



Department  
for Transport

# RIS2 Analysis Overview

**Moving Britain Ahead**



March 2020

The Department for Transport has actively considered the needs of blind and partially sighted people in accessing this document. The text will be made available in full on the Department's website. The text may be freely downloaded and translated by individuals or organisations for conversion into other accessible formats. If you have other needs in this regard please contact the Department.

Department for Transport  
Great Minster House  
33 Horseferry Road  
London SW1P 4DR  
Telephone 0300 330 3000  
Website [www.gov.uk/dft](http://www.gov.uk/dft)  
General enquiries: <https://forms.dft.gov.uk>



© Crown copyright 2019

Copyright in the typographical arrangement rests with the Crown.

You may re-use this information (not including logos or third-party material) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence, visit <http://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/> or write to the Information Policy Team, The National Archives, Kew, London TW9 4DU, or e-mail: [psi@nationalarchives.gsi.gov.uk](mailto:psi@nationalarchives.gsi.gov.uk)

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

# Contents

Foreword	4
Executive summary	5
1. The objectives for the analysis of RIS2	8
2. The development of the analysis since RIS1	11
3. Engaging with stakeholders and ensuring robust analysis	18
4. How the analysis informs the RIS2 investment decision	21
5. Next steps on developing the analysis for the RIS2 package	25
Glossary	28

# Foreword

The Second Road Investment Strategy (RIS2) sets out the government's plans for developing and improving the Strategic Road Network between 2020/21 and 2024/25, so that its long-term vision for a network that is safe, reliable and efficient for everyone is met. £27.4bn will be made available to fund the operation, maintenance, renewal and enhancement of the network that will move us closer to that vision, through a detailed Investment Plan and a robust and tested Performance Framework.

This investment will make a significant difference to the everyday experiences of millions of people using the SRN, helping them to get to work and conduct their business in an efficient and reliable way. It will help ensure the smooth delivery of goods to shops, factories, hospitals, schools, and improve links to ports and airports for international trade.

The infrastructure that we invest in now will be serving this country into the next century, shaping our national landscape and the way we live our lives for decades to come. Evidence has played a crucial role in informing investment decisions in RIS2 and we have sought to further improve the analysis and analytical models informing those decisions, building on the excellent work carried out for the first RIS.

At the end of 2017 we consulted on our strategy for delivering relevant, robust and trusted analysis for RIS2. We have used the helpful feedback to further improve our approach and this paper sets out how we have done that, working with and alongside our partners, Highways England, Transport Focus and the Office of Rail and Road. It outlines:

- Our approach to the analysis;
- How the approach builds on the excellent start in the first RIS;
- The engagement with stakeholders to build in their ideas and challenges;
- High level results from the investment appraisal; and
- The next steps in analysis as the schemes develop and are tested further.

Amanda Rowlatt  
Chief Analyst  
DfT



# Executive summary

This paper outlines the approach taken by the Department for Transport, together with our partner organisations (Highways England, the Office of Rail and Road (ORR) and Transport Focus), to complete the analysis for the second Road Investment Strategy (RIS2). It builds on the Analytical Strategy published with the RIS2 Consultation in December 2017 which set out our desire for relevant, robust and trusted analysis.

RIS2 sets out investment in the Strategic Road Network (SRN) during the second road period (RP2) which runs from 2020/21 to 2024/25. It builds on work taken forward through the first RIS (RIS1) to invest in the network and improve the way it is operated and maintained. Four key elements form the basis of the RIS2 announcement:

- Strategic Vision – setting out our long-term vision for what the SRN should be like in 2050 and the steps that will help us achieve it;
- Performance Specification – setting out the government’s high-level expectations for what outcomes Highways England will deliver for the SRN during RP2;
- Investment Plan – setting out the government’s expenditure priorities for RIS2;
- Statement of Funds Available (SOFA) – setting out the resources available to Highways England to deliver RIS2.

In response to this, Highways England will publish the:

- RIS2 Strategic Business Plan (SBP) - which sets out Highways England’s strategic direction based on the vision and objectives in RIS2, and explains the performance outcomes planned to be delivered during RP2; and the
- RIS2 Delivery Plan - which sets out how and when Highways England will deliver the activities in its business plan. It is structured around activities, which are then linked back to performance outcomes.

The Analytical Strategy that DfT previously consulted on set out the aims of creating relevant, robust and trusted analysis:

- Relevant means it must support decision making in all the key RIS2 areas;
- Robust means it provides sound information which can be relied upon when forming decisions;

- Trusted means that policy makers, analysts and key stakeholders are confident in the analytical methods and results.

Analysis underpins each of the key elements of RIS2:

- Strategic Vision – trends have been analysed in travel behaviour, car ownership and trip behaviour to understand alternative possible futures for use of the SRN. These have fed into a range of scenarios which have informed the Vision. Key to this has been improving our understanding of technology which we have tested out through alternative scenarios.
- Performance Specification – the impact of the investment portfolio analysis has informed the development of targets, indicators and metrics that are key to assessing the performance of both Highways England and the SRN.
- Investment Plan – analysis has played a key role in supporting the investment plan:
  - It has informed the identification of problems on the network and potential options for dealing with them. It has also been used to assess different options;
  - A new Analytical Platform has been developed by Highways England to assess the impacts of different investment packages. In addition to traffic impacts, it also accounts for broader implications, including for the wider economy, the environment and social impacts.
- Statement of Funds Available (SOFA) – modelling of costs for the different elements of the SOFA package has been developed and improved.

To ensure that the analysis is robust and trusted, the department and Highways England have actively engaged with stakeholders and experts on the analytical approach supporting RIS2. In December 2017 we consulted on our Analytical Strategy which received positive feedback from consultees. The development of the strategy has continued through further engagement with stakeholders to address key points that were raised. A rigorous assurance process has also been put in place to make sure that the analysis is fit to inform each of the elements of RIS2.

Analysis for the Investment Plan has provided an overall Value for Money (VfM) assessment of the RIS2 package which alongside the other four elements of the Department for Transport's business case framework (strategic, financial, commercial and financial) supports decision making.

<b>Major RIS2 Spending Line</b>	<b>VfM Assessment</b>
Operations, Maintenance and Renewals	Very High
Enhancements	High
Designated Funds	High/Very High

**Table 1: Major Spending Lines and VfM Assessments of the RIS2 Package**

The analysis shows that for the Investment Plan, RIS2 overall is High Value for Money (VfM) – meaning that more than £2 of benefits are generated for each £1 spent. All elements of RIS2 spend generate more benefits than the money invested in them. Table 1 sets out the VfM assessment for each of the major RIS2 spending lines. Detail on these assessments is set out in Chapter 4.

While RIS2 sets out government’s spending commitments from 2020/21 to 2024/25, and Highways England’s Delivery Plan sets out how the different elements of RIS2 will be delivered, further decisions will still need to be made on different parts of the Investment Plan. In particular, the process for delivering road enhancements involves a number of decision making stages. Analysis will continue to play an important role in informing those decisions, while engagement with stakeholders will continue to inform the analysis.

# 1. The objectives for the analysis of RIS2

## Introduction

This document sets out the approach the department, Highways England and their partner organisations have taken to analysis for RIS2. It shows how we have jointly ensured the analysis meets key objectives for relevant, robust and trusted analysis. It sets out:

- Why analysis is important;
- The approach we have taken to developing our analysis for RIS2;
- How we have engaged with stakeholders and experts to make sure our analysis meets objectives;
- How we have made sure the analysis is robust;
- How the analysis will be developed for the RIS2 schemes going forward.

## Background

On 11th March 2020 the government published the [Road Investment Strategy 2](#), setting out a £27.4bn investment programme for the SRN covering 2020/21 to 2024/25 and a long-term vision looking toward 2050. It also set out a performance framework for RP2 with targets that Highways England must deliver and metrics that it must report against. To enable the vision and performance targets to be delivered, it specifies a package of spending including investment in capital enhancements, maintenance of the network and its operations, and designated funds to support the environment, help users and communities, facilitate innovation and improve safety and congestion.

Analysis has informed the Strategic Vision, the development of the performance framework, and has played a key part in supporting decisions on how much to invest, what to invest in and the timing of investment.

The approach adopted builds directly on the analysis for RIS1. However, we have sought to build on the analytical foundation and to be at the forefront of the delivery of the department's appraisal development strategy and enhance the focus on the user.

## Analysis informs each of the different elements of RIS2

The analysis covers all of the following components for RIS2:

- Strategic Vision – to examine what the future might look like by developing scenarios and tackling emerging issues like the role and impact of technology;



- Performance Specification – analysis has informed targets and the development of metrics that are key to assessing performance;
- Investment Plan – to support the identification of a high performing investment plan;
- Statement of Funds Available – analysis has been used to develop and improve modelling of costs for the different elements of the SOFA package, and ORR has reviewed opportunities for efficiency gains.

In line with our general approach to RIS2, the analysis has been carried out in partnership across all four RIS2 organisations: The department, Highways England, Transport Focus and ORR.

### Our key analytical objectives

The ambition for RIS2 analysis has been to create relevant, robust and trusted analysis:

- Relevant analysis means that it must support decision making in all the key RIS2 areas;
- Robust means that it provides sound information which can be relied upon when forming decisions;
- Trusted means that policy makers, analysts and key stakeholders are prepared to believe the methods and results.

### We have achieved these objectives building on the analysis for RIS1

Analysis informed many parts of RIS1, including investigation of:

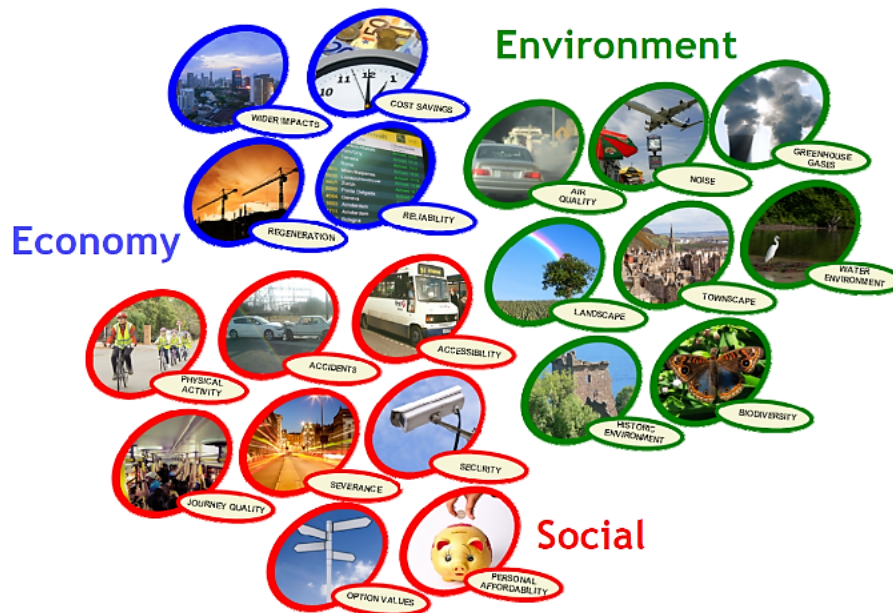
- The drivers of road demand which fed into future forecasts of road use and congestion and ultimately into Road Traffic Forecasts 2015 (RTF15);
- User needs to ensure RIS1 was tailored more effectively towards the user; and
- The economic costs and benefits of RIS1 interventions, allowing the VfM of the investment plan to be assessed.

**Figure 1: Publications used to inform RIS1 analysis**



The Investment Plan was based on the sound application of the department's appraisal framework (TAG), acknowledged in the report [Transport Investment and Economic Performance](#) as providing a rigorous framework for appraising projects.

TAG's comprehensive framework was applied for assessing Economic, Social and Environmental impacts of RIS1 schemes. Figure 2 sets out the themes covered by TAG<sup>1</sup>.



**Figure 2: Impacts covered in TAG**

### How we have built on the RIS1 analysis

We have endeavoured to ensure the analysis is:

- Relevant by applying it to each of the key elements of the RIS2 package;
- Robust by developing the analysis beyond that available in RIS1 to improve existing techniques and our understanding of difficult questions;
- Trusted by engaging actively with stakeholders to set out our plans, understand their concerns and demonstrate they have been addressed.

The robustness and relevance of our analysis is described in more detail in Chapter 2, whilst Chapter 3 explains our engagement with stakeholders.

<sup>1</sup> The following sources are acknowledged for the images in Figure 2: <http://www.freedigitalphotos.net>: Grant Cochrane (cost savings), Nirutfdp (wider impacts), winnond (regeneration), artur84 (reliability, water environment), njaj (greenhouse gases), zironicusso (landscape), Vichaya Kiatying-Angsulee (townscape, security, severance), James Barker (historic environment), Christian Meyn (biodiversity), bunnacula (accidents), suphakit73 (option values), kongsky (personal affordability); <http://www.flickr.com>: biofriendly (air quality), chanelcoc872 (noise), Vinicius Depizzol (journey quality), hamster! (accessibility); <https://www.gov.uk/government/organisations/department-for-transport> (physical activity).

## 2. The development of the analysis since RIS1

### Introduction

The analysis supporting all elements of RIS2 has improved and developed since RIS1. This section demonstrates how this has been achieved.

### How analysis feeds into the different areas of RIS2

#### Strategic Vision

The Strategic Vision sets out our long-term vision for what the SRN should be like in 2050 and the steps that will help us achieve it. This gives Highways England, along with its customers, suppliers and other stakeholders, a clear sense of the government's objectives for the SRN, and a direction of travel for the way ahead across future road periods.

#### a. Understanding the Future – Scenarios

To understand the future requirements for the SRN we have assessed the areas of greatest uncertainty and impact on road user behaviour. We have built on RIS1 analysis by looking at many different scenarios around key user themes including:

- Trip-making behaviour of users
- Demographic change;
- Economic and geographic change; and
- Technology

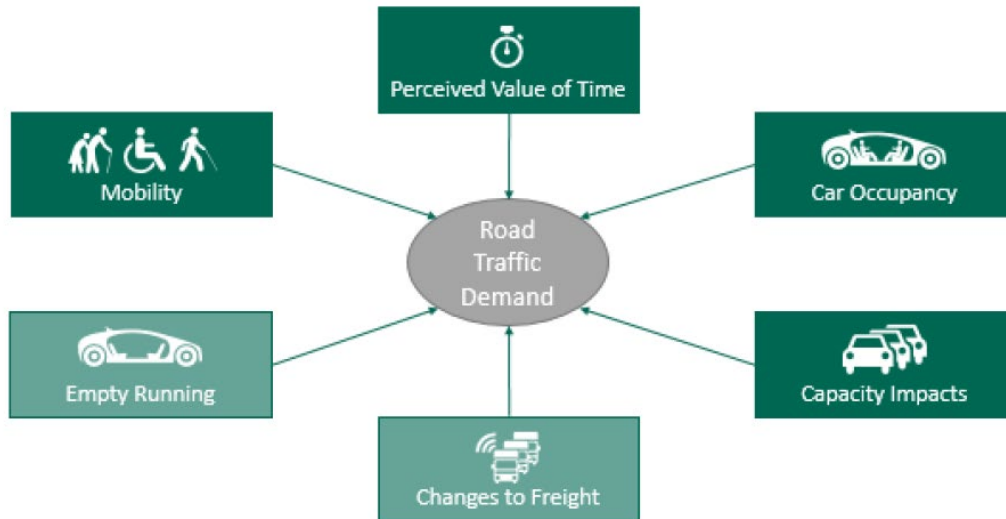
DfT publishes Road Traffic Forecasts at semi-regular intervals. [Road Traffic Forecasts 2018 \(RTF18\)](#) presented a set of new scenarios which consider a wide variety of uncertainty and combine multiple issues to create plausible future states of the world.

These scenarios have been based on the most up-to-date robust [evidence on the factors impacting road traffic growth](#), or the drivers of travel demand and updated forecasts of demographics, population levels and distribution and the economy. All scenarios show an increase in car travel from 2015 to 2050. Road Traffic Forecasts 2018 provided a key source of evidence for the development of RIS2.

## b. Transport Technology

Transport technology is a major theme of our work. The key trends on a wide range of factors influencing traffic volumes have been examined (see below), which are detailed in our report, [Technology and RIS2](#).

**Figure 3: Potential Traffic Impacts of CAVs**



These assessments include the impact of connected autonomous vehicles (CAVs) and of vehicle to vehicle and vehicle to infrastructure innovations. The department has developed different scenarios for CAVs given the uncertainties about the impact they will have on the SRN and combined them with other uncertainties e.g. on ride sharing. The two technology scenarios developed were:

- Private, productive and increased mobility scenario – this has limited ride sharing, lower values of time because people are able to be more productive whilst travelling and an increase in travel amongst older drivers;
- Ridesharing scenario – has a significant increase in ride sharing, no change to values of time and no extra travel by older members of society;

Traffic growth from 2015 to 2050, under the combined tests, ranges between 5% and 71% or from 300 to 500 billion vehicle miles per year, clearly demonstrating the wide range of uncertainty.

However, the analysis suggests that even in optimistic technological scenarios, traffic is likely to increase modestly above present-day levels.

Because of the nebulous nature of technological progress and adoption by drivers, further work will be done to update and refresh the analysis at regular intervals. Substantial work to understand likely user attitudes to technology has been carried out. This does not yet provide evidence for a specific change in user attitudes that would suggest a paradigm shift in road use. This will continue to be investigated using more detailed quantitative predictions as more evidence becomes available. This will feed into future appraisal of road investments and to the next RIS.

## Performance Specification

The Performance Specification sets out the government's high-level expectations for Highways England and the SRN during RP2. It draws on specific aspects of the government's long-term vision for the road network and how it supports mobility and the economy, safety, and the environment. Highways England's Connecting the Country report reflects many of these themes in considering how the SRN might evolve, and what this could mean for road users and the country's economy.

The Performance Specification also identifies where there is a need to develop improved measures of performance for future road periods.

The performance specification is focused on the needs of those who use and rely on roads or who live and work near the network. There are six outcome areas on which Highways England must focus:

- Improving safety for all;
- Fast and reliable journeys;
- A well maintained and resilient network;
- Being environmentally responsible;
- Meeting the needs of all users;
- Achieving real efficiency.

In each outcome area, the performance of Highways England and the SRN will be assessed against:

- Key Performance Indicators (KPIs);
- Performance Indicators (PIs); and
- Commitments that will provide additional context to Highways England's performance or help develop future performance measures.

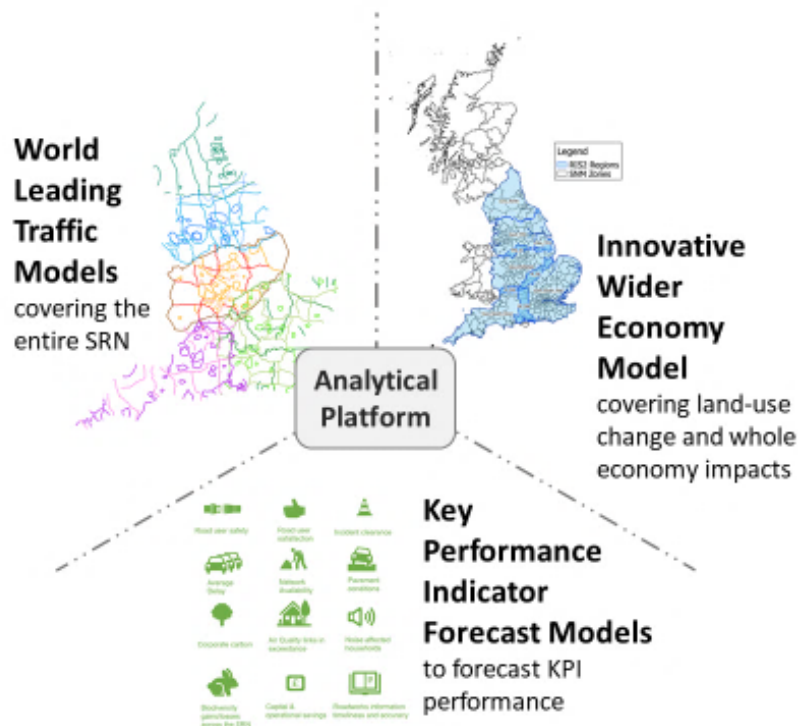
KPIs focus on activities or outcomes which are seen as the most important, either by road users or communities that live near to the SRN, or which support wider government objectives. For each outcome area, there are a small number of KPIs.

KPIs and PIs have been defined to be realistic, yet challenging, based on a solid understanding of the relationship between Highways England's activities and the outcomes supported and with supporting data for monitoring. The nature of the performance specification is that it is closely related to the analysis underlying the Strategic Vision, SOFA and Investment Plan, and so shares much of their evidence base. As noted above the Average Delay KPI ambition was informed by the outputs of the Regional Traffic Models, but several other KPI forecasting models have been used to support targets, including the national safety model which predicts killed and seriously injured in road accidents per year. Where it was not appropriate to create forecasting models, other approaches have been taken to KPI target-setting, including looking at historic data and external benchmarking.

## Investment Plan

In 2015, the government announced the most ambitious programme of roads investment in a generation. RIS2 takes this as its foundation, and builds upon it to produce a programme of investment that is larger and even more thorough than its predecessor.

This Investment Plan sets out the government's expenditure priorities and the details of what that programme is expected to mean in terms of outputs. Analysis has played a key part in informing and assessing different options. A new Analytical Platform has been developed by Highways England to assess the impacts of different investment packages and support target setting.



**Figure 4: Highways England's Analytical Platform**

The Analytical Platform is made up of three key components:

- 1 New Regional Traffic Models – for the first time, these provide a consistent approach to traffic modelling of the SRN across England. These have been used to forecast how traffic flows and speeds change following infrastructure investment. They take account of the latest evidence on how increased road capacity impacts on traffic volumes and economic welfare (that is induced demand) and include not just a representation of the SRN but of the local road network to model wider impacts. They assess the impacts on different types of road user (freight, commuter, local and regional) and are a significant advance on the models employed for RIS1;
- 2 Comprehensive KPI Forecast models – outputs from the regional traffic models have been used to estimate the impacts of RIS2 interventions on outcomes and to

help inform target setting discussions with the department, ORR and Transport Focus. For example, as part of the appraisal process, carbon impacts have been forecast so that their impact can be understood and included in the VfM assessment;

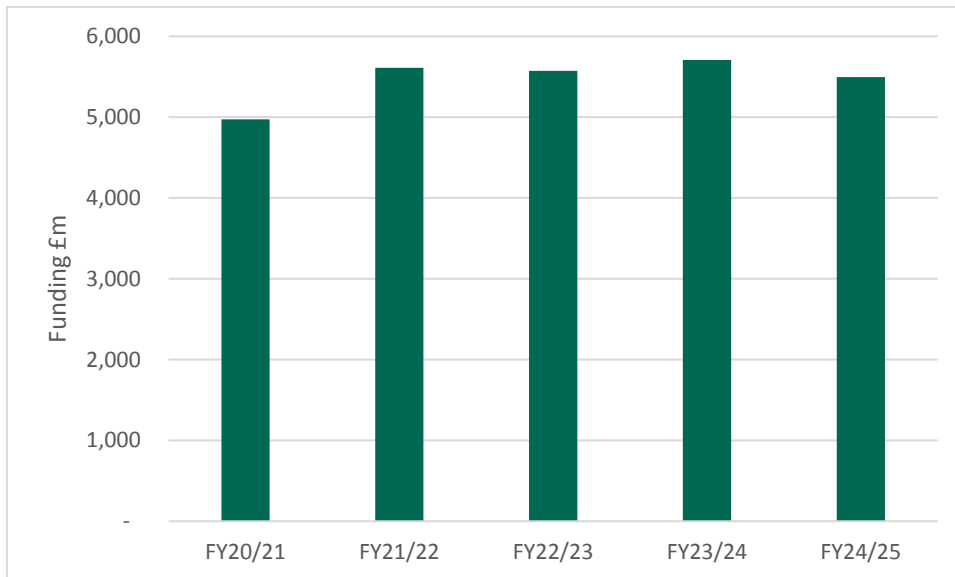
- 3 A new economy model – this has built on the considerable work to understand the impact of roads on the economy through [The Road to Growth paper](#). This new economy model has been used to assess key economy impacts including how transport impacts on GDP, jobs, land use change and economic welfare at regional and national levels;

Capacity building is key to delivering the analytical platform. Highways England has significantly increased its analytical capacity so it can deliver increased volumes of transport modelling, ensure development and application of the new performance outcome models and deliver improved wider economy modelling. Highways England has been building on the strong foundation for post opening project evaluation by growing its evaluation capabilities.

### Statement of Funds Available (SOFA)

The SOFA outlines the resources available to Highways England in delivering the outputs listed in the investment plan and performance specification, as well as discharging all responsibilities set out in Highways England’s Licence and wider statute.

Funding for 2020-25 is set out in Chart 1 below. In total RIS2 £27.4 billion will be made available over the five years of RIS2.



**Chart 1: Total Funding for each year of RIS2**

The SOFA is broken down into a number of funding streams including: operations, maintenance and renewals; road enhancements (e.g. new roads, widening, roundabouts and bypasses); and designated funds. Building on RIS1, analysis has enabled:

- Network needs to be established - using information on the state of the network and problems that the network is facing;
- Assessments of options to be carried out for addressing different needs in line with HM Treasury's Green Book Guidance and Transport Appraisal Guidance. The high-level cost benefit analysis for assessing the VfM of options is discussed in Chapter 4;
- Better estimates of costs to be identified using information from Highways England's cost database;
- Cost estimates have then been reviewed and challenged by ORR to assess their robustness and the potential for efficiency improvements (see Box 1 below for details).

### **Box 1: Office of Rail and Road Cost and Efficiency Reviews**

An important part of ORR's role in setting RIS2 is in providing advice to the Secretary of State on whether the Draft RIS and Draft SBP are challenging and deliverable with the financial resources available. This includes assessing the level of efficiency proposed by Highways England in its Draft SBP.

ORR has taken a four-stage approach to its Efficiency Review:

**Highways England's capability in areas expected to be important for delivering efficiency in RP2.** A set of three studies jointly commissioned with Highways England considered: portfolio and programme management; asset management; and procurement and contract management. These assessed Highways England's capability in each area at the time of the reviews, improvements that could be made during the remainder of the first Road Period (RP1) and during RP2, and efficiencies that might be expected as a result.

**Targeted benchmarking studies.** During RP1, ORR carried out a targeted programme of efficiency and performance benchmarking activities to inform its Efficiency Review and wider monitoring activities. This included comparisons across Highways England's regions, with highway authorities in other countries and companies in other sectors. Efficiency-related benchmarking studies considered: real unit operating expenditure; renewals spending; and efficiency targets made in regulatory determinations for sectors at a similar stage to Highways England.

**Sampling of expenditure lines in the Draft SBP.** ORR reviewed every spending area in its Efficiency Review, and investigated some areas in more detail. Its sample-based detailed investigation covered the major spending areas of support; operations; maintenance; renewals (pavement, structures and vehicle restraint systems); and enhancements (a sample of twelve projects were selected that covered a range of different scheme types, sizes, and stages of development).

**Bringing the evidence together to form conclusions.** The Efficiency Review brought the evidence together to provide advice on the levels of challenge, deliverability and efficiency proposed in Highways England's Draft SBP, supplemented by information provided at a series of challenge workshops and requests for additional information.



## **Summary**

As a result of the work done on improving understanding of the future challenges to the road network, better costing of options, building a robust analytical platform to model the impacts of interventions, and linking impacts through to KPI forecasting models, the department has significantly improved upon the analytical advice delivered for RIS1. This has supported all key aspects of the RIS2 decision making process, ensuring decisions are informed by the best available evidence.

# 3. Engaging with stakeholders and ensuring robust analysis

## **Understanding user needs is key to ensuring that their needs are met**

We have actively engaged with users throughout the RIS2 process to ensure users have had a chance to:

- Feed in their priorities and concerns to RIS2 as it develops; and
- Challenge our overall approach to analysis.

We have engaged closely with key stakeholders to make sure that they have confidence in the analysis produced and consulted widely on the analysis.

## **Improving our understanding of user needs**

Many activities have been undertaken to understand users' needs, including:

- a. Route strategies – Highways England has engaged with stakeholders to identify priority areas for investment in RIS2 including:
  - A national call for evidence (with over 4,000 responses);
  - Customer surveys by Transport Focus (4,400 interviews in total).
- b. Strategic studies – the department and Highways England have engaged with local stakeholders, sub national transport bodies and LEPs to work up options for tackling key strategic problems, e.g. improving connectivity and reliability across the north through dualling the A66;
- c. Performance Specification – the department held a number of tailored events on each of the performance specification outcome areas with key stakeholders to take their views on how they should be developed for RIS2.

Each of these activities has allowed us to enhance analytical work already being carried out on identifying issues and potential options along the SRN.

## **Close working with Transport Focus has ensured that User Perspective have been built into all of the analysis**

We have worked with Transport Focus to ensure that the recommendations it made in [Road Users' Priorities for the Road Investment Strategy, 2020-25](#) have as far as possible been acted on.

We have worked with Transport Focus to:

- Clarify how key user issues identified by Transport Focus are being dealt with in our analytical framework, for example:
  - How in our appraisals we take account of the impact of accidents on users and the impact of SRN investments on traffic on the local road network; and
  - How we assess the impact of designated funds to protect vulnerable users on the SRN and to future proof the SRN to meet new technological developments.
- Improve our knowledge of areas important to users. Priority areas agreed with Transport Focus include road surface quality, information provision and coverage of the Traffic Officer Service.

### **We have built trust in the analysis by actively engaging with stakeholders**

The department publicly consulted on its approach to RIS2 analysis alongside the consultation on Highways England's SRN Initial Report.

Our question was:

*"Does the analytical approach strike the right balance between ambition, robustness, and proportionality?"*

Whilst two thirds of you said yes to the question, many respondents were keen to understand the details of the analysis. A number of analytical workshops with stakeholders have been held to discuss key areas raised including:

- The approach to modelling the future and dealing with the opportunities and challenges technology provides;
- The robustness of the regional traffic models and their ability to assess how increased road capacity impacts on traffic levels and on the welfare of road users (induced demand);
- How wider economy impacts including housing and productivity impacts are assessed;
- How the environment has been modelled within RIS2;
- Assessing the impact of interventions on outcomes.

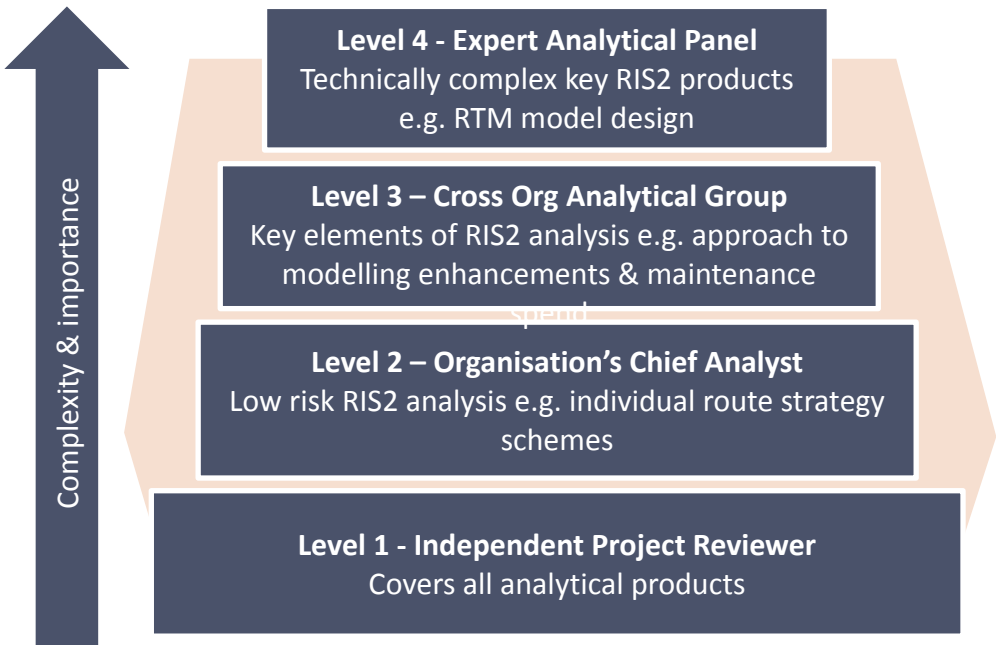
In each case, major concerns have been understood and catered for in the analysis, so that it provides fit for purpose information for the decision at hand.

We have also published reports on key areas of interest including [Roads Traffic Forecasts 18](#) which outlined the department's approach to modelling uncertainty and a [report on the link between road investment and traffic growth](#) which supports the approach we have taken.

**Internal Assurance of Analysis**

Alongside the external engagement process, there has also been a carefully considered approach to assuring the analysis, tailoring the level of assurance based on the complexity of the analysis and the decision it will inform.

- a. The approach covers all RIS2 analysis, including by Highways England, Transport Focus and ORR.
- b. The department's analytical assurance processes are in line with its [Strength in Numbers guidance](#). This involves tiered assurance:
  - Tier 1 - at the level of the analysis, within organisations;
  - Tier 2 - within organisations;
  - Tier 3 - across organisations;
  - Tier 4 - Expert panel of internationally recognised researchers for the most complex areas of important analysis.



**Figure 5: The Analytical Assurance Process**

c. The analytical approach has been presented to external expert groups, for example the department’s Joint Analytical Development Panel, to understand and take account of their views in developing it.

In summary, the department has confidence that user needs have been robustly assessed within the analysis through comprehensive engagement with stakeholders and through the adoption of a rigorous assurance process.

The next chapter discusses how the analysis has informed investment decisions for RIS2.

## 4. How the analysis informs the RIS2 investment decision

### The areas assessed as part of the RIS2 investment decision

The areas assessed as part of the RIS2 investment include:

- Operations, Maintenance and Renewals – through:
  - Carrying out a detailed assessment of maintenance needs and the costs of maintaining the network;
  - Assessing key elements of the SRN including structures, concrete pavement and vehicle restraint systems;
  - Assessing the impacts of providing a traffic officer service to cover 44% of the network;
- Enhancements – the analytical platform has been used to model the impact of each of the elements of the enhancements package;
- Designated Funds – evaluation of evidence from similar schemes in RIS1 has been used to assess their VfM.

The approach used has varied across the areas above, reflecting the nature of the investment and the problem being solved.

The analysis of these areas has informed the Economic Case for RIS2, which alongside the other four elements of the Department for Transport's business case framework (strategic, financial, commercial and financial), has provided the overall case for investment in RIS2.

### Overall Assessment of the VfM of RIS2

The overall assessment is that RIS2 offers High VfM when existing and new planned spending is assessed together across all blocks of spending. However, there is variation in VfM across spending blocks. The assessment for each major spending line is set out below.

Major Spending Line	VfM Assessment
Operations, Maintenance and Renewals	Very High
Enhancements	High
Designated Funds	High/Very High

**Table 2: Major Spending Lines and VfM Assessments of the RIS2 Package**

**Assessment of Operation, Maintenance and Renewals**

Operation, Maintenance and Renewals (OMR) is essential for supporting the delivery of a safe and reliable network.

Failure to provide adequate levels of investment will result in asset deterioration, speed restrictions on decaying roads leading to delays, potential safety issues and higher investment costs in the future.

To assess the appropriate level of both maintenance and capital renewal spend during RP2, Highways England has carried out detailed assessments of need for both life extending renewals and maintenance of the road network. This is based on:

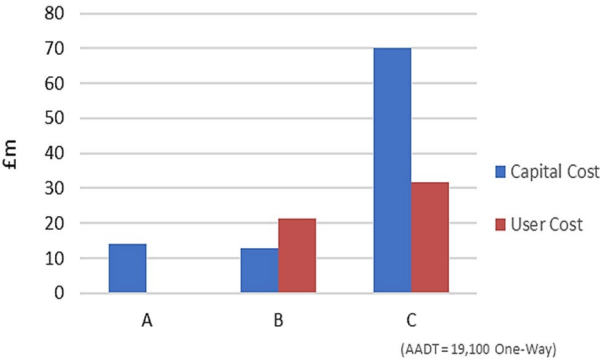
- Surveying the existing condition of the road and network assets;
- Modelling deterioration in assets to understand the volume of work required and the impact of not doing it;
- Assessing the costs of restoring asset type at different stages of its life;
- Assessing impacts on users for different asset conditions.

Using the approach outlined above, Highways England has identified; a number of different structures across the network that require interim risk management measures; almost all of the 1000 lane kilometres of concrete pavement on the SRN is approaching the end of its life span and is in need of repair; and approximately 40% of Vehicle Restraint Systems will be in a very poor condition at the end of RP2 without the investment we are announcing in RIS2.

For maintenance, Highways England has developed the Traffic Impact Assessment model, which can demonstrate the impact of different maintenance routines at a selection of indicative points on the SRN. Figure 6 is a case study example of assets on the network which show the customer impact from delays due to roadworks under three scenarios.

These scenarios demonstrate the approach to full asset life planning with a constrained budget:

- A – Planned maintenance (driven by asset need and best practice Asset Management)
- B – Delayed maintenance (still in RP2 but less frequent)
- C – Postponed maintenance (push back to next Road Period)



**Figure 6: Impact on User and Capital Costs under the three scenarios - A14 Haughley**

The analysis concludes that greater levels of repairs would be required if these were delayed or postponed slowing down traffic. There would also be costs to the user from slower and longer journeys as a result of maintenance works. This analysis, along with a detailed assessment of the existing condition of the network and modelling deterioration of the critical points provides the case for both the level and timing of maintenance spend.

The assessment for operational expenditure has included analysis and appraisal of its major component, the Traffic Officer Service, which covers 44% of the SRN. This analysis showed that Traffic Officers reduced incident time by 15 minutes on average, translating to a Benefit Cost Ratio (BCR) of 4 and likely Very High VfM.

**Major capital enhancement schemes**

Major capital investment improves the capacity and resilience of the network, thereby supporting increased connectivity and encouraging economic growth. Commitments have been appraised using Highways England’s analytical platform to assess their costs and benefits. The assessment uses Highways England’s regional traffic models, Wider Economy Model and the carbon emissions, air quality and noise KPI forecasting models.

Overall the RIS2 enhancements have a VfM rating of High and non-monetised impacts assessed as positive/neutral. High VfM represents between £2 and £4 per £1 spent. High carbon value sensitivities have been included in the analysis of major capital enhancements and these do not change the VfM rating.

	Existing Commitments		New Commitments	
	Impacts measured	Assessment	Impacts measured	Assessment
Monetised	Journey time impacts, reliability, wider economy impacts under fixed land use, CO2, noise, air quality.	Adjusted BCR = 2.3	Journey time impacts, reliability, wider economy impacts under fixed land use, CO2, noise, air quality.	Adjusted BCR = 1.5
Non-monetised	Landscape, biodiversity, historic environment, water environment, journey quality, security, physical activity, affordability, resilience, wider economic impacts under variable land use.	Likely to be positive/neutral. There will be positive economy, resilience and journey quality impacts. There will be negative environmental impacts for some schemes.	Landscape, biodiversity, historic environment, water environment, journey quality, security, physical activity, affordability, resilience, wider economic impacts under variable land use.	Likely to be positive/neutral. However, many of these schemes are larger and the size of non-monetised impacts can be large so there is more uncertainty around these impacts than for existing commitments.
VfM rating	<b>VfM = High</b>		<b>VfM = Medium</b>	

**Table 3: Summary of the VfM of RIS2 enhancements**

Table 3 sets out the VfM assessment of existing commitments begun in RIS1 which have yet to be completed and new commitments to be started in RIS2. It summarises both the monetised and non-monetised impacts and their respective assessments informing the overall VfM rating.

Existing enhancement commitments are at a more advanced stage of development than new enhancement commitments. However even here there is more work to be done on assessing and monetising impacts. As the next section sets out, this is not the final stage in the decision-making process and schemes will continue to be appraised and assessed right up to the build decision. At each stage the analysis will become more robust and certain.

### **Designated Funds**

These are small scale funds designed to tackle specific and local problems. Designated Funds can provide targeted environmental, social and economic benefits to the people, communities and businesses who live and work alongside the SRN, beyond large-scale investments. For RIS2 there are four specific funds:

- £345m for Wellbeing and Environment;
- £169m for Users and Communities;
- £216m for Innovation; and
- £140m for Safety and Congestion.

The VfM of the Designated Funds has been assessed using the evaluation evidence from similar schemes in RIS1. Evidence is not available for all elements of the funds.

The first three funds are assessed together because the evidence cuts across the funds. Evidence is only available for 20% of assumed spend but the likely positive impact of that spend is large enough to indicate that the VfM of the three funds will be High.

The Safety and Congestion Fund is ranked as Very High VfM, which is based on the evaluation of similar budgets that had an estimated BCR of 16.3.



# 5. Next steps on developing the analysis for the RIS2 package

## How the RIS2 analysis will develop

RIS2 is not the end of the story for the package of investments announced. All of the schemes are at different stages of assessment. Many schemes have not yet gone through the full option identification and selection stages of their development. Where a single option has been identified, further work needs to be done on option design before the final decision on whether to build is made following presentation of the Full Business Case. The process which major schemes must go through is set out in Figure 7.

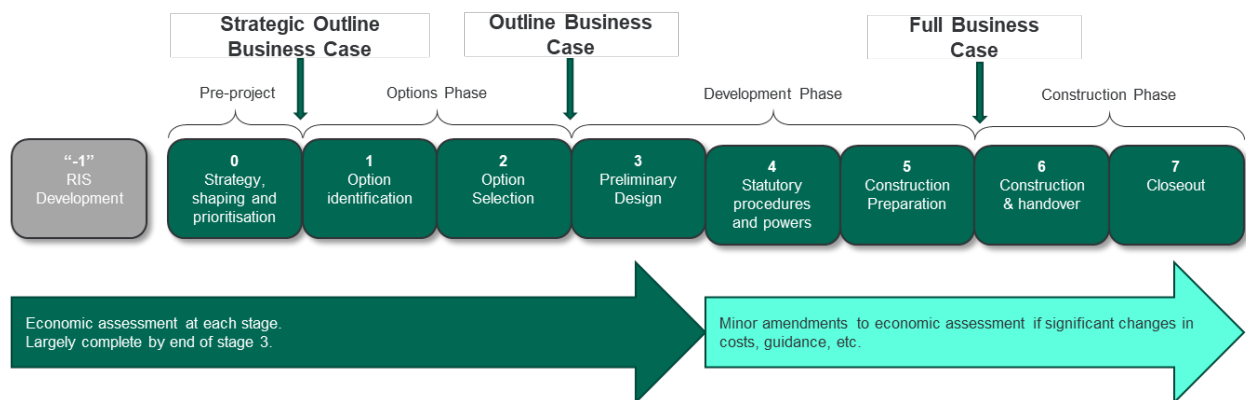


Figure 7: The decision process for building a major scheme

Key decision points occur at specific stages of scheme development (Strategic Outline Business Case, Outline Business Case and Full Business Case). At each of those points the earlier decisions on whether to progress the scheme will be revisited in the light of the latest information on the degree to which strategic objectives are met, costs and benefits, affordability, deliverability and risk. As such analysis will continue to play a key role in supporting that decision.

Over time the analysis for each scheme will be refined to improve our understanding of VfM:

- 1 Cost information will be refined e.g. by gathering more information about local conditions, improving the design of routes and consulting with the market;
- 2 Analysis of benefits will be further developed. As options are narrowed down the granularity of the transport models will be increased allowing more accurate modelling. More impacts will be monetised as the number of options reduce, and

better-defined routes will allow us to improve the quality of the environmental analysis.

- 3 All the improved analysis will feed into decisions about whether to continue with schemes made at later stages, by increasing the network detail in the traffic modelling, monetising more of the impacts and as there is a better understanding of the likely route option for each scheme.

Highways England's SBP will set out the process for delivering RIS2.

## **Monitoring and Evaluating Performance**

The Performance Specification will play a key part in ensuring that Highways England delivers the outcomes set out in RIS2 and will be articulated in greater detail in the SBP and Delivery Plan. ORR will monitor Highways England's performance against 12 KPIs and 23 PIs, which will be frequently reported to the department. ORR will also monitor delivery and cost data to make sure that the investment plan is being delivered to plan. If required, ORR has the ability to hold Highways England to account by using its formal enforcement powers, including a range of reputational and financial sanctions. In parallel, the department's RIS Client division also monitors Highways England's performance against the performance specification and its delivery of the investment plan.

Alongside this, our approach to evaluation of RIS2 will continue to be developed. This involves:

- Collecting and publishing information on the performance of the SRN both from the performance specification and as part of our regular statistical data collection exercises;
- Post opening project evaluations (POPE) of major schemes at intervals after opening, which allows the ability to determine whether the scheme's objectives have been achieved, assess the outturn VfM and compare the observed benefits realised with those projected during the project appraisal;
- Thematic analysis of POPE data to synthesise for schemes;
- Where appropriate, and proportionate, new evaluation methods will be developed to monitor a broader range of benefits to support programme evaluations;
- A proportionate approach for the evaluation of small investment programmes and designated funds, which will be developed once the programme pipelines are established.

There will be further work to identify whether there are additional evaluation needs at the portfolio level not already met by the above activities including an evaluation of the economic performance impacts of road enhancements. This programme of work will improve our understanding of the economic impacts that have emerged from a range of different road schemes and contexts. It will also help to develop the department's future evaluation strategy by the assessing the extent to which the chosen evaluation framework could be used for future road scheme evaluations, including RIS2.

Alongside this, Transport Focus will continue to carry out research during RP2 to understand how the SRN serves the needs of all users. One of the main ways which it does this is the Strategic Roads User Survey, which surveys over 8,000 motorised road users of all types each year, allowing a granular level of information to inform

the department and Highways England's efforts to improve the experience of the SRN for these users. It has so far produced two waves of its survey of pedestrians and cyclists using or interacting with the SRN, and a survey of the views of logistics and coach managers. Both of these surveys will continue to operate in RP2.

### **Engaging with the public**

We will continue to engage with the public as RIS2 develops. Each of the schemes will go through a detailed consultation process as they mature, which will allow for incorporating stakeholder expertise and for any concerns to be aired and dealt with. This established consultation process is comprehensive, covering all road impacts including on the environment and communities.

Finally, going into development of the next RIS, we will want to consult widely with stakeholders on analysis getting your views on how we can develop it to continue the process of improving it to better inform investment decisions.

# Glossary

BCR	Benefit Cost Ratio; adjusted BCR refers to the scheme benefits of level 1 and 2 impacts divided by the scheme cost to public accounts.
CAV	Connected and Autonomous Vehicles
Delivery Plan	This sets out how and when Highways England will deliver the activities in its SBP. It is structured around activities, which are then linked back to performance outcomes.
GDP	Gross Domestic Product; a measure of economic output.
Green Book	HM Treasury's appraisal guidance
HE	Highways England
Investment Plan	This sets out the government's expenditure priorities for RIS2.
KPI	Key Performance Indicator
OMR	Operations, Maintenance and Renewals
ORR	Office of Rail and Road
Performance Specification	This sets out the government's high-level expectations for what outcomes Highways England will deliver for the SRN during RP2.
PI	Performance Indicator
POPE	Post Opening Project Evaluations; determining whether the scheme's objectives have been achieved through evaluation post opening.
RIS	Road Investment Strategy; government's statement of its long-term vision for strategic roads, what it expects Highways England to deliver in the next road period, and the funding it will make available for that purpose. RIS1 was published in 2014; this document is concerned with the analytical strategy of RIS2; RIS3 is expected to be published in 2024.
RP	Road Period; the period of time to which a RIS applies. RP1 is financial years 2015/16 to 2019/20 inclusive; RP2 will be 2020/21 to 2024/25; and RP3 will commence with 2025/26.
RTF15	Road Traffic Forecasts 2015
RTF18	Road Traffic Forecasts 2018
RTM	Regional Traffic Model
SBP	Strategic Business Plan; sets out Highways England's strategic direction based on the vision and objectives in the RIS, and explains the performance outcomes planned to be delivered during RP2.
SOFA	Statement of Funds Available; this sets out the resources available to Highways England to deliver RIS2.
SRN	Strategic Road Network; the motorways and main 'A' roads managed by Highways England on behalf of government.
Strategic Vision	Setting out our long-term vision for what the SRN should be like in 2050 and the steps that will help us achieve it.

TAG	Department for Transport's Transport Analysis Guidance
Values of Time	The value placed on a certain unit of time by transport users for a given mode, journey purpose and distance.
VfM	Value for Money