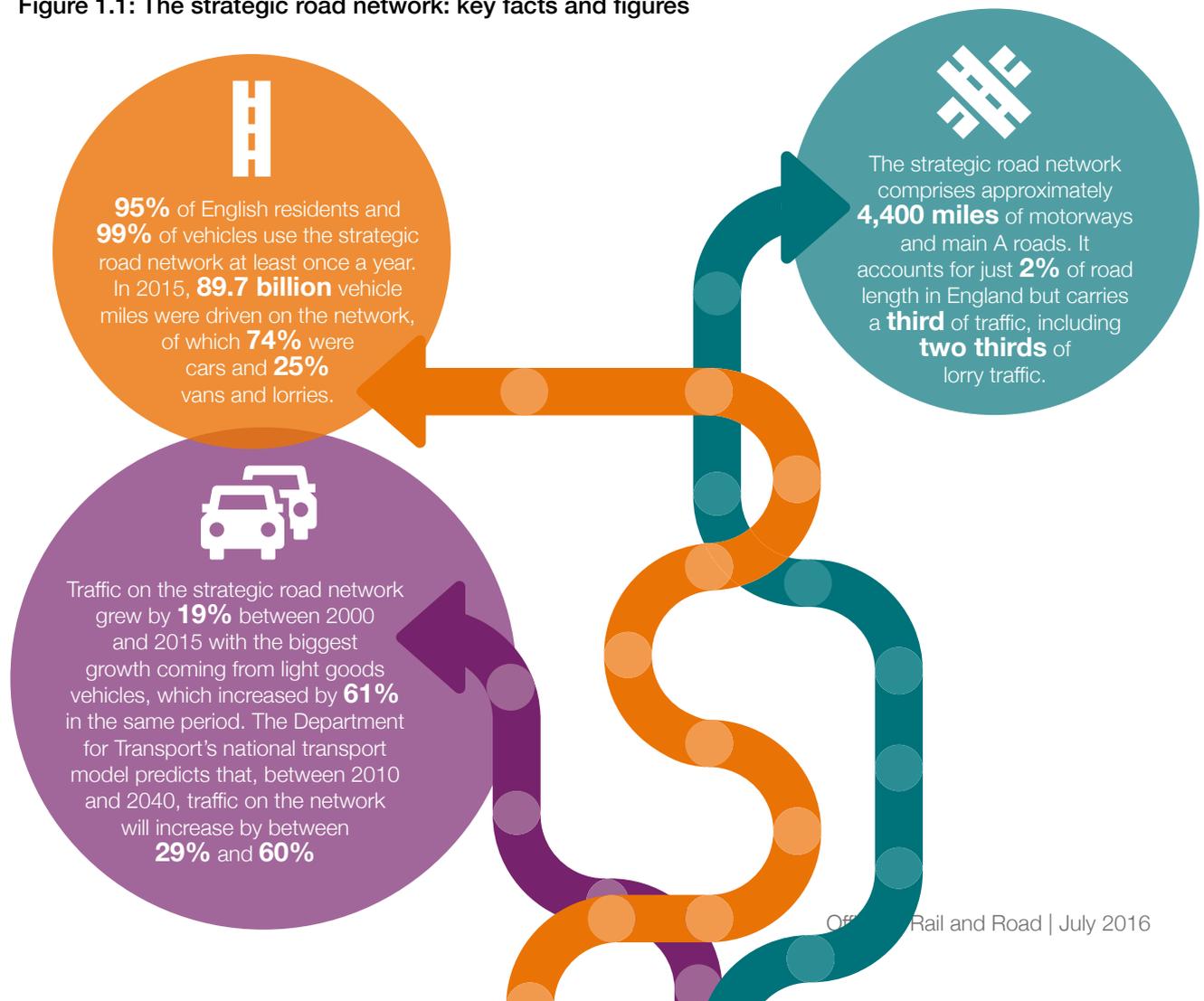
What is our role?

- 1.1 Our role in monitoring Highways England is defined in the Infrastructure Act 2015. We must carry out activities to monitor how Highways England exercises its functions. As part of fulfilling this role, we produce an annual report on the company's performance setting out whether, how and at what cost the company has achieved its objectives under a RIS.

The Strategic Road Network

- 1.2 Roads are a key part of the country's infrastructure. They keep people connected and are vital for supporting economic growth. 90% of passenger journeys and almost 70% of freight movements are made by road.
- 1.3 The strategic road network (SRN), managed by Highways England, is a vital part of the road network.

Figure 1.1: The strategic road network: key facts and figures



Significant change for Highways England

1.4 Highways England is a new company with new challenges. It was formed when the Highways Agency became a government-owned company in April 2015. At the same time, wide-reaching reforms to the sector were implemented, meaning that Highways England is operating in a new environment. Some of the key changes are that Highways England:

- has agreed performance targets over a five year period (whereas the previous performance specification covered a two year period);
- has committed to deliver a large increase in capital expenditure over the five year period – including more than £7bn of funding to deliver a programme of 112 major schemes – while realising significant efficiencies; and
- has been given greater autonomy, and now takes more ownership of developing, analysing and making investment decisions.

1.5 As a result the company has an opportunity to deliver more efficiently by taking a longer-term approach to planning and through different approaches to contracting and delivering through its supply chain. But it is also implementing significant change to adapt to its new environment.

The first Road Investment Strategy

1.6 As this is the first road period there are some aspects of the framework which continue to be developed. In some cases there is more to do to specify what Highways England is expected to deliver. The company needs to agree a firm scope of works for its capital investment with the Department for Transport, which will lead to improved certainty of costs in the road period.

1.7 There is also a need to clarify what level of delivery constitutes success (for example what proportion of scheme milestone delivery is acceptable to the Department for Transport). Highways England and the Department may need to consider options to repackage and reschedule works to deliver more efficiently in the longer-term. Some flexibility in delivery is being managed through a change control process managed by the Department. This has been implemented and will be further developed in 2016-17.

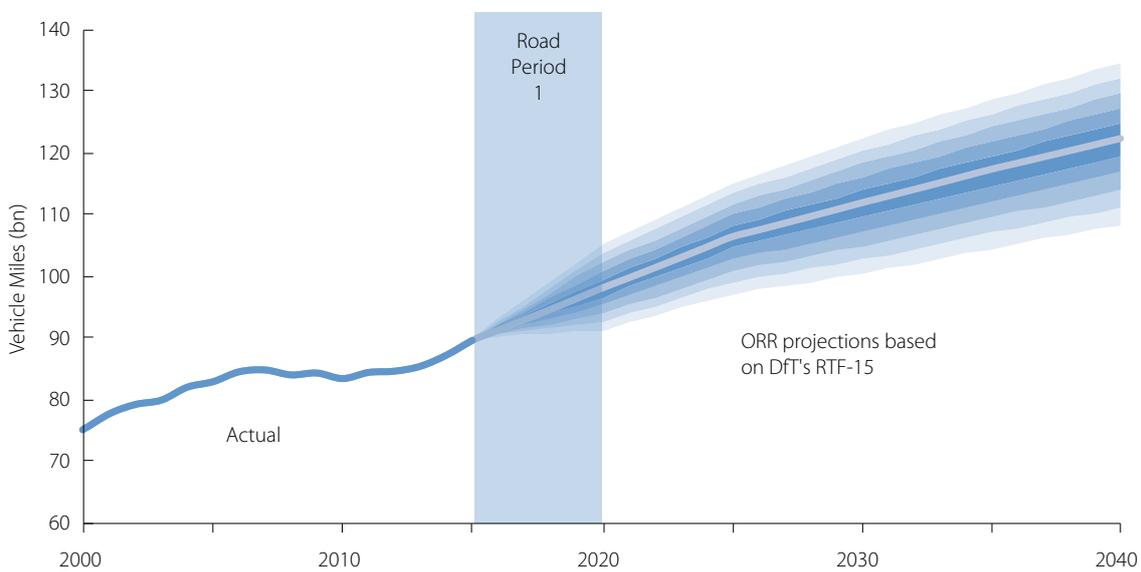


Traffic growth

- 1.8 Highways England is managing, operating and delivering improvements to its network at a time when traffic is at record levels and continuing to grow.
- 1.9 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.

- 1.10 Traffic growth presents specific challenges for the company in almost all of its outcome areas. For example, it must keep traffic flowing to support economic growth whilst delivering an increased programme of capital investment. It must also manage the impact of traffic growth on safety, network condition and air quality.

Figure 1.2: Vehicle miles travelled on the strategic road network³



³ The projected traffic presented in this chart is based on the high and low scenarios from DfT's road traffic forecasts, 2015: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/411471/road-traffic-forecasts-2015.pdf



2

Highways England's performance

This chapter summarises Highways England's performance against key outcomes in 2015-16. It also considers the quality of plans to deliver outcomes in the remainder of the road period.

How we measure Highways England's performance

- 2.1 We measure Highways England's performance against the outcomes in the RIS Performance Specification, as shown in table 2.1. This includes assessing Key Performance Indicators (KPIs), Performance Indicators (PIs) and requirements in each of the outcome areas⁴.
- 2.2 Table 2.1 provides a summary of the KPIs and associated targets for each outcome area. It shows Highways England's performance against each of the KPIs and a summary of our assessment of the company's performance using a red, amber, green (RAG) status.
- 2.3 Each outcome area is reviewed in greater detail later in the chapter. Within these sections we provide the explanations for the RAG statuses.

⁴ 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>

Table 2.1: Performance Specification KPI delivery

Outcome	KPI and target	RAG ⁵ 2015-16	RAG RP1
Making the network safer	Killed and seriously injured Target: 40% reduction by end of 2020	Amber	Amber
Improving user satisfaction	Road user satisfaction Target: 90% by March 2017	Amber	Amber
Supporting the smooth flow of traffic	Network availability Target: 97% lane availability in any one rolling year	Green	Green
	Incident clearance Target: 85% of motorway incidents cleared within one hour	Green	Green
Encouraging economic growth	Average delay (seconds per vehicle mile) Target: No target set	Amber	Amber
Delivering better environmental outcomes	Noise important areas mitigated Target: Mitigate at least 1,150 noise important areas by March 2020	Amber	Amber
	Improved biodiversity Target: Publish biodiversity action plan	Green	Green
Helping cyclists, walkers and other vulnerable users	Number of new and upgraded crossings Target: No target set	Amber	Amber
Achieving real efficiency	Capital expenditure savings Target: Total savings of at least £1.212bn on capital expenditure by March 2020	Green	Amber
	Progress of work, relative to Delivery Plan Target: No target set	Green	Amber
Keeping the network in good condition	Pavement condition Target: 95% of pavement requiring no further investigation for possible maintenance	Green	Green

⁵ Explanations for RAG statuses are given for each KPI later in this chapter

Outcome: Making the network safer

2.4 Safety of road users and workers is a primary concern for Highways England and us, and needs continued focus. The company is demonstrating commitment to making the network safer, and has started to implement its health and safety plans.

Key performance indicator: The number of killed and seriously injured on the strategic road network

- Highways England must achieve an on-going reduction in network KSI (Killed and Seriously Injured) to support a 40%+ decrease by end 2020 against the 2005–09 average baseline

2.5 England's roads are amongst the safest in the world, but Highways England is tasked with making the network even safer, including reducing the number of KSIs by 40% by the end of 2020⁶. The long-term trend of falling KSIs on the strategic road network was interrupted by increases in 2013 and 2014. In 2015 the number of KSIs was 1,787, a 3.6% reduction on the previous year. However, the total remains higher than in 2012 and above the straight line trajectory required to meet the target at the end of 2020.

KPI Performance in:	Status	Explanation
2015-16	Amber	The number of people killed and seriously injured in 2015 was 3.6% lower than in 2014. However, this is above the trajectory required to deliver the target by the end of 2020.
Road Period 1	Amber	Highways England has developed plans for improvement in the first road period but these are not yet published. The company has not yet quantified how its plans will deliver the end-of-road period target.

⁶ The 40% reduction required is against the average for 2005 to 2009

Figure 2.1: Killed and seriously injured on the network, 2005-2015

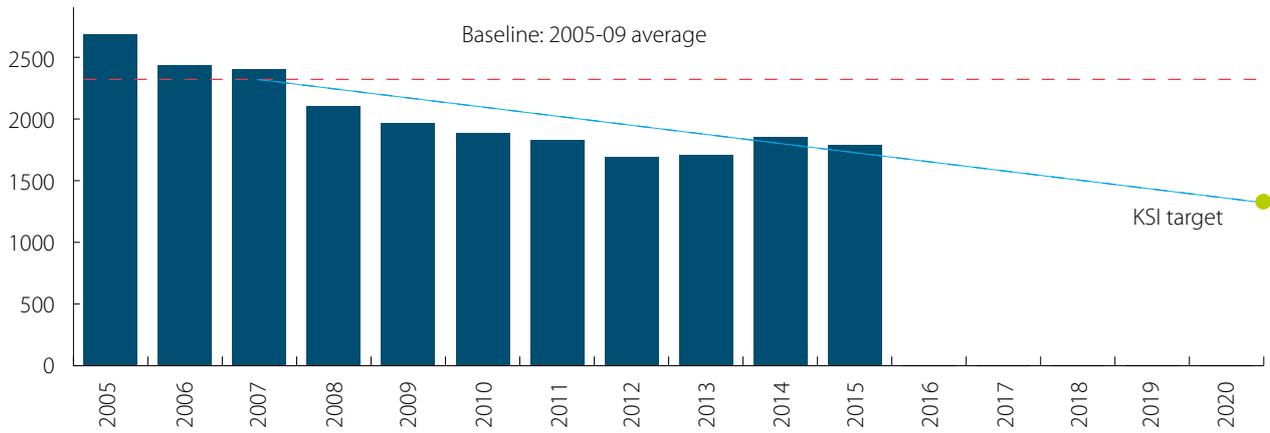


Table 2.2: Number of killed and seriously injured on the network, 2014 and 2015

	2014	2015	Change
Killed	211	226	↑ 7.1%
Seriously injured	1,642	1,561	↓ 4.9%
KSI	1,853	1,787	↓ 3.6%

- 2.6 Table 2.2 shows that the number of people killed on the network increased by 7.1% in 2015. The Department for Transport's analysis suggests that this may reflect natural variation in the figures rather than an underlying trend.
- 2.7 Highways England is demonstrating commitment to making the network safer for both users and road workers, and has produced safety plans including:
- a published strategy, "Health and safety: our approach"⁷;
 - a health and safety five year plan, which has been shared with the supply chain; and
 - a national incident and casualty reduction plan, which sets out details of how the company will achieve its safety outcomes, including analysis of regional safety performance, enabling it to focus on improvements in each region to support the overall target.
- 2.8 Highways England has begun to implement these plans and will need to continue to monitor their delivery and impact closely to achieve the required safety improvements. We will work with the company to understand and review how it is managing the delivery of its plans. We are also currently discussing with Highways England what further action it can take to make sure that its plans are sufficiently visible to, and understood by, its stakeholders.
- 2.9 Highways England has explained to us some of the more detailed work that it is taking forwards. It has provided us with details of an in-depth study it has commissioned which aims to identify the causation and contributory factors of all fatal, and the most serious non-fatal collisions, on the network in 2014. We will work with the company to understand its conclusions and how the company is taking its findings forwards. Highways England has also given us a demonstration of its forecasting tool which it is using to quantify the impact of its planned interventions on reducing the number of KSIs.
- 2.10 We regard these as important steps in Highways England developing an improved understanding of the link between its actions and safety performance to ensure that its actions are prioritised and targeted. The work being taken forward has given us assurance that Highways England is applying focus and management attention to improving safety performance.
- 2.11 Highways England plans to spend over £70m of "ring-fenced funds" on additional safety improvements over-and-above its business-as-usual interventions.
- 2.12 During 2015-16 Highways England spent approximately £1m of the fund on safety improvements, and its activity has largely involved scoping work, with the main body of delivery expected between 2017-18 and 2019-20. A key focus for expenditure will be on improving safety of those parts of the network with the worst safety record – primarily single carriageway A roads. It will also be delivering safety improvements by focusing on improving driver compliance with the law (for example, compliance with variable speed limits and obeying smart motorway signs, such as "red X" warnings) and on improving road worker safety. We will monitor Highways England's delivery closely over the coming year to understand more about these interventions and how they will support the achievement of the target.

⁷ Highways England's publication, "Health and Safety: our approach": <https://www.gov.uk/government/publications/highways-england-health-and-safety>

Case study – Sharing safety lessons between road and rail

- Improving and maintaining safety performance on the road and rail networks has very different challenges. In 2014, there were 211 deaths on the strategic road network, compared to four passenger deaths on Britain's railways during 2014-15.
- There are many reasons for the differences between the two modes of transport. One obvious distinction is that the rail network is a more controlled environment.
- However, there are opportunities for the sectors to share learning. For instance, in rail there is a well-established, systematic approach to the analysis of accidents to identify and share lessons learned.
- ORR and Highways England have collaborated to share experience and expertise in this area. As well as working with Highways England to review its 5 Year Health and Safety Plan, ORR also engaged with the company to demonstrate the safety models used in rail.
- We have seen evidence of Highways England applying a more systematic approach to its work on safety. It has commissioned a study which aims to identify the causation and contributory factors of all fatal, and the most serious non-fatal, collisions on the network in 2014. The company has produced a national incident and casualty reduction plan which includes focus on regional performance to support delivery of the overall target and we have also seen its KSI forecasting tool which quantifies the impact of its planned interventions.



Safety performance indicators

- 2.13 In common with the decrease in KSIs, total casualty numbers on both main A roads and motorways decreased in 2015 from the previous year.
- 2.14 Highways England is progressing a programme to assess the safety of its network, based on a star rating system used internationally. The company is working with the Road Safety Foundation to use and develop the International Road Assessment Programme model. The company reports that it is currently on track to set the 2015 baseline safety star rating for the network in September 2016.
- 2.15 The accident frequency rate for both Highways England and supply chain staff has remained worse than Highways England's own targets throughout the year. Highways England is engaging its supply chain and is commissioning an independent incident investigation project to understand how and why incidents have occurred and to learn lessons. The company is also carrying out an internal audit of Traffic Officer health and safety. Highways England reports that one cause of the increase is likely to be improved reporting of incidents.

Outcome: Improving user satisfaction

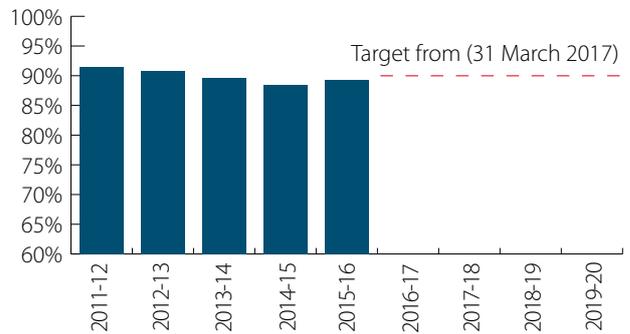
Key performance indicator: National road users' satisfaction survey

2.16 It is important that Highways England delivers a service that meets road users' requirements, and maintains high levels of customer satisfaction. Road user satisfaction is measured through regular surveys and is a key indicator of how the company is performing.

- 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

KPI Performance in:	Status	Explanation
2015-16	Amber	Road user satisfaction is 89.3%, which is lower than the target for March 2017 but an improvement over 2014-15.
Road Period 1	Amber	Highways England has developed plans to improve user satisfaction, but has not yet set out quantified plans for how it will deliver 90% satisfaction by March 2017, and beyond.

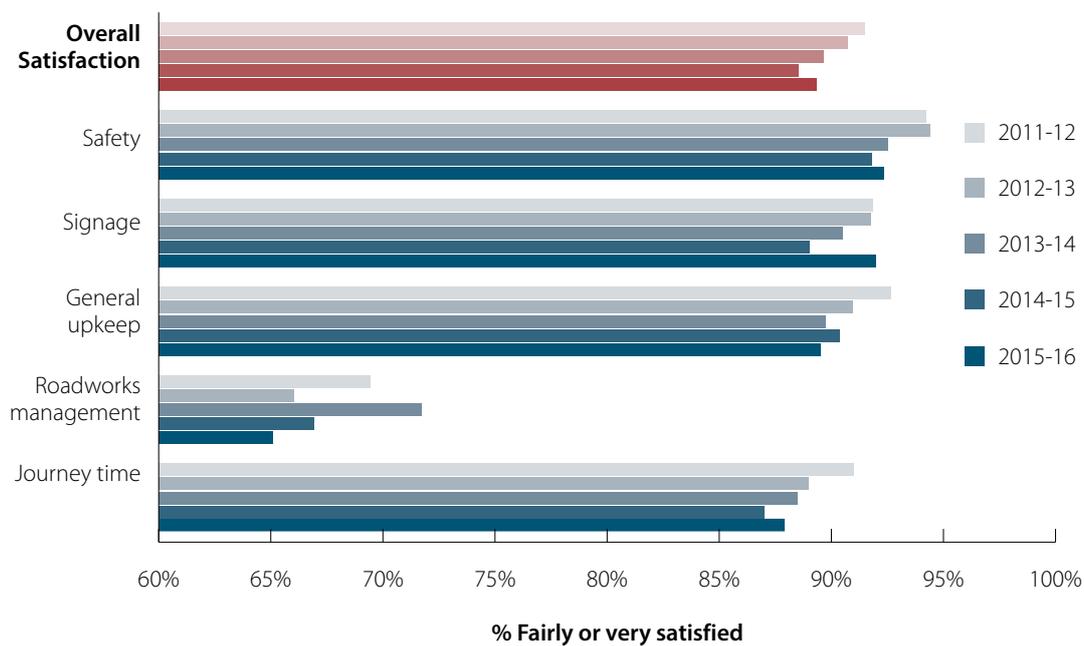
Figure 2.2: Overall road user satisfaction, 2011-12 to 2015-16



2.17 The percentage of respondents to the National Road Users' Satisfaction Survey (NRUSS) that were very or fairly satisfied in 2015-16 was 89.3%, up from 88.5% in the previous year. This represents the end of a decline in overall road user satisfaction in the preceding four years. However, overall satisfaction is still below the target level of 90% (which is to be achieved from the end of March 2017 onwards).



Figure 2.3: Elements of overall satisfaction, 2011-12 to 2015-16



2.18 The overall satisfaction score is calculated from users' satisfaction with five journey elements: journey time, roadworks management, general upkeep, signage and safety. Comparing the results for the individual elements shows a similar trend to overall satisfaction; satisfaction with journey time, signage and safety has increased for the first time in several years. However, satisfaction with roadworks management and general upkeep has fallen.

2.19 Users have historically been less satisfied with roadworks management than the other elements. This affects overall satisfaction through both the proportion of respondents who experienced roadworks on their most recent journey on the network, and their level of satisfaction with roadworks management.

2.20 Table 2.3 shows that although satisfaction with roadworks management fell by almost 2% in 2015-16 compared with 2014-15, this had only approximately a -0.1% impact on the overall satisfaction score. This is because not all journeys on the network encounter roadworks and the methodology used takes this into account.

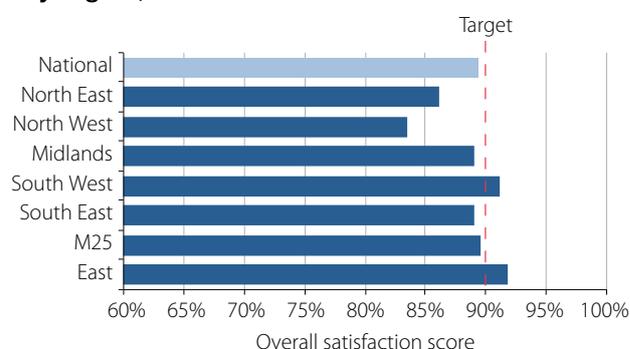
Table 2.3: Changes in individual satisfaction scores and their impacts on the overall satisfaction score, 2014-15 to 2015-16

	Journey time	Roadworks management	General upkeep	Signage	Safety
Change in individual satisfaction score	0.9%	-1.9%	-0.9%	3.0%	0.5%
Estimated impact on overall satisfaction score	0.2%	-0.1%	-0.2%	0.7%	0.1%

2.21 Highways England has trialled, and is evaluating, a number of initiatives to improve its users' experience, for example by reducing the duration of roadworks and improving signage. However, increased investment over the first road period is likely to increase the number of users experiencing roadworks and the weight placed on roadworks management in the overall satisfaction score. Therefore, even if satisfaction with roadworks management improves, the increasing presence of roadworks represents a risk to user satisfaction in the later years of the period.

2.22 Figure 2.4 shows how overall road user satisfaction varied by region in 2015-16. Whilst overall satisfaction is close to, or exceeds, the 90% target in five out of the seven regions, it is substantially lower in the North East (86%) and the North West (84%). Regional analysis of the individual elements shows that, whilst satisfaction in the North East is lower across the board, in the North West the lower overall score is driven by lower satisfaction with factors such as upkeep and signage.

2.23 In 2016-17 we will be carrying out an in-depth review of Highways England's plans to improve user satisfaction. As part of this we will be reviewing the actions that the company is taking in response to these results.

Figure 2.4: Overall road user satisfaction by region, 2015-16

Development of the replacement measure

2.24 Transport Focus is working with stakeholders to develop a new road user satisfaction survey, and we are engaged in that process. We are working with stakeholders to understand what impact any change of methodology could have on the KPI target. This will only become fully apparent during a period of dual running. In the event this reveals a significant difference in what constitutes satisfaction, the need to change the user satisfaction KPI target will be considered.

A road-user perspective from Transport Focus

- Transport Focus is the statutory, independent consumer watchdog for transport users. Our remit was extended in March 2015 to include users of England's motorways and major A roads.
- Highways England has made a good start on the journey from infrastructure provider to service provider. We have found the company keen to engage, and hungry to understand road users' needs.
- During the first year we have worked closely with Highways England and engaged the company on a wide range of issues. For example, we have raised the concerns of freight operators with respect to inaccuracies in information about roadworks, and have raised the need for earlier involvement of users when designing new infrastructure.
- Guided by our research into road users' priorities for improvement to the Strategic Road Network, we are pressing for change in a number of areas. For example, Highways England needs to address road users' top priority for improvement – road surface quality. It needs to embrace road users' views in the way it plans roadworks. And the company must make sure that it is dealing with incidents in the best way possible – working with others to get traffic moving again more quickly.
- A key priority for Transport Focus over the next year is developing a road user survey to replace the existing National Road User Satisfaction Survey (NRUSS). The new survey will be called the Strategic Roads User Survey (SRUS) and it is due to launch in early 2017, after its pilot during the summer and autumn of 2016. Input from Highways England, as well as the Department for Transport and ORR, has been particularly valuable with regards to the development of the questionnaire and to understand how they wish to use the survey data.

Outcome: Supporting the smooth flow of traffic

2.25 There are two key performance indicators for this outcome: network availability and incident management.

Key performance indicator: Network availability

2.26 **A smooth flowing strategic road network is vital to the economic health of the country and supports the safe and timely movement of people and goods. If Highways England is to deliver investment in the network then roadworks are inevitable – but the company must minimise their impact on road users by keeping the network available to traffic where possible.**

- Highways England must maximise lane availability so that it does not fall below 97% in any rolling year

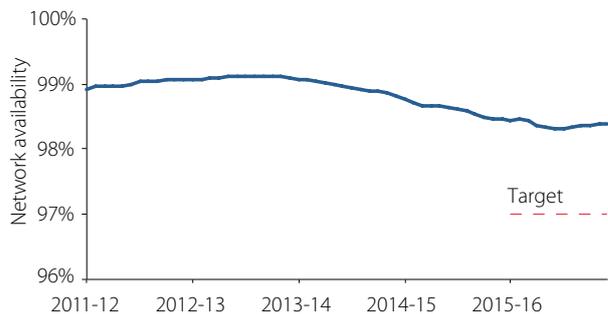
KPI Performance in:	Status	Explanation
2015-16	Green	Network availability of 98.4% is above the target of 97%.
Road Period 1	Green	Network availability is forecast to be at 97.7% at the end of the first road period, above the target of 97%.

2.27 In simple terms, 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 year⁸.

2.28 Network availability in the rolling year to March 2016 was 98.4%. Availability has been broadly stable over 2015-16. Highways England forecasts availability of 97.7% at the end of the first road period – above the target of 97%.

2.29 During the year we have engaged with Highways England to understand more fully the work of the analytical team that is responsible for monitoring availability on the network and projecting future performance. This has provided us with further assurance about the processes that are used to monitor this KPI.

Figure 2.5: Network availability by rolling year, 2011-12 to 2015-16



⁸ A full definition is provided in Highways England's Operational Metrics Manual: <https://www.gov.uk/government/publications/highways-england-operational-metrics-manual>

Key performance indicator: Incident management

2.30 Highways England can also contribute to the smooth flow of traffic by proactively responding to, and managing, incidents on the strategic road network.

■ Highways England must clear at least 85% of incidents on the motorways within one hour

KPI Performance in:	Status	Explanation
2015-16	Green	Highways England cleared 86% of motorway incidents within an hour. This is above its target of 85%.
Road Period 1	Green	Highways England undertakes ongoing analysis of past incidents to inform its future plans.

2.31 In the rolling year to March 2016, Highways England cleared 86% of motorway incidents within an hour. This is above its target of 85%. Despite remaining above target, there has been a downturn in the trend in recent months – this was due to lower than average performance in December and January 2016, where figures for the individual months were below 85%. Following this drop in performance, Highways England has undertaken analysis to review the types of incident that have not met the metric which will be used to identify areas where improvements can be made. We will review the outcomes of this with the company.

Figure 2.6: Incident management by rolling year: 2011-12 to 2015-16



2.32 During the year, we have engaged Highways England directly on its incident management, including carrying out an in-depth review of the company's incident management data and associated processes. This highlighted the analytical work ongoing within the organisation to build understanding of how incident management can minimise delays for road users. It provided assurance about the processes that are in place to report the KPI.

Traffic flow performance indicators

2.33 Several performance indicators are used to provide context for, or additional information about, traffic flow (or congestion) on the network. As table 2.4 shows, the total vehicle miles travelled has increased over the last four years and this is likely to be a factor in a general worsening of traffic flow performance measures⁹.

2.34 Since 2012-13, average speeds have decreased. The “planning time index”, which measures the additional time that road users would have to allow for their journey to arrive on time in 19 out of every 20 journeys, has been increasing (getting worse). And “acceptable journeys”, measuring the percentage of journeys that are above 75% of free-flowing speeds, has been reducing (getting worse).

⁹ During 2015-16 Highways England began using a new data source to report against traffic flow performance indicators, making direct year-on-year comparisons difficult

2.35 These performance measures show the importance of Highways England delivering the capital investment improvements which are required to address congestion on the network, whilst minimising the impact on road users.

Table 2.4: Traffic performance indicators, 2012-13 to 2015-16

	2012-13	2013-14	2014-15	2015-16
Vehicle miles (bn)	84.7	85.5	87.3	89.7
Average speed (mph)	61.3*	60.7*	59.4*	59.3
Planning time index	1.54*	1.57*	1.64*	1.66
Acceptable journeys	87.1%*	85.8%*	83.4%*	83.6%

*adjusted

Outcome: Encouraging economic growth

2.36 The strategic road network is a vital piece of national infrastructure which helps to support our economy. The network carries a third of all road traffic and two thirds of all road freight traffic. Delays to journeys are likely to have a negative impact on economic growth.

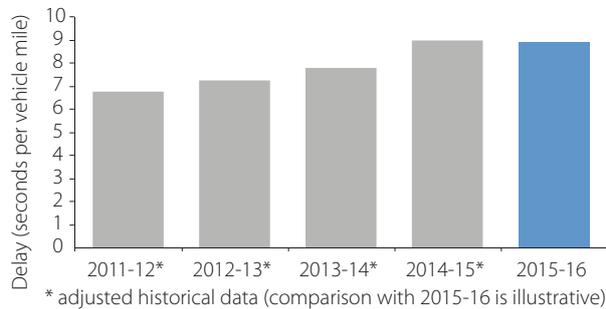
Key performance indicator: Average delay

- Highways England must report on average delay – time lost per vehicle mile

KPI Performance in:	Status	Explanation
2015-16	Amber	Average delay was 8.9 seconds per vehicle mile. A change in data supplier means comparisons to previous years are illustrative.
Road Period 1	Amber	Future performance depends on traffic growth and the delivery of the investment plan in the remainder of the road period (see chapter 3).

2.37 Highways England's impact on economic growth is measured using average delay per vehicle mile as a proxy. No target has been set, but the KPI is being monitored to understand the trend. Average delay in 2015-16 was 8.9 seconds per vehicle mile. This means that, on average, a trip of 100 miles takes approximately 15 minutes longer than when the network has no congestion.

Figure 2.7: Delay, seconds per vehicle mile



2.38 Delay on the network is likely to be influenced by traffic growth. Highways England can manage levels of delay in the way that it operates the network (for example managing speeds) and, in the longer-term, through delivery of its capital investment programme. Minimising roadworks and lane closures, and delivery of schemes to reduce congestion, tend to minimise or reduce delays.

2.39 A new data supplier was used to calculate the measure of delay in 2015-16 and Highways England has implemented an interim methodology to define 'free-flow' speeds used in the calculation. Data for previous years have been adjusted to make them more comparable, but we cannot draw firm conclusions about performance in 2015-16 relative to prior years. We will continue to monitor congestion data as they become available during the road period to gain a better understanding of the trend.

2.40 We are working with Highways England to understand the causes of recent delay performance and the measures that it is taking to minimise future levels of delay. We will be carrying out an in-depth review of average delay in summer 2016.

Encouraging economic growth performance indicators

- 2.41 Gateway routes are the connections linking major population centres, or business and manufacturing sites, with the most important ports and airports, and potentially strategic rail freight services. Average delay on gateway routes generally mirrors the trend for delay on the network. However, gateway delay was 8.1 seconds per vehicle mile in 2015-16, compared with 8.7 seconds per vehicle mile in 2014-15 (adjusted data).
- 2.42 Highways England can help support economic growth by playing its role as a major statutory consultee in the planning process effectively. The percentage of planning applications responded to within 21 days in 2015-16 was 99.8%, above the company's internal target of 99%.
- 2.43 Highways England has agreed to help the government support small and medium sized businesses. It estimates that its expenditure with small and medium sized businesses during 2015-16 was 27%, above the government target of 25%.



Outcome: Delivering better environmental outcomes

2.44 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.

Key performance indicator: Number of noise important areas mitigated

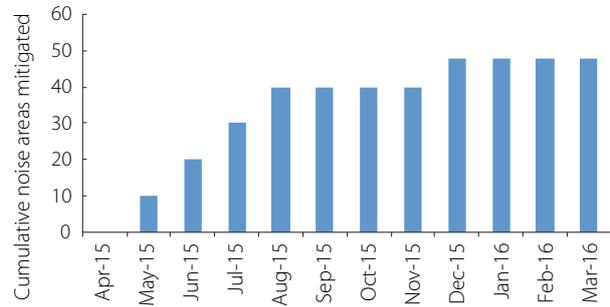
2.45 Noise from the strategic road network can be a nuisance to neighbouring communities, but Highways England can take steps to mitigate its impact.

■ Highways England must mitigate at least 1,150 noise important areas over the first road period

KPI Performance in:	Status	Explanation
2015-16	Amber	48 noise important areas have been mitigated during 2015-16, which represents 4% of the target to be delivered in the first road period. No clear plan has been set out.
Road Period 1	Amber	Highways England is yet to set out a clear plan for delivering the end-of-road period target of mitigating 1150 noise important areas.

2.46 Highways England has mitigated 48 noise important areas during 2015-16. This is 4% of the 1,150 target which must be mitigated in the first road period. The company expects to deliver its target through a combination of its resurfacing programme, its major schemes, and noise insulation schemes delivered through the environment ring-fenced fund.

Figure 2.8: Noise important areas mitigated during 2015-16 (cumulative)



2.47 Highways England has put in place processes to report more robustly on its performance in mitigating noise important areas, and started reporting in the final quarter of 2015-16. Whilst this represents progress, the company now needs to deliver improved planning to assure that the target will be met at the end of the road period. The company expects to provide us with detail of its plan in the first half of 2016-17.

Key performance indicator: Delivery of improved biodiversity

2.48 The way in which the strategic road network is managed and improved can have a significant impact on biodiversity.

■ Highways England must publish a Biodiversity Action Plan by 30 June 2015 and report annually on how it has delivered against the Plan

KPI Performance in:	Status	Explanation
2015-16	Green	Highways England published its Biodiversity Action Plan in June 2015.
Road Period 1	Green	The delivery of the Biodiversity Action Plan is largely on track.

- 2.49 Highways England published its Biodiversity Action Plan in June 2015, in line with its target. The plan makes a clear commitment to ensure no net loss to biodiversity by 2020 and sets out actions to baseline biodiversity on the network, to develop a new biodiversity metric and to report annually on net biodiversity loss.
- 2.50 We have reviewed Highways England's performance against its Biodiversity Action Plan, including reviewing its year-end report. Overall, the company has made good progress in delivering the actions that it committed to in the plan. However, more work is still required in some areas, for instance in establishing a baseline for the biodiversity of the network. We will undertake a more detailed review of progress against the biodiversity plan in the coming year.
- 2.51 We have also engaged stakeholders to understand their views on Highways England's performance in this area. The Biodiversity Action Plan has been well received, but the company can do more to make sure that its engagement with environmental stakeholders is as consistent and effective as possible, both at a local and a national level.
- 2.53 During the year, Highways England started work on six air quality pilot studies. The commissioned studies cover Sheffield, Manchester, the A38 Derby junctions and the West Midlands, plus intervention studies for an HGV incentivising programme and dynamic junction management. The conclusions from the pilots are due in 2016-17 and will be used to inform how the ring-fenced fund for air quality will be spent. Highways England has split the work to be delivered into two phases. The first phase delivers the pilot studies, the second delivers interventions based on lessons learned from the pilots. We will work with Highways England to understand and monitor progress of this work.
- 2.54 The company has also contributed to Defra's 'Air Quality in the UK' report which plans to reduce nitrogen dioxide emissions. This report was published in December 2015 and sets out how the UK will comply with the EU Ambient Air Quality Directive in the shortest possible time. However, air quality issues still represent a risk to delivery of the investment programme.

Performance indicator: Number of air quality pilot studies completed

- 2.52 The latest version of Highways England's environment strategy is expected to be published in summer 2016. The strategy commits to producing action plans for specific areas, including air quality. Highways England will publish its air quality plan this year, setting out the actions it will be taking to reduce air pollution. We will engage the company closely to ensure that its plans meet stakeholders', and our, expectations.



Environmental performance indicators

2.55 The table below provides a summary of Highways England's performance against its environmental KPIs and PIs. Highways England has improved the robustness of these data sources during 2015-16, particularly through reporting mechanisms in the asset management systems which are used to report progress on flooding mitigation.

Table 2.5: Environmental performance indicators

	2014-15	2015-16
Number of Noise Important Areas mitigated	N/A	48
Number of air quality pilot studies commissioned	N/A	6
Carbon dioxide equivalents – Highways England's activities (tonnes)	104,978	95,373
Carbon dioxide equivalents – supply chain activities (tonnes)	383,487	294,448
Number of flooding hotspots and culverts (high risk and very high risk) mitigated	90	124
Number of water outfalls and soakaways (high risk and very high risk) mitigated	0	0

2.56 Carbon dioxide emissions associated with Highways England's activities were lower in 2015-16 than the previous year.

2.57 Highways England has mitigated more high risk and very high risk flooding hotspots and culverts this year compared to last, but has not mitigated any outfalls and soakaways. We will discuss performance in this area further with the company in the coming year.

Case study – Design panel

- In line with its licence requirements, Highways England has established a design panel, whose role is to independently advise the company on design issues.
- Terms of reference have been agreed for the panel, which is chaired by the Highways England Chief Highways Engineer, and it met four times during 2015-16. Membership of the panel includes a wide range of organisations covering the natural and built environment with an interest in design on the strategic road network. Members include the National Trust, the Campaign to Protect Rural England and the Institution of Civil Engineers.
- To date, the panel has considered examples of good infrastructure design and guidance for highway schemes. It has engaged with an ongoing review of technical standards and has commented on a number of plans, including for the development of Expressways and of an A1 Northumberland improvement scheme.
- In the coming year, we expect to see further evidence of how the design panel's advice has helped shape the development of projects on and around the strategic road network. ORR will also continue to engage with many of the stakeholders that sit on the panel to understand how the company is addressing any issues raised through this forum.

Case study – Management of litter

- In addition to monitoring the company against the measures set out in the Performance Specification and the RIS more widely, we will, where appropriate, review compliance with its licence. An example of this is the issue of litter at the roadside, where stakeholders have raised concerns to us.
- Highways England has a duty under the Environmental Protection Act 1990 to ensure that the land (the strategic road network) is, so far as is practicable, kept clear of litter and refuse. It also has a licence requirement to develop and implement strategic plans that demonstrate how it aims to meet its legal duties and other obligations with regard to the environment. During the last year we undertook inquiries into how the company approaches its duties with respect to litter management. From our engagement with Highways England, we found that it is working to manage this issue through a range of measures. For example, the company picks a large volume of litter from its network – over 150,000 sacks each year – and runs campaigns to discourage road users from dropping litter. The company has set up a hotline for members of the public to report litter.
- Through our review, we identified a number of actions that Highways England should take to improve performance in this area and have since written to the company to set these out. They include requirements for the company to publish an updated litter strategy and to publish further details of the litter picking it undertakes on the network, to provide greater assurance to its users and stakeholders that it is effectively managing the issue.

Outcome: Helping cyclists, walkers and other vulnerable users

2.58 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 use and cross the network safely.

Key performance indicator: Number of new and upgraded crossings

- Highways England must report on the number of new and upgraded crossings

KPI Performance in:	Status	Explanation
2015-16	Amber	204 new and upgraded crossings were delivered during 2015-16. Highways England has not developed a clear plan for delivering new and upgraded crossings.
Road Period 1	Amber	Highways England has not developed a clear plan for delivering new and upgraded crossings.

2.59 Highways England's delivery of new and upgraded (improved) crossings can have a big impact on its neighbouring communities, helping them to stay connected, and providing facilities for cyclists, walkers, equestrians, and other vulnerable users to cross the network safely.

Table 2.6: New and upgraded crossings delivered in 2015-16

	New	Upgraded	Total
Ring-fenced investment funds	6	53	59
Major schemes	27	50	77
Local schemes	6	62	68
Total	39	165	204

2.60 Highways England has been developing processes to report more robustly on the number of new and upgraded crossings being delivered. The company reports that 204 new and upgraded crossings were delivered during 2015-16, as shown in table 2.6. The schemes listed under 'ring-fenced investment funds' have been delivered through the Cycling, Safety and Integration fund. These are crossings which would not have otherwise been constructed through major schemes or business as usual.

2.61 Highways England should now set out a clear plan for delivering new and upgraded crossings over the remainder of the road period to provide transparency about what will be delivered for vulnerable users and when these schemes will be delivered.

Identification and delivery of the annual cycling programme

2.62 The company's programme of cycling improvement schemes is an important contributor to the delivery of new and improved crossings.

2.63 Highways England set out its annual cycling programme in its Delivery Plan which included 40 schemes to be completed during 2015-16. Of these, a total of 21 were finished by the year end. Highways England also took forward an additional programme of nine reserve schemes, of which four have been completed in 2015-16.

2.64 Whilst Highways England has not completed a number of the planned cycling schemes during the year, the majority of these are under construction and will be completed shortly. We will review Highways England's plans and delivery in 2016-17, making sure it has learned the lessons from performance to date, and report on progress at the end of the year.

2.65 Highways England published its Cycling Strategy in early January 2016 and followed this up with a programme of stakeholder engagement to communicate the plan. The published Cycling Strategy is a high-level document, but it is supported by a more detailed cycling delivery plan which contains clear actions and associated completion dates. We will now monitor Highways England's delivery of its plan.

Number of vulnerable user casualties

2.66 Highways England reports a performance indicator on the number of vulnerable user casualties injured on its network. Data for 2015, as shown in table 2.7, show a reduction in the number of casualties for each group of vulnerable users when compared with the previous year.

2.67 During the year, Highways England developed a package of measures aimed at vulnerable users in its "Health and Safety 5 Year Plan". Performance in 2015 was positive, but we will continue to monitor delivery of this plan closely.

Table 2.7: Casualties for vulnerable users, 2015

	2014	2015	Change from 2014
Motorcyclists	917	849	 7%
Pedal cyclists	179	153	 15%
Pedestrians	182	158	 13%

Outcome: Achieving real efficiency

Key performance indicator: capital savings

2.68 Highways England's five year funding certainty gives it the opportunity to plan its work over the longer-term and deliver more efficiently. The company has started to deliver efficiencies in 2015-16.

- Highways England must deliver total capital expenditure savings of at least £1.212bn over the first road period

2.70 Highways England needs to deliver £1.2bn of efficiency improvements in Road Period 1 and the company's work over the past year on developing its processes for substantiating efficiencies has established good practice for future years. It will be important that the quality of evidence provided is commensurate with the size of the efficiency being reported.

2.71 Further details about our assessment of Highways England's efficiency improvements are provided in chapter 3 (Financial Performance and Efficiency).

KPI Performance in:	Status	Explanation
2015-16	Green	Highways England has met its internal target of £33m.
Road Period 1	Amber	The company needs to develop a clear plan to deliver capital savings to meet its target of £1.212bn by the end of the road period.

2.69 Highways England has identified £55m of efficiency improvements across its capital programme during 2015-16. Our assessment is that Highways England has achieved its internal efficiency target of £33m, though there is uncertainty about an additional £21m, in relation to savings on the company's smart motorway programme. We recognise the challenges in evidencing efficiency in this area and we will continue to work with Highways England in 2016-17 as it develops its evidence base. The efficiency reported by the company for 2015-16 may be adjusted at a future date.

Outcome: Keeping the network in good condition

2.72 Highways England must keep its existing assets in a safe and serviceable condition to deliver the service that road users and wider stakeholders require. It must maintain and renew the assets which make up the network to make sure they remain safe and fit for purpose.

2.73 How Highways England manages its assets affects the service that road users experience and the value for money that taxpayers receive. Making the right asset management decisions – for example, which assets to replace, when to replace them, and how to replace them – is vital to maintaining the network's performance whilst minimising costs.

2.74 Highways England needs to develop and maintain the right information about its assets to manage them effectively. It needs to understand what assets it has, where they are, their condition, their utilisation, their criticality and impact on the wider network, how they degrade, and the costs of carrying out work on them (or the costs of not doing so). The company needs to use this information to develop maintenance and renewal plans which will deliver the required level of network performance whilst seeking to minimise costs over the long-term (whole life cost) and living within funding allowances. It then needs to implement those plans and review their effectiveness.

Key performance indicator: percentage of pavement asset that does not require further investigation for possible maintenance

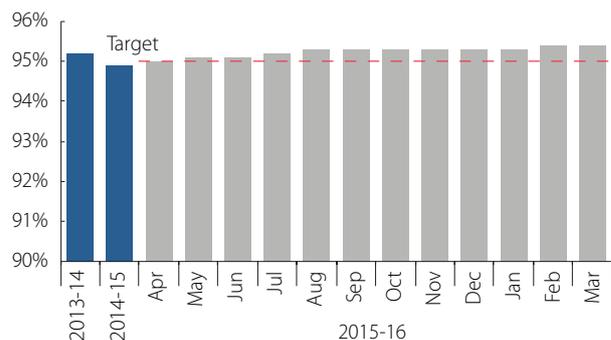
- Highways England must maintain the pavement asset such that at least 95% of it does not require further investigation for possible maintenance

KPI Performance	Status	Explanation
2015-16	Green	In March 2016, pavement condition was 95.4%, above the target of 95%.
Road Period 1	Green	Pavement condition is currently on an upward trend.

2.75 Pavement (carriageway) condition is a key performance indicator for the first road period as the road surface condition is critical for delivering a safe and comfortable journey.

2.76 In March 2016, the pavement condition indicator was 95.4%¹⁰, and it has shown continuous improvement over the year. It is above the target of 95%. Figure 2.9 shows annual performance since 2013-14 and monthly figures for 2015-16.

Figure 2.9: Percentage of pavement that does not require further investigation



¹⁰ Further data on the pavement condition indicator became available after the year end and is currently being reviewed

Wider network condition

- 2.77 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).
- 2.78 Highways England has developed its geotechnical asset inventory and condition data measures and updated them in line with its latest standards. The company reports that 96.6% of its geotechnical assets were low risk in March 2016. It does not currently have complete information on the volume of its geotechnical asset and now needs to develop a robust plan to improve its inventory.

- 2.79 Highways England is reporting high availability for its technology assets – largely consistent with historical trends. During 2015-16, the annual average of availability of control centre technology was 99.94% whilst availability of National Road Telecommunications Service was 99.99%. The availability of roadside technology was 98.67%.
- 2.80 The percentage of Highways England's drainage asset for which it has inventory and condition data is increasing. At the end of March 2016, drainage inventory data was held for 87% of the network, but condition data was only held for 27% of the asset. These measures are increasing but the company needs to continue to focus on improving drainage asset management information.



- 2.81 Highways England has developed new structures asset inventory and condition measures which it reported for the first time in December 2015. We worked closely with Highways England and the Department for Transport to guide development of these and to advise on their suitability. The new indicators show that structures inventory information is 97.8% complete. Highways England reports that the overall condition of its structures asset is good (it has a high average structural condition score). The company states that risks associated with poor condition are being managed, for example through increased frequency of inspections and implementation of weight restrictions, to make sure that safety is maintained whilst repairs are pending.
- 2.82 Highways England has produced an asset information improvement plan as part of its coordinated data improvement plan. This sets out the improvements that the company will make to its asset management information and systems to be implemented during the first road period and beyond. During 2016-17 the company has committed to improving its structures inspection process, extending the type and range of its pavement survey data capture and developing improved pavement and structures condition indicators. We will progressively review delivery of the asset information improvement plan.



3

Financial performance and efficiency

This chapter sets out our analysis of Highways England's financial performance and delivery of efficiency in 2015-16, and our review of its plans for the first road period.

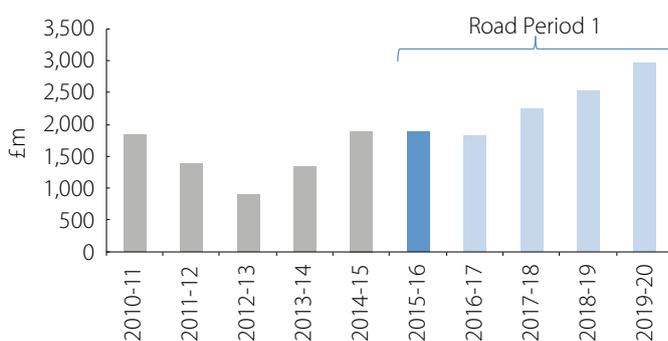
Financial performance

3.1 Highways England is funded by central government, receiving separate capital and resource funding from the Department for Transport. Capital includes funding for renewals (for example, pavement resurfacing and structural repairs), improvements to the network (for example, upgrading to smart motorways) and other capital works such as supporting local authority road schemes. Resource funding covers maintenance and renewals, operations (traffic management), support activities (for example, finance and human resources) and payments to Private Finance Initiative (PFI) contractors who operate and maintain some sections of the network under long-term contracts.

Highways England's funding under the RIS

3.2 The RIS gave Highways England the long term certainty of £11.4bn funding for capital during the first road period, of which £1.8bn related to 2015-16. The RIS also gave Highways England the flexibility to bring forward or defer up to 10% of its capital funding each year, to provide greater flexibility to deliver capital projects efficiently. Any other changes to total or in-year capital funding are to be agreed through formal change control with the Department for Transport. Figure 3.1 shows capital expenditure prior to the start of the road period and in 2015-16, and the profile of capital funding in the remainder of the road period.

Figure 3.1: Capital expenditure and funding to 2019-20



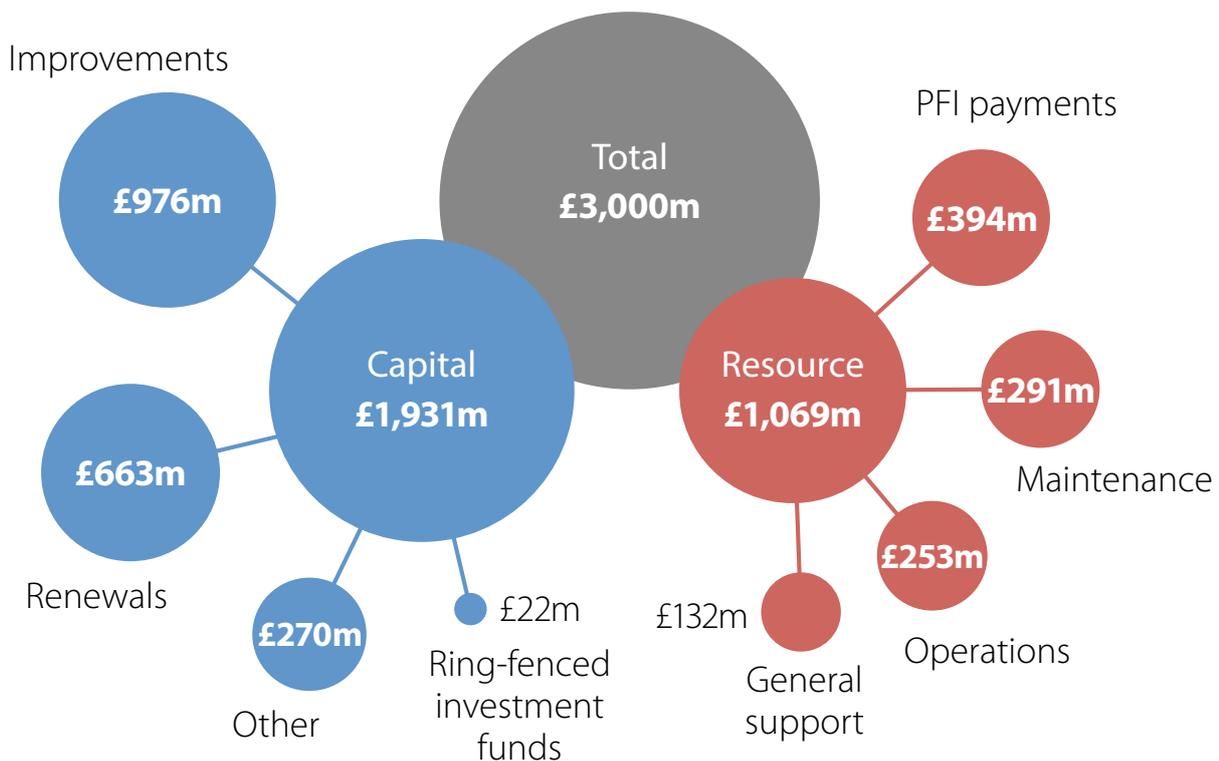
3.3 In 2015-16 Highways England received resource funding of £1bn. Resource funding for future years is announced through government spending reviews.

Highways England's expenditure in 2015-16

3.4 As shown in figure 3.2, Highways England spent £3.0bn in 2015-16, with almost two thirds of this on capital investment. This was 4.6% higher than expenditure in 2014-15 and, as examined in more detail below, was broadly consistent with the company's funding for the year.

3.5 Following publication of its Delivery Plan, Highways England reallocated budgets to better reflect how it intended to deliver its required outputs. Its revised capital baseline (£1,951m), agreed by the Department for Transport in October 2015, included an additional £169m to cover the estimated cost of works carried over from before the start of the road period. This was expected to be funded from additional Department for Transport funding and capital funding brought forward from 2016-17, making use of some of the 10% capital flexibility described above.

Figure 3.2: Highways England's expenditure in 2015-16



3.6 The Department for Transport provided £144m of additional funding in March 2016 comprising £140m for completion of work carried over from 2014-15 and a further £4m for the development of works for a major lorry park in Kent to improve Operation Stack (the procedure used to hold lorries on the M20 during disruption to cross-channel services). The company subsequently did not require use of the capital flexibility arrangement.

3.7 Highways England spent £1,931m on capital projects which was £20m lower than the revised capital baseline and £4.6m higher than its funding. On resource, the company spent £1,069m, which was £4m lower than its baseline. Expenditure variances compared to the revised baseline are shown in figure 3.3 and are summarised below.

- There was an underspend of £46m on (capital) renewals mainly due to the diversion of funding to other capital projects including the minor improvement schemes which overran from 2014-15. Despite this reduced renewals expenditure, as examined in chapter 4, Highways England significantly exceeded planned volumes in several categories.

- The company underspent by £46m on improvements to the network (including investment funds), due to delays to a number of schemes. £15m relates to Temple to Carblake which is being delivered by Cornwall County Council, £9m relates to the M1 J32-35A project and £10m relates to the A50 Growth Corridor.
- Other capital was overspent by £72m due to £29m of additional expenditure on smaller projects that were not identified in the RIS, £26m of capitalised staff costs which have not been allocated across capital projects and £17m of overspend on minor improvement schemes that overran from 2014-15.
- Resource expenditure was £4m lower than the baseline. Maintenance expenditure¹¹ was £30m higher than the baseline which Highways England has largely attributed to additional work undertaken to improve safety and KPI performance. Payments to PFI contractors were £19m lower than the baseline due to lower outturn traffic volumes and inflation than assumed.

Figure 3.3: Financial performance summary



¹¹ Includes non-capitalised renewals

3.8 Highways England's RIS funding settlement for 2015-16 included an assumption of 4.0% input price inflation (that is, increases in materials and labour costs). Highways England's analysis indicates that this is likely to outturn in the range -0.6% to +1.6% with a midpoint estimate of +0.5%¹². Our analysis suggests that this could result in substantial savings due to benign economic conditions, particularly for fuel and steel. We consider that there is likely to have been limited scope for realising these savings this year as many contracts were already in place and input price effects can be expected to only fully materialise as contracts expire and are renewed. Over time this might be expected to have a benefit in the region of £70m.

Efficiency improvements

Measuring efficiency improvements

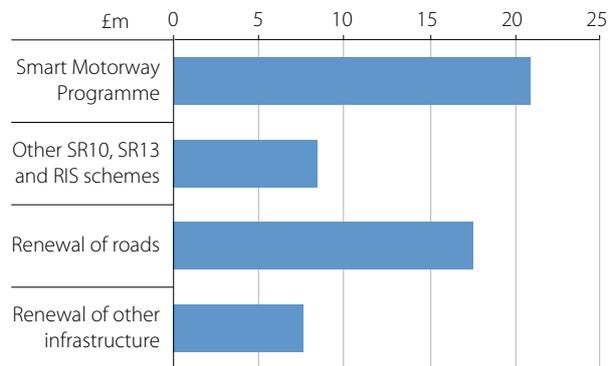
3.9 We worked with Highways England to develop its Efficiency and Inflation Monitoring Manual which was published in September 2015¹³. Since then we have continued to work with the company to establish an appropriate level of evidence for demonstrating efficiency improvements on the company's capital programme.

Highways England's reported efficiencies

3.10 Highways England is required to deliver over £1.2bn of efficiency improvements on its capital programme, by March 2020. Consistent with this, our assessment of the company's efficiency improvements focuses on its capital programme.

3.11 Highways England has reported £55m of efficiency improvements in 2015-16 which is 67% ahead of the company's internal £33m target for the year. A breakdown of reported efficiencies by major programme is shown in figure 3.4.

Figure 3.4: Reported efficiencies in 2015-16



3.12 Highways England's reported efficiency improvement in 2015-16 represents 4% of the company's requirement to deliver £1.2bn of efficiency improvements across the first road period as a whole. This means that the company will have to find significantly greater savings later in the five year funding period. Highways England has shared analysis with us about how the company aims to achieve this. Although the analysis is at an early stage, Highways England has identified and is pursuing a number of initiatives which have the potential to realise significant efficiencies. These include smoothing the monthly profile of renewals activity to reduce more expensive winter repairs, better integration of enhancements and renewals, optimising the working window for pavement resurfacing and improvements in the programme of upgrading to smart motorways. Highways England now needs to do work to further develop and deliver these plans.

Highways England's efficiency improvements

Introduction

3.13 It is important to note that improving efficiency is not just about short-term cost reductions. Although reducing short-term costs can be a form of efficiency, efficiencies can also be

¹² A final value will not be available until the relevant construction and other underpinning inflation indices have been finalised in the autumn.

¹³ <https://www.gov.uk/government/publications/highways-england-efficiency-and-inflation-monitoring-manual>

achieved through improving asset quality and intervention decisions (including a better understanding of whole life costs) and by improving customer outcomes for the same cost. Likewise, short-term cost reductions could be achieved through simply avoiding necessary work to maintain the network in a safe and sustainable condition – these cost reductions would not be an efficiency improvement. These factors are important for assessing efficiency improvements for Highways England's large and complex capital programme.

3.14 Because of this, there are three components to our assessment of Highways England's efficiency improvements:

- 1) expenditure and delivery compared to the funding assumptions set out in the RIS (as amended through change control over the period);
- 2) unit cost variances compared to 2014-15, the year preceding the start of Road Period 1; and
- 3) review of Highways England's bottom-up analysis of efficiency improvements.

3.15 Our assessment of Highways England's performance under the first component is covered in the financial performance section above and our assessments of the other two elements are covered below.

Our assessment of unit cost changes from the previous year

3.16 Highways England has provided unit cost analysis in support of the major areas of claimed efficiencies on renewals and upgrading to smart motorways.

3.17 Our analysis of renewals unit cost variances between 2014-15 and 2015-16 suggests renewals unit cost savings of around £31m. The most substantial unit cost saving was in pavement resurfacing where the cost of a lane kilometre reduced by 9.0% to £0.127m

per lane km. Whilst recognising Highways England's own concerns about the robustness of its reported renewals unit costs, our analysis supports the £25m of renewals efficiencies that Highways England has reported based on its bottom up efficiency analysis (see next section).

3.18 Highways England recognises the importance of robust unit cost analysis for substantiating efficiency improvements. We do not underestimate the difficulty of accurately recording unit costs when several renewals activities may be undertaken as part of a scheme, for example resurfacing and drainage. We are working with the company to ensure that the quality of its unit cost reporting improves. This forms an important part of a coordinated data improvement plan which Highways England is taking forwards.

3.19 During 2016-17 we will review delivery of the coordinated data improvement plan which is an important step to improving the company's efficiency analysis and asset management capability more widely.

Our assessment of Highways England's bottom-up register of efficiency improvements

3.20 Highways England has undertaken a significant amount of work over the past year to develop its approach for capturing and recording efficiencies. It has begun to embed efficiency reporting across the business through the use of regional efficiency registers. We consider that Highways England has done a good job of implementing this regionally distributed process. However, the process has only been operating for a few months and we are aware that it is taking time to embed consistently throughout the business¹⁴.

3.21 We distinguish efficiency improvements between economy, productivity and effectiveness. Improving economy means reducing the cost of resources used whilst having regard to quality. Improving productivity means improving the relationship between

¹⁴ This may have resulted in achieved efficiencies not being fully captured within Highways England's internal reporting. If Highways England can subsequently demonstrate efficiencies having been achieved in 2015-16 that have not yet been reported we will take this into account in our assessment of the company's cumulative efficiency improvements across the first road period.

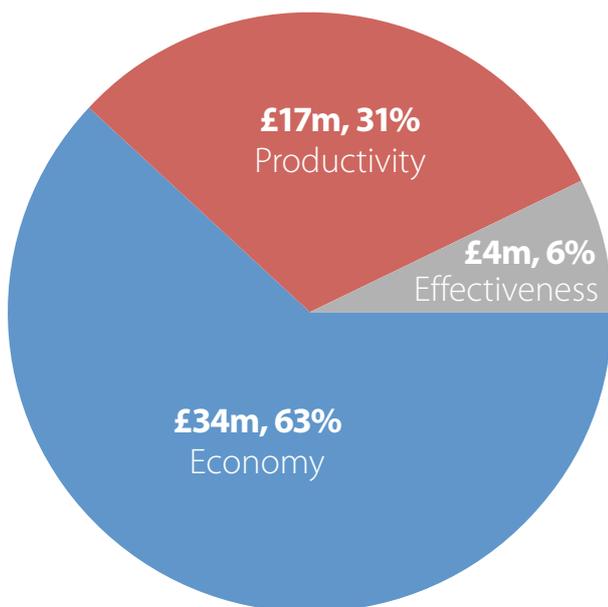
resources used and outputs delivered. Improving effectiveness means improving the extent to which intended objectives have been achieved.

- 3.22 These terms are perhaps best explained with an example such as pavement resurfacing. Highways England could improve economy by obtaining asphalt at lower cost through improved procurement. Productivity could be improved by improving the utilisation of machinery. Lastly, effectiveness could be improved by making sure that pavement is being renewed using the most appropriate materials, and only when the pavement needs renewing.
- 3.23 Figure 3.5 provides an analysis of Highways England's reported efficiencies between economy, productivity and effectiveness.
- 3.24 Highways England has reported economy efficiencies of £34m, of which £21m is in relation to the company's smart motorways programme. At this time we believe that the company has not provided sufficiently robust analysis of the efficiency improvement on the

smart motorway programme. We recognise the challenges in evidencing efficiency in this area and support Highways England's plan to do further work.

- 3.25 Highways England has identified a further £13m of economy efficiencies across a number of projects including £4m from combining pavement resurfacing with smart motorways upgrades on the M1. By reducing disruption, this approach should also result in improved customer service both now and in the longer-term.
- 3.26 Highways England has reported £17m of productivity efficiency gains mostly from two initiatives to optimise the working window for pavement renewal and to allow running on temporary surface.
 - Optimising the working window aims to maximise the period in which pavement is able to be laid during an overnight road closure. Highways England has undertaken a number of pilots of a new approach which significantly increased the amount of material that was laid.
 - For running on planed surface, the road planer is used for longer shifts following which traffic is allowed to temporarily run on the planed surface. The resurfacing plant is then used to deliver longer stretches of road surface the following night rather than having to work alongside the planer. This allows an increase in the amount of pavement that can be laid in a shift and reduces the number of surface joints, increasing the durability of the road surface.
- 3.27 Highways England has reported £4m of effectiveness efficiency gains by improving the output of some schemes. For example, the company reduced costs by £0.9m on the M1 J19 improvement scheme by making better use of excavated materials in landscaping the area rather than disposing of this waste at a landfill site.

Figure 3.5: Efficiency reported by category 2015-16



3.28 In addition to the efficiency KPI, Highways England is required to report a Cost Performance Indicator (CPI) and Schedule Performance Indicator (SPI). These are measures of earned value which are often used in the construction industry. CPI is the relationship between target and actual cost for work completed and SPI is the relationship between work planned and actually completed. Highways England has reported CPI of 1.02 and SPI of 1.05 across its portfolio of major improvements to the network. As these numbers are both greater than 1 this indicates that overall, projects are ahead of schedule in terms of cost and completion compared to the company's Delivery Plan commitments. Refer to chapter 4 for our detailed assessment of capital delivery.

3.29 Highways England has identified £55m of efficiency improvements across its capital programme during 2015-16. Our assessment is that the company has achieved its internal efficiency target of £33m, though there is uncertainty about an additional £21m, in relation to savings on the smart motorway programme. We recognise the challenges in evidencing efficiency in this area and we will continue to work with Highways England in 2016-17 as it develops the evidence base. The efficiency reported by the company for 2015-16 may be adjusted at a future date.

3.30 Highways England needs to deliver £1.2bn of efficiency improvements in the first road period and the company's work over the past year on developing its processes for substantiating efficiencies has established good practice for future years. It will be important that the quality of evidence provided is commensurate with the size of efficiency being reported.

Case study – Delivering efficiencies through an integrated site-based design team during construction

- Highways England delivered £4m of productivity efficiency improvements by introducing an integrated, site-based design team during the construction phase of the upgrade of junctions 28 to 31 of the M1.
- The design of this scheme was subject to significant change to incorporate additional maintenance works. This resulted in more technical queries during the construction phase. By having a site-based team these queries were able to be dealt with more quickly both reducing the cost of resolving these matters and reducing disruption to the construction work.





4

Network investment delivery

This chapter describes Highways England's performance against its investment plan in 2015-16. It also considers risks to delivery in the remainder of the road period.

- 4.1 As part of the RIS, government published its Investment Plan, setting out the £11.4bn capital investment which Highways England must deliver during the road period. This includes:
- more than £7.0bn on the delivery of 112 major improvement schemes;
 - £0.7bn on programmes of additional targeted improvements funded through five ring fenced investment funds; and
 - £3.7bn on works to maintain and renew the network.
- 4.2 We measure and report on Highways England's performance against the network investment required by the Investment Plan.
- 4.3 Table 4.1 provides a summary of delivery in the first year of the road period, including those major schemes which have started construction works or opened for traffic. It provides a summary of ring-fenced funds, and maintenance and renewals delivery. In each case the table summarises our assessment of the company's delivery using a red, amber, green (RAG) status.

Table 4.1: Investment Plan delivery

Construction phase	2015-16 Delivery Plan commitments	Delivery in 2015-16	Scheme	RAG
Open for traffic	5 schemes to open for traffic during 2015-16	5 schemes opened for traffic	A14 Kettering bypass widening	Green
			A453 widening	Green
			M1 J39 – J42 (Smart Motorway)	Green
			M1 J28 – J31 (Smart Motorway)	Green
			M6 J10a – J13 (Smart Motorway, behind schedule)	Amber
Start of works	7 schemes to start works during 2015-16	8 schemes started	A160/A180 Immingham	Green
			A21 Tonbridge to Pembury	Green
			M1 J13 – J19 (Smart Motorway)	Green
			M5 J4a – J6 (Smart Motorway)	Green
			M6 J16 – J19 (Smart Motorway)	Green
			M5 Junctions 5 to 7 (ahead of schedule)	Green
			A50 Uttoxeter (delivered by Staffordshire County Council)	Green
			A43 Abthorpe junction (ahead of schedule)	Green

2015-16 commitments	Planned volume	Actual volume	Comment
Renewals¹⁵			
Pavement (lane miles)	1,200	1,468	Amber Improved planning and assurance over delivery required
Vehicle restraint systems (linear metres)	178,000	144,530	
Structures – bridge joints (number)	222	533	
Structures – waterproofing (square metres)	20,000	55,637	
Drainage (linear metres)	231,000	290,919	
Geotechnical (linear metres)	46,000	40,293	

2015-16 commitments	Comment
Ring-fenced investment funds	
Environment, Air quality, Innovation, Growth & Housing, Cycling, safety & integration	Amber Governance and processes established, limited expenditure to date. Some deferral of cycling schemes

¹⁵ Table reports a subset of renewals volumes

Delivery of major improvement schemes in 2015-16

- 4.4 Highways England is required to progress delivery of 112 major improvement schemes during the road period. These major schemes are aimed at improving capacity and connectivity across the network – for example, by improving junctions, opening the hard shoulder to traffic, adding new lanes, or bypassing congested parts of the network.
- 4.5 Highways England has progressed delivery of its capital programme during 2015-16. It has commenced construction works on all seven schemes that were planned to start, one of which was started ahead of schedule. In addition one scheme (A43 Abthorpe junction) scheduled to start construction in late 2016 started early, ahead of its commitment.
- 4.6 Highways England opened five schemes to traffic during 2015-16, in line with its plans, adding an additional 91 lane miles to the capacity of the network. Of these, the M6 J10a-J13 scheme was delayed by two months and opened for traffic in February 2016. The delay was due to the need to resolve technology communication problems. We have discussed the detail of the delay with Highways England and have received assurance that lessons learned will be reflected in future schemes.
- 4.7 The M1 J39-J42 scheme commenced phased opening in December 2015 in line with its Delivery Plan commitment, subject to carrying out some additional maintenance work, such as bridge waterproofing and resurfacing of the carriageway. It was fully opened for traffic in January 2016. Table 4.2 sets out Highways England's progress in delivering major improvement schemes in 2015-16.

Table 4.2: Major scheme delivery in 2015-16

2015-16 commitments	Committed date	Actual date
Major schemes starting construction		
A160/A180 Immingham	2015-16, Q1	2015-16, Q1
A21 Tonbridge to Pembury	2015-16, Q1	2015-16, Q1
M1 J13 – J19	2015-16, Q3	2015-16, Q3
M5 J4a – J6	2015-16, Q3	2015-16, Q3
M6 J16 – J19	2015-16, Q3	2015-16, Q3
A50 Uttoxeter	2015-16, Q3	2015-16, Q3
M5 Junctions 5 to 7	2015-16, Q3	2015-16, Q2 Ahead of schedule
A43 Abthorpe junction	Late 2016	2015-16, Q4 Ahead of schedule
Major schemes opened for traffic		
A14 Kettering bypass widening	2015-16, Q1	2015-16, Q1
A453 widening	2015-16, Q2	2015-16, Q2
M1 J39 – J42	2015-16, Q3	2015-16, Q3
M1 J28 – J31	2015-16, Q4	2015-16, Q4
M6 J10a – J13	2015-16, Q3	2015-16, Q4

Key

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

4.8 Highways England's expenditure against its budget for major schemes in construction stages in 2015-16 is shown in table 4.3. The company has spent broadly in line with its plans. For those schemes which opened for traffic it has spent 4% more than its budget, but it has spent 8% less than budget on those in construction. However, the company continues to develop a more robust cost baseline against which expenditure can be assessed. This is discussed later in this chapter.

Table 4.3: Major scheme costs against budget in 2015-16

Scheme stage (end of 2015-16)	Budget (2015-16)	Outturn costs (2015-16)	Variance	% over / (under)
Under construction	£726m	£671m	£55m	(8%)
Open for traffic	£112m	£116m	£4m	4%

Major scheme case study – widening the A453

- The A453 provides an important link between Nottingham and the M1. In July 2015 Highways England completed a £165m major improvement scheme, widening 9km of a rural section of the route from single carriageway to dual carriageway and widening a 2.5km urban section to four lanes.
- We visited the completed scheme, and were given a tour of some of the major engineering works delivered. The project includes two new, split-level (grade-separated) junctions, and the construction of 10 major structures. It has delivered a more accessible pedestrian cycle route away from the road and improved bridleway crossings.
- The improvements are aimed at increased safety, reduced congestion and improved reliability of journey times. Initial indications suggest that these improvements are being delivered, but this will be formally evaluated during the next year.



4.9 During 2015-16, Highways England has also made progress in developing schemes prior to construction. The company has progressed 32 schemes into options stages and eight schemes have started development. By end of March 2016, 19 schemes were under construction exceeding Highways England's planned commitments. A breakdown of the major schemes' progress during 2015-16 is shown in figure 4.1. The numbers above the arrows show how many schemes moved between the stages during the year.

4.10 Highways England has provided us with its assumptions for the dates when its major schemes will progress through the stages outlined above. We will monitor progress against these in the remainder of the road period.

Figure 4.1: Progress of schemes through development and construction in 2015-16*



*Numbers in brackets are the number of schemes in each stage at the end of March 2016

Case study – M1 junction 19 major improvement scheme

- In August 2015 we visited a major improvement scheme at junction 19 of the M1. The £191m scheme is being delivered to improve connections between three important strategic roads – the M1, the A14 and the M6. The scheme started in January 2014 and is scheduled to be completed by the end of December 2016. It includes six new bridges.
- The scheme will also provide significant improvements to the local road network and recreational links.
- The visit highlighted the challenges and constraints of carrying out improvement on a complex interchange site while maintaining traffic flows of 150,000 vehicles per day. The team was also shown the benefits of using advanced technology such as BIM (Building Information Modelling) to enhance the design and build of the scheme.
- The project is making good progress with the delivery of significant milestones during 2015-16, for example opening the southbound link from the M6 to the M1 to traffic. The company reports that it is on target for completing the scheme on time.



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

- 4.11 As well as assessing major scheme delivery over the last year, we have also carried out work looking ahead to delivery in the rest of the road period.

Future major scheme key milestones

- 4.12 The Delivery Plan commitments for the remainder of the road period are summarised in table 4.4. Highways England plans to have started all 112 major schemes by the end of the first road period, of which one scheme is forecast to miss its start of works Delivery Plan commitment – the A63 Castle Street improvement scheme is delayed while the environmental impact of the scheme is being assessed. The M54 to M6/M6 Toll link road scheme is at risk having had its Preferred Route Announcement delayed following the Department for Transport's request for further assessment and development of options.
- 4.13 For those schemes which are planned to open for traffic, the opening of the A30 Temple to Carblake scheme is forecast to be delayed by one month to January 2017. This scheme is being delivered by Cornwall County Council. Highways England forecasts that all 23 schemes which are planned to open for traffic during the remainder of the road period will do so.

Table 4.4: Major scheme delivery – remainder of first road period, construction phase

Phase	Planned for remainder of RP1*	Progress	No	Details	RAG
Start of works	88*	On schedule	86	As planned	●
		At risk	1	M54 to M6/M6 Toll link road – start of works commitment of 2018-19 at risk	●
		Delayed	1	A63 Castle street – Start of Work commitment of 2016-17 delayed until Dec 2018	●
Open for traffic	23*	On schedule	22	As planned	●
		Delayed	1	A30 Temple to Higher Carblake is forecast to be delayed by one month	●

* as set out in Highways England's Delivery Plan. At the end of the period 84 schemes will be in construction and 28 will be open for traffic.

Establishing clear plans for delivery

4.14 In our monitoring of Highways England we aim both to monitor past performance and to understand risks to future performance so that we can work with the company to ensure that these are mitigated wherever possible. Over the last year we have engaged Highways England to press the need for a clearer plan to deliver the capital investment requirements over the remainder of the road period.

4.15 At the end of March 2016, the company provided us with its assumptions for the costs of its capital programmes and its assumptions for key milestone delivery dates for its major schemes. This demonstrates some progress in setting out clearer planning assumptions which we will use as a baseline against which to monitor delivery. However, Highways England has further work to do to improve the robustness of the baseline, and the company acknowledges this. It is planning a programme of work over the next six months to provide greater assurance about delivery of network investment in the rest of the road period.

4.16 There are key areas that this must address. For example, the company needs to:

- set out a clear baseline for the scope of what it plans to deliver for each major scheme;
- provide assurance that the baseline schedule information is deliverable, affordable and aligned with performance specification requirements;
- provide assurance that the baseline schedule information represents an efficient approach to delivering the portfolio of works;
- provide assurance that the baseline considers alignment in delivery of renewals and improvement works;
- confirm that the baseline meets the expectations of key stakeholders, including the Department for Transport; and
- provide further assurance about how baseline costs have been developed.

4.17 We have particular concerns that:

- the company's assumptions for major schemes include a very significant increase in schemes starting construction in 2019-20, which may present a risk to delivery. The company has more work to do to set out how it is monitoring deliverability and managing associated risks.
- Highways England's baseline assumes a small proportion of total scheme expenditure during the first roads period on those schemes announced in the RIS and Autumn Statement 2014. The company needs to confirm that this is aligned with stakeholders', including the Department for Transport's, expectations.

4.18 At the same time that the company provided the baseline it also provided some current forecasts for project costs. These forecasts represent the position prior to realising efficiencies, mitigating risks and taking other actions to manage the portfolio and its costs. It is normal for these early forecasts to be higher than expected outturn costs and we welcome Highways England's open engagement on this. However, we have the following concerns:

- Highways England has more to do to evidence how its forecast has been developed; and
- the company needs to develop a clear plan for how its current forecast costs will be managed down to deliver within the funding available.

4.19 Highways England must resolve these issues during the next year and we will report on its progress.

Capability to deliver the RIS

4.20 To support our work in this area we have carried out a study to assess Highways England's supply chain's capability and capacity to deliver the requirements of the RIS and to understand the risks of cost escalation¹⁶. The study focused on resource and skills in the supply chain, availability of labour, plant and materials and whether the supply chain can deliver the increased investment. It also looked at Highways England's management of the supply chain.

4.21 The study included two key workstreams:

- structured interviews with a broad cross-section of Highways England's suppliers to understand capacity and constraints to delivery of the RIS (qualitative evidence); and
- development of a strategic model of demand and capacity constraints to delivery of the RIS (quantitative evidence).

4.22 The review was carried out collaboratively with Highways England to make sure that findings were shared, constructively challenged, jointly understood and useful. The study identified opportunities in three areas:

The supply chain's capacity:

4.23 Analysis and modelling of the supply chain's capacity has identified that:

- availability of appropriately skilled people represents the strongest capacity constraint;
- the industry needs to do more to address availability of skilled resource and attractiveness of a career in highways to new entrants; and
- there is an opportunity for Highways England to optimise the profile of its work.

¹⁶ Review of Highways England Supply Chain Capability: <http://orr.gov.uk/highways-monitor/publications/highways-englands-supply-chain-capability>

Highways England's engagement with its supply chain:

- 4.24 In engaging with its supply chain, there is an opportunity for Highways England to:
- provide more detailed forward visibility of demand at an appropriate level which facilitates improved planning by its suppliers;
 - align procurement more closely with suppliers' ability to bid; and
 - use industry engagement to ensure successful roll-out of its operating models.

Highways England's and ORR's monitoring of progress:

- 4.25 There is an opportunity for Highways England to bring together a clear and concise set of measures on supply chain issues to monitor progress of delivery of the RIS and to highlight future risks to delivery. These measures might cover:
- individual project progress;
 - impact of adjacent infrastructure markets;
 - indicators of future trends (e.g. construction prices); and
 - combining the above to give an overall view on RIS portfolio health.
- 4.26 Working with Highways England highlighted that the company is progressing work in many of the identified areas, and the study has helped to further inform the work's future direction. The company has published a high-level plan for taking this work forward¹⁷. In particular, Highways England is working on improvements to the management of its portfolio of capital investment and we will work with the company to make sure that these improvements are delivered. This is a key priority for 2016-17.

Case study – Encouraging a more strategic approach to risk management

- Through our monitoring of Highways England we seek to encourage and work with the company to develop a more strategic view of risks.
- An example of this is our review of Highways England's supply chain's capability. This work has helped to inform us and the company about some of the potential constraints to delivery of the RIS – such as the availability of skilled labour. This has resulted in Highways England publishing its response, which sets out its plans to mitigate some of these risks.
- We are now working with the company to develop appropriate metrics to give early indication of deliverability risks and will report on this and Highways England's delivery of its plans next year.

Ring-fenced investment funds

- 4.27 Highways England is responsible for administering £900m of ring-fenced funds which allow for investment that is additional to, or beyond the traditional focus of, its road schemes. These funds are split into five areas, as set out in the table below. Much of the work in the first year has involved the development of programmes for delivery during the remainder of this road period. However, there have also been some more tangible outputs, which are summarised below.

¹⁷ Highways England's response to ORR's report on supply chain capability: <https://www.gov.uk/government/news/highways-england-response-to-the-office-of-rail-and-road-orr-report-on-their-supply-chain-capability>

Table 4.5: Ring-fenced investment funds delivery in 2015-16

Fund Name	Value (to 2020-21)	Expenditure in 2015-16	Highlights
Air quality	£100m	£0m	<ul style="list-style-type: none"> ■ Programme to be established once the results of ongoing study work have been reported
Cycling, safety and integration	£250m	£16.6m	<ul style="list-style-type: none"> ■ 21 cycling schemes delivered
Environment	£300m	£2.6m	<ul style="list-style-type: none"> ■ 11 noise barrier schemes in development ■ Guidelines developed for future biodiversity projects
Innovation	£150m	£2.7m	<ul style="list-style-type: none"> ■ Three fuel price signs deployed on the network ■ Development of the first motorway to motorway traffic management system ■ Innovation research strategy completed
Growth and housing	£100m	£0.1m	<ul style="list-style-type: none"> ■ First pilot scheme open to traffic ■ Around 50 expressions of interest received from Local Enterprise Partnerships

4.28 Highways England has provided evidence of its plans and governance for each of the ring-fenced funds. Some stakeholders have made us aware of concerns about Highways England's transparency and communication of its plans for the funds. The company has recently started to deliver workshops to discuss with stakeholders how it will use these funds and we expect engagement to continue to improve during the next year. We will continue to work with the company to review progress made against the plans it now has in place.

Strategic studies

4.29 The Investment Plan announced a set of six strategic studies to address some of the biggest challenges on the road network and to inform the development of RIS2. The strategic study programme has been commissioned by the Department for Transport, with Highways England funding and undertaking the project management for each study. During 2015-16

consultants were appointed to all six studies. The studies are currently on track to complete in 2016-17. Each study will contain a Strategic Outline Business Case which will have a number of options. Better performing options will continue into development, with resultant schemes ready to start in RIS2. More details on the status of each study are given below.

Table 4.6: Strategic studies progress

Strategic study	Status	Next steps
Northern Trans-Pennine	Interim report published in March 2016. This outlines the high level case for making improvements to the A66 and A69 to improve Trans-Pennine connectivity.	Further work is being carried out to develop the economic case for intervention, and a shortlist of better performing options has been identified. Study to complete by Autumn Statement 2016.
Trans-Pennine Tunnel	Interim report published in November 2015. This outlines the high level case for the Trans-Pennine tunnel road scheme between Manchester and Sheffield and feasibility of constructing the new link.	Further work is being carried out to develop the economic case for intervention, and the long list of tunnel routes will be narrowed down. Study to complete by Autumn Statement 2016.
Manchester North-West Quadrant	Interim report published in March 2016. This outlines the high level case for making improvements to the north-west quadrant of the M60, improving strategic and regional connectivity in the Manchester area.	Further work is being carried out to develop the economic case for intervention, and a shortlist of better performing options has been identified. Study to complete by Autumn Statement 2016.
A1 East of England	Interim report outlining the high level case for making improvements to the A1 between the M25 and Peterborough has yet to be published.	Further work to be carried out to develop the economic case for intervention, and identify a shortlist of better performing options. Study to complete by Autumn Statement 2016.
M25 South-West Quadrant	Study let in March 2016 to consider improvements to the performance of the transport network (including local roads and public transport) between junctions 10 and 16 of the M25.	An interim report is expected in Autumn 2016, and a final report in March 2017.
Oxford to Cambridge Expressway	Interim report outlining the high level case for making improvements to the Oxford to Cambridge corridor has yet to be published.	Further work to be carried out to develop the economic case for intervention, and identify a shortlist of better performing options. Study to complete by Autumn Statement 2016.

Maintenance and renewals delivery

4.30 Highways England must maintain and renew the network to make sure that it is kept in a safe and serviceable condition.

4.31 During 2015-16, the company reviewed its initial maintenance and renewals programme. It re-profiled expenditure compared to its budget, resulting in a significant movement of expenditure from the summer to the winter months. Figure 4.2 shows the profile of renewals expenditure by quarter. There was a 35% increase in expenditure in quarter 4 compared to quarter 3. Carrying out more renewals work in winter months is potentially less efficient because, for example, there is more likely to be adverse weather. It may also lead to a lower quality product, which may increase whole life cost. The profile also suggests variances in workload across the year, which may be inefficient, and which it was hoped longer-term certainty of funding would address. We are reviewing the efficiency of this profile with the company.

4.32 Highways England's Delivery Plan set out the volumes of renewals work it planned to carry out in 2015-16. The company has reported the actual volumes carried out and provided high level explanations for variances from the plan but it will need to improve the robustness of its asset management planning going forwards.

4.33 Volumes delivered compared to plan are shown in table 4.7. The company has delivered significantly greater volumes of structures renewals (with the exception of bridge bearings). It has also delivered different volumes of renewals of roads assets, including greater volumes of pavement renewals, road markings, kerbs, drainage, traffic sign and lighting, and lower volumes of vehicle restraint systems, geotechnical assets, boundary fencing and footways. For technology assets, the company has delivered increased volumes of motorway communications equipment and technology projects, but appears to have delivered lower volumes of technology renewals and improvements.

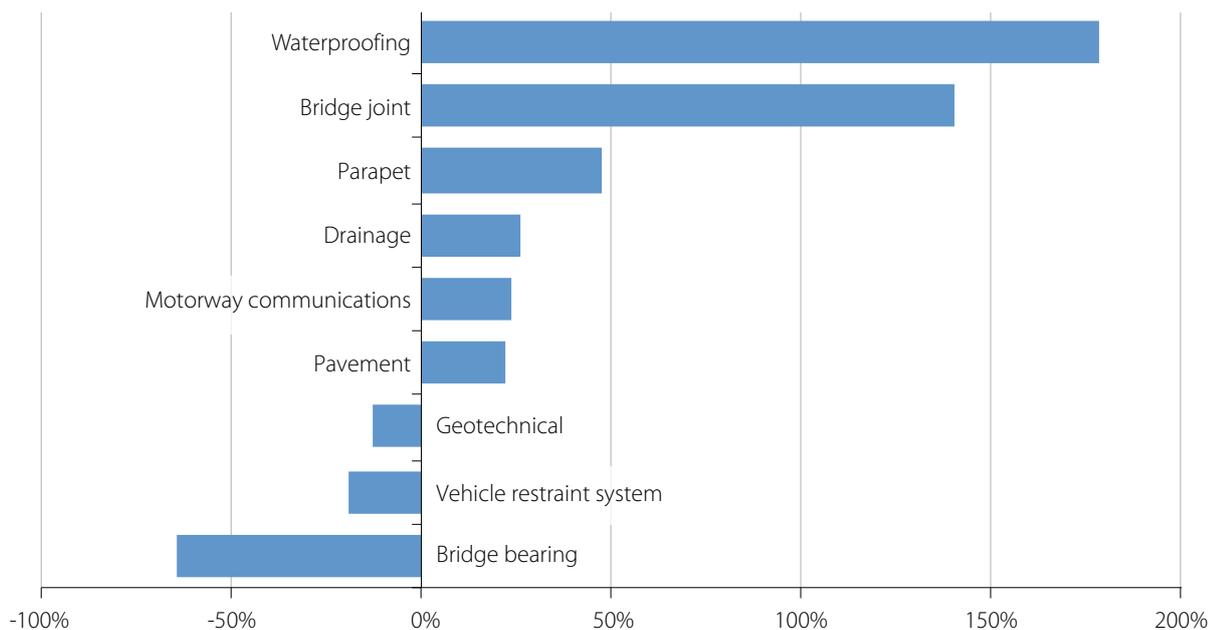
Figure 4.2: Renewals expenditure in 2015-16



Table 4.7: Volumes of renewals delivered compared to plan in 2015-16

2015-16 commitments	Planned Volume	Actual Volume	Comment
Renewals			
Pavement (lane miles)	1,200	1,468	Improved planning and assurance over delivery required
Vehicle restraint systems (linear metres)	178,000	144,530	
Structures – bridge joints (number)	222	533	
Structures – bridge bearing (number)	214	77	
Structures – waterproofing (square metres)	20,000	55,637	
Structures – parapet (linear metres)	1,000	1,471	
Drainage (linear metres)	231,000	290,919	
Geotechnical (linear metres)	46,000	40,293	
Motorway communications equipment (number)	100	124	

Figure 4.3: Asset renewal, delivered volume variance from baseline plan



4.34 When taking the profile of renewals expenditure and renewals volume variances together, we consider that Highways England has more to do to plan and deliver its renewals work efficiently and effectively.

4.35 Highways England needs to improve its processes for identifying and prioritising its maintenance and renewals work and must now set out a plan for improvement in the first road period. The current reporting of renewals points to the need for Highways England to improve its asset management capability, with particular focus on improving:

- asset information;
- strategic planning;
- asset management workbank development;
- reporting, including reasons for variances from plan; and
- efficient delivery.

4.36 Highways England is developing plans to improve its asset management capability. Its coordinated data improvement plan specifically targets improved asset information, and it has developed plans to ensure that it has an asset management system that is consistent with industry standards (ISO 55000) by the end of the road period. In 2015-16 the company has produced its asset management principles document and has started to develop its asset management strategy.

4.37 It is important that Highways England continues to develop its asset management strategy and asset management plans to deliver the required improvements. This is a priority for 2016-17.

Schemes carried over from 2014-15

4.38 Some capital works were carried over from 2014-15 and have impacted on the first road period delivery and financial performance. For example, a number of pinch point schemes that were originally scheduled to complete by the end of March 2015 were actually completed in 2015-16.

4.39 We have engaged Highways England to ensure that it has learned the lessons from the delivery of this programme and have received assurance that it has.

4.40 The request for additional funding of £140m, required to complete these schemes, has been through the change control process and has been agreed by the Department for Transport.



5

Priorities for 2016–17

- 5.1 This report has highlighted that Highways England has largely delivered its performance requirements and investment plans in the first year of the road period, but it must now build on that success to make sure that it delivers in the remainder of the period. It is important for Highways England to ensure that there is sufficient focus in the following areas in 2016-17.

Establishing clear performance plans

- 5.2 As set out in chapter 2, Highways England has more work to do to establish robust plans for the road period to make sure that it delivers the Performance Specification targets and requirements of the RIS Investment Plan. In 2016-17 we expect the company to set out:

- improved clarity of its plans to deliver its user satisfaction target of 90% by March 2017;
- its plans to deliver its efficiency target over the period;
- its plans to mitigate noise important areas;
- its plans to deliver against environmental performance indicators (for example, those relating to management of water); and
- its plans to deliver new and upgraded crossings.

Establishing clear capital investment plans

- 5.3 As set out in chapter 4, Highways England has more to do to assure itself, us, government and other stakeholders of the robustness of its capital investment plans. Improved management of the capital portfolio is a key priority for 2016-17.

- 5.4 As part of this, we expect Highways England to improve clarity of its baseline information relating to major schemes, and of its management of affordability and deliverability risk. We expect the company to improve its processes for ensuring that its asset maintenance and renewal plans are based on a robust assessment of network need and performance delivery.

Improving data quality and transparency

- 5.5 We have concerns about the breadth and quality of information that Highways England reports to us in a number of areas, notably asset information and unit costs. These form key parts of a coordinated data improvement plan which Highways England is developing. During 2016-17 we will review delivery of the improvement plan which is an important step to improving the company's asset management capability more widely, for example improving its renewals planning and reporting.

- 5.6 Whilst Highways England has progressed development of its plans and strategies, as set out earlier in the document, we have expressed concerns that some of these are too high level to provide sufficient detail to stakeholders on the company's strategic direction and specific work plans for the road period. In our view, Highways England particularly needs to increase the transparency of its plans and strategies in the areas of safety and the environment and we expect this to be progressed during 2016-17.

Developing and implementing plans for RIS2

- 5.7 The planning for RIS2 is now underway, and Highways England's route strategies are an important aspect. The process for the development of the route strategies should be as collaborative and transparent as possible. Throughout the route strategies process, the licence envisages high quality engagement from Highways England with its stakeholders.
- 5.8 Highways England has a key role to play in understanding the challenges on the network through its leading work on RIS2. Through the Strategic Studies, route strategies and associated work, Highways England is in a unique position to consider some of the wider challenges in the highways sector. Drawing on both our rail and road remits, we would encourage Highways England to work with us to ensure greater consideration of infrastructure and operational issues across transport modes.



Annex A – List of performance indicators

This table shows a list of performance indicators by outcome area. These are used to support and inform the associated KPIs. A fuller list and description of performance indicators can be found in the Operational Metrics Manual¹⁸.

Outcome	Performance Indicator
Making the network safer	Incident numbers and contributory factors for motorways
	Casualty numbers and contributory factors for all-purpose trunk roads
	International Road Assessment Programme based road safety investigations, developed in conjunction with the Department to feed into subsequent route strategies
Improving user satisfaction	Accident frequency rate for construction and maintenance workers, and for Customer Operations
	The percentage of National Road User Satisfaction Survey respondents who are very or fairly satisfied with: journey time; information and signs; management of roadworks; feeling safe; and upkeep.
Supporting the smooth flow of traffic	Planning time index (a measure of how much additional time road users need to allow to ensure they arrive on time)
	Traffic (vehicle miles travelled) on the strategic road network
	Acceptable journeys (the proportion of journeys faster than 4/3 of the 'free flow' journey time, calculated as a percentage)
Encouraging economic growth	Average speed of car journeys on the strategic road network
	Percentage of formal planning applications responded to within 21 days of receipt by Highways England
	Average delay (time lost per vehicle mile on gateway routes)
Delivering better environmental outcomes	Meet the government target of 25% small and medium sized enterprise direct and indirect spend
	Number of air quality pilot studies completed

¹⁸ <https://www.gov.uk/government/publications/highways-england-operational-metrics-manual>

	Carbon dioxide equivalents in tonnes associated with Highways England's activities
	Supply chain carbon dioxide (measure of carbon dioxide and other greenhouse gas emissions for Highways England and its supply chain as it operates, maintains and improves the network)
	The number of flooding hotspots and culverts (high risk and very high risk) mitigated
	The number of outfalls and soakaways (high risk and very high risk) mitigated
Helping cyclists, walkers and other vulnerable users of the network	Number of vulnerable user casualties (broken down by cyclists, pedestrians, motorcyclists and equestrians)
	Identification and delivery of the annual cycling programme
Achieving real efficiency	Cost performance indicator and schedule performance indicator for schemes at Project Control Framework stage 5 and beyond (demonstrates that the portfolio is being developed and the investment plan delivered in a timely and efficient manner)
Keeping the network in good condition	Geotechnical asset inventory and asset condition
	Drainage asset inventory and condition data coverage
	Technology asset availability (the percentage of Highways England's technology, used for management and operation, which is functioning correctly)
	Structure asset – inventory and condition (the percentage of structures that have basic inventory information)



Annex B – Glossary of terms

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

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

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

Investment Plan – The part of the Road Investment Strategy which sets out the planned investments and the funds available for the first road period.

Key Performance Indicators (KPI) – The performance specification sets out 11 key performance indicators which are used to measure Highways England’s performance. Full details of each indicator can be found in the Operational Metrics Manual (referenced in chapter 2).

Killed or Seriously Injured (KSI) – A person killed or seriously injured in an accident.

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

Performance Indicators (PI) – Indicators which sit below, and give context to, the key performance indicators. Full details of each indicator can be found in the Operational Metrics Manual (referenced in chapter 2).

Performance Specification – The part of the Road Investment Strategy which sets out the level of performance that Highways England must deliver in the first road period.

Road Investment Strategy (RIS) – This document sets out a long-term vision for England’s motorways and major roads, including a multi-year investment plan for improving the network and high-level objectives for the first roads period.

Road Period – The period that the Road Investment Strategy covers. The first road period covers the years 2015-16 to 2019-2020.

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

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

Transport Focus – The independent transport user watchdog which represents users of the strategic road network and is responsible for developing the new road user satisfaction survey. Formerly Passenger Focus.

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