Department for Transport

EB/042

Road Investment Strategy: for the 2015/16 –2019/20 Road Period

March 2015

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for Transport

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A405, M25, M25

1. Foreword

Roads are fundamental to modern living. They make it possible for people to travel for work and leisure, and for businesses to move goods and materials. As the backbone of our transport system, carrying 90% of passenger journeys and almost 70% of freight[1], roads keep the population connected and the economy flowing.

The government is directly responsible for the busiest of English roads: the Strategic Road Network. These motorways and all-purpose trunk roads were planned and developed between the 1930s and the 1960s. In the decades that followed, traffic volumes have grown to a point where the network now transports over four million vehicles a day[2]. Investment has, however, not increased with such demand. As a result, the quality of the network has declined and the likes of congestion, noise and poor air quality are problems at numerous hotspots across the network.

Continued underinvestment is no longer a realistic option – as our roads age further, they will increasingly fail to meet the social, economic and environmental aspirations we have as a nation. In simple terms: a modern country needs modern roads. This means we need a better network with smarter roads – ones that harness developments in technology and road building to address today's challenges and maximise tomorrow's opportunities.

This Road Investment Strategy outlines how we can grasp the opportunity to transform both our roads and the experience of driving on them, whilst also addressing strategic imperatives such as economic growth and climate change. It sets out our vision for smooth, safe and reliable motoring, more sustainable roads, and how we should foster cutting-edge technologies.

Combined with the reform of the Highways Agency, this is a genuinely transformational moment. We will ensure that the Strategic Road Network exemplifies – and drives – the country we want to live in and the thriving nation we want to be.

1 DfT Statistics
2 DfT Statistics

2. Executive summary

The Strategic Road Network (SRN, or the network) is entering a time of transformation. The management of the SRN is being reformed, with the Highways Agency becoming Highways England, a government owned strategic highways company (the Company). Long term strategic planning and funding of the network is also being introduced through the first Road Investment Strategy (RIS), a suite of documents of which this Strategic Vision is part. These changes are underpinned by a step-change in investment in our strategic roads, worth over £15 billion to 2021. Taken together, this scale of reform and investment has allowed us to dramatically increase our ambitions for the SRN.

This is critical because the SRN requires upgrading and improving to ensure it can deliver the performance needed to support the nation throughout the 21st century. Inconsistent and insufficient investment in roads has left our network paying the price, with capacity being close to breaking point at certain points, poor connectivity at others, and increasingly common environmental black spots. Certainty of funding, the ability to plan for the long term and the opportunity to drive increased efficiency – the products of Roads Reform – will give us the tools to bring lasting improvements to the network of the future.

And that future appears to be an exciting place for the network. The greater uptake of existing technologies and the likely emergence of new innovations will transform the way we use our roads. More Smart Motorways will increase the capacity of motorways by a third while only slightly increasing their physical footprint. Better access to data will enable drivers to make smarter, informed travel choices. Ultra Low Emission Vehicles (ULEVs)[3] will reduce the carbon and other harmful emissions generated through SRN use. And, in the longer term, assisted driving technologies and autonomous vehicles will increase safety and reduce the stress of driving.

Setting our aspirations for the future

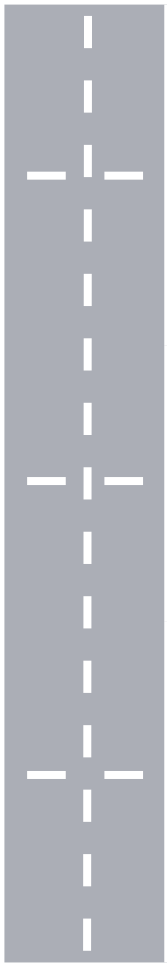
Our ambition for the next 25 years is to revolutionise our roads and create a modern SRN that supports a modern Britain, making a real difference to people's lives and businesses' prospects.

The reform of the Highways Agency and the step-change in investment gives us the confidence to aim high, and develop challenging, yet achievable, aspirations for the network. With that in mind, we want to have transformed the SRN by 2040,

3 The Department for Transport uses ULEVs to refer to vehicles with significantly lower levels of tail-pipe emissions than conventional vehicles. In practice, the term currently refers to electric, plug-in hybrid and hydrogen fuel-cell vehicles. In this document, vehicles with fully electric powertrains and cars with tail-pipe emissions below 75 g/km of CO_2 have been included at this stage

delivering the safer, more stress-free journeys that everyday users need, as well as the enhanced reliability and predictability that is so important to business. The SRN of the future must also be more socially and environmentally sensitive, working more harmoniously with its surroundings.

By 2040, we aspire to a network that will be:



SMOOTHER

- The number of people killed or seriously injured on the SRN **approaching zero**
- More users, more happy with more journeys, leading to road user satisfaction levels of **95%**
- A **free-flow core network**, with mile a minute speeds increasingly typical

SMARTER

- A network that enhances the UK's global competitiveness, and is recognised as one of the **top 10** global road networks by business
- A step change in efficiency, with roads projects and maintenance delivered **30% – 50%** cheaper than today

SUSTAINABLE

- A better neighbour to communities, with **over 90%** fewer people impacted by noise from the SRN
- **Zero** breaches of air quality regulations and major reductions in carbon emissions across the network
- Improved environmental outcomes, including a **net gain** in biodiversity from the Company's activities

"The reform of the Highways Agency and the step-change in investment gives us the confidence to aim high, and develop challenging, yet achievable, aspirations for the network."

Targeting areas for improvement

Achieving these stretching aspirations will require considered and strategic action. This means targeting improved levels of performance in the short term that will put us on course to deliver the network the country wants and needs in the long term.

To this end, we have identified eight areas of focus which form the Performance Specification for the Company and the SRN over the next five years[4]. We expect the Company to make the network *safer* and improve *user satisfaction,* while *smoothing traffic flow* and encouraging *economic growth*. We want to see the company delivering *better environmental outcomes* and *helping cyclists, walkers, and other vulnerable users* of the network at the same as time as *achieving real efficiency* and *keeping the network in good condition*.

Taking the first steps

In total, we have committed over £15 billion of capital investment. We will also undertake 127 major schemes over the course of the first Road Period. These wide-reaching plans represent good value for money; the Company has proposed efficiency savings of over £1.2 billion during the first Road Period, with a target of at least £2.6 billion over the next ten years[5]. The Investment Plan element of the RIS outlines how the Company will deliver improvements to the SRN in the short term, and put us on course to deliver our long term vision of a revolutionised network. Our investment is targeted, and makes use of all of the tools at the Company's disposal.

Looking to the future

These plans will deliver benefits quickly and begin to reverse the consequences of decades of inaction. In the next five years, our network will directly contribute to economic growth through, amongst other things, improved connectivity and better access to our international gateways. Users will benefit from safety improvements and reduced congestion, while the actions of Company will deliver better environmental outcomes.

Our plans for the first Road Period are just the start. As we look to the longer term, and to achieving our 2040 goals, we want an upgraded network, enabled by technology, and ultimately a transformed SRN. Smart Motorways will become the standard for the busiest sections of the network, bringing smoother traffic flow, increased capacity and improved safety. Our busiest A-Roads will become Expressways, providing improved standards of performance, with technology to manage traffic and mile a minute speeds. Improved design standards will give greater consideration to the needs of walkers, cyclists and local communities along with the aesthetic appearance of the network.

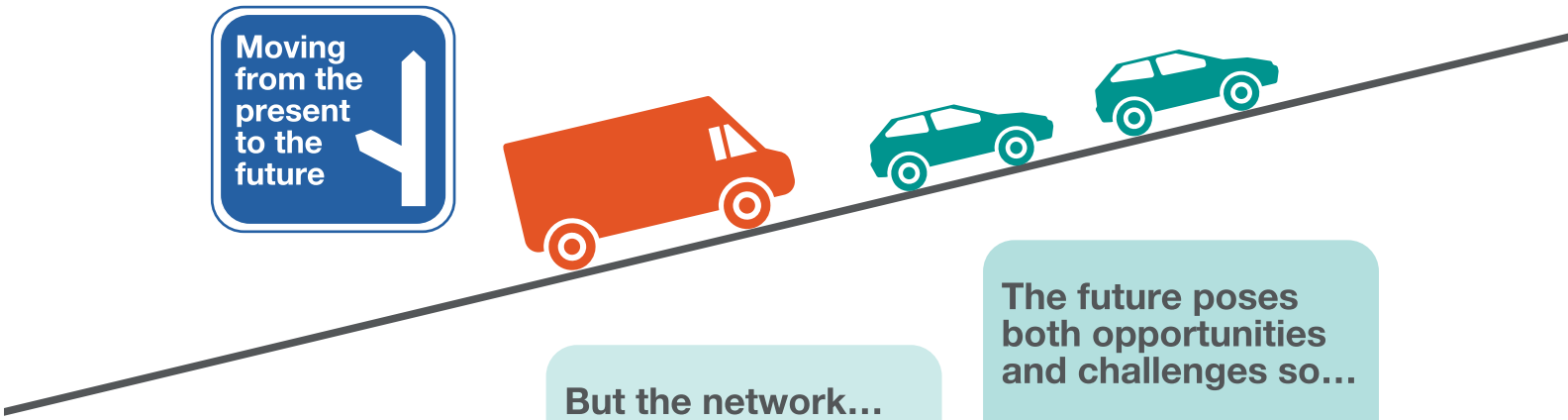
This Road Investment Strategy is laying the foundations for a better future – foundations on which future Road Investment Strategies will build, as we strive to achieve our vision of a revolutionised SRN that will underpin progress and prosperity for generations to come.

4 The Performance Specification covers the first Road Period from 2015/16 to 2019/20

5 This target figure is in nominal terms, and is based on the efficiency assumptions used to develop the Investment Plan

Our strategic vision

“Our ambition for the next 25 years is to revolutionise our strategic roads to create a modern SRN that supports a modern Britain”



The SRN currently…

…Connects the population, linking people, places, communities and different transport modes

…Keeps the economy flowing, providing capacity to support growth on both a national and local level

…Supports delivery of environmental goals, striving to improve the impact it has on the natural landscape and the SRN’s neighbours

But the network…

…Has suffered from inconsistent and inadequate investment

…Needs a transformation in the way it is managed, with a move to longer term planning and investment, supported by the wider Roads Reform agenda

…Must continue to work with the wider transport network and support new transport developments

The future poses both opportunities and challenges so…

…We have assessed strategic trends that will have a significant impact on how we use the SRN

…We have forecast the future traffic on the network and predicted growth in demand

…We have identified specific pressures that will influence network planning

Our aspiration for the network in 2040 is that it will be…

…Smoother – connecting people and businesses safely, swiftly and seamlessly

…Smarter – a world leader in road building and traffic management technology

…Sustainable – driving the transition to a decarbonised, environmentally and locally sensitive network

We will work to achieve this vision in the first Road Period by…

…Focusing on eight performance areas, outlined in our Performance Specification

…Investing in the areas which need it most, as detailed in our Investment Plan

…Providing ring-fenced funding for actions beyond business as usual, including Environmental, Innovation, and Cycling, Safety and Integration funds

We know that such transformation cannot be achieved overnight…

…So consideration of the second Road Period and beyond has begun to ensure that the next RIS will have what it needs to continue this transformation

3. The Strategic Road Network

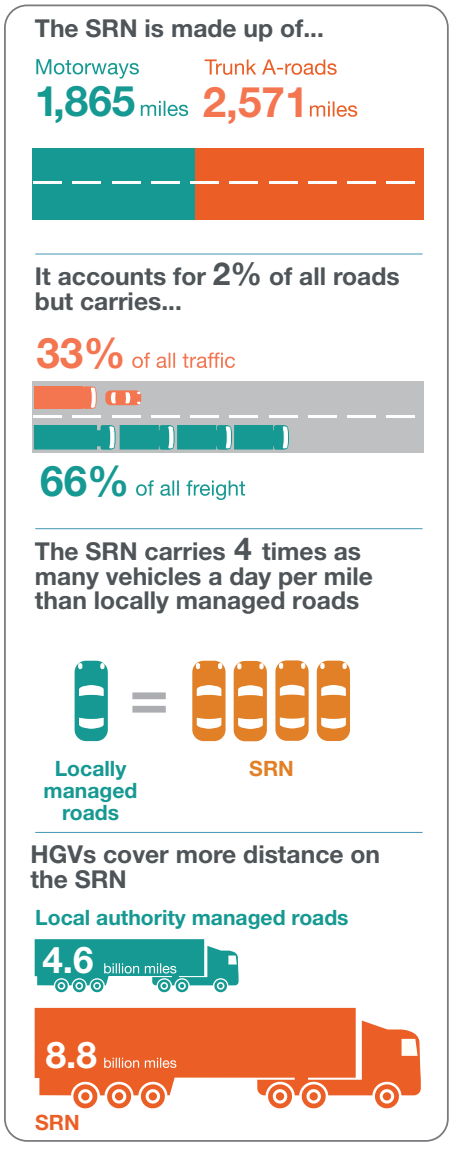
"The quality of a nation's infrastructure is one of the foundations of its rate of growth and the living standards of its people"

National Infrastructure Plan, 2013

Connecting the population, driving the economy

Roads are a critical element of our country's social, economic and environmental wellbeing. Despite only accounting for 2% of the road network as a whole, the SRN is the most heavily used part, carrying one third of all traffic and two thirds of all freight[6].

The network's physical size and volume of use means that it has a vital role to play in delivering government's goals for our national transport networks, as outlined in the four strategic goals of the National Network National Policy Statement (NN NPS)[7], detailed in the following pages.



Source: DfT Statistics

6 DfT Statistics

7 It is important to note that the NN NPS is a high level planning document, which is non-spatially specific. The RIS outlines where decisions have been made on particular schemes and investments over this Road Period (2015/16 – 2019/20)

1: Providing capacity and connectivity to support national and local economic activity

The SRN is vital to British businesses and to the successful functioning of our local and national economies. The network not only includes England's main freight and logistics arteries, which connect our international gateways, logistics interchanges and distribution centres, but also inter-urban connections, which help put more people within reach of a wider range of jobs. This pivotal role is recognised by the public, with recent research indicating that 93% of people consider the SRN important to Britain's economy, and approximately two thirds (69%) also confirming that the SRN is important to them personally[8].

However, capacity has become a major issue in recent years, with parts of the network becoming increasingly congested. It is important that we continue to address this to ensure that the network drives, instead of constrains, growth.

> *"It's no surprise that our European head office is in between those two kinds of major transport roads. That [was] the decision….taken several years ago and continues to ensure that our personnel [are] able to recruit the best individuals."*
>
> Frequent commercial road user (London), DfT Social Research

Enabling and supporting local economic growth

The SRN drives local economic activity – it enables new housing and business developments, encourages trade, and attracts investment to local areas. In the West Midlands, for example, Tata Group committed to long-term investment in automotive manufacturing at the i54 business park alongside the M54 in Wolverhampton and at Brown's Lane in Coventry near the M6 and M42. Along with the scheduled improvements to the network, the transport infrastructure offered in the area was a key factor in Tata Group's decision to invest.

Improvements to the SRN are also designed to bring economic benefits to the local area and wider region. For instance, a new junction arrangement on the A30, near M5 Junction 29, substantially enlarged junction capacity and opened up access to the Exeter and East Devon Growth Point. This is a strategic development targeted at driving economic growth and prosperity in the area, which includes the Exeter Science Park and Skypark business developments. Taken together, these developments are expected to create more than 10,000 jobs and generate £450 million in private sector investment, as well as featuring an intermodal freight and distribution facility. The improvements to the A30 were delivered by Devon County council, in partnership with the Highways Agency.

8 DfT'S Public Attitudes to Roads in England: Wave 3

2: Supporting and improving journey quality, reliability and safety

The SRN is only as good as the journeys it can provide. Many businesses rely heavily on a smoothly functioning SRN to carry out their core activities, while individuals need to be able to trust their journeys will only take as long as expected. The network is also invaluable to logistics: a reliable SRN helps supermarkets to keep prices low and enables consumers to order goods online and receive them the following day.

> *"When it goes wrong... you can lose half a day, a day, and it's just a huge cost which no-one will pay for, my customers won't pay for"*
>
> Frequent commercial road user, (North West), DfT Social Research

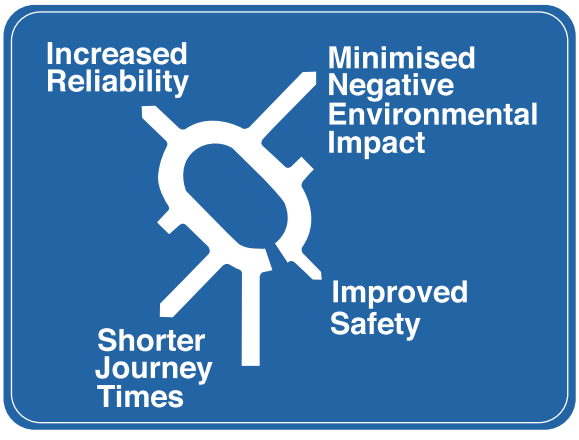
Today we have a network of mixed performance. On the one hand, congestion is a real problem in certain areas, threatening the quality and reliability of journeys. On the other hand, safety on the network has improved markedly over the last two decades[9]. Encouragingly, evaluation evidence has shown that investment in the SRN makes a real difference, with clear social and economic benefits.

Analysis of major schemes shows…

Scheme-specific objectives were met

For every £1 spent, the average return was more than £4 in long term benefits

The biggest benefits were:



Source: Analysis of all major schemes completed on the SRN from 2002–2010 through Post Opening Project Evaluations

9 DfT Statistics

3: Joining our communities and linking effectively to each other

The road network brings communities closer together, providing users with a freedom and flexibility of travel that is unrivalled by any other mode of transport. Almost all journeys start or end on a road and, given their ability to provide access to railway stations, ports and airports, roads are, in many ways, the glue that joins the transport network together.

The SRN is a key part of such connectivity, linking people, places, and different transport modes. This is particularly true outside of the big cities, where the range of transport options may be more constrained. In a recent survey, 64% of individuals who used the SRN at least once a month stated that it would be difficult or impossible to do their most frequent journey without using the network[10]. Road transport, including journeys on the SRN, also plays an important role for those with mobility difficulties – many of whom rely on their car as their primary means of transport. Indeed, nearly two thirds (64%) of older, less mobile car owners surveyed said that they would only travel by train or bus if they had no other option[11].

However, we recognise that the SRN can also have a negative impact on communities. Busy roads can generate noise, and sever access in towns and villages, impeding cyclists and walkers. Solving these issues has been a focus of the Highways Agency, and it is important that the new Company strives to do even more to deliver improved outcomes for those living and working near the network.

Connecting Cambridge and Huntingdon through an improved A14

At the 2013 Spending Round, the government committed to improving a 21 mile stretch of the A14 between Cambridge and Huntingdon. One of the busiest parts of the SRN between the Midlands and East Anglia and the Port of Felixstowe, it was also a long-standing congestion hotspot and area of concern for local communities. £100 million of the £1.5 billion scheme cost was contributed by partners, including Local Authorities and Local Enterprise Partnerships.

Through widening sections, improving junctions, creating a new Huntingdon Southern Bypass and de-trunking a large stretch of the old road, the scheme will provide benefits to both road users and local communities. It will keep heavy through-traffic away from villages, reduce community severance, and relieve congestion on a critical part of the network, making travel and commuting easier, safer and more reliable. Changes to the old road will improve air quality and reduce traffic noise, and will give an opportunity to improve conditions for walkers, cyclists and equestrians through new crossings. The improved stretch of motorway will be open to traffic in this decade.

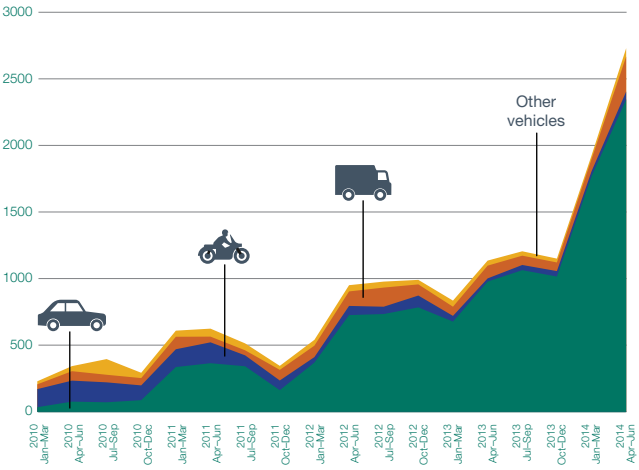
10 DfT's Public Attitudes to Roads in England: Wave 3
11 DfT's Climate Change and Transport Choices: Segmentation Study

4: Supporting delivery of environmental goals and the move to a low carbon economy

Roads have a significant impact on the environment. Their construction can impact the built and natural environment and threaten biodiversity, while traffic is a cause of air pollution and accounts for nearly a fifth of UK's carbon emissions[12].

Yet, today, there are more options to mitigate environmental impact than ever before. Since 2001, for example, the average emissions of new cars has fallen by 29%. In April-June 2014, the average CO_2 emissions from new cars fell by 2.3% when compared with the same time period in 2013[13]. ULEVs are becoming more common, and will dramatically reduce carbon and other emissions generated on the SRN. Improved construction standards and better road design can improve the aesthetic appearance of the network, mitigate biodiversity impacts and reduce the effect on the built and natural environment.

Retrofitting the SRN with low-noise surfacing can also reduce the impact of roads on local communities.



ULEV registered for the first time in the United Kingdom, January 2010 to June 2014

- All cars (inc. quadricycles)
- Motorcycles & tricycles
- All vans
- Heavy goods vehicles, buses, coaches and other vehicles

Source: DfT Statistics

Protecting ancient woodland along the A21 for future generations

Ancient woodlands are irreplaceable features of our landscapes, rich in biodiversity and culture. When it was discovered that the approved development to widen the A21 would damage or destroy nine hectares of ancient woodland, an alternative solution was sought by the Highways Agency: habitat translocation. Alongside salvaging key woodland features, this will create 18.1 hectares of new woodland (double the area lost), to be managed by the Highways Agency for at least 25 years. Ancient woodland soil, ground flora and coppice stools will be transferred to sites with similar soil characteristics to the original site to protect the complex ecosystem of the woodland. The 26.4 hectares of remaining ancient woodland will be managed for ten years to improve its condition while the new planting becomes established. To help ensure success, some advance environmental work has already begun in advance of the main construction work, which will start in Spring 2015.

12 DfT Statistics
13 DfT Statistics

Gathering road user perspectives on the SRN

The Department for Transport undertook a large scale programme of social research to understand how individuals and commercial organisations interact with, and perceive, the SRN. The results highlighted:

The need for SRN investment

The SRN is an unfamiliar concept to most road users. However, once understood, they recognise the network's economic and strategic importance.

If all roads were in comparable condition, users believe that investment in the SRN should be prioritised over investment in other roads. Road users think it is particularly important to invest in the SRN to ensure that it is safe and well-maintained.

As well as supporting investment in physical improvements, road users are keen to see upgrades in how the network is managed. They advocate strategic, joined up, long term planning for the SRN, and roads in general.

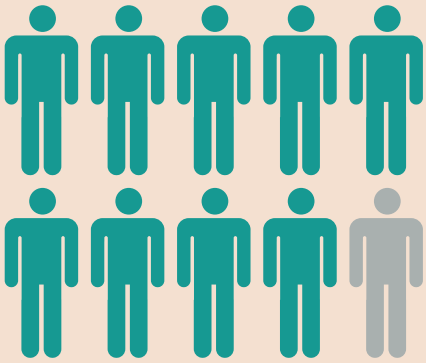
The effect of widespread congestion

The prevalence of congestion on England's roads means that it has become expected and accepted. Road users have learnt to adapt their behaviour, planning journeys defensively.

It is crucially important to road users that their journeys are predictable and reliable. The cost of delays and congestion is particularly high for businesses. Above all, they seek to prevent passing on these 'costs' of congestion to customers.

Source: Roads Reform Social Research Programme

The SRN plays an important role in the national economy



In our recent social research, **nine** in **ten** individuals surveyed recognised the importance of the SRN to the economy

Delays are of particular concern to business road users

Additional time spent on the road reduces business productivity

Stop-start driving and longer journey times increase fuel costs

Unforeseen delays can result in the loss of business through missed opportunities

Late delivery of goods and services can cause reputational damage and jeopardise relationships with clients/customers

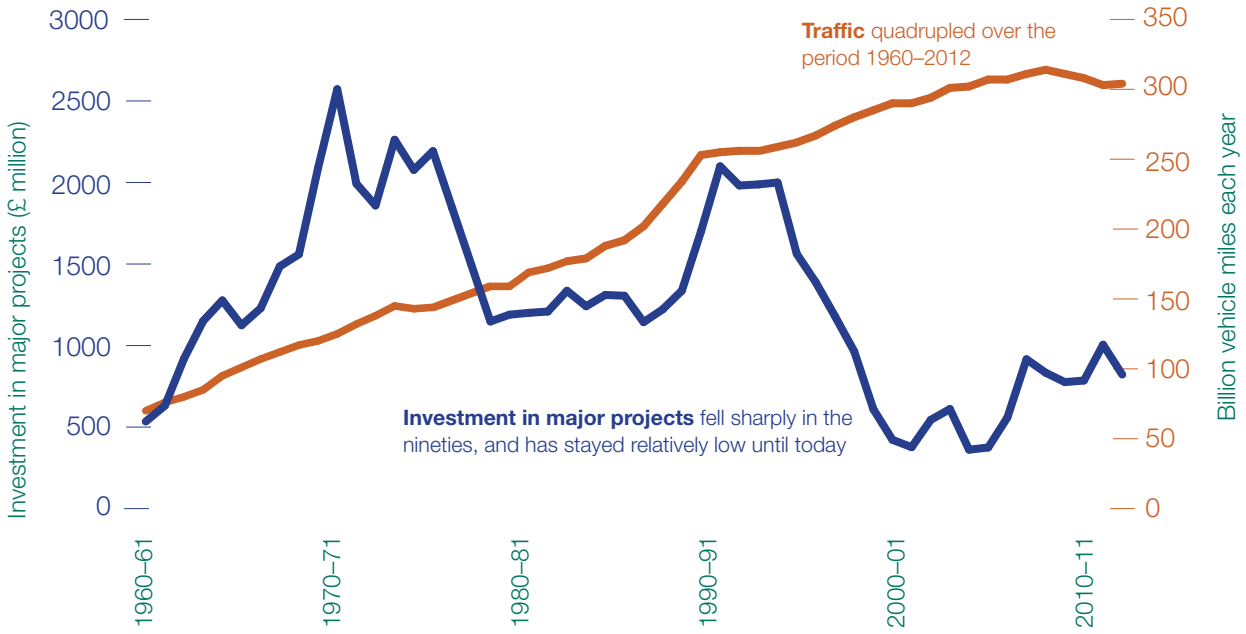
Transforming to meet future needs

We live in a modern, vibrant and internationally competitive country and, to maintain and build on this, our country needs a high-performing SRN that matches the aspirations we have for the future.

The legacy of insufficient and inconsistent investment

The SRN was originally planned in the 1940s and built primarily in the 1960s and 1970s. In the decades that followed, traffic volumes grew and overall investment in England's roads reduced. In the 1990s, annual spending in real terms on trunk road schemes fell sharply, reducing from over £2 billion to less than £0.4 billion[14]. Spending has remained at a relatively low level ever since, despite the number of vehicle miles driven on the SRN reaching 85 billion in 2013, a 14% increase since 2000[15].

The recent low levels of investment in our SRN are in contrast to those made by many of our international competitors, including our European neighbours. This is highlighted by relative per capita spending on all roads, which in 2010 was 75% higher in France and at least 40% higher in Germany than it was in UK[16]. As a result, our network has fallen behind and our international standing has suffered: in 2014, the UK's road infrastructure



Investment v Traffic

Investment in major projects (£ million)

Billion vehicles miles per year

Source: Traffic estimates from DfT Statistics; spending data collected from a range of published government documents and HA spend data. Note that for the spending data, there have been minor changes to the classification of road projects over time.

14 DfT Business Plans and HA spend data
15 DfT Statistics
16 International Transport Forum

ranked 30th in the World Economic Forum's Global Competitiveness Index[17], down from 14th in 2006 and far behind European nations such Portugal, Austria, France and the Netherlands, who are all ranked in the top five.

Now, in certain places, our strategic roads have already reached or exceeded capacity, resulting in areas of significant congestion, particularly around larger cities. Relative congestion levels across Europe highlight the challenges we face, even accounting for differences in respective networks. For instance, traffic density on UK motorways is 113 million vehicle miles per mile of road compared to 47 million in Germany and 39 million in France[18].

Such congestion not only undermines the driving experience for SRN users, it also amounts to around £2 billion per year in lost time. By 2040, we believe that congestion will cost £10 billion a year in lost time, and the freight industry £2.2 billion unless action is taken[19].

Roads reform and the transformation of the Highways Agency

With this RIS and the government's broader Roads Reform agenda, we are taking a markedly different approach to SRN investment. We are moving to longer term investment and planning, seeking to deliver a better network and a better deal for taxpayers.

In this RIS we therefore set out an ambitious, long term vision for the SRN and outline a multi-year investment plan that will put us on the path to achieving our vision.

These changes are underpinned by the step-change in investment announced at the 2013 Spending Round. Over £15 billion of capital investment has been committed to road investment between 2015 and 2021, with annual funding on enhancements tripling to £3 billion per year by 2021. Such commitment reflects government's belief in the importance of the SRN to the nation's transport networks, economy and society.

Alongside this RIS, the Highways Agency is being transformed into a government-owned company. Such a change will allow it to operate like the best-performing infrastructure providers in other sectors, and enable the organisation to deliver better roads more quickly and at a lower cost. Transport Focus will act as the motorists' champion and ensure that the needs of road users are being heard and responded to by the Company. The Office of Rail Regulation has taken on the role of independent monitor and will hold the Company to account for delivering to quality, time, and budget.

Investment across the transport network

It is, however, important that we continue to invest across the tranport system as a whole, with the aim of enabling more choice and smoother journeys for all.

Road and rail, for instance, can often offer different options for passengers and freight[20].

17 The Global Competitiveness Report assesses the competitiveness landscape of 144 (2014) economies, providing insight into the drivers of their productivity and prosperity. It is based on statistical data and an Executive Opinion Survey

18 International Transport Forum

19 DfT National Transport Model Analysis

20 *Planning Ahead*, Network Rail, 2010

While roads may be better placed to serve smaller freight loads and journeys that start or end outside of city centres, other markets, such as commuting and bulk freight, are often more suited to rail transport.

So, while we are investing in the SRN, we are also taking investment to record levels across the wider transport network. This includes continued investment in the rail network, building on the £25 billion which has been invested since 2005[21]. Between 2014 and 2019, Network Rail will invest £38 billion in the rail network, while a further £16 billion will be invested in HS2 over the next Parliament.

Local transport, too, will continue to benefit, with the Local Growth Fund making £3 billion available to support local transport projects between 2015 and 2021, and £1 billion per year for maintenance of roads maintained by the local highways authorities. This follows the £4 billion spent between 2011 and 2015 on local highway maintenance and other transport investments, as well as the £266 million Local Pinch-Point Fund, which funded 112 local road schemes across England.

21 HM Treasury Statistics – Country and Regional Analysis

4. Planning for the long term: trends and forecasting

"It is already clear that some parts of the system are under severe strain, and looking ahead, significant challenges are looming"

Sir Rod Eddington, The Case for Action, 2006

To ensure we meet the future needs of the SRN, we must aim to understand the wider context for roads over the coming decades. However, the challenge of doing so should not be overstated. In looking ahead, this RIS does not seek to predict the future, but takes into account a range of possible outcomes, underpinned by broad evidence, which the Department will continue to build on and review. This includes an assessment of the trends that are likely to have a significant impact on road use, and what these trends mean for traffic volumes on the SRN specifically, now and in the future.

Assessing the strategic trends

As part of developing this RIS, we have looked to identify trends that will have a significant impact on how we use the SRN over the next 25 years. While we recognise that there are a vast number of trends that could potentially have an impact, a small number have been prioritised as those that are most likely to shape the network of the future.

Population growth and demographic shifts

The Office for National Statistics (ONS) projects that the English population will rise to 63 million by 2040, some 20% (10 million) higher than the population in 2010[22]. All else being equal, this means millions more potential drivers on the SRN.

It is not just population levels but the structure of the population which will shape demands on the network, with different groups and people in different areas exhibiting varying needs and attitudes to travel. For instance, average life expectancy is expected to increase over the coming decades. This could see greater demand for road travel, with the over 60 age group showing the highest growth in car mileage in recent decades[23]. Migration, too, could have an influence, with some evidence showing that migrants tend to drive less on average, although evidence also suggests they tend to 'transport assimilate' by taking on the travel

22 ONS population projections

23 T. Kuhnimhof, D. Zumkeller and B. Chlond (2013). "Who Made Peak Car, and How? A Breakdown of Trends over Four Decades in Four Countries." Transport Reviews 33(3)

patterns of the domestic population over the long-term.

Where people live will also influence their transport needs and behaviours. For much of the second half of the twentieth century, de-urbanisation was the primary trend, with more people choosing to live in suburban areas, smaller towns and rural areas. Combined with the development of offices and retail parks on the outskirts of cities, the result was growing car use as people travelled longer distances to get to work and go shopping.

Over the past two decades, however, such trends have reversed, with more people moving back to cities – 82% of the UK population is said to now live in urban areas[24]. This trend is expected to continue, meaning we are likely to see increasingly dense urban cores, still surrounded by large hinterlands. Given the greater options and the frequency and reliability of public transport, we would expect to see increased usage as a result of this shift. However, with significant proportions of the population still living on the outskirts of cities, and significant economic activity taking place in these outskirts, road-based travel will remain a critical element of urban transport needs.

Growing economy

The Office for Budgetary Responsibility (OBR) predicts that the UK economy will continue to grow through the coming decades, with a central prediction of 85% total GDP growth and 60% per capita growth by 2040. However, the future will see the UK facing increasing international competition with established and emerging economic powers. Such global economic challenges are likely to increase the focus on ensuring the country is competitive, reinforcing the emphasis on infrastructure as a key enabler of national competitiveness.

From a roads perspective, traffic has historically grown with rising incomes. However, as car ownership has grown, this relationship has gradually weakened over time[25]. Going forwards, the nature of GDP growth – the way it is allocated across individuals, and feeds through into disposable incomes – will be important. The available evidence continues to show a positive relationship between GDP and demand for travel by road[26], and growing GDP growth per capita is therefore still expected to be a driver for continued increases in car ownership and road travel.

Energy

Over the coming decades, there will be increasing pressure on traditional energy sources. UK oil production currently accounts for 65% of demand and is declining[27]. In the short to medium term, as domestic production declines, our dependence on imported oil and gas will grow and we will become increasingly exposed to the pressures and risks of global markets. Over the same period, global energy consumption is anticipated to increase significantly, implying increasing competition for available resources.

Despite this, fuel costs are not projected to rise significantly over this time period. It is anticipated that vehicles will have increasingly

24 The World Bank data table, Urban Population %

25 Road Transport Forecasts 2013

26 *The Department commissioned RAND Europe to undertake a review of road traffic demand elasticities, with respect to GDP, fuel costs and population changes. The findings of this review will be published shortly*

27 Energy Security Strategy – UK Government, November 2012

efficient engines partly in response to longstanding emissions targets, including those mandated by the EU. We expect to see the rise of ULEVs – with an expectation that, by 2050, almost every car and van in the UK will be an ULEV[28]. These improvements in fuel efficiencies, and uptake in ULEVs, are expected to increase traffic levels by reducing the cost of driving, whilst simultaneously reducing – dramatically – the environmental impact of vehicles and of the road network as a whole.

Environmental shifts

At a global level, consideration of the environment, and the increasingly apparent effects of human activity, is having an ever more profound impact on industry, society and how we approach development and our future. Transport and infrastructure are no exception; appreciating potential environmental shifts is important as we develop a robust, resilient network that is fit to face the challenges of the future.

The implications of environmental change for the road network are potentially wide ranging. The imperative to reduce carbon dioxide and other greenhouse gases in response to climate change is likely to drive increasingly efficient, low-emission vehicles, as noted above[29]. In addition, increasing instances of extreme weather will expose any vulnerabilities in the overall network, testing its resilience, as the challenge to minimise disruption and keep the country moving, whatever the weather, intensifies.

These and other emerging challenges will ensure that the need to improve the SRN's environmental impact remains at the forefront of decision making. This includes our support for ULEVs and alternate fuels, our work with vehicle manufacturers and international partners to improve emission standards, and our determination to enable improved choice across transport options by investing across all modes.

Technological developments

New technologies are changing the nature of transport both in terms of how we travel and also why we travel.

Technology provides an incredible opportunity to change how people use the SRN and improve the driving experience. In 2000, 25% of the world's information was stored digitally – today it is more than 98%[30]. On this trajectory, and with the forecast dramatic increase in computing power, by 2040 there will be around 20,000 times more digital information[31]. The ability to collect and analyse this growing volume of information has been termed 'Big Data'. From a transport perspective, Big Data is already making a real difference to journeys and has the potential to unlock more value from the SRN. Real-time mapping on smart phones already saves one billion hours of travel time and 3.5 billion litres of fuel globally per year[32]. Floating vehicle

28 Driving the Future Today – a strategy for Ultra Low Emission Vehicles in the UK, 2013

29 The EU ambient air quality directives set limits and targets for concentrations of various pollutants in outdoor air for the protection of health and ecosystems. The Climate Change Act (2008) established a target for the UK to reduce its emissions by at least 80% from 1990 levels by 2050

30 Global Strategic Trends – Out to 2040, fifth edition, Ministry of Defence

31 Global Strategic Trends – Out to 2040, fifth edition, Ministry of Defence

32 Oxera quantifies the benefits of Geo services to global consumers and businesses on behalf of Google (Oxera.com January 2013)

data[33] and mobile phone location data can be used to give better real time management of traffic, enabling predictive and personalised traffic information for road users.

We are also likely to see increasing automation on the roads as we transition from existing vehicles, via assisted driving services like platooning[34], to the deployment of fully autonomous vehicles. While driverless technology still has to mature, it clearly has the potential to transform the UK's transport networks – improving safety, reducing congestion, and lowering emissions.

While the timing of development and mass market adoption of many of these technologies is unclear, what is certain is that changes are coming, the impact of these changes on the road network of the future will be real, and we need to support such advances as much as possible.

Connecting vehicle and infrastructure information on the A14

The Highways Agency are undertaking a pilot on a 50-mile section of the A14, which is to become Britain's first internet-connected road. A network of sensors will be placed along this stretch, creating a digitally-enabled road which can monitor traffic by sending signals to and from mobile phones in moving vehicles. Sensors in cars and on the roads can monitor the build-up of congestion and wirelessly send this information to a central traffic control system, which automatically smooths the flow of traffic. This system could also communicate directly with cars, directing them along diverted routes to avoid the congestion and managing speeds to ensure journeys are both quick and safe. We expect to see more of such schemes over time.

33 This is defined as the collection of localisation data, speed, direction of travel and time information from mobile phones in vehicles that are being driven

34 Platooning is the electronic coupling of one or more vehicles to a lead vehicle, which takes control of the speed and direction of all the vehicles in the platoon, and can decrease the distance between vehicles thus increasing road network capacity

Technology and the vehicles of the future

Significant trends in vehicle technology are evolving quickly and offer exciting opportunities, with the potential to transform the way we travel. In particular:

- **Automation**, allowing vehicles to "see" the surrounding environment and provide advice about, or take control of, decisions on how to navigate it
- **Connectivity**, where vehicles communicate in real time with other vehicles and the infrastructure, opening up new services for drivers and allowing traffic to behave cooperatively so the whole system flows better
- **Ubiquitous data**, which could result in more advanced information about the wider transport network and the world around us, optimising the way that we use personal transport and the transport network
- **New ownership models**, such as car clubs and lift sharing, enabled by better data, better mobile connectivity and better journey planning
- **Low-emission technology**, including hybrids, plug-in hybrids and pure electric vehicles, powered by batteries at first and potentially hydrogen fuel cells in the medium to long term.

This is, of course, a complex agenda and uncertainties remain, but the realisation and convergence of these various emerging trends could radically change the way we think about transport. They are likely to have major impacts on safety, network capacity, asset management, energy consumption, emissions, driver behaviour and mobility more generally.

Government has a vital role to play in understanding the opportunities and challenges these developments bring, and ensuring that we are well-placed to respond to, enable and capitalise on them for the benefit of all. Government will need to work in partnership with the Company to establish firm plans for how the SRN can best enable and benefit from the technologies. Capitalising on these advancements must be a focus of the Company's approach to innovation, technology and research, and also the Innovation Fund. Building on the previous work of the Highways Agency, these provide the means for the Company to position itself at the vanguard of global efforts in this area (see the Performance Specification and Investment Plan for more information).

With so far-reaching an issue, a partnership approach is essential. The Department and the Company must be an active contributor in efforts to ensure the UK takes advantage of these global technology trends, facilitates investment and boosts overall UK capability. Together with the Company, we will engage closely with industry, operators, local authorities and other stakeholders to position the government. Our aim for 2015 is to see a consensus built and plans developed about how the UK will move, with the assistance of the vehicles of the future, towards a vision of better network flow, exemplary safety and improved efficiency.

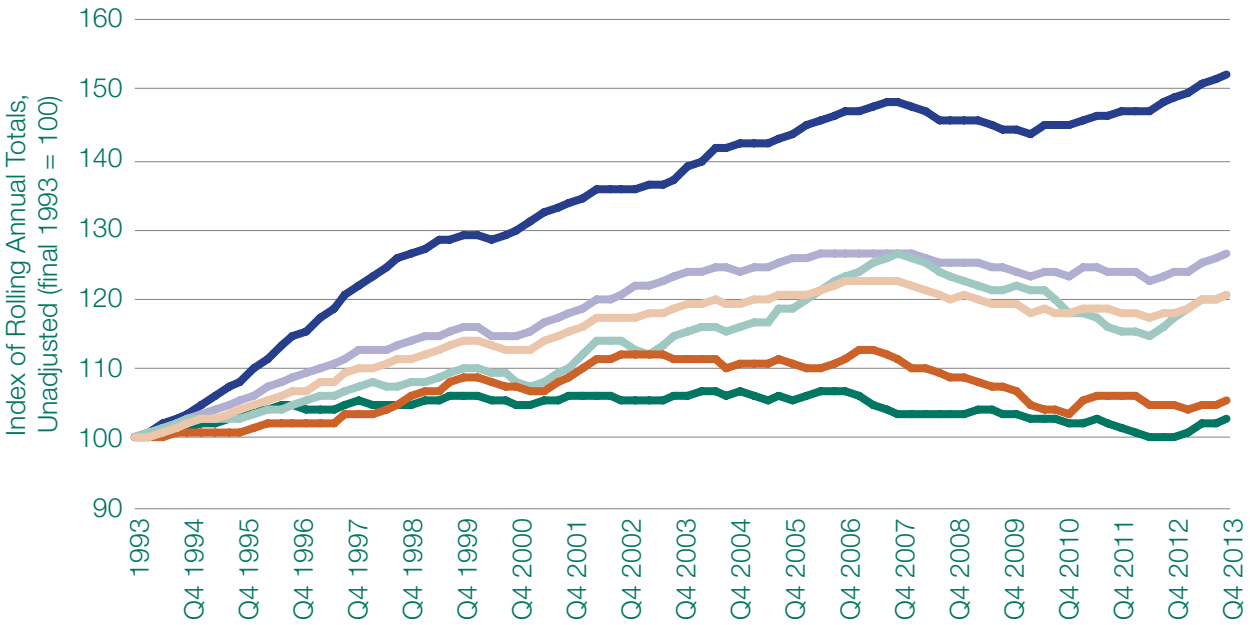
Forecasting future traffic

We are aware that traffic on the wider road network is at a similar level to ten years ago – in 2013, traffic for all vehicle types across all roads was just 0.4% higher than in 2003[35]. There is, however, increasing debate and uncertainty over what this means for future levels of traffic. Some of the emerging trends we identified in the previous section, such as growing concentrations of people living and working in urban areas and technological advancements, along with changes in social behaviours and attitudes, are seen by many to be playing an increasingly important role in reducing demand for the motor vehicle. In the following pages, we take a closer look at traffic trends and the impact on the SRN.

Demand on the SRN

Whilst overall traffic has levelled off, demand for the SRN has continued to grow, with the exception of a levelling off during the recessionary years of 2008 and 2010[36]. Since 2010, daily traffic flows on the SRN have increased steadily, and are now at an all-time high. According to the latest quarterly data, motorway traffic is 2.3% higher in the summer of 2014 than it was in the same period a year earlier[37].

There is, therefore, little sign of the demand on the SRN abating, indicating that the impact of the broader strategic trends moderating traffic growth may be having a



Index of rolling annual traffic totals by road class in Great Britain (1993 = 100)

- Motorway
- Rural A-road
- Urban A-road
- Minor rural road
- Minor urban road
- All roads

35 DfT Statistics

36 DfT Statistics

37 DfT Statistics

greater impact on the local road network. Furthermore, there is emerging evidence that demand on these roads is also picking up again as the economy recovers. The latest data shows that traffic across all vehicle types and road classes has increased by 2.2% since 2013[38], the highest quarterly total recorded since 2008, with economic growth likely contributing to the upward trend.

Understanding drivers

The Department recognises how important it is to fully understand what is happening with traffic and why, to forecast what future road demand might look like, and ensure investment is allocated to the network on the best possible basis.

To this end, we have been undertaking a systematic review of the existing evidence base to understand the trends in road traffic in more detail, including how they vary across different areas and groups, and the extent to which different factors have contributed to these trends. The findings and conclusions of this review will be published separately. A summary is presented on pages 29 and 30.

Implications for future road demand

There are clearly a wide range of factors affecting overall traffic levels, some of which are well understood. These include income, costs and demographics, which have been at the core of the Department's road traffic forecasts. Other are less clear and, as a consequence, there is an uncertain outlook for future levels of traffic.

Where there is uncertainty, the effect on current and future road demand could be either positive or negative. Changing lifestyles and social attitudes, for example, may reduce car travel amongst young people, but increase it amongst women, whilst improving health and life expectancy may drive up car usage amongst older people.

Some trends which may have reduced levels of car usage in recent years are also unlikely to continue and will therefore not have an ongoing effect on road demand; trends such as increasing educational participation and having children later in life can only go on for so long. The effect of changes to company car taxation, which has been found to have contributed to the recent levelling off in overall traffic levels, has now largely been fed through.

Meanwhile, evidence suggests that the factors which have traditionally been seen as important determinants for national traffic levels, particularly income and costs, continue to be so.

38 Data comes from provisional quarterly estimates of road traffic volume in Great Britain – for Quarter 3 (July to September) 2014. Final data will be available in June 2015

Understanding drivers of road demand – summary of findings:

Trends in car usage

In Britain in 2013 there were 304 billion vehicle miles travelled compared to 30 billion in 1949. Cars have shown the greatest growth of all vehicle types over this period. In recent years traffic growth has slowed, largely being driven by a reduction in car traffic: in 2013, car traffic was 1% lower than in 2002. This compares to strong growth in van traffic, which has risen 19% since 2003.

Analysis of the National Travel Survey (NTS) reveals this levelling off in national car traffic masks a fall in the average vehicle miles individuals have travelled, offset by a growing population. The decline in average individual mileage has been brought about mainly by a fall in the number of trips people make; the proportion of trips taken by car has increased slightly, and trip lengths have stayed broadly constant.

The aggregate trend also masks different trends across different groups and locations. Reductions have been concentrated amongst men, young people and urban areas. By contrast, car travel has increased amongst older people, women and, importantly, on motorways.

	Growing	Falling/Flat	Details
Area/road type	Motorways (+15%) Rural (+8%)	Urban (-4%)	Transport Statistics Great Britain (TSGB), major roads – GB, 2000-2013
Age	60-69 (+13%) 70+ (+25%)	17-20 (-15%) 21-29 (-25%)	NTS, individual mileage, 2002-2012
Gender	Females (+5%)	Males (-15%)	NTS, individual mileage, 2002-2012

Drawing on evidence from across social and economic research, statistics, surveys and econometrics:

Well-established factors

Some factors are well-established as having a significant effect on traffic levels – most notably costs and income:

- *Costs of driving:* The NTS shows that younger people (under 30s) consistently cite the high cost of learning and insurance as the main reasons why they are not learning to drive
- *Employment:* Labour Market Statistics show that the employment rate for people aged 18–24 years old fell by 10.5 percentage points from 2001 to 2011, and was falling behind other groups even before the recession
- *GDP:* In a literature review of travel demand elasticities, commissioned by the Department, almost all studies found a significant and positive impact of GDP on traffic
- *Taxation:* Company car use has declined by over a third in the last two decades (Le Vine and Jones, 2012) which is likely attributed to company car taxation policy.

Factors with moderate impact

Other emerging trends have influenced changes in car travel behaviour. However, the effect on overall road traffic to date appears to be relatively modest.

- *Urbanisation:* Evidence suggests that recent trends of relocation from rural to urban areas have not had a large effect on total traffic: in 2011, only 6.7% of the population was distributed differently[39] from 1971. It is therefore thought that the impact on national traffic will be relatively small
- *Having children and getting married later in life:* Over a number of decades there has been a trend of these significant life events occurring at older ages. Analysis of Understanding Society data by a research team, that included the Department, shows such a trend has a positive impact on car ownership, which is now happening later. However, only a small proportion of the population is affected (3.1% have a child, 1.6% gain a partner in any year)
- *Increased use of public transport:* Public transport has become more popular in urban areas as services have expanded and become more reliable but the impact of this on overall road traffic appears to be small, given the share of total travel these entail
- *Telecommuting:* ONS analysis suggests the role of technology may only have had a modest impact on home working to date; the home working rate (defined as the proportion of those employed staying at home to work) has only risen 2.8 percentage points over the last 16 years.

Factors with mimimal impact

There are some factors that have been cited as potential causes for car trends but appear, on the basis of limited evidence, to have minimal impact on travel behaviour:

- Environmental concerns: Self-reported awareness and concern for environmental issues does not appear to have translated into a change in travel demand. The NTS reports that only 0.4% of respondents quoted this as the main reason for not learning to drive.

Factors where there is insufficient evidence

Finally, there are a number of factors where the Department feels that the evidence is currently insufficient to draw firm conclusions from:

- *Educational participation:* The effect of an increasing educational participation rate on trips and distances travelled
- *Immigration:* Although there is some evidence to suggest that migrants travel less by car, this behaviour appears to reduce over time, and the degree to which the travel decisions of this group affect overall traffic levels is unclear
- *Desirability of the car:* There is little evidence to indicate the extent to which societal and cultural changes – above and beyond those caused by technological developments – may have led to the car becoming less desirable
- *Technological developments:* While they do not appear to have been an important factor to date, the role of social media and other technological advancements is unclear

Further work is needed to understand the role these last set of factors are playing, and could play in the future. The Department will be investigating this going forwards.

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39 Headicar, Peter. 2013. "The Changing Spatial Distribution of the Population in England: Its Nature and Significance for 'Peak Car'." Transport Reviews no. 33 (3):pp 310-324

A steady rise in fuel prices since the turn of the century, and more recently the economic recession, have undoubtedly dampened traffic levels over the last decade, and contributed to the recent decline in the average distance people travel. However, the future, projected growth in GDP per capita and improved fuel efficiencies should drive up demand – increasing both the number of car trips people take and the distances they travel.

With the predicted growth in demand combined with the likely strong growth in population levels, the outlook is therefore for continued growth on the road network, and on the SRN particularly.

Road traffic forecast scenarios

The extent of growth depends on how other strategic trends evolve, and their impact on how, and how much, people travel. To account for this uncertainty, the Department have forecast road traffic levels – using the National Transport Model[40] – under a number of different scenarios. These take account of some of the key uncertainties which have been identified in our review of the existing evidence base[41].

One key uncertainty is how and whether the decline in the number of trips people make will continue into the future. As this has been the main reason for the decline in individual mileage over the last decade, we have considered future traffic levels under two alternative assumptions – one where the current rate of decline continues into the future[42] to 2040, and another where they remain at their historical levels.

In reality, the number of trips might decline at a slower rate, or level off before 2040. It might even increase in the future. But, by considering a scenario (Scenario 3) where they are assumed to continue declining throughout the whole forecasting period – whether this is due to changing social attitudes, technological developments, or demographics – we can ensure that our forecasts better reflect the uncertainty which sits around recent trends and their implications for the future. This in turn will help ensure that the Investment Plan included in this RIS is sufficiently robust to deal both with today's problems and those the future may bring.

There is also uncertainty over how some of the strategic trends may affect people's decision to own a car, travel by other modes (eg use public transport), or travel different distances. To account for this, we have forecast traffic under an alternative scenario where car ownership levels, the proportion of trips taken by car and the distance people travel are all unresponsive to future GDP growth (Scenario 2).

40 The National Transport Model is a multi-modal four stage behavioural model that forecasts travel demand bottom up using highly disaggregated input data. The forecasts reflect updates to our modelling assumptions, to better reflect speeds and capacities in London, and take account of latest forecasts for GDP growth, fuel costs and efficiencies, as well as latest data on the number of trip people make

41 Full details of this work will be published soon as part of the next update to the Department's road transport forecasts

42 Trip rates are estimated by journey purpose. On average they have been falling, although for some journey purposes they have been increasing

While the evidence suggests the link between road traffic and GDP has been weakening over time, there is virtually no evidence to suggest it will have no effect in the future.

Finally, the recent trends in fuel prices and GDP show that there remains considerable uncertainty around the path these may take in the future. So, as before, we have also forecast traffic under different outcomes for these key drivers to demonstrate the sensitivity of future traffic levels to different economic outcomes (Scenario 1 low and high).

Our range of forecasts, therefore, capture the most important uncertainties around future road demand both in terms of the impact of different drivers, and also the outcome for the main components of traffic – namely, trips, mode choice, and distance travelled.

Strong predicted traffic growth on the SRN

Based on latest trends, the available evidence on the drivers of road demand, and taking account of the key sources of uncertainty in a range of forecast scenarios, it is reasonable to plan for growing levels of traffic.

The scenarios give a range of outcomes for road demand, but all point to strong positive growth. On the SRN, we forecast that traffic (in terms of total miles driven) will be between 27% and 57% higher in 2040 than it was in 2013[43].

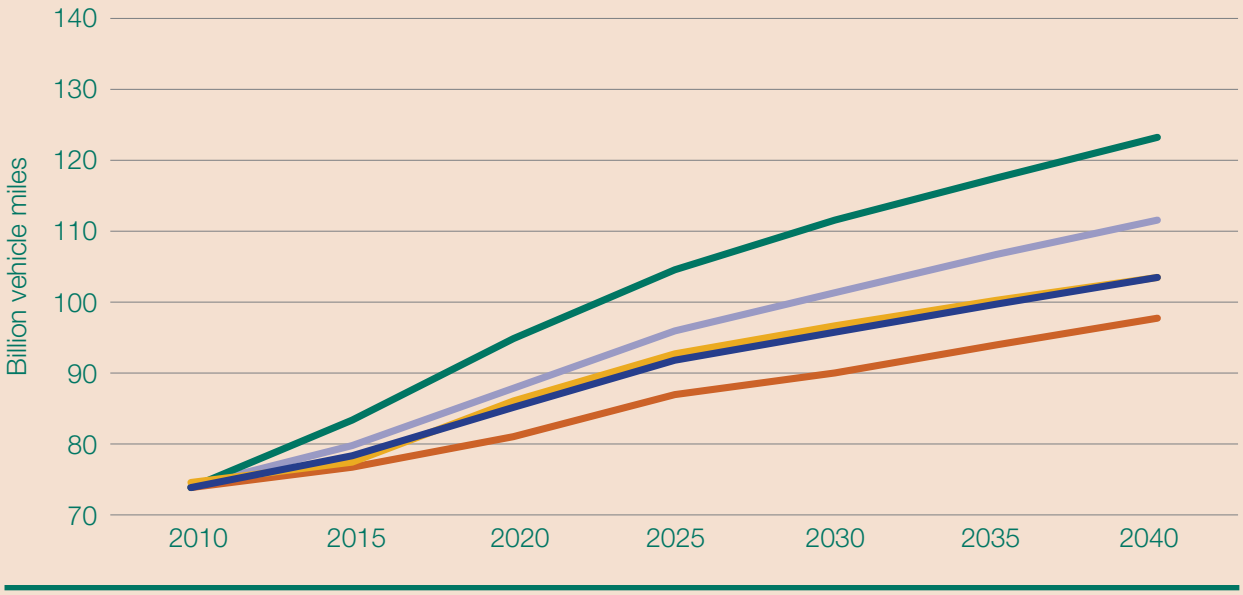
This implies average annual traffic growth on the SRN of between 0.9% to 1.6%. This is lower than, albeit broadly in line with, recent traffic data – with latest figures showing overall traffic levels in Great Britain as 2.2% higher than a year ago, and motorway traffic levels specifically 2.3% higher.

Even in a scenario where the number of trips people take continue to decline in the future, overall traffic grows because more people are taking trips (due to population growth), more of these trips are taken by car, and people are travelling further (due to falling fuel costs and rising income). Where car ownership and car use do not increase with rising incomes, population growth and improving fuel efficiencies will continue to mean more people travelling by car and for longer distances.

Of course, it is possible that there could be other outcomes and future road demand may fall outside of this range. The Department thinks the scenarios presented provide a plausible range, but will remain vigilant, monitoring and reviewing the evidence, and will develop our understanding of road demand over time. Future Road Investment Strategies will respond to any changes in outlook.

43 DfT National Transport Model analysis

Forecast SRN traffic



Forecast SRN Traffic – England (billion vehicle miles)

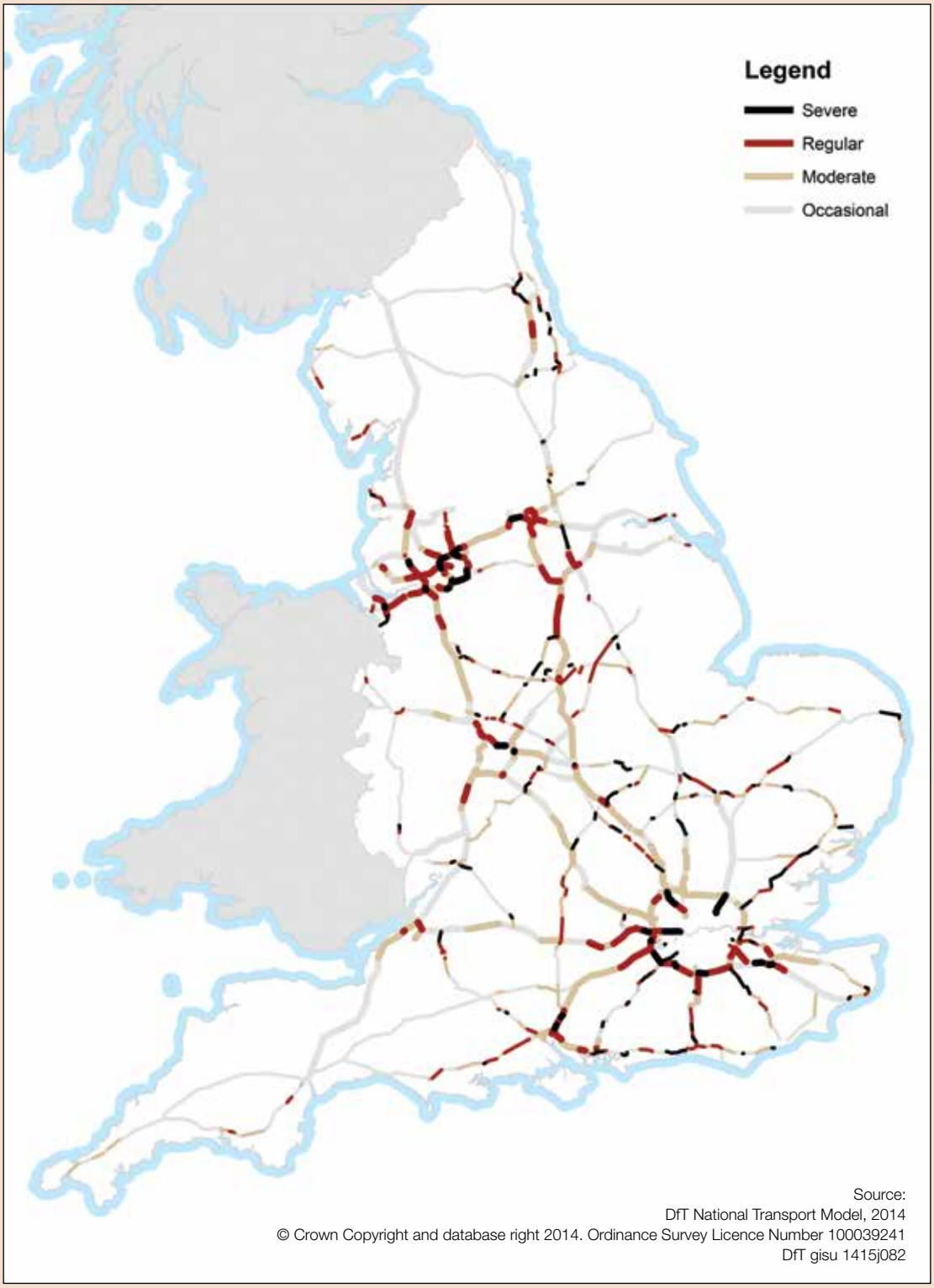
Scenario 1
Scenario 2
Scenario 1 (low)
Scenario 3
Scenario 1 (high)

The scenarios

- **Scenario 1** assumes trip rates remain constant going forwards, and that car ownership, choice of mode and distance travelled all change in response to changing demographics, income and costs (as previously assumed in the NTM). Traffic on the SRN is forecast to be **43%** higher than in 2013.
- **Scenario 1 (high)** and **Scenario 1 (low)** assume the same as Scenario 1 but use the OBR's high and low productivity GDP forecasts, and use high and low oil price forecasts from the Department for Energy and Climate Change. Traffic growth on the SRN is forecast to range between **27% and 57%**.
- **Scenario 2** is based on the same assumptions as Scenario 1, but with the link between income and car ownership and car travel removed. Traffic on the SRN is forecast to be **34%** higher in 2040 than 2013.
- **Scenario 3** is based on the same assumptions as Scenario 1, but with the decline in trips observed between 2003 and 2010 continuing until 2040. Traffic on the SRN is forecast to be **34%** higher in 2040 than in 2013.

The maps that follow on the next two pages show congestion on the network in 2010, and the forecast level of congestion in 2040, according to Scenario 1.

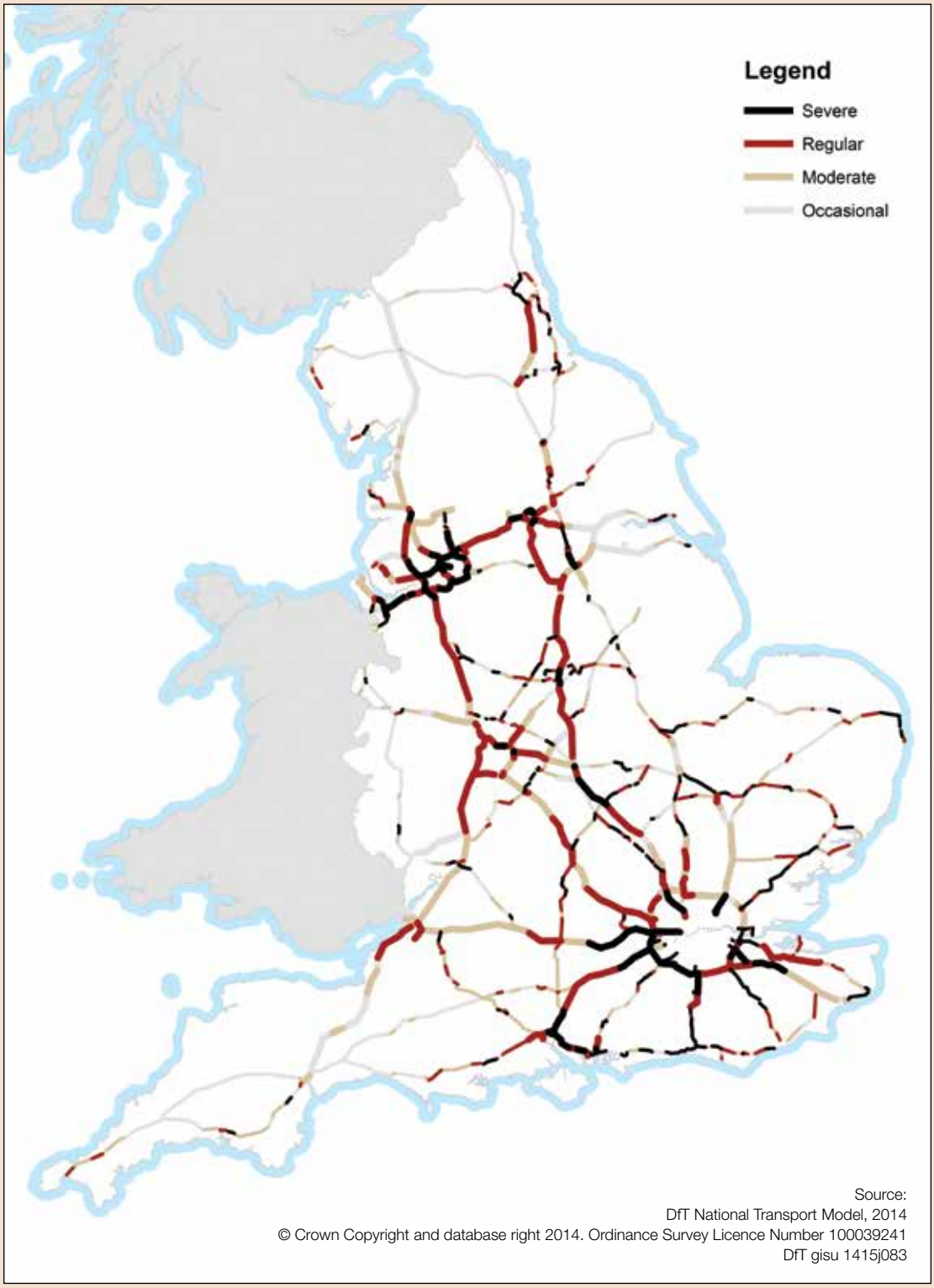
Congestion on the Strategic Road Network in 2010



Source:
DfT National Transport Model, 2014

DfT gisu 1415j082

Predicted congestion on the Strategic Road Network in 2040



Source:
DfT National Transport Model, 2014

DfT gisu 1415j083

The impact of increased congestion

By 2040, without sustained investment and other action, congestion will become a serious problem for many important routes.

These projections, which relate to the high growth scenario, translate to **16 hours** stuck in traffic for every household each year, **28 million** working days lost per year and a **£3.7 billion** annual cost to the freight industry, which could see prices increase on the High Street and beyond.

Difficulties could include:

- Impeded travel between regions that hampers business
- Longer travel times that constrain possible job opportunities
- Negative impacts on efforts to spur economic growth, with enterprise zones, potential housing sites and areas of high growth held back by bottlenecks
- Increased stress on roads to ports and airports, making it harder for British businesses to access export markets
- Safety and the environment suffering as congested traffic is more polluting and there is an increased risk of accidents.

Our Scenario 1 road traffic forecasts indicate that, by 2040, around **25%** of the entire SRN, and **32%** of the motorway network will experience severe congestion at peak times and suffer poor conditions at other times of the day.

5. Planning for the long term: pressures and challenges

Understanding the pressures for network planning

While the strategic trends discussed in the previous chapter can provide us with a sense of how the network may be used in the future, and the future traffic forecasts can indicate the amount of vehicles expected to use the SRN, a range of other factors must also be taken into account when planning future investments on the network. These can range from national issues, such as an aim to support the growth of particular industries or regions, to very local issues like the need to enable access to a new housing development. An overview of a number of these factors, each influencing future network planning, is outlined below.

Economic growth

As stated previously, the government is aiming to secure robust and resilient economic growth across a broad range of sectors and regions. The Department for Business, Innovation and Skills' Industrial Strategy identifies a number of priority industries and highlights how these are clustered across the country.

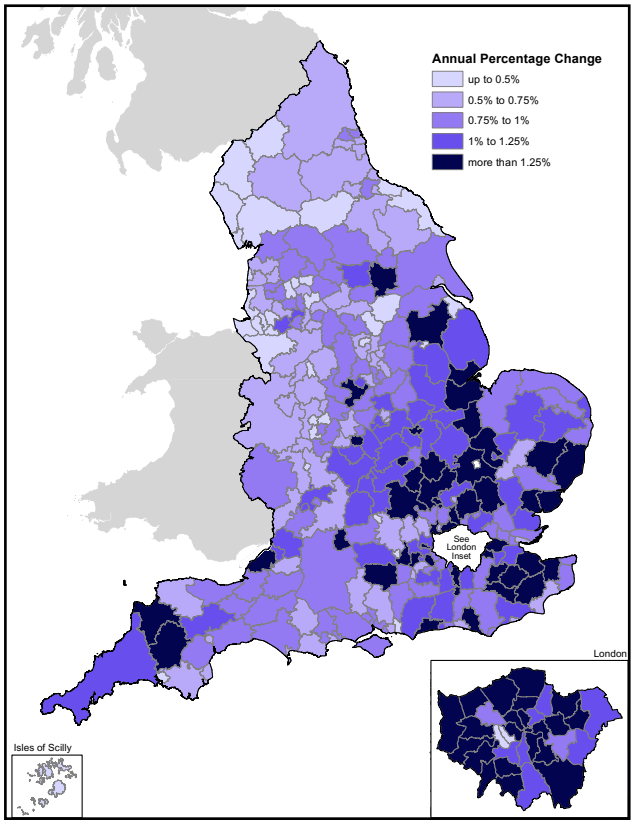
The SRN can act as an enabler and supporter of growth for these industries, and also has a role to play in supporting broader economic priorities. For example, recent statements about creating a 'Northern Powerhouse' will need to be underpinned by effective transport connectivity between the economic hubs of the north, including, for instance, the deployment of Smart Motorway technology between Leeds and Sheffield and across the Pennines, linking Manchester and Leeds.

Additionally, a lack of connectivity can act as a constraint on the growth of a particular area, especially where there are areas of strong growth nearby. Improved SRN connectivity between areas of low and high economic activity can give people better access to jobs, and businesses better access to markets, potentially stimulating broader, more widespread growth.

Connectivity and quality

One of the primary purposes of the SRN is to connect England's significant urban areas. While the network performs well in many areas, there are still, however, some notable gaps. The standard of the SRN also varies significantly, from single carriageway roads to multiple lane Smart Motorways. Future investment may be required to address inherited deficiencies, where there are connectivity gaps between urban areas or where the quality of connectivity is insufficient to support economic and social needs.

Number of households, annual average percentage change, 2011–2021



Source:
Department for Communities and Local Government, OS Boundary-Line

Housing growth

With a growing population, it is unsurprising that significant housing growth is forecast, which in turn will place pressure on transport.

As shown in the map, growth is expected across the country but it will vary by region. Key growth areas include:

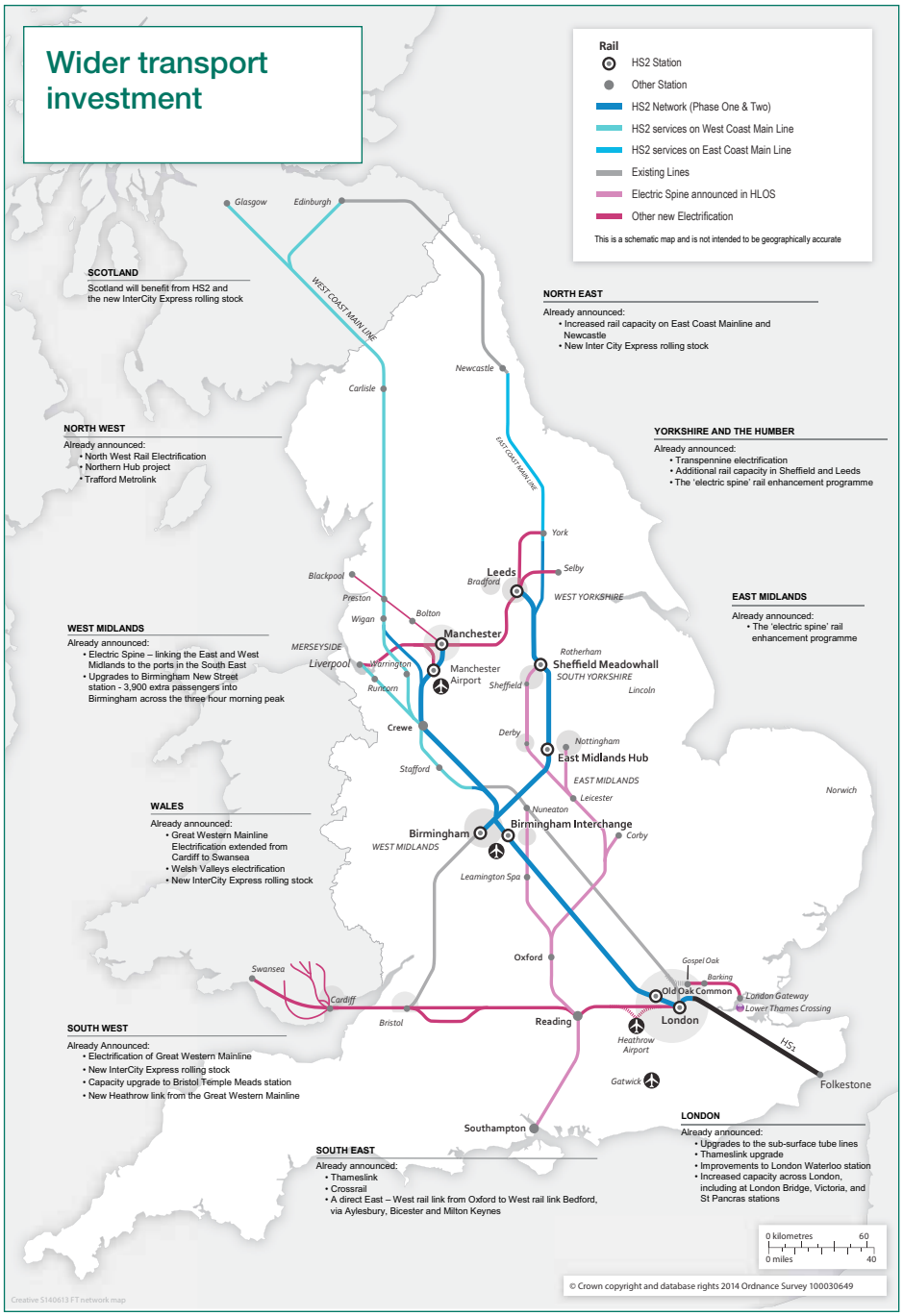
- An arc of growth stretching from East Anglia through Cambridgeshire and Northamptonshire to Oxfordshire
- Growth in the North, particularly a band across the Pennines
- Patches of strong growth in the South West.

We expect the SRN to continue to play a key role in unlocking access to new housing developments. New schemes will also support this area. For example, a scheme on the A2 will support the development of a Garden City at Ebbsfleet, while a new junction on the A14 near Kettering will directly benefit housing development in the area. We are also establishing a £100 million Growth and Housing Fund to provide further support.

Wider transport developments

Given the contrasting strengths of its component parts, our overall transport network is at its most effective when the modes work together to enable real choice and smooth journeys.

There are many transformational developments planned for the wider transport network over the coming decades. The map below illustrates transport investment across rail and high speed rail networks:



Many investments in the wider transport network focus on North-South connectivity and the spine of the country. These areas have historically been the busiest and most economically significant transport routes in the country. The SRN should also look to provide balance, including focusing on improved East-West connectivity and those areas served less well by our main rail routes, which roads may be better placed to support.

The SRN should also work with other modes more directly. Schemes in this RIS will follow the requirement set in the NNN PS to give proportionate consideration to alternate modes, as they progress through the investment decision making process. Looking across the wider transport network, we see our strategic roads working with other modes during the first Road Period in the following ways:

HS2

With work set to start in 2017 and the first trains between London and Birmingham planned for 2026, HS2 is fast becoming a reality. To drive maximum benefits, it is important that we give full and early consideration to how the SRN can dovetail with, and support, HS2. Connectivity to stations, particularly the new Parkway Stations, is vital. Access to HS2 stations will be assisted by the planned improvements to the M1 in Nottingham (Junctions 24 – 25), as well as schemes on the M1 in Yorkshire (Junctions 32 – 35A) and the M42 (Junction 6) near Birmingham Airport.

Rail

Government continues to support the growth of rail travel, and expects the Company to work in conjunction with Network Rail to identify areas where it can help. This is likely to include identifying where access to rail stations may be improved, focusing in particular on areas which will remove traffic from the SRN, as well as supporting the transfer of freight from road to rail, with the aim of facilitating sustainable rail freight growth. To this end, it is important that the Company and Network Rail give consideration to each other's investment plans. Sharing information, such as demand forecasts and long term strategic thinking, will help maximise the efficacy of future investment.

Aviation

The SRN should continue to support and improve access to existing airports across England and respond to the forecast increase in demand for air travel, which shows 1% – 3% growth per year to 2050[44]. Plans for the first Road Period include the rolling out of Smart Motorway technology and all-lane running between Junctions 8 and 10 of the M23, which serve Gatwick Airport, as well as schemes on the M56 to improve access to Manchester Airport. The Company will also help deliver the requisite surface access capacity following any decision on the future expansion of South East airport capacity.

Ports

With approximately 95% of the UK's goods trade by volume, and 75%[45] of its value, being handled by ports in England and Wales, along with two thirds of all freight being carried on the SRN, the linkages between our ports and strategic roads are vital. Their importance will only grow with the

44 DfT Aviation Forecasts 2013
45 National Policy Statement for Ports, 2012

forecast long-term growth in imports and exports by sea. The SRN must enable smooth access to ports, allowing goods and services to be moved into and around the country efficiently and reliably. Schemes such as the upgrade of the A14 to improve access to Felixstowe, and the A5036 Port of Liverpool road are firmly focused on this. During this Road Period, we will also assess how to improve the 'last mile' of roads to ports to improve access.

Local transport

The SRN and local networks should work together to provide flexibility and door-to-door connectivity for all users. Schemes such as the A453 upgrade highlighted below do just this, and we have also set aside funding in the ring-fenced Cycling, Safety, and Integration Fund to further support connectivity with local networks. Over the longer term, we expect such investment to support the development of transport hubs that connect to the SRN and provide users with access to a range of local transport options.

Cycling and walking

The government is committed to improving active travel options, such as cycling and walking. Too often the SRN often acts as a barrier to these activities, so we are committed to improving access through building new bridges, crossings and cycle paths. The Investment Plan has allocated £100 million to invest in 200 projects to improve cycling and walking across and alongside existing stretches of the SRN. The Company has also committed to cycle-proofing new schemes as standard, as well as working with Local Authorities to improve end-to-end cycling and walking journeys.

Improving links to local transport through the A453

The dualling of the A453 will allow traffic from the M1 to access the new Nottingham Tram Park and Ride site in Clifton more quickly and easily. The improvement will also make it easier for people in south Nottingham to access the new East Midlands Parkway station, where they continue their journey, for example to London, without having to use the motorway.

Five long term challenges for the SRN

Our review of the predicted trends, forecasts and pressures suggests that demands on the SRN and how users will interact with the network could be set to change radically. The future picture is complex and constantly evolving so our approach must be flexible in order to address the issues the SRN may face. The following section highlights five overarching challenges that require consideration.

Access around major cities

Our major cities are anticipated to be the drivers of the greatest growth over the coming decades. Yet some major cities, particularly London, have serious congestion around their peripheries, which is set to worsen given the growing, urbanised population. A lasting solution that makes the best of all transport modes is important for the long term health and prosperity of our economy.

Connecting outlying areas

The SRN is a national network that tends to provide the best coverage to the spine of the country. Regional growth can be helped by providing better links from outlying regions, such as the South West, North East and East Anglia, to the centre of the country to help businesses compete in the national and international economy.

Improving East/West connectivity

Rail and road connectivity traditionally links the North and the South, with our main arteries not serving East – West travel as comprehensively. Indeed, there is only one continuous dual carriageway or better link from East to West between Derby in the South and Edinburgh in the North. This serves as a major barrier to the development of the economies of the North. For instance, the lack of adequate Trans-Pennine connectivity must be addressed to realise the desire for a Northern Powerhouse.

Radial versus ring

A glance at the map of England's road network clearly illustrates that it has been built like a series of spokes heading out from major cities. In some places, cross-connections are missing, meaning that it can be difficult to travel between certain places even though they are close geographically. This can prevent nearby communities from benefiting from each other's growth; improving these cross-connections could help unlock more balanced growth across the country.

Building a smarter network

New developments and technology innovations are likely to fundamentally change the way we use and operate our roads in coming years. The technology that enables emission-free, driverless vehicles has progressed rapidly in recent years, although uncertainties remain as to how this will scale up. Alongside smarter vehicles, smarter infrastructure can unlock the potential of our roads, as we are already seeing through the deployment of Smart Motorways. A key challenge for government and the Company will be to drive forward these changes and developments so we can maximise their potential and make the most of the network of the future.

6. The network of the future: our vision

"If motorways and trunk roads are to meet the needs of a growing UK economy, we must make a clear break from [the] pattern of short term thinking and stop-start investment"

Alan Cook, A fresh start for the Strategic Road Network, 2011

Looking to 2040

By 2040, we want to have transformed the busiest sections of the SRN to deliver the safer, more stress-free journeys that everyday users desire, and the enhanced reliability and predictability that is so important to business users and freight. We see the SRN working more harmoniously with its surroundings, impacting less on local communities and the environment.

These are ambitious plans and it will take time to make our vision a reality. But, with the planned reforms to the Highways Agency and the funding commitments made in Investing in Britain's Future[46], complemented by the technological advancements expected in the coming years, we are acting from a position of strength.

Our aspiration

By 2040 we aspire to have a network that is:

- **Smoother**
  Connecting people and businesses safely, swiftly and seamlessly
  - The number of people killed or seriously injured on the SRN **approaching zero**
  - More users, more happy with more journeys, leading to road user satisfaction levels of **95%**
  - A **free-flow network**, with a mile a minute speeds increasingly typical across the network

46 Investing in Britain's Future, 2013

- **Smarter**
  A world leader in road building and traffic management technology
  - A network that enhances the UK's global competitiveness, and is recognised as one of the **top 10** global road networks by business[47]
  - A step-change in efficiency, with roads projects and maintenance delivered **30% –50%** cheaper than today

- **Sustainable**
  Driving the transition to a decarbonised, environmentally and locally sensitive road network
  - A better neighbour to communities, with **over 90%** fewer people impacted by noise from the SRN
  - **Zero** breaches of air quality regulations and major reductions in carbon emissions across the network
  - Improved environmental outcomes, including a **net gain** in biodiversity from the Company's activities

Envisaging the future network

Realising our vision will require a network that works in a fundamentally more effective way. This means updating infrastructure to make the best use of technology, improving how drivers, vehicles and non-users interact both on and with the network, and placing the customer at the heart of how the network is managed.

Modern infrastructure

Smart Motorways

Today's Smart Motorways are at the cutting edge of technology and we want it to stay that way. This means keeping pace with innovation and incorporating emerging technologies, allowing for continued improvements to journeys where it matters most. To ensure this happens, we are requiring the Company to set out its approach to innovation, technology and research during the early part of this Road Period.

Conventional motorways, which will remain for England's less busy motorways, should still offer mile a minute journeys, and will benefit from junction improvements, capacity enhancement and the deployment of new technologies where needed.

47 As measured by the World Economic Forum

The story of Smart Motorways

In 2013, the Highways Agency coined a new term, Smart Motorways, to describe the different designs of actively controlled motorways. These motorways use technology to convert the hard shoulder into an additional, controlled running lane, increasing the capacity of our busiest motorways by a third at a fraction of the cost of traditional lane widening. The latest design involves 'all lane running' motorways, for example on certain roads around Manchester and Birmingham, and along the M1, where there is no longer any dedicated hard shoulder. CCTV cameras and variable message signs are used to regulate speed and close lanes in the event of an incident or congestion, and regularly-spaced emergency refuges mean that there is always somewhere to go in the event of a breakdown.

By smoothing traffic flow, Smart Motorways reduce congestion and improve journey times. There is also strong evidence that they improve safety: on the M42 Smart Motorway in Birmingham, the frequency of accidents fell by more than half after the Smart Motorway was opened[48]. Environmental impacts are also limited compared to a widening scheme as the extra capacity can be created without significantly enlarging the network's physical footprint.

Expressways

It is not just the motorway network that must be transformed in order to realise our vision. Our major A-roads, too, must be upgraded to ensure the necessary improvement in performance across the network.

Users of motorways know they can expect a broadly consistent standard from the whole of their road, and that this ensures they have a safe, free-moving journey. The same is not true of A-roads, where piecemeal upgrades have often resulted in inconsistency and substandard stretches of the road that are often less safe and a regular cause of congestion.

By 2040, we want to have transformed the most important of these routes into Expressways: A-roads that can be relied upon to be as well-designed as motorways and which are able to offer the same standard of journey to users. At a minimum, this means:

- Largely or entirely dual carriageway roads that are safe, well-built and resilient to delay
- Junctions which are largely or entirely grade separated, so traffic on the main road can pass over or under roundabouts without stopping
- Modern safety measures and construction standards
- Technology to manage traffic and provide better information to drivers.

This means an Expressway will be able to provide a high-quality journey to its users. Most Expressways should be able to offer mile a minute journeys throughout the day, particularly outside of urban areas. Safety levels should match the highest standards

48 Smart Motorways fact sheet one

of the network and, for many parts of the country, an Expressway will be able to provide a motorway-quality journey for drivers.

While this standard is already met at many points on the network, certain routes that may justify Expressway status are inconsistent, repeatedly switching from dual to single carriageway and back again, or suffering serious congestion at a particular roundabout. We will prioritise fixing these problems to provide better journeys.

Modern trunk roads

Not all trunk roads need to be upgraded to Expressway standard, and not all motorways will need to be a Smart Motorway to provide a good service to users. This could be because a road is not subject to serious congestion, because of environmental or engineering constraints upon a route, or because an upgrade would not offer good value for public money. In these cases, investment in the route will need to be targeted on where it makes the greatest difference for road users.

A network to achieve our goals

All of the above actions will come together to deliver an optimised network capable of achieving the nation's goals. The routes to be targeted, and the priorities for intervention, will be informed by the next generation of Route Strategies, which will ensure the inclusion of local community and business views, and also by a new generation of strategic studies.

For further details about how we believe the network of 2040 could appear, see the map on the following page. It shows a host of Smart Motorways and Expressways providing smoother traffic flow, increased capacity and improved safety.

The network towards 2040

An environmentally and socially sensitive network

We are determined to ensure that improvements to network performance do not come at the expense of the environment. By 2040, we expect to have completed a wide-ranging retrofit of the network that raises environmental standards and helps the network fit more seamlessly with its human and natural surroundings. The Company will already have at their disposal many of the tools required to make this happen, while the development of new technologies and techniques will broaden the range of available options.

It is also important that serving the needs of the motorist does not come at the expense of others. Instead, the network should account for the needs of walkers and cyclists, and not act as a deterrent to active travel options. The network must be easier to get over, under or around to ensure that roads do not divide communities, and that the associated health and wellbeing benefits of walking and cycling are felt as widely as possible.

Embracing new technology

The driver and the SRN

In the future, drivers will be more informed than ever before. Better sources of data, such as mobile phone location data, and the ability to communicate through smart phones and in-car technology, will increase the quality, and speed up the flow, of information. Control will be returned to drivers, with personalised, predictive travel information helping plan alternative routes to avoid roadworks or unexpected disruption, leading to improved journeys at a more reliable speed.

Vehicles and the SRN

As already stated, intelligent vehicles, which communicate with road infrastructure and each other, have the potential to significantly enhance road safety and efficiency, and reduce congestion. In the Autumn Statement 2013, the government demonstrated a desire for the UK to be at the forefront of the driverless car industry, commiting to part-funding a £10 million competition for UK cities to bid to host driverless car trials and announcing trials on public roads in 2015[49]. We want to capitalise on this momentum and fully exploit new technology to deliver real benefits for the network.

Management of the network

Creative and considered management of the network, driven by the needs of customers, will also help make strides towards the achievement of our aspirations for the SRN. This could involve further developments in customer-focused operations, while better planning and innovative construction practices also provide the opportunity to limit lane and road closure times, and therefore disruption to journeys.

The adoption of more novel approaches can also help to improve conditions on the network. More strategically-positioned park and rides, greater numbers of high volume vehicles, such as coaches, on the SRN, and better integration with the passenger rail and strategic rail freight network would all increase choice and take vehicles off the road.

49 Government Fast Tracks Driverless Cars

7. Taking steps to realise our vision for the network

Targeted outcomes to achieve our vision

Given the extent of our ambitions, we need to take a considered and strategic approach to delivering the network of the future. We have targeted eight areas for improved performance in the short term. These areas form the basis of the Performance Specification, which sets specific expectations for the SRN and the Company over the first Road Period. The outcomes sought in the Performance Specification have been chosen to help us make progress in achieving our long term aspirations. They are reflected in, and have informed, the allocation of funding and the investments being made over the next five years, as described by the Investment Plan.

The interventions being funded by government have been targeted to provide value for money for the taxpayer. That often means focusing on where there are clear signals of sub-optimal performance, where the network is most critical in supporting economic growth, and where there are complementary policy priorities or transport initiatives that need to be supported.

The eight performance areas

A long term aspiration for each area is outlined below. For more details of specific targets for the next five years, see the Performance Specification.

- *Making the network safer*

  Safety is an important consideration for road users owing to the significant impact of serious and fatal accidents. A considerable economic cost is also associated with collisions on all roads, estimated at £15 billion annually to the UK economy[50]. We will never stop striving to ensure the safety and welfare of all those who use, work on, or are indirectly impacted by the road network, with the ultimate aspiration of eliminating fatalities and serious injuries on the network.

- *Improving user satisfaction*

  The satisfaction of network users is an important measure of both operator performance and the quality of the network, and can highlight areas where greater attention or investment is needed. Satisfaction levels are also a reflection of expectations. In the long term, we want to radically change what all road users expect of the network,

50 DfT Statistics

making them more demanding of improved performance, while encouraging the Company to improve on existing satisfaction levels, achieving a user satisfaction score of 95%, or better.

- *Supporting the smooth flow of traffic*

  Keeping traffic moving on the SRN is vital to our economic wellbeing as a country, and our personal wellbeing as individuals and families. We want to improve journeys and allow users to drive at consistent speeds and enjoy predictable travel on our roads. In the long term, we are setting the bar high in this regard and aspire to make mile a minute speeds typical across the core of the network by improving resilience and reducing both planned and unplanned delay.

- *Encouraging economic growth*

  To ensure the SRN positively impacts growth, we must tackle congestion and delay on the network, particularly on the main freight arteries that connect cities and international gateways. The network must dovetail with other transport developments over the coming decades to improve domestic connectivity, encourage trade and investment, and enable British business to compete in international markets. The Company will, therefore, engage with other infrastructure providers and private developers to build long-standing relationships that help unlock opportunities for growth, including the construction of new housing, industrial and business sites, while also collaborating with local authorities to identify interventions on and off the network.

- *Delivering better environmental outcomes*

  Roads, both in their construction and use, have a significant impact on the environment. The Company will therefore exploit the growing toolkit of mitigation measures in the short term, while keeping a firm eye on the longer term, and environmentally-positive technologies, such as the mass take up of ULEVs. Taking this approach, as well as working closely with local authorities and environmental groups, will allow the Company to limit, and even reverse, the effects that the network has on its surroundings. It will also move us towards our aspiration of a dramatically lower emission SRN that delivers a net gain in biodiversity and leaves a strong environmental legacy.

- *Helping cyclists, walkers, and other vulnerable users of the network*

  The network does not just impact on motorists. The safety and access of cyclists and walkers are also affected, while communities located near the SRN can be inhibited as well as enabled by its presence. Better provision is needed to ensure the SRN acts as an even more considerate neighbour. Amongst other things, that means bypassing towns and villages where appropriate, creating more segregated cycleways alongside trunk roads, ensuring safer junctions, and providing clearer road markings.

- *Achieving real efficiency*

  The Cook report[51] highlighted the opportunity for the Highways Agency to develop into a more commercially-minded organisation. Thanks to the transformation of the Highways Agency and the advent of this RIS, we expect this opportunity to be seized. The Company has the chance to build on recent progress, extract maximum value from every pound spent and, in the long term, deliver schemes and maintenance faster and 30%–50% cheaper than today.

- *Keeping the network in good condition*

  Effective asset stewardship, in terms of monitoring and management, is vital to the successful operation and maintenance of the SRN. It helps spot problems and identify solutions before failures occur, and reduce costs in the long term. The Company's harnessing of new technology to improve data collection techniques and provide a more in-depth and up-to-date understanding of the asset base will ensure that maximum value is wrought from maintenance investment.

51 A fresh start for the Strategic Road Network, Alan Cook, November 2011

Investing to achieve our vision – network interventions

The Performance Specification sets out what we want from the network during the first Road Period. The Investment Plan, on the other hand, outlines how the Company will turn our intentions into reality by delivering performance improvements in the short term.

Investment announced prior to the first RIS

Government has already announced, and is delivering, a substantial level of investment in the SRN. Investments include nine schemes to help develop a 145 mile 'smart spine' linking London, Birmingham and the North West. Schemes will also improve critical freight routes, such as the £1.5 billion A14 schemes and improvements to the M6 in Cheshire. In addition, £6 billion has been set aside to resurface 80% of the SRN and keep our network in top condition.

Investment announced as part of the first RIS

The Investment Plan for this RIS announces the next round of investment. 69 schemes will enter construction in the first Road Period across every region of England to improve safety, ease congestion, unlock growth, and begin the process of upgrading our most important A-roads to Expressways. Highlights include:

- Schemes to help seven major ports and five major airports
- Completing the dual carriageway from Milton Keynes to Cambridge
- Dualling the A30 in Cornwall.

A further 15 schemes have been announced for the second Road Period, including upgrading the A1 in Yorkshire to motorway standard and completing Smart Motorway connections across the Pennines.

The package of investment also contains the outcomes of the six feasibility studies conducted into some of the longest standing and most notorious hotspots on the network. In total, we have committed to over 20 proposals across the six feasibility study areas, and made some longer term commitments to further work in some areas. Commitments from the studies include:

- Transforming connectivity to and from the South West by dualling the entire A303 from the M3 to the M5 at Taunton, and building a tunnel as the road passes Stonehenge
- A new bypass on the A27 at Arundel together with on-line improvements at Worthing and Lancing
- Dualling the A1 north of Newcastle between Morpeth and Ellingham
- Widening schemes on the A1 Newcastle-Gateshead Western Bypass
- Construction of the Mottram Moor Link road together with overtaking and safety improvements and dualling the A61 to improve Trans-Pennine connectivity
- A range of dualling and junction improvement schemes on the A47/A12 corridor supporting growth at Peterborough, Norwich, Great Yarmouth, and Lowestoft

Ring-fenced investment funds

The Investment Plan also contains a series of ring-fenced funds for actions beyond the business as usual. These will help the Company make significant progress in a range of areas to ensure that network performance continues to improve and that such improvements are delivered in a sustainable fashion.

- *Environment*

  To ensure more is done to limit the impact that the SRN and its users have on the environment, we have ring fenced £300 million in an *Environment Fund* to deliver improved environmental performance across carbon, noise, water, biodiversity, landscape and cultural heritage. The funding will deliver additional environmental benefits where new schemes have standards built in, and will also allow for measures to retrofit the existing network to tackle current problems. In addition to the Environment Fund, we are also establishing a £100 million *Air Quality Fund* to ensure a specific focus and real improvements in this area.

- *Cycling, safety, and integration*

  The effect of the SRN on local communities can be profound, particularly where it severs pedestrian and cyclist access routes. We are determined to do more to ensure the SRN acts as a good neighbour so we have set aside £250 million in a *Cycling, Safety, and Integration Fund*. This funding is aimed at improving safety, increasing provision for cyclists on and near the SRN, and enhancing access for a variety of users, including pedestrians, horse riders and the disabled. This will involve both bespoke interventions and enhancements to new and existing schemes.

- *Innovation*

  This document has already identified the potential of technology to revolutionise how we build and use roads in this country. We have an aspiration to develop a technology-led SRN that supports innovation and industry so we can be a world leader in roads development and operations. To help us get there, we have created a £150 million *Innovation Fund* to allow the Company to place a greater emphasis on the future technologies that will positively impact users and the network. It will involve the full range of research, development, demonstration, and deployment activities.

- *Growth and housing*

  Given the number of people and the amount of freight the SRN carries, not to mention its nationwide coverage, the SRN is vital to England's growth. To ensure that the Company is sufficiently equipped and flexible to respond to future development opportunities, including those relating to new housing and enterprise zones, we have established a *Growth and Housing Fund*. This fund is worth £100 million and will be used to match-fund infrastructure to enable new developments.

Strategic studies

Building on the feasibility studies produced in preparation for this Investment Plan, we are commissioning a series of six new strategic studies, focused on making major improvements to the capacity and connectivity of SRN. Detail on each of the studies below is contained in the Investment Plan:

- Northern Trans-Pennine
- Trans-Pennine Tunnel
- Manchester North-West Quadrant
- A1 East of England
- M25 South West Quadrant
- Oxford to Cambridge Expressway.

Where to find out more

Further information on the steps we are taking to deliver our vision for the future of the SRN can be found in the documents that accompany this Strategic Vision.

The Performance Specification provides more detail on the eight performance areas outlined here, including Key Performance Indicators and Performance Indicators for the first Road Period (2015/16 – 2019/20).

The Investment Plan offers a breakdown of all of the schemes planned for the first Road Period and more detail on the five ring-fenced funds and future strategic studies.

The Overview provides an introduction to our vision and plans for the network. It outlines the areas of key impact from the investment package for the first Road Period, as well as outlining six regional investment stories.

8. Transforming our roads

With the creation of this Road Investment Strategy, we have an opportunity to transform our SRN so that it truly meets the needs of commuters, freight hauliers, and the country as a whole. A well-functioning SRN – with safer, less congested roads, better information and reliable journeys – will make a real difference to people's lives and businesses' prospects. By looking to the long term, both in this strategy and its successors, we can improve outcomes today while ratcheting up our ambition for the future.

We cannot, of course, be certain of exactly what the world will look like in 2040. By then, autonomous, ultra low-emission vehicles could be well on the way to revolutionising how we travel. But we can more readily envisage what users of the network could expect following 25 years of consistent investment: a well-functioning road network, offering improved connectivity and reliability, that makes everyday life and business easier. Such a network will be a boost to industry, help in the quest to satisfy the demand for new housing, contribute to the realisation of a more economically-balanced country and, ultimately, be a driving force behind sustained growth across England.

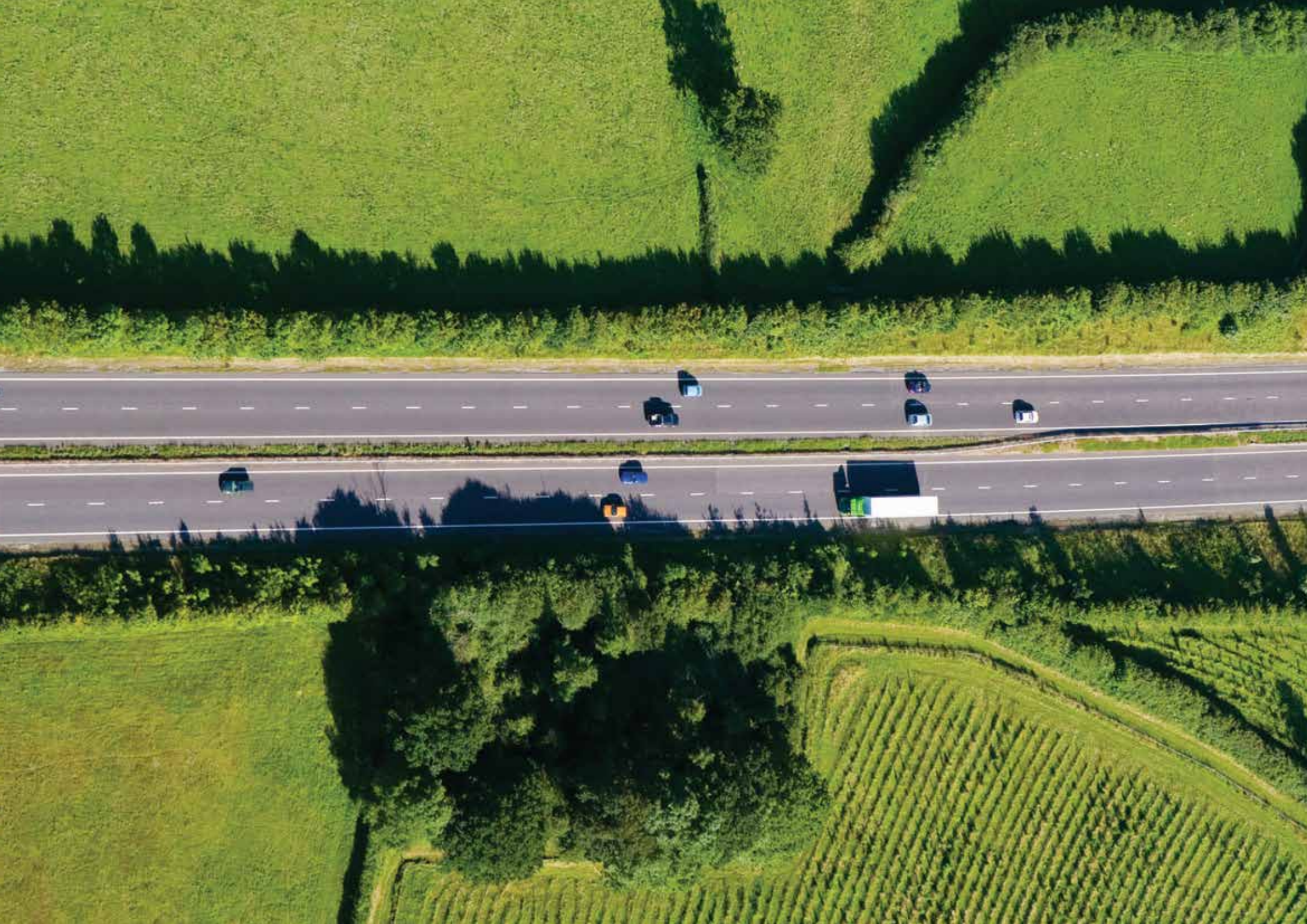
Grasping this opportunity will require a long term commitment and sustained investment. We must be smart, adaptable and collaborative as we tackle the inevitable challenges of the future while looking to exploit advances in technology. The investments being made over the course of the first Road Period represent an important step in that direction as we set about raising the bar and redefining what users expect from the SRN.

We live in a fast changing world so developing the network of the future will be an iterative process. Our plans and aspirations, while remaining broadly focused on the same core areas, will develop as circumstances change and more information becomes available. It is, therefore, imperative that both government and the Company continue to work with all of our stakeholders to build on this first step and ensure the SRN is developed in a way that drives growth, delivers a positive environmental and societal legacy and, ultimately, helps achieve our goals as a nation and as individuals.

Department for Transport

Part 2
Investment Plan

Contents



1. Overview

As part of the Road Investment Strategy (RIS), this Investment Plan outlines how we will invest in the Strategic Road Network (SRN) between 2015/16 and 2020/21, delivering the improvements that will put us on the path to achieving our long term vision.

In total, we are investing £15.2bn to enhance, renew and transform the network, and starting work on over 100 major schemes over the 2015/16–2019/20 Road Period. This significant investment will be used to complete current road schemes, begin construction of previously-announced road schemes and also take 69 new road schemes into construction by 2020/21. It will also include asset renewal and maintenance. The RIS includes a long term funding commitment – the Statement of Funds Available – to support this programme.

The Investment Plan reflects the conclusions of the six feasibility studies announced in June 2013, examining the case for improvements to the A303, A1 and other key national corridors. We are announcing 20 new major schemes to improve crucial sections of these roads, including a £2 billion commitment to turn the A303 into a new strategic corridor to the South West.

It also brings forward a new package of investment, drawing on the Highways Agency's emerging Route Strategies, to begin the process of transforming our strategic roads. This includes schemes to tackle congestion, improve safety, support growth, connect rail hubs, ports and airports, link our nation and transform the economy of the north.

> *In total, we are investing £15.2bn in over 100 major schemes to enhance, renew and transform of the network over the next Road Period.*

We will also undertake a series of new strategic studies to address some of the most fundamental challenges facing our road network, developing options for the long term and ensuring that our roads remain robust for the foreseeable future.

A series of dedicated funds, each ring-fenced, will address some of the key local challenges across the network. Cycling, safety and better integration will benefit from £250 million of dedicated funding, and similar arrangements will exist to deliver environmental enhancements, improve air quality, foster innovation and support growth and housing.

Timely and efficient delivery of this Investment Plan forms part of the Performance Specification, which sets specific expectations for the SRN and for Highways England, the strategic highways company (the Company). The new Strategic Road Network Monitor will independently monitor the progress of the Investment Plan, and will include a report on delivery as part of

their published assessment of how well the company is performing.

In its entirety, this multi-year Investment Plan represents committed funding well beyond the level previously associated with investment on the SRN. This is the foundation on which the transformation of the network will be built, and through which the Strategic Vision will be achieved.

The following sections provide details on three factors that have informed the Investment Plan: considering how the SRN can best support economic growth, how the network and Company can do more to work with local partners, and how we can ensure there is a strong focus on protecting the environment throughout the Investment Plan.

Economic Growth

Roads play a central role in our economy. Nearly every kind of economic activity depends on roads in some way.

- Over 80% of the nation's freight journeys are by road, with two thirds of these on the SRN[1]. Without these vital movements, our farms cannot move their produce, our factories cannot get their parts and our economy cannot compete internationally. Almost every product in our shops and every item in our homes has travelled by road at some point.
- The costs of transport are part of the price of every good we buy. Faster, better transport means cheaper goods. A well-functioning transport network has helped us to create one of the world's most efficient national logistics networks, which has helped supermarkets cut costs and internet retailers to take off. The benefits of this are felt in every household budget.
- Millions of people travel by road for work. For those who commute by road, the state of the network not only determines how their working day starts and ends – it also decides which jobs are reasonably accessible and which are not. For those who travel during their working day, connections and congestion help determine a person's productivity.

A high-performing road network improves the health of our economy. Even those who do not drive benefit, as better links help local businesses to fill their order books and allow shops to keep their prices down.

However, our road network does not always match this aspiration. Congestion jams key arteries when they need to flow. Routes to ports and airports slow, making supply chains less competitive. Poor or missing links mean that cities which are close together do less business with one another, and fail to benefit from their potential synergy.

While the SRN plays an important role in our national economy, and has done much to shape our economic geography in recent years, it could also do much more. Putting in place high quality infrastructure will maintain our competitiveness and allow our economy to expand in new ways.

This Investment Plan will help the economy to grow in five key ways:

The Northern Powerhouse – we want to create a stronger economy across the north of England, with different cities joining together to form a single, world-beating economy. This cannot happen without effective transport.

1 Transport Statistics Great Britain 2013, table 0401

In this road period, we will continue delivering Smart Motorways around Manchester, Sheffield, and Leeds, benefitting both the city regions themselves and, through their role as key transport hubs, the wider economy of the north of England. Better links to the North East will come as the first continuous motorway link to the region opens in 2017 and the A19 is upgraded to Expressway. Improvements in Liverpool, Leeds and Birkenhead will all unlock nationally significant growth sites.

We are also starting the process of a true transformation of the region's roads. By the end of the next Road Period, Smart Motorways will provide four-lane links between all the major cities of the region, including via the M62 across the Pennines. The A1 in Yorkshire will be upgraded to motorway, relieving the M1 in Sheffield and Leeds. Better links across the northern Pennines could extend the Powerhouse further north. A national and regional debate is required on whether we should commit to build a tunnel under the Pennines to link Manchester and Sheffield. The cost would be great, as would the possible transformative benefits for the economy.

Smart Motorways and Expressways – road users and businesses both need reliable networks. On the core of our motorway network, this means deploying world-leading technology to smooth journeys and open up additional capacity. The Smart Motorway roll-out will continue, supporting our biggest cities and increasingly linking them to one another. By the end of the second Road Period, there will be continuous Smart Motorway corridors linking London, Leeds, Manchester and Birmingham, offering a reliable and consistent level of service to motorists.

The rest of the country needs equally dependable roads. Many parts of the country are linked by A-roads that are mostly high-quality, but are dominated by one or two bottlenecks. Consistency of performance is required – and to achieve this we will create a series of Expressways – consistently good roads which are largely or entirely dual carriageway, with grade-separated junctions, giving most users a motorway-quality journey.

The South West will lead the country in adopting this approach. £2 billion of investment in the A303 will create a new Expressway corridor into the region. Improvements to the A30 will extend an Expressway to within 15 miles of Land's End. Well-designed improvements offer the prospect of doing the same for the A417 near Gloucester. Taken together, this will send a clear message that this part of the country is open for business.

Growth and Housing – economic development places new pressure on our roads. Enterprise zones, industrial sites and new office parks all offer potential employment for their communities. Good access to the strategic network is an important factor in making many of these developments work. Equally importantly, enabling investment can prevent the results of new development being worse traffic for existing road users.

Schemes in this investment plan are linked to housing developments across England, making thousands of new homes possible. They improve access to enterprise zones and growth sites in Sunderland, Leeds, Stoke, Merseyside, the Black Country and other towns and

cities. The strategic studies announced as part of this programme will make sure that conditions on the M60 don't become a block on long-term growth in Manchester.

A further investment fund will make sure that the Company is able to pool its resources with developers and other partners, and keep responding to opportunities for growth throughout the Road Period.

Better Connections – for Britain to be a competitive economy, it needs the right connections to make its transport network effective. Roads need to serve ports, airports, and rail-freight, to make the business of exporting easier. This plan includes improvements to help access five key airports and seven major ports. It also backs developers' efforts to improve the M1 to allow a whole new rail freight interchange in the East Midlands.

Connections across the country will also improve. Improvements to A-roads at the edges of England from the A1 north of Newcastle to the A30 into Cornwall, will allow regional economies to compete more effectively. Improvements in the heart of the nation will also open up new opportunities – most notably completing an Expressway linking Cambridge to Milton Keynes, and possibly extending onwards to Oxford to connect some of our fastest growing cities.

Congestion and Safety – at a local level, some parts of our network are fundamentally overstretched, or are built in a way that leaves them vulnerable to accidents and disruption. Better safety and more capacity will have real benefits for the nearby economy – removing bottlenecks, preventing disruption and making it easier to travel.

Important improvements include upgrades to the south west quadrant of the M25, plus a long-term study to make sure the route is resilient in the future, significant widening of the A1 around Newcastle, and fixing bottlenecks on the A12 in Essex. This is on top of the major enhancements of capacity around Manchester and Birmingham announced at the last spending review.

Taken together, this programme is a massive injection of funding into a critical part of our national infrastructure, the impact of which will be felt by everyone from major corporations to growing small and medium-sized enterprises.

Delivering with local partners

The SRN does not work in isolation; it sits within a larger road and wider transport network meeting national, regional and local needs for connectivity. Government is seeking to empower local partners to address more effectively social and economic challenges and opportunities in their localities.

Responsibilites and funding are being devolved to empower local areas, and new governance arrangements devised to promote more effective working in partnership between national and local bodies.

- **City Deals**: in September 2012 the government signed deals with eight of the largest cities in England, giving them more powers to help encourage growth and jobs in their area, as well as increasing their accountability for delivery. In 2013, deals were agreed with a further 20 cities.
- **Local Growth Fund**: Growth Deals were announced in July 2014 with all 39 local

enterprise partnerships. Funds were provided to local enterprise partnerships for projects that benefit the local area and economy. The Growth Deals committed the Highways Agency to develop a more proactive and collaborative approaches to promoting growth and to continue building strong relationships with Local Enterprise Partnerships, Local Authorities and Combined Authorities.

- The **Greater Manchester Agreement** takes devolution to a new level, with the agreement to a package of measures to devolve power and control to the city-region. Greater Manchester is to get its own directly elected city wide mayor with powers over transport, housing, planning and policing. The government hopes that Manchester will be the first of many big cities to take advantage of this greater devolution of powers.

Effective management of networks and traffic on the national and local roads depends on a strong partnership between the new Company, local authorities and other operational and strategic partners, such as the police and emergency services. This means thinking about the road network as a whole, and its connections with other modes of transport.

This means:

- **Planning together**: linking the pressures on the strategic network with the needs of local communities, with a view to arriving at shared agendas and solutions.

  Through successive Route Strategies, the Company will continue to deepen its engagement with local partners to better understand the challenges and opportunities associated with the network and to develop evidence based long-term plans to bring about much needed local economic growth and development. The Highways Agency's first round of Route Strategies has informed the investment plans in this RIS.

  The Newcastle and Gateshead City Deal included a joint commitment to tackle transport problems in the local area to help pursue growth. The Government made a commitment to develop new proposals for improving the A1 Western Bypass, which is seen as a key constraint on the local economy. Newcastle committed to invest in complementary small, local schemes and in better traffic management. This Investment Plan delivers on the Department for Transport's commitment.

- **Delivering together on the strategic network**: by co-operating to develop and fund improvements, the Company and local partners can enable and accelerate local development, and so unlock growth.

  Cornwall County Council is matching funding and taking forward preparation of the A30 Temple scheme, one of the few remaining undualled sections of the A30 in Cornwall, this will ensure the scheme is delivered significantly earlier than would otherwise have been possible.

  The Company will be working with Local Enterprise Partnerships and Local Authorities to take forward proposals for match-funding enabling developments promoted in the Strategic Economic Plans. Up to £100 million has been set aside in the RIS to part fund these and future schemes unlocking local growth.

- **Investing together on the local network**: the new company will able to invest in local transport networks where there are clear and demonstrable benefits

for users of both networks, so that institutional boundaries do not stand in the way of better conditions for road users. In some cases, better links on the local network are the best way to improve conditions on the strategic road network.

As part of a package of schemes to improve conditions on the M27, the HA will widen two railway bridges in Southampton, meaning people will have less need of the motorway and can complete more of their journeys on the local network.

Likewise, as part of the Government's response to the Trans-Pennine feasibility study, the Company will be funding delivery of the A57 Link Road scheme in Tameside to relieve traffic blight affecting local communities on the nearby A628.

- **Operating together**: there are potentially sizeable gains from linking together respective control centres and traffic operations arrangements, planning for winter, sharing data and coordinating road works in order to manage traffic flows better.

  The Greater Manchester Agreement has kick-started discussions between the Highways Agency and Greater Manchester authorities on how to establish more effective real-time working between their respective traffic control centres. This will continue when the Company is established.

  We will make sure that there continue to be clear, effective channels for local authorities to work with the new company. Greater autonomy must not lead to any decrease in communication – the Infrastructure Bill and the draft statutory Directions and Guidance for the new Company both include requirements to co-operate, which will underpin the arrangements described here.

Protecting the environment

While the impact of roads on the economy is widely recognised as positive, many people are concerned about the effect that new investment will have on the environment.

> *Today's road schemes are very different to their predecessors, designed in far greater sympathy with their surroundings and with a much smaller environmental footprint.*

The Department and the Highways Agency have learnt a great deal in the past twenty years. Today's road schemes are very different to their predecessors, designed in far greater sympathy with their surroundings and with a much smaller environmental footprint. This investment programme includes more than £1 billion of environmental mitigation measures, a large number of which are built into modern roads by default.

Given these improvements in design, there is no longer a forced-choice between a well-functioning road network and a well-protected environment. There are three key reasons why we are confident of this:

1. **Advances in environmental mitigation measures** – we continue to introduce new ways to limit the impact of new development on the local environment

A249 Swale Crossing

The A249 links the Isle of Sheppey with the mainland, running through ecologically sensitive marshlands and an area of outstanding natural beauty. Between 2004 and 2006 construction work began on a new dual-carriageway bridge, following close cooperation between the Highways Agency and environmental bodies. Natural England and the Environment Agency approved a plan to restore a lost area of marshland – Chetney Marsh – to compensate for land lost to the construction of the bridge.

The environmental package that was agreed, and which started work before any road-building began, took great care to avoid damage to rare local species. Water voles living on the site were temporarily relocated to a special holding area in Dorset so they could be reintroduced once work was complete. In a world-first, workers successfully transplanted the rare sedge grasses along the route to a new site.

2. **Closer partnership with environmental bodies** – we are cooperating with environmental bodies to make sure that the Company is doing all it can to mitigate environmental impacts
3. **Scope to improve the existing network** – we can help the environment by redesigning or replacing the oldest parts of the network, built when environmental issues were poorly understood and unsympathetic designs were common.

For much of the past decade, most road improvements in England have been upgrades to existing roads. Britain's road network has many of the routes that it already needs. When planning upgrades, the Company will try to make best use of the existing route; and where the alignment changes, use this as an opportunity to reduce the impact of the road on surrounding communities.

Where new alignments are proposed, the Highways Agency works hard to limit the environmental impacts. Most major schemes begin with thorough environmental surveys, building a detailed picture of how the scheme will affect the environment. These are then used to refine the scheme design and to build up a plan of environmental mitigation.

The techniques that we use to counter environmental problems are extensive, and have improved greatly in the past twenty years:

- **Impacts on the landscape are carefully controlled**, trying to make the road fit into the existing landscape. This starts at the very beginning of scheme design, finding a route that matches the local topography and tries to hide the road behind existing features such as established woodland or natural contours. To further reduce the visual impact, designers use false cuttings and stands of new trees. In recent years, the Highways Agency has also tried to reduce the night-time impact by scaling back the amount of lighting, so that it only covers safety-critical sections of the road.
- **All new and improved roads now use low noise road surfaces** to help reduce the noise made by vehicles. Improvements in engine technology

mean vehicles are quieter than they have ever been. Where communities live close to the road, as on the M1 at Luton or the A14 north of Cambridge, the HA has also installed barriers to block some of the noise.

Better than the status quo

In the past, much of the debate around the environmental impacts of road schemes has focused on their potential for damage. However, equal weight needs to be to their potential to bring about genuine environmental improvements.

Britain's Strategic Road Network was not created overnight. While its kerbs and surfaces may only ever be a few years old, some of the routes were traced by Georgian surveyors, Roman legionaries or bronze age herdsmen. Today, these roads carry traffic that their creators could never have predicted, with serious environmental consequences.

One example of this was the A3 at Hindhead. For many years, traffic between London and Portsmouth was jammed at a three-mile stretch at the village of Hindhead in Hampshire. Here, the road ran next to the Devil's Punchbowl – a major local landmark and a designated Area of Outstanding Natural Beauty (AONB). In this section, no improvements had been made, meaning that this site and the nearby village were constantly blighted by a stream of heavy traffic.

In 2007, construction started on the A3 Hindhead improvement. This was a wholly new road which travelled to the south of Hindhead itself, before disappearing into a pair of 1.14 mile tunnels. The road then emerged to the north of the AONB and linked up with the existing A3. This removed the last single-carriageway stretch on the road.

When the scheme opened in 2011, the Highways Agency then set about closing the old A3. To the northern end of the scheme, the road was either converted to a bridleway or was allowed simply to return to nature. In other places, what had been a major trunk road between London and the south coast became the access road to a National Trust car park.

The Hindhead Tunnel demonstrates how a well-designed road scheme does not have to choose between helping the environment and helping the economy. In addition to greatly improving journey times between London and Portsmouth and removing one of the network's accident blackspots, the ambitious design of the scheme meant that an AONB once blighted by traffic is now returning to its natural state.

We want to build on this example. As part of this investment plan, we are committing to a new tunnel at Stonehenge, together with the removal of the existing A303 from the landscape around the stones. We are also commissioning a study into the feasibility of a new tunnel under the Peak District which could provide a high performance road link between the great Northern cities of Manchester and Sheffield. More than £300m is being made available across the Roads Period to improve hundreds of sites nationwide, and start the process of retrofitting modern environment standards to the rest of the network.

- **Early preparation allows the Highways Agency to protect wildlife** – both during construction and after the scheme has opened. When building, the Highways Agency starts its mitigation measures well before construction. They work with the seasons to relocate affected animals with the minimum disruption, in some cases creating entire substitute habitats for protected species.
- **We are also making new commitments to design**. The Company will have a 'design panel' that can be involved in the most sensitive schemes and locations, to help ensure that the negative effects of the network are limited and the positive opportunities to make improvements are seized.

> *By 2020, funding for purpose-built environmental improvements will be five times higher than at any point in the history of the Highways Agency.*

This is not to say that road schemes will not continue to have an environmental impact; but today that impact is better understood and more thoroughly addressed than ever it has been before. These practices will continue in the new Company, and will be extended further. This Investment Plan includes the biggest ever fund for environmental mitigation, so the measures listed above can be rolled out further than ever before. By 2020, dedicated funding for environmental improvements will be five times higher than at any point in the history of the Highways Agency, allowing the retrofitting of more environmental measures to the existing network.

An Ultra-Low Emission Network

Efforts to make strategic roads more environmentally sensitive cannot focus on the infrastructure alone. The vehicle fleet must also become cleaner if air quality is to improve; and it must undertake a fundamental shift in its design if we are to develop a low carbon economy.

For the UK vehicle fleet, emissions standards are set at a European level, with input from national governments. Vehicle emissions standards are now steadily tightening globally: reflecting concerns about carbon, air quality and how to deal sustainably with the consequences of rapid development and urbanisation. These ever-tougher regulations are inevitably leading to radical changes in how we power our vehicles – a process that is already well underway with the launch of plug-in hybrid, battery electric and fuel cell vehicles from major auto manufacturers.

The past thirty years have seen tailpipe emissions fall, pollutants removed from petrol, fuel economy rise and carbon emissions decrease significantly per mile driven. This process will continue and accelerate. 2014 has seen the uptake of ultra-low emission cars in the UK, supported by the activities of the Office for Low Emission Vehicles (OLEV), rising extremely rapidly. In the second quarter of 2014 sales of plug-in vehicles were 400% up on the same quarter the previous year and rapidly approaching 1% of all new car sales.

Thanks to the work done so far, Britain is at the forefront of the adoption and manufacture of electric vehicles in Europe, and it remains the Government's aim that by 2040 new vehicles will fundamentally different to that of today. Most vehicles will be quiet, clean and zero-carbon.

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While this is primarily the task of government, the company also has an important role in bringing this about. This is why, over the investment period:

- **The Company will work on the recharging facilities on the SRN** to allow it to be a truly national network. Many motorway service areas have already invested in rapid charging points. The company will work with operators to ensure this becomes a comprehensive national network. More generally, the Company will have the aim of ensuring that 95% of SRN will have a charging point every 20 miles. Wherever possible, these will be rapid charging points that can charge a battery-powered electric vehicle in less than 30 minutes.
- **The Company will seek to cut the emissions from its own activities**. The construction industry is working to develop lower-carbon methods of road-building, and these should bear fruit in the years ahead. Operational decisions, such as the decision of whether to run network lighting all-night, can reduce the day to day emissions of the company.
- **The traffic officer service will maximise the number of ultra-low emission vehicles in its fleet by 2020** – a particularly significant step in decarbonising its activities.


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2. The feasibility studies

As part of the Spending Review announcement made in June 2013, the Department committed to undertaking six feasibility studies to help identify and fund solutions to tackle some of the most notorious and long-standing road hot spots in the country. These studies included work at the following locations:

- **The A303/A30/A358 corridor**
- **The A1 North of Newcastle**
- **The A1 Newcastle-Gateshead Western Bypass**
- **The A27 corridor**
- **Trans-Pennine routes**
- **The A47/A12 corridor**

We recognise the strategic importance of these corridors and locations, and of finding solutions to their problems. These studies have investigated the priorities for the routes and tested that potential improvements demonstrate a robust case for investment, offer value for money and are deliverable.

Following a process of engagement and discussion the Department set out the details of the scope, timing and management arrangements for each study, establishing Stakeholder Reference Groups to help with the work and to ensure that the views of those affected were captured throughout the study process.

Each study considered and analysed the evidence available on the current problems faced at each location and the potential issues or future pressures that may arise. The work identified the priority needs for investment and reviewed a number of potential investment options and their performance in tackling those issues. Further work and analysis looked at the strength of the economic case for the investment and the degree to which they demonstrated value for money, and their deliverability within the first Road Period.

Following completion of the study work and consideration of the potential investment options we have committed to take forward an overall feasibility study investment package of around £3.5 billion. This includes a number of proposals from each study, and these are outlined in the sections below.

The proposals identified in this investment package will require further work, engagement and consultation in order to reach agreement on the specific details of each proposal. Delivery will require the successful completion of the necessary statutory planning process and the continued development of business cases and demonstration of value for money.

Summaries of the individual studies will be published shortly.

The A303/A30/A358 corridor

The A303/A30/A358 corridor is a vital connection between the South West and London and the South East. While the majority of the road has been dualled, there are still over 35 miles of single carriageway. These sections act as bottlenecks for users of the route resulting in congestion, particularly in the summer months and at weekends, delays to traffic travelling between the M3 and the South West and an increased risk of accidents. The A303 passes through the Stonehenge World Heritage Site, separating the iconic stones from other Scheduled Monuments and severely limiting the enjoyment of the wider site. Further west the road passes through the Cranborne Chase and Blackdown Hills AONB.

We recognise the damage that the existing road does to the setting of numerous Scheduled Monuments and Stonehenge itself, and so we intend to construct a tunnel at least 1.8 miles long to take traffic away from the surface, reuniting the landscape of the World Heritage Site.

We intend to upgrade all remaining sections of the A303 between the M3 and the A358 to dual carriageway standard, together with creating a dual carriageway link from M5 at Taunton to the A303, as part of a long-term commitment to creating a new Expressway to the South West.

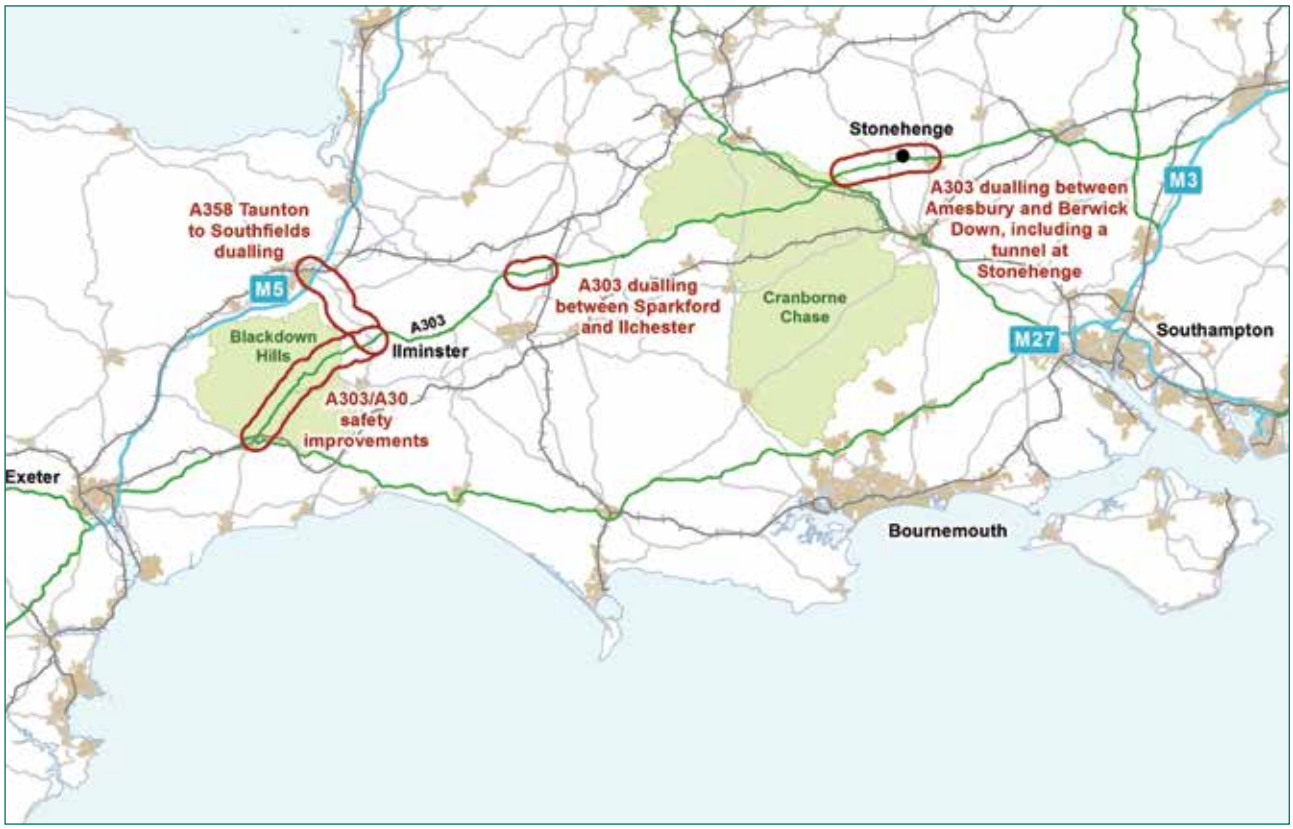
We intend to start this process with three major improvements, as part of a total A303/A30/A358 corridor package of commitments worth £2 billion:

- ***A303 Amesbury to Berwick Down dualling*** – construction of a twin-bored tunnel at least 1.8 miles long as the road passes Stonehenge and a bypass for Winterbourne Stoke to link the existing dual carriageway section around Amesbury with the dual carriageway at Berwick Down.
- ***A303 Sparkford to Ilchester dualling*** – dualling of the 3 mile single carriageway section of the A303 between Sparkford and Ilchester.
- ***A358 Taunton to Southfields dualling*** – creating a dual carriageway link from the M5 at Taunton to the A303.

We will also set aside funding for smaller-scale improvements to the A303/A30 section between Southfields and Honiton to improve safety and journey quality for road users recognising that large scale improvements would be challenging given the protected landscape and topography surrounding the route. This includes some small-scale work in the Blackdown Hills AONB which will take account of the enviromental sensitivity of the area.

Taken together, this long-term programme will transform this route into an Expressway to the South West. Full implementation of these proposals will run beyond the first Road Period, and we intend that subsequent Road Investment Strategies will fund the remaining improvements.

Outcomes from the A303/A30/A358 corridor feasibility study



A1 North of Newcastle

The A1 north of Newcastle provides a nationally important connection between Newcastle and Edinburgh. While the M6 remains the main traffic route to Scotland, the A1 is an essential link for the North East and Northumberland. Improving the road has been a long-standing call from businesses and communities.

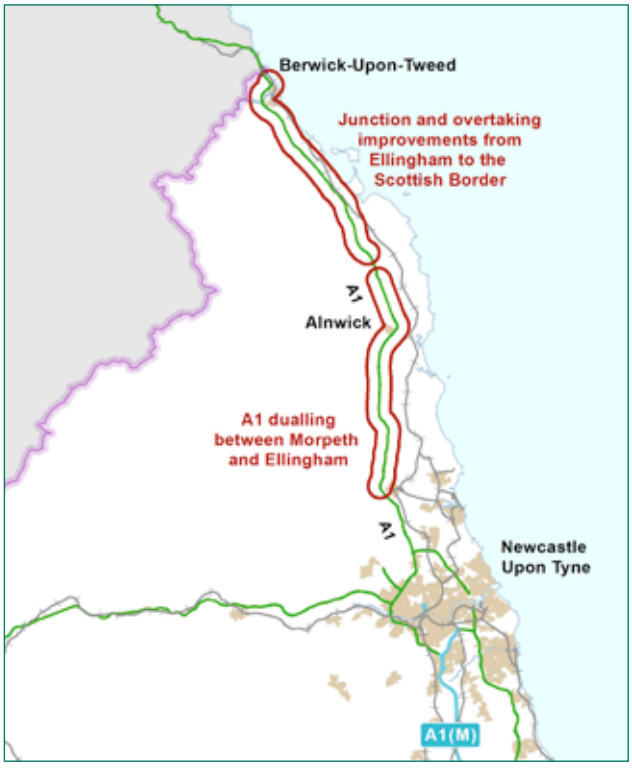
We recognise that this route needs substantial improvement to meet the needs of the local economy and to better fulfil its role in the national transport network. In order to make this happen, we are announcing an investment package worth around £290 million consisting of the following:

- ***A1 Morpeth to Ellingham*** – thirteen miles of upgrade to dual the carriageway linking the Morpeth and Alnwick bypasses with the dual carriageway near Ellingham, to create a continuous, high-quality dual carriageway from Newcastle to Ellingham.
- ***A1 north of Ellingham enhancements*** – a set of measures to enhance the performance and safety of the A1 north of Ellingham, including:
  - Three stretches of climbing lanes totalling 2.5 miles
  - Five junctions enhanced with right-turning refuges
  - Better crossing facilities for pedestrians and cyclists.

These changes will ensure that for the first time there will be dual carriageway from London to Ellingham – 34 miles north of Newcastle. The remainder of the route will also become safer and have fewer delays, with bottlenecks tackled and junctions improved.

Longer term, we have a vision to upgrade the full route to Expressway Standard, and we will continue to examine further investments in future Road Investment Strategies.

Outcomes from the A1 North of Newcastle feasibility study



A1 Newcastle-Gateshead western bypass

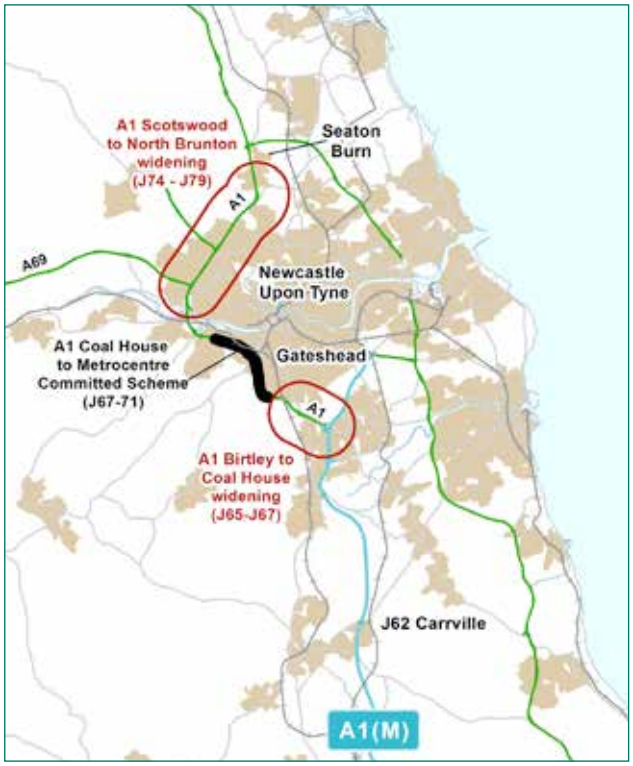
The A1 Newcastle-Gateshead western bypass is important to the economy of the North East, supporting both regional and local connectivity. The route has some of the most congested highway links in the region and it needs to perform well to support the ambitions for local growth. As part of the 2012 Newcastle City Deal and the 2013 Spending Round, we committed to widen the bypass from Coal House to the Metro Centre (J67 to J71) to three lanes, where delivery work has already started.

To tackle the current congestion and address the forecast impacts of traffic growth from planned development, we are announcing an investment package worth around £350 million and consisting of the following:

- ***A1 Birtley to Coal House (J65-J67)*** – online widening south of Gateshead to three lanes. Alongside this enhancement, separate maintenance schemes will replace and improve the Allerdene Bridge, which carries the A1 over the East Coast Main Line. Constructed nearly 40 years ago, the bridge requires regular maintenance works to keep the bridge operational.
- ***A1 Scotswood to North Brunton (J74-J79)*** – four and a half miles of narrow lane widening to allow three lanes of traffic through the junctions, with four lanes between some junctions.

We have also identified other improvement measures. The planned investment package, for example, includes technology upgrades and a number of associated improvements for pedestrians and cyclists to provide better access and reduce severance caused by the bypass. Taken together, this investment will help to ease congestion and support local growth and tackle the on-going maintenance requirement of the Allerdene Bridge, making the route more resilient. Longer term, we will continue to examine the case for further improvements to the other sections of the Western Bypass in future road investment strategies.

Outcomes from the A1 Newcastle – Gateshead western bypass feasibility study



The A27

The A27 is the only east-west trunk road south of the M25. It links the key coastal urban areas between Portsmouth and Eastbourne with each other and the rest of the SRN. Over three quarters of a million people are concentrated in the urbanised coastal area. The route also runs along and through the South Downs National Park. Over 60% of the 67 miles length of road is dual carriageway, while four stretches of the road remain single carriageway at Arundel, Worthing and east of Lewes.

The local economy has strengths in advanced engineering, tourism and other sectors and has accommodated substantial growth over the past decade. Over 60,000 new homes and substantial employment growth are expected to be developed over the next 15 years along the coast.

There are a variety of short and long distance trips along the route, but few travelling end-to-end along the A27. The towns and cities attract additional traffic during the morning and evening peak hours and there are also seasonal increases in traffic. So, our aim is to address congestion at key hotspots, the delays for road users, separation of communities – notably in Arundel, Worthing and Lancing – air pollution, and an above average number of accidents.

We are therefore announcing an investment package worth around £350 million and consisting of the following:

- ***A27 Arundel bypass*** – a new dual carriageway bypass to link together the two existing dual carriageway sections of the road. The starting point will be the previous preferred route, subject to consultation with the National Park Authority, local government and the public on this, and alternative options.
- ***A27 Worthing and Lancing improvements*** – improvements to the capacity of the road and junctions along the stretch of single carriageway in Worthing and narrow lane dual carriageway in Lancing. The extent and scale of the improvements, including the option of full dualling, are to be agreed in consultation with West Sussex County Council and the public.
- ***A27 East of Lewes*** – funding set aside pending further work on capacity increases following review of long term growth plans in light of any recommendation made by the Airports Commission.

We will also develop sustainable transport measures at Arundel, Worthing, Lancing and East of Lewes.

Outcomes from the A27 feasibility study

Trans-Pennine routes

The routes between Manchester and Sheffield provide a key connection between two of our most important Northern cities. Current journey times and performance of the connecting routes compare unfavourably against links between other cities separated by a similar distance. Elements of the route, particularly the A628, perform poorly both in terms of delays and accidents, causing impacts for both the communities on the route and on the environment of the Peak District National Park. There have been long-standing calls for improvements to connectivity but to date, an acceptable solution has not been found.

In order to make improvements, we are announcing an investment package worth over £170 million consisting of the following:

- ***Mottram Moor link road*** – a new dual-carriageway link road from the M67 terminal roundabout to a new junction at A57(T) Mottram Moor and a new single-carriageway link.
- ***A57(T) to A57 link road*** – a new single carriageway link from the A57 at Mottram Moor to a new junction on the A57 at Brookfield, bypassing the existing A628/ A57 and A57 Woolley Lane/Hadfield road junctions.
- ***A61 dualling*** – on the east side of Pennines, completion of the dualling of the A61 between the A616 roundabout and junction 36 of the M1.
- ***A628 climbing lanes*** – consideration of the provision of two overtaking lanes on the A628 near Woodhead Bridge and near Salter's Brook Bridge. We are very aware of the specific environmental protections (SAC, SSSI, SSC) in place in and around these locations and will therefore work closely with the National Park Authority. For any proposals to go ahead, they will need to be sensitively designed and their potential impacts properly assessed and understood so that the improvements are in keeping with the significance of the Park's protected landscape.
- ***Safety and technology improvements*** – safety measures focused on addressing accident clusters; and the provision of traffic light cameras, speed cameras and message signs to allow drivers to make informed decisions.

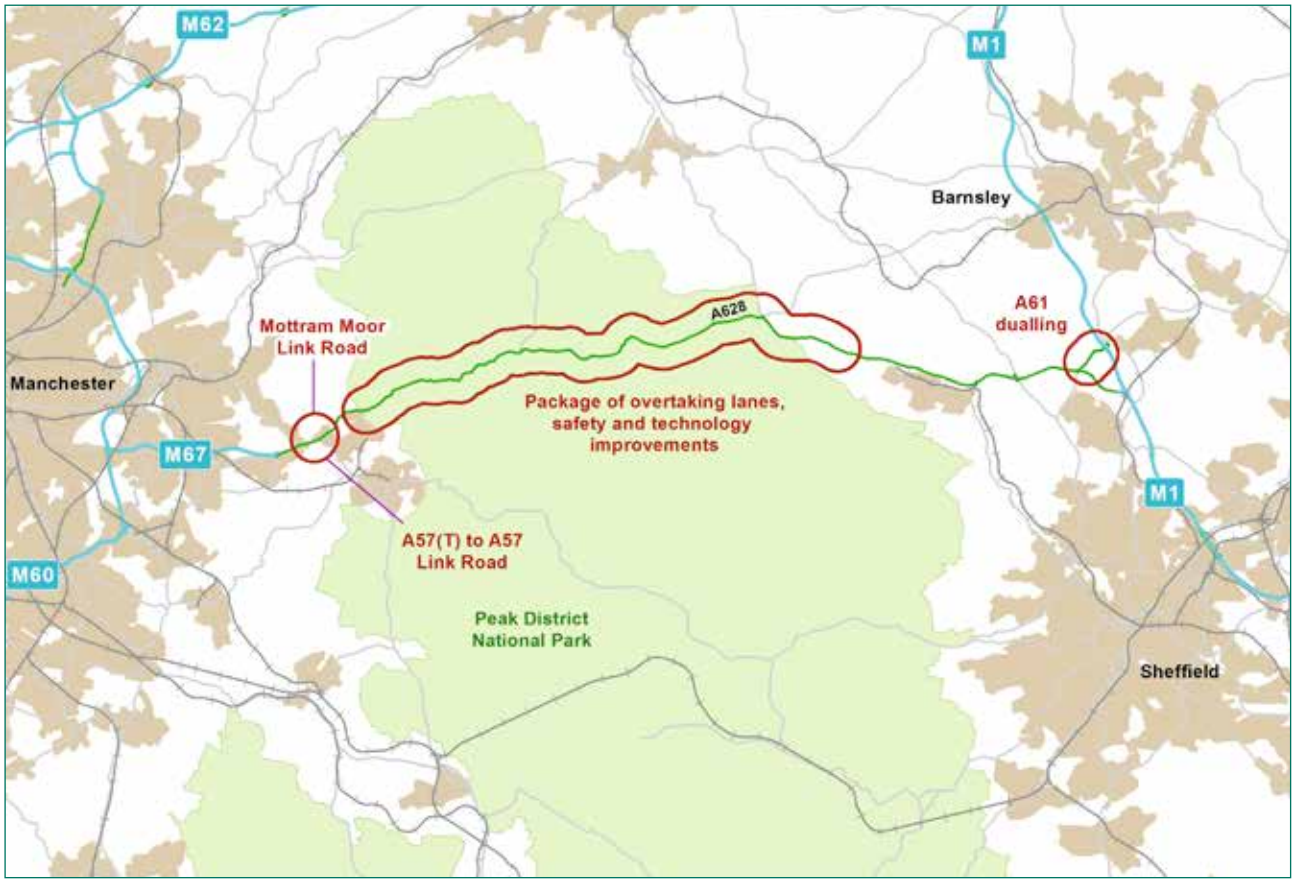
These will address congestion and improve journey times between Manchester and Sheffield, as well as addressing issues with the safety and resilience of the route and deal with the impacts of the traffic in Mottram.

As part of the process of developing and delivering this investment package we will, through consultation with local communities and stakeholders, look to reach consensus on the scope and viability of further improvements and extensions to the Mottram Moor Link Road that would alleviate the issues faced in Tintwistle and Hollingworth.

In the longer term, as a strategic study ahead of the next RIS, we will consider how to get the balance right between economic gains through improving connectivity, and protecting and enhancing our valued natural environment and landscape. The Department

and the Company will work with Transport for the North to explore the costs and feasibility of a high performance road link between Manchester and Sheffield through a purpose-built tunnel. This could link the economies of the two cities while avoiding damaging impacts on the Peak District National Park.

Outcomes from The Trans-Pennine routes feasibility study



The A47/A12

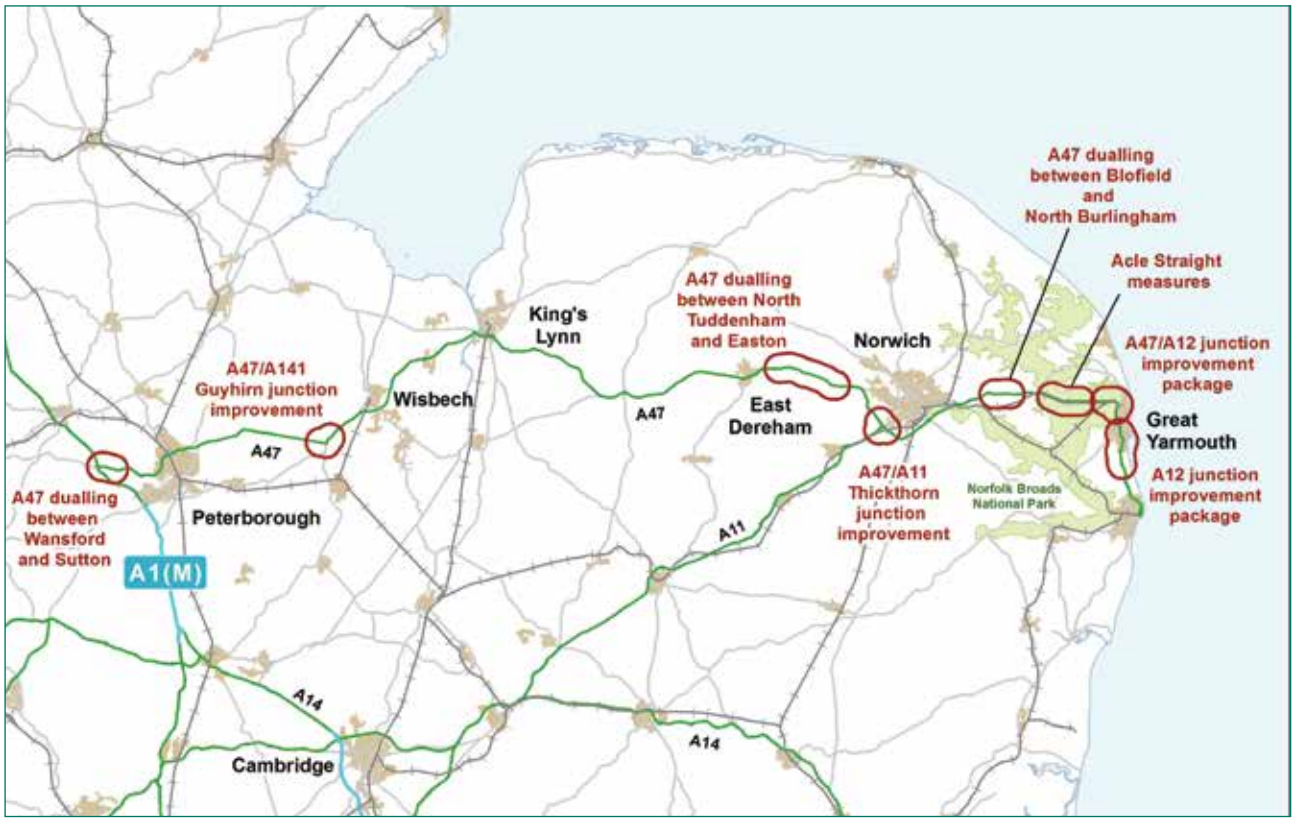
The A47/A12 trunk road runs for 115 miles from the west of Peterborough to the east coast ports of Great Yarmouth and Lowestoft. While there have been some improvements in recent years, over half the road is still single carriageway. The cities of Peterborough and Norwich attract additional traffic along the route, particularly during the morning and evening peak periods. There has been rapid growth over the past decade and the area is expected to continue to grow with over 50,000 new jobs and 100,000 new homes planned for the next 15 years. This means congestion and delay for users, as well as a greater risk of accidents. The route also passes through the Broads National Park.

We know most people travel relatively short distances, rather than the entire length of the route and some stretches of the road are over-capacity. For that reason there is no case for making the entire route a dual carriageway at this moment in time. There are, however, a number of key challenges at specific points. Our aim is to address those challenges to reduce congestion, delays and accidents and we will review the case for further improvements in future Road Periods.

We are announcing an investment package worth over £300 million and consisting of the following:

- ***A47 Wansford to Sutton*** – dualling of the A47 between the A1 and the dual carriageway section west of Peterborough.
- ***A47/A141 Guyhirn junction*** – creation of a new, larger junction linking the A47 and A141.
- ***A47 North Tuddenham to Easton*** – dualling of the single carriageway section of the A47 between Norwich and Dereham, linking together two existing sections of dual carriageway.
- ***A47 Blofield to North Burlingham*** – dualling of the A47 to fill a gap in the dual carriageway section between Norwich and the Acle Straight.
- ***A47/A11 Thickthorn junction*** – improvement of the interchange between A47 and A11, improving access into Norwich.
- ***A47 & A12 junction enhancements*** – improvements to junctions throughout Great Yarmouth, including reconstruction of the Vauxhall roundabout.
- ***A47 Acle Straight measures*** – addressing safety concerns by making short-term and long-term improvements, potentially including installation of safety barriers, junction improvements, road widening and capacity improvements. These will be subject to appropriate environmental mitigation, working with Natural England and the National Park Authority at all stages.
- ***Renumbering part of the A12*** – as part of this improvement package, we also intend to renumber the A12 between Great Yarmouth and Lowestoft as the A47, to better reflect the route's nature as a continuous corridor.

Outcomes of the A47/A12 feasibility study



3. Key investments on the Strategic Road Network

We are committing a total of £15.2 billion in the enhancement and long-term maintenance of the network between 2015/16 and 2020/21 including 127 major enhancements. This will be used to complete the road schemes currently under construction and begin construction of previously-announced road schemes. It will also be used to take 69 new road schemes into construction over the course of the Road Period, and to develop a further pipeline of future improvements for the network.

This Road Investment Strategy includes a long term funding commitment by government to support delivery of this programme. This is an important change of approach, which involves ring-fencing investment for the Strategic Road Network in a way which takes it outside of the normal decisions on departmental budgets. This means that the schemes listed below have access to committed funding, allowing them to enter construction during this Road Period.

This represents a level of commitment well beyond the level previously associated with investment on the strategic road network.

In some instances, the development of schemes over the course of the Road Period may bring unexpected issues to light. This could mean that in limited cases individual commitments in this chapter may need to change or adjust. If this happens ministers will be required to confirm that the revised proposals continue to meet the overall objectives of the scheme, or that they provide an alternative way of tackling the problems targeted.

Because these schemes feature in the Investment Plan, their delivery forms part of the performance specification. The new Strategic Road Network Monitor will independently monitor the progress of the investment plan, and will include a report on delivery as part of their published assessment of how well the Company is fulfilling the requirements of the performance specification.

North East and Yorkshire

- 26 major schemes
- £1.4 billion invested this Road Period
- A1 all motorway Doncaster to Newcastle, all dual Newcastle to Ellingham
- Smart motorways linking Sheffield and Leeds to Manchester and London
- Comprehensive review of connectivity across north and south Pennines

North West

- 16 major schemes
- £1.5 billion invested this Road Period
- Biggest increase in capacity into the region since 1971
- Key east-west and north-south links upgraded to Smart Motorways
- Comprehensive review of connectivity across north and south Pennines

Midlands

- 31 major schemes
- £1.8 billion invested this Road Period
- 145 miles of Smart Motorway to improve links from Birmingham to London, Manchester
- 11 schemes unlocking housing and growth across the region

East

- 17 major schemes
- £2.0 billion invested this Road Period
- £1.5 billion upgrade to the A14
- Dualling Cambridge to Milton Keynes link
- Phase 1 of major A12 upgrade
- Major upgrades to A47

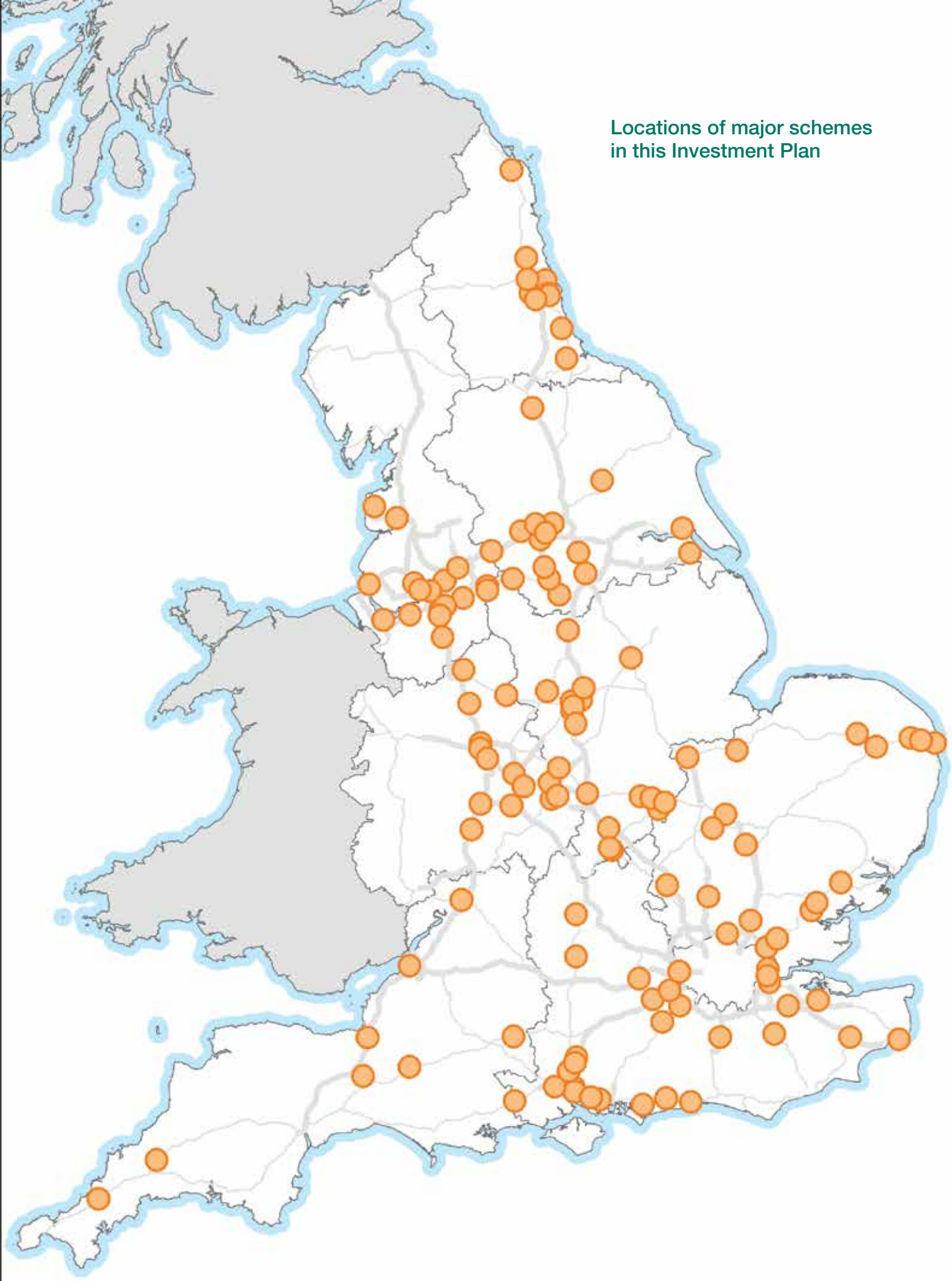
South East and London

- 29 major schemes
- £2.2 billion invested this Road Period
- Upgrades around 10 out of 31 junctions on M25
- New smart technology on M25, M1, M3, M4, M20, M23, M27 and A1(M)
- Tackling ‘missing links’ on the South Coast A27

South West

- 8 major schemes plus £500 million further investment in A303
- £2.0 billion worth of investment open or under construction by 2020
- Single largest new scheme in the programme – tunnel at Stonehenge
- Expressways for Cornwall, Gloucestershire

Locations of major schemes in this Investment Plan



Investment status

Five types of investment committment are listed in the section below:

In construction – all relevant design and planning hurdles have been cleared and construction of this scheme has already begun. We are committing ongoing funding to support its delivery.

Committed *(previously announced, or newly announced in this Investment Plan)* – we are committing the full anticipated funding for this scheme. In some cases, this may include funding from other sources within central government, including the Local Growth Fund. Provided that the necessary statutory approvals are granted and the scheme continues to demonstrate value for public money, it will enter construction during this roads period.

Committed subject to other contributions – we are committed to provide part of the anticipated funding for this scheme, base, on the expectation that the balance of funding will be available from other parties, including local authorities and/or affected property developers.

- In many cases, agreement over the relative scale of contributions has been reached. In these cases the scheme will in effect be committed provided the agreed contributions are made, and construction will begin during this Road Period.
- In other cases, the Company will first need to reach agreement with other parties over the scale of relevant contributions. Where agreement is reached in a suitable period of time, construction will also begin during this Road Period.

Developed for the next Road Period – this scheme will be developed during this Road Period, but may not enter construction until the next Road Period.

- This is usually because the design of the scheme is complex and needs to consider a number of potential options – a process which takes time to complete.
- In some cases, the interaction between a proposed scheme and other committed work on the network means that the disruption caused by doing all proposed work at once would be significant.

In either case, we are comitting funding to prepare this scheme so it can be ready to enter construction early in the next Road Period. If the Company is able to develop the scheme more quickly than expected, and if efficiency savings at the Company mean that surplus funds are available during this Road Period, construction may begin during this Road Period.

Funded from other sources – a scheme that is being fully funded under other funding frameworks or by developers. While it is not formally part of the Investment Plan and will not draw on the funds set out in the Statement of Funds Available, this scheme will be delivered alongside the other schemes listed in this section.

Yorkshire and the North East

Schemes in construction

- ***A1 Coal House to Metro Centre*** – widening the A1 south of Gateshead from two to three lanes between junctions 67 and 71, plus new parallel link roads between junctions 68 and 69 to remove traffic from the main carriageway.
- ***A1 Leeming to Barton*** – upgrading the A1 between Leeming and Barton to three-lane motorway standard; connecting together the two sections of the A1(M) in the north of England and completing the motorway link from the Teesside and Tye and Wear to the rest of England.
- ***M1 Junctions 39-42*** – upgrading the M1 to Smart Motorway, including the use of hard-shoulder running, between junction 39 (Denby Dale) and junction 42 (M62 interchange) near Wakefield.
- ***M1 Junctions 32-35A*** – upgrading the M1 to Smart Motorway, including the use of hard-shoulder running, between junction 32 (M18 interchange) and junction 35A (A616) around Sheffield and Rotherham.

North East and Yorkshire

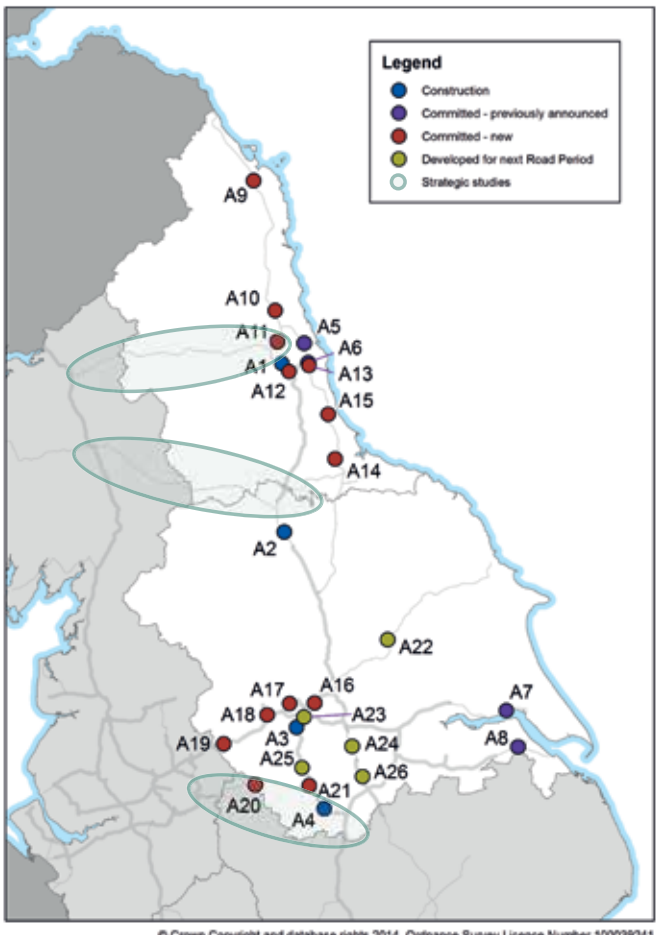
Construction
A1 A1 Coal House to Metro Centre
A2 A1 Leeming to Barton
A3 M1 Junctions 39-42
A4 M1 Junctions 32-35A

Committed – previously announced
A5 A19 Coast Road
A6 A19 Testos
A7 A63 Castle Street
A8 A160/A180 Immingham

Committed – new
A9 A1 North of Ellingham
A10 A1 Morpeth to Ellingham dualling
A11 A1 Scotswood to North Brunton
A12 A1 Birtley to Coal House widening
A13 A19 Down Hill Lane junction improvement
A14 A19 Norton to Wynyard
A15 A1 & A19 Technology enhancements
A16 M1 Junction 45 Improvement
A17 M621 Junctions 1-7 improvements
A18 M62/M606 Chain Bar
A19 M62 Junctions 20-25
A20 A628 Climbing Lanes
A21 A61 Dualling

Developed for next Road Period
A22 A64 Hopgrove Junction
A23 M1/M62 Lofthouse Interchange
A24 A1 Redhouse to Darrington
A25 M1 Junctions 35A-39
A26 A1(M) Doncaster Bypass

Strategic studies
Northern Trans-Pennine
Trans-Pennine Tunnel



Schemes Committed

Previously announced

- ***A19 Coast road*** – replacement of the junction between the A19 and the A1058, allowing free-flowing movement for traffic along both the A19 and A1058. This provides uninterrupted access to the northern end of the recently-widened Tyne Tunnel. Together with the A19 Testos, this scheme raises the A19 to expressway standard from Yorkshire to north Newcastle.
- ***A19 Testos*** – grade separation of the junction between the A19 and A184, providing free-flowing access to the southern end of the Tyne Tunnel. Together with the A19 Coast Road, this scheme raises the A19 to expressway standard from Yorkshire to north Newcastle.
- ***A160/A180 Port of Immingham*** – improvements to the junction between the A180 and A160 near Immingham port, plus upgrading the A160 to a full dual carriageway between the A180 and the port itself.
- ***A63 Castle Street*** – grade separation of the A1079 Mytongate junction in Hull and improvements to the surrounding roads, including the provision of improved pedestrian and cyclist access across the A63. Along with the Connecting the City Bridge, funded through the Humber Growth Deal, this will improve cyclists' and pedestrians' access to and from Hull Marina and road access to and from the port of Hull.

Newly announced in this Investment Plan

- ***A1 Morpeth to Ellingham*** – 13 miles of upgrades to dual the carriageway linking the Morpeth and Alnwick bypasses with the dual carriageway near Ellingham, to create a continuous, high-quality dual carriageway from Newcastle to Ellingham.
- ***A1 North of Ellingham enhancements*** – a set of measures to enhance the A1 beyond Ellingham, including:
  - Three stretches of climbing lanes totalling 2.5 miles
  - Five junctions enhanced with dedicated right-turn facilities
  - Better crossings for pedestrians and cyclists
- ***A1 Scotswood to North Brunton*** – narrow lane widening in Newcastle between junction 74 and junction 79 to allow three lanes of traffic through the junctions, and four lanes between some junctions.
- ***A1 Birtley to Coal House*** – online widening of the A1 south of Gateshead to three lanes. Alongside this enhancement, a separate maintenance scheme will replace and improve the Allerdene Bridge. Linking with the existing Coal House to Metro Centre scheme, this will provide three lanes of capacity from the Metro Centre to the A194(M) interchange.

- ***A19 Downhill Lane*** – significantly enhanced capacity on the junction between the A19 and the A1290 in Sunderland, supporting local plans for an International Advanced Manufacturing Park to the north of the existing Nissan Plant.
- ***A19 Norton to Wynyard*** – widening of the A19 Billingham bypass in Teeside to three lanes, between the A139 and the A689, including replacement of the concrete surface with low-noise surfacing.
- ***A1(M)/A1 & A19 Technology enhancements*** – new technology including vehicle detection loops, CCTV cameras and driver information signs, to allow better information to drivers and active management of traffic across Tyne and Wear.
- ***M1 Junction 45*** – improvements to junction 45 of the M1, to the east of Leeds near the Aire Valley enterprise zone, through signalisation and improved slip roads.
- ***M621 Junctions 1-7 improvements*** – improvement of key junctions on the M621 in central Leeds, providing safer and more reliable journeys for those travelling in the city.
- ***M62/M606 Chain Bar*** – provision of a direct link from the M62 westbound to the M606 northbound and removing significant congestion from the main part of the existing junction.
- ***M62 Junctions 20-25*** – upgrading the M62 to Smart Motorway between junction 20 (Rochdale) and junction 25 (Brighouse) across the Pennines. Together with other Smart Motorways already under construction in Greater Manchester and existing Smart Motorways in Yorkshire, this will provide a full four lane Smart Motorway link between Leeds and Manchester.
- ***A628 climbing lanes*** – consideration of the provision of two overtaking lanes on the A628 near Woodhead Bridge and near Salter's Brook Bridge
- **A61 Dualling** – dualling of the A61 north of Sheffield between the A616 roundabout and junction 36 of the M1.

Schemes developed for the next Road Period

- ***A64 Hopgrove junction*** – upgrading the Hopgrove roundabout, to the east of York, to a grade separated junction.
- ***M1/M62 Lofthouse interchange*** – reconstruction of the junction between the M1 and the M62 as an all-direction free-flowing interchange.
- ***A1 Redhouse to Darrington*** – upgrading the A1 to motorway standard between A1(M) junction 38 and junction 40. This will mean that the whole of the A1 in Yorkshire has been upgraded to motorway standard, providing traffic between the North East and the Midlands with an alternative route avoiding Sheffield and Leeds.

- ***M1 Junctions 35A-39*** – upgrading the M1 to Smart Motorway between junction 35A (A616) and junction 39 (Denby Dale) near Barnsley. Together with other Smart Motorways already under construction in Yorkshire, this will provide a full Smart Motorway link between Sheffield and Leeds; and together with improvements in the East Midlands will provide a fully upgraded link between Leeds and London.
- ***A1(M) Doncaster bypass*** – adding further capacity to the two-lane section of the A1(M) between junction 35 and junction 38, to ensure that the A1(M) can form an alternative strategic corridor between the Midlands and the North East and to deal with congestion on the route.

North West

Schemes in construction

- ***M60 Junction 8 to M62 Junction 20: Smart Motorway*** – installation of Smart Motorway technology on the M60 between junction 8 and junction 18, plus the introduction of Smart Motorway with all-lane running between M62 junction 18 and junction 20.
- ***A556 Knutsford to Bowdon*** – online and offline widening of the A556 between the M56 and M6 with grade-separated dual carriageway, including a bypass around Mere. This improves the A-road that serves as the main southern access to Manchester to Expressway standard.

Schemes committed

Previously announced

- ***M6 Junctions 21A-26*** – upgrading the M6 to Smart Motorway between junction 21A (M62 Croft interchange) and junction 26 (Wigan) in southern Lancashire. This links to the M62 junctions 10-12 scheme to the east.

North West England

Construction
B1 M60 Junction 8 to M62 Junction 20: Smart Motorway
B2 A556 Knutsford to Bowdon

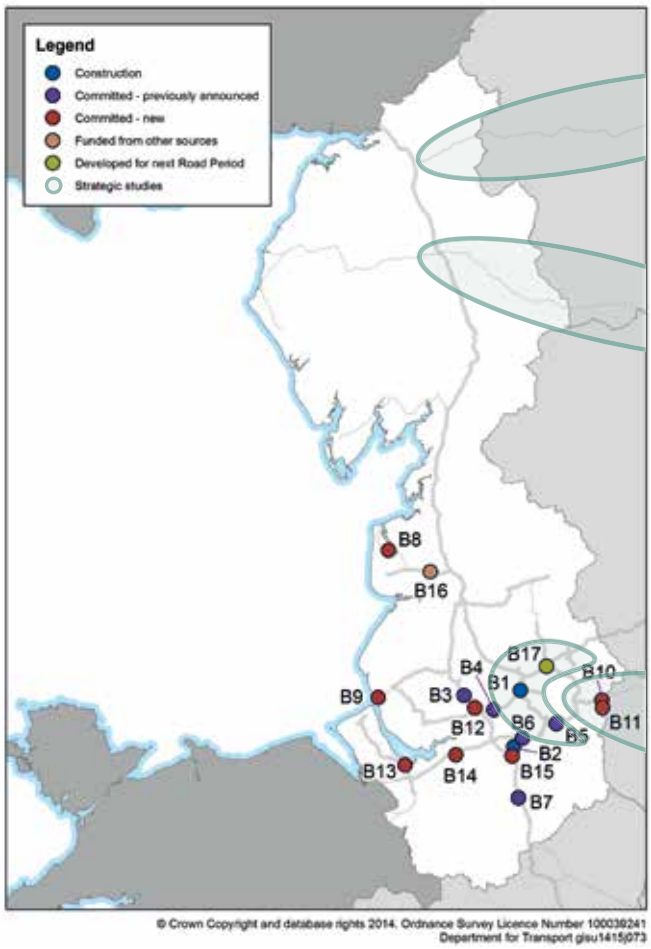
Committed – previously announced
B3 M6 Junctions 21A-26
B4 M62 Junctions 10-12
B5 M60 Junctions 24-27 & J1-4
B6 M56 Junctions 6-8
B7 M6 Junctions 16-19

Committed – new
B8 A585 Windy Harbour – Skippool
B9 A5036 Princess Way – Access to Port of Liverpool
B10 Mottram Moor link road
B11 A57(T) to A57 Link Road
B12 M6 Junction 22 upgrade
B13 M53 Junctions 5-11
B14 M56 new Junction 11A
B15 M6 Junction 19 Improvements

Funded from other sources
B16 M55 Junction 2

Developed for next Road Period
B17 M60 Simister Island Interchange

Strategic studies
Northern Trans-Pennine
Manchester North-West Quadrant
Trans-Pennine Tunnel



- ***M62 Junctions 10-12*** – upgrading the M62 to Smart Motorway between junction 10 (M6 Croft Interchange) and junction 12 (M60 Winton interchange) west of Manchester. This links with the M60 Smart Motorway schemes to the east and the M6 junctions 21A-26 schemes to the north.
- ***M60 Junctions 24-27 & 1-4*** – upgrading south-eastern quadrant of the M60 to Smart Motorway between junction 24 (M67 Denton interchange) and junction 4 (M56 Kingsway interchange).
- ***M56 Junctions 6-8*** – upgrading the M56 to Smart Motorway between junction 6 (Manchester Airport) and junction 8 (A556). Together with improvements to the A556, the M6 junction 19 and Smart Motorways on the M6, this forms part of a comprehensive upgrade to Manchester's southern access.
- ***M6 Junctions 16-19*** – upgrading the M6 to Smart Motorway between junction 16 (Stoke) and junction 19 (Knutsford) in Cheshire. Coupled with other improvements to the M6 and M1, this forms the northern end of the 'smart spine' linking the North West and London.

Newly announced in this Investment Plan

- ***A585 Windy Harbour to Skippool*** – a new offline bypass of the village of Little Singleton, reducing the impact of traffic on the local community and removing a major bottleneck on the main road to Fleetwood.
- ***A5036 Princess Way – access to Port of Liverpool*** – comprehensive upgrade to improve traffic conditions on the main link between the Port of Liverpool and the motorway network. This scheme was identified as a central element of the Liverpool Local Growth Deal.
- ***Mottram Moor link road*** – a new dual-carriageway link road from the M67 terminal roundabout to a new junction at A57(T) Mottram Moor and a new single-carriageway link to bypass Mottram.
- ***A57(T) to A57 link road*** – a new single carriageway link from the A57 at Mottram Moor to a new junction on the A57 at Brookfield, bypassing the existing A628/A57 and A57 Woolley Lane/Hadfield road junctions
- ***M6 Junction 22 upgrade*** – improvements to junction 22 near Warrington, improving access to nearby developments.
- ***M53 Junctions 5-11*** – upgrading the M53 to Smart Motorway between junction 5 (A41) and junction 11 (M56 interchange) around Ellesmere Port.
- ***M56 new Junction 11A*** – a new junction to link the M56 to the A533 at Runcorn, creating an improved link to the new Mersey Gateway bridge from the south.
- ***M6 Junction 19 Improvements*** – major improvements to the junction between the M6 and the A556 in Cheshire. Together with improvements to the A556, M6 and M56, this forms part of a comprehensive upgrade of Manchester's southern access.

Schemes funded from other sources

- ***M55 Junction 2*** – this new junction will link the recently-approved Preston Western Distributor Road to the strategic road network.

Schemes developed for the next Road Period

- ***M60 Simister Island interchange*** – comprehensive improvement of the intersection between the M60 (junction 18), M62 and M66 north of Manchester, upgrading the critical junction for traffic heading eastwards over the Pennines.

Midlands

Schemes in construction

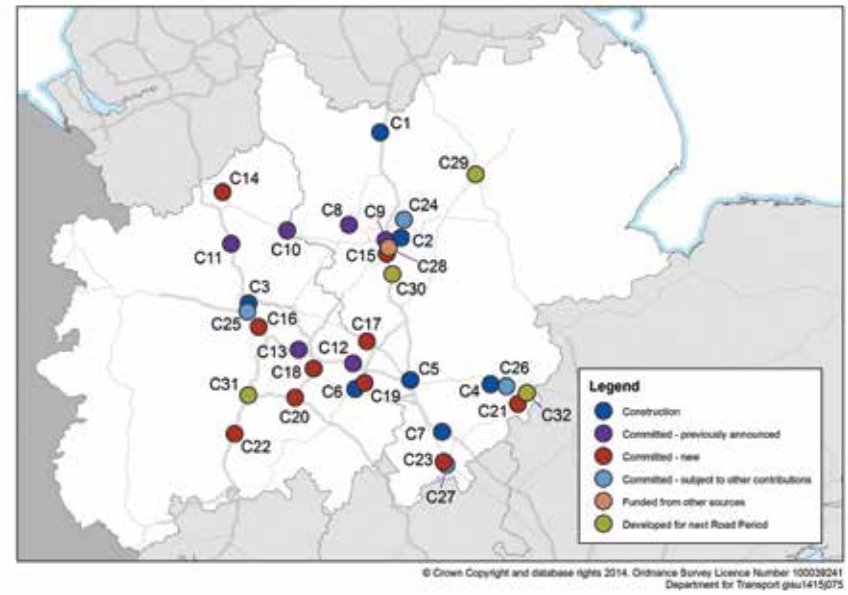
- ***M1 Junctions 28-31*** – upgrading the M1 to Smart Motorway between junction 28 (Mansfield) and junction 31 (Sheffield). Together with existing improvements to the south, this creates a Smart Motorway link between Derby, Nottingham and Sheffield.
- ***A453 Widening*** – upgrade of the A453 between Nottingham and the M1, replacing rural sections with new dual carriageway, adding an extra lane in each direction to the urban sections and improving junctions along the route.
- ***M6 Junctions 10a-13*** – upgrading the M6 to Smart Motorway between junction 10a (M54 interchange) and junction 13 (Stafford) north of Birmingham.
- ***A14 Kettering bypass widening*** – widening of the A14 to three lanes around Kettering between junction 7 and junction 9.
- ***M1 Junction 19 improvement*** – reconstruction of the Catthorpe interchange linking the M1, M6 and A14. In addition to the existing free-flowing conections between the M1 and M6, the improvement will allow free-flowing movement between the A14 and the M6, and the A14 and the M1 north.

Midlands

Construction
C1 M1 Junctions 28-31
C2 A453 Widening
C3 M6 Junctions 10a-13
C4 A14 Kettering bypass widening
C5 M1 Junction 19 improvement
C6 A45-A46 Tollbar End
C7 M1 Junctions 13-19

Committed – previously announced
C8 A38 Derby Junctions
C9 M1 Junctions 24-25
C10 A50 Uttoxeter
C11 M6 Junctions 13-15
C12 M6 Junctions 2-4
C13 M5 Juntions 4A-6

Committed – new
C14 A500 Etruria widening
C15 M1 Junctions 23A-24
C16 M6 Junction 10 improvement
C17 A5 Dodwells to Longshoot widening
C18 M42 Junction 6
C19 A46 Coventry junction upgrades
C20 M40/M42 interchange Smart Motorways
C21 A45/A6 Chowns Mill junction improvement
C22 M5 Junctions 5, 6 & 7 junction upgrades
C23 A43 Abthorpe Junction



Committed – subject to other contributions
C24 A52 Nottingham junctions
C25 M54 to M6/M6 Toll link road
C26 A14 Junction 10a
C27 A5 Towcester Relief Road

Funded from other sources
C28 M1 Junctions 24-24A improvement

Developed for next Road Period
C29 A46 Newark Northern Bypass
C30 M1 Junctions 19-23A
C31 M5/M42 Birmingham Box Phase 4
C32 A45 Stanwick to Thrapston

- ***A45-A46 Tollbar End*** – replacement of the Tollbar End roundabout with a grade-separated junction, plus associated improvements to the neighbouring sections of the A46 and A45.
- ***M1 Junctions 13-19*** – upgrading the M1 to Smart Motorway between junction 13 (Milton Keynes South) and junction 19 (M6 Catthorpe interchange). Coupled with other improvements, this is an important link in the 'smart spine' linking London and the North West. Initial work on this scheme has begun, and full construction will start next year.

Schemes committed

Previously announced

- ***A38 Derby junctions*** – replacement of three roundabouts on the A38 in Derby with grade-separated interchanges, raising the A38 in the East Midlands to Expressway standard and removing congestion.
- ***M1 Junctions 24-25*** – upgrading the M1 to Smart Motorway between junction 24 and junction 25 in the East Midlands.
- ***A50 Uttoxeter*** – replacement of two roundabouts on the A50 in Staffordshire with grade-separated junctions.
- ***M6 Junctions 13-15*** – upgrading the M6 to Smart Motorway between junction 13 (Stafford) and junction 15 (Stoke south). Coupled with other improvements, this is an important link in the 'smart spine' linking London and the North West.
- ***M6 Junctions 2-4*** – upgrading the M6 to Smart Motorway between junction 2 (M69 interchange) and junction 4 (M42 interchange). Coupled with other improvements, this is part of the 'smart spine' linking London and the North West.
- ***M5 Junctions 4A-6*** – upgrading the M5 to Smart Motorway between junction 4A (M42 interchange) and junction 6 (Worcester).

Newly announced in this Investment Plan

- ***A500 Etruria widening*** – widening of the A500 between Wolstanton and Porthill junctions near the Etruria Valley development. This compliments measures on the local road network funded under the Stoke-on-Trent and Staffordshire Growth Deal.
- ***M1 Junction 23A-24*** – extends the previously-announced M1 Smart Motorway junctions 24-25 improvement to junction 23A (East Midlands Airport).
- ***M6 Junction 10 improvement*** – additional capacity on junction 10, including the replacement of both bridges allowing the widening of the roundabout to four lanes. This scheme has been partly funded through the Black Country Local Growth Deal.
- ***A5 Dodwells to Longshoot*** – widening of a short section of the A5 near Hinkley, which carries the traffic of both the A5 and A47, to dual carriageway. This will improve access to the MIRA Enterprise Zone.
- ***A43 Abthorpe junction*** – improvement to the Abthorpe junction on the A43 near Towcester in Northamptonshire. Together with the A5 Towcester relief road, this

supports the Towcester southern extension and helps remove traffic from the centre of the town.

- ***M42 Junction 6 improvement*** – comprehensive upgrade of the M42 junction 6 near Birmingham Airport, allowing better movement of traffic on and off the A45, supporting access to the airport and preparing capacity for the new HS2 station.
- ***A46 Coventry junction upgrades*** – grade separation of the Binley and Walsgrave roundabouts on the A46 near Coventry, upgrading the trunk road sections of the A45 and A46 between the M6 and M40 to full Expressway standard.
- ***M40/M42 interchange Smart Motorway*** – introduction of Smart Motorway on the approaches to the M40/M42 interchange – the M40 from junction 16 and the M42 from junction 3 to 3A, plus the introduction of all-lane running to the existing Smart Motorway section between junctions 3A and 4 on the M42.
- ***A45/A6 Chowns Mill junction improvement*** – upgrade of the Chowns Mill junction between the A45 and A6 in Northamptonshire.
- ***M5 Junctions 5, 6 & 7 junction upgrades*** – significant expansion of junction 6 near Worcester, with improvements to approach roads, plus additional measures to improve capacity on junctions 5 and 7.

Schemes committed subject to other contributions

- ***A52 Nottingham junctions*** – a two-phase package of measures to improve the junctions along the length of the A52 in Nottingham, including signalisation and junction reconstruction.
- ***M54 to M6/M6 Toll link road*** – adding a north-facing access between the M54 and the M6 and M6 Toll around junctions 10A and 11.
- ***A14 Junction 10a*** – a new grade-separated junction on the A14, to facilitate access to the East Kettering Sustainable Urban Extension.
- ***A5 Towcester relief road*** – A new link road to the south of Towcester, agreed as part of the Towcester southern expansion, allowing traffic to bypass the town centre.

Schemes funded from other sources

- ***M1 Junctions 24-24A improvement*** – as part of the transport mitigation measures associated with the new Roxhill rail freight interchange, developers are proposing to fund improvements to junctions 24 and 24A on the M1, including removal of the roundabout at junction 24A, a new direct southbound link from the A50 to the M1 and better links to junction 24.

Schemes developed for the next Road Period

- ***A46 Newark northern bypass*** – widening of the A46 north of Newark to dual carriageway, raising the last section of the A46 between the A1 and M1 to Expressway standard. Improvement of the A46/A1 junction to allow for better traffic movement to Newark and Lincoln.

- ***M1 Junctions 19-23A*** – upgrading the M1 to Smart Motorway between junction 19 (M6 Catthorpe interchange) and junction 23A (East Midlands Airport). Coupled with other improvements, this will complete a Smart Motorway corridor between London and Yorkshire. It also includes an upgrade to junction 21 to provide better links between the M1 and M69, reducing pressure on the main junction and to improve access to south Leicester.
- ***Birmingham box Phase 4*** – upgrading the remainder of the Birmingham box to Smart Motorway standard, with additional capacity and technology on the M5 and M42 on the western and southern sections of the road and supporting upgrades to junctions.
- ***A45 Thrapston to Stanwick*** – upgrading the existing single carriageway section of the A45 between Stanwick and Thrapston, so the A45 can provide a continuous Expressway between the A14 and the M1. This improvement will have to manage carefully the interaction of the road with the Stanwick Lakes SSSI[2] and the wider Nene Valley.

2 Site of Special Scientific Interest

East of England

Schemes committed subject to other contributions

- ***A14 Cambridge to Huntingdon*** – a major upgrade to the A14 between the A1 and north Cambridge, widening the road to three lanes, providing a new bypass around Huntingdon, creating distributor roads for local traffic and remodelling key junctions along the route. This scheme supports a number of local developments, and a series of developer contributions have been agreed – provided these contributions stand, the scheme is fully committed.
- ***A5-M1 Link road*** – a new junction 11A on the M1 north of Luton plus a road linking to the A5 north of Dunstable. This will effectively serve as a diversion for the A5 through Dunstable, allowing strategic traffic to bypass the town. The scheme creates the capacity for major development at Houghton Regis and the developer has agreed to provide part of the funding.

Committed Schemes

Newly announced in this Investment Plan

- ***A47 North Tuddenham to Easton*** – dualling of the single carriageway section of the A47 between Norwich and Dereham, linking together two existing sections of dual carriageway.

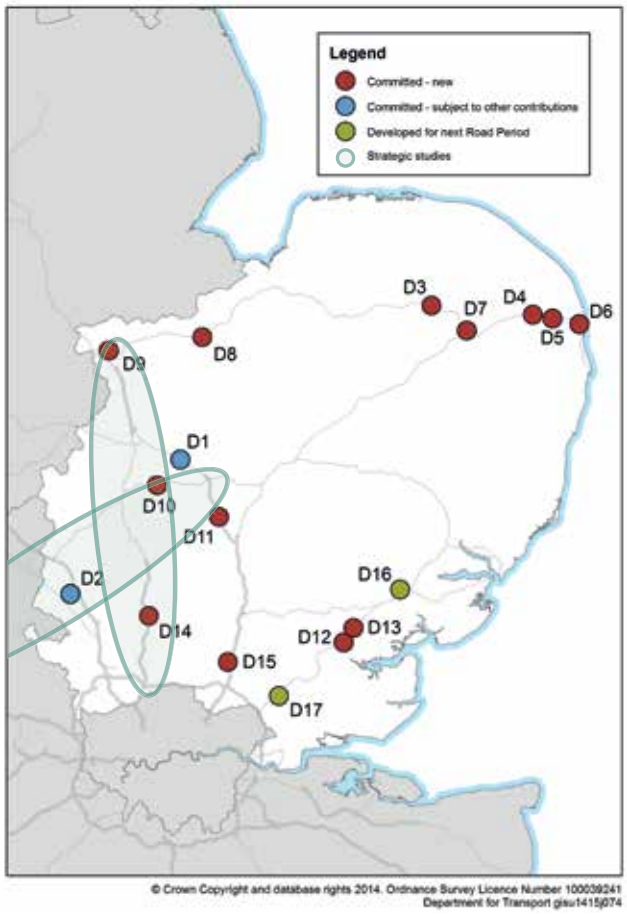
East of England

Committed – subject to other contributions
D1 A14 Cambridge to Huntingdon
D2 A5-M1 Link Road

Committed – new
D3 A47 North Tuddenham to Easton
D4 A47 Blofield to North Burlingham dualling
D5 A47 Acle Straight
D6 A47/A12 junction enhancements
D7 A47/A11 Thickthorn Junction
D8 A47 Guyhirn Junction
D9 A47 Wansford to Sutton
D10 A428 Black Cat to Caxton Gibbet
D11 M11 Junctions 8 to 14 – technology upgrade
D12 A12 Chelmsford to A120 widening
D13 A12 whole-route technology upgrade
D14 A1(M) Junctions 6-8 Smart Motorway
D15 M11 Junction 7 junction upgrade

Developed for next Road Period
D16 A12 Colchester Bypass widening
D17 A12 M25 to Chelmsford

Strategic studies
Oxford to Cambridge Expressway
A1 East of England



- ***A47 Blofield to North Burlingham dualling*** – upgrade of the A47 to fill a gap in the dual carriageway section between Norwich and the Acle Straight.
- ***A47 & A12 junction enhancements*** – improvements to junctions throughout Great Yarmouth, including reconstruction of the Vauxhall roundabout.
- ***A47/A11 Thickthorn junction*** – improvement of the interchange between the A47 and A11, improving access into Norwich
- ***A47/A141 Guyhirn junction*** – creation of a new, larger junction linking the A47 and A141.
- ***A47 Acle Straight measures*** – addressing safety concerns by making short-term and long-term improvements, potentially including installation of safety barriers, junction and road widening improvements. These will be subject to appropriate environmental mitigation, working with Natural England and the National Park Authority at all stages.
- ***A47 Wansford to Sutton*** – dualling of the A47 between the A1 and the dual carriageway section west of Peterborough.
- ***A428 Black Cat to Caxton Gibbet*** – improvement of the A428 near St Neots, linking the A421 to Milton Keynes with the existing dual carriageway section of the A428 to Cambridge, creating an Expressway standard link between the two cities via Bedford. The scheme is expected to include significant improvements to the Black Cat roundabout, where the A1 currently meets the A421.
- ***M11 Junctions 8 to 14 – technology upgrade*** – addition of several elements of the Smart Motorway package on the M11 between Stansted Airport and the Girton interchange north of Cambridge to help deal with congestion.
- ***A12 Chelmsford to A120 widening*** – widening the A12 to three lanes between junction 19 (north of Chelmsford) and junction 25 (A120 interchange).
- ***A12 whole-route technology upgrade*** – a major upgrade to technology applied to the A12 between the M25 and Ipswich, including vehicle detection loops, CCTV cameras and driver information signs, to allow better information to drivers and active management of traffic on the route.
- ***A1(M) Junctions 6-8 Smart Motorway*** – upgrading the existing two-lane section of the A1(M) around Stevenage to Smart Motorway to provide a third lane of capacity.
- ***M11 Junction 7 upgrade*** – expansion of junction 7 on the M11 to provide better access to Harlow.

Schemes developed for the next Road Period

- ***A12 Colchester bypass*** – widening of the A12 between junctions 25 and 29 to three lanes and improvements to local junction layout, to relieve congestion and improve access between London and Ipswich.
- ***A12 M25 to Chelmsford*** – widening to three lanes between the M25 and the Chelmsford bypass (junctions 11 to 15), improving a road, which is a patchwork of smaller-scale improvements, to a modern, safe standard.

London and the South East

Schemes in construction

- ***M3 Junctions 2-4A*** – upgrading the M3 to Smart Motorway between junction 2 (M25 interchange) and junction 4A (Farnborough).

Schemes committed

Previously announced

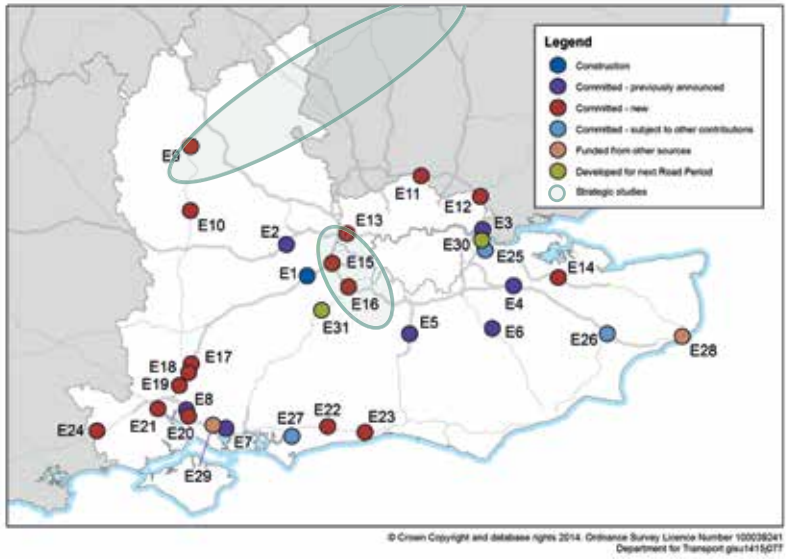
- ***M4 Junctions 3-12*** – upgrading the M4 to Smart Motorway between junction 3 (Uxbridge) and junction 12 (west of Reading), linking Reading and Heathrow.
- ***M25 Junction 30*** – comprehensive expansion of the junction between the M25 and A13, including the introduction of free-flowing links for traffic from the southbound M25 to the eastbound A13.
- ***M20 Junctions 3-5*** – upgrading the M20 to Smart Motorway between junction 3 (M26 interchange) and junction 5 (Maidstone).
- ***M23 Junctions 8-10*** – upgrading the M23 to Smart Motorway between junction 8 (M25 interchange) and junction 10 (Crawley), improving connections to Gatwick.
- ***A21 Tonbridge to Pembury*** – dualling of the A21 around Tonbridge, linking the existing high-quality dual carriageway

London and South East England

Construction
E1 M3 Junctions 2-4A

Committed – previously announced
E2 M4 Junctions 3-12
E3 M25 Junction 30
E4 M20 Junctions 3-5
E5 M23 Junctions 8-10
E6 A21 Tonbridge to Pembury
E7 M3 Junctions 9-14
E8 M27 Junctions 4-11

Committed – new
E9 A34 Oxford Junctions
E10 A34 Technology enhancements
E11 M25 Junction 25 improvement
E12 M25 Junction 28 improvement
E13 M4 Heathrow slip road
E14 M2 Junction 5 improvements
E15 M25 Junctions 10-16
E16 M25 Junction 10/A3 Wisley interchange
E17 M3 Junction 9 improvement
E18 M3 Junction 10-11 improved sliproads
E19 M3 Junctions 12-14 improved sliproads
E20 M27 Southampton Junctions
E21 M271/A35 Redbridge roundabout upgrade
E22 A27 Arundel Bypass
E23 A27 Worthing and Lancing improvements
E24 A31 Ringwood



Committed – subject to other contributions
E25 A2 Bean & Ebbsfleet junctions
E26 M20 Junction 10a
E27 A27 Chichester Improvement

Funded from other sources
E28 A20 Access to Dover
E29 M27 Junction 10

Developed for next Road Period
E30 Lower Thames Crossing
E31 A3 Guildford

Strategic studies
Oxford to Cambridge Expressway
M25 South-West Quadrant

north of the town with the remaining stretches to the south and grade separating the Longfield Road junction.

- ***M3 Junctions 9-14*** – upgrading the M3 to Smart Motorway between junction 9 (Winchester/A34 interchange) and junction 14 (M27), linking with the Smart Motorway scheme on the M27.
- ***M27 Junctions 4-11*** – upgrading the M27 to Smart Motorway between junction 4 (M3 interchange) and junction 11 (Fareham), linking with the Smart Motorway scheme on the M3.

Newly announced in this Investment Plan

- ***A34 Technology enhancements*** – introduction of vehicle detection loops, CCTV cameras and driver information systems on the A34 between the M4 and the M40.
- ***A34 Oxford junctions*** – improvements to the Peartree and Botley interchanges.
- ***M25 Junction 25 improvement*** – upgrade of the between the M25 and the A10 at Cheshunt, providing greater capacity for traffic.
- ***M25 Junction 28 improvement*** – upgrade of the junction between the M25 and the A12 in Essex, potentially including the provision of dedicated left-turn lanes and improvement of the gyratory system.
- ***M4 Heathrow slip road*** – improved technology to allow better traffic management on the slip road into Heathrow.
- ***M2 Junction 5 improvements*** – additional capacity for the junction, through improvements to slip roads and enhanced junction approaches.
- ***M25 Junctions 10-16*** – upgrading the M25 between junction 10 (A3) and junction 16 (M40) through a mixture of enhancements, including hard shoulder running between junctions 15 and 16, as well as four-lane through-junction running between junctions 10 and 12.
- ***M25 Junction 10/A3 Wisley interchange*** – improvement of the Wisley interchange to allow free-flowing movement in all directions, together with improvements to the neighbouring Painshill interchange on the A3 to improve safety and congestion across the two sites.
- ***M3 Junction 9 improvement*** – upgrade to the junction to allow free movement from the A34 to the M3.
- ***M3 Junctions 10-11 improved sliproads*** – improvements to the most pressured sliproads on junctions 10 and 11 near Winchester.
- ***M3 Junctions 12-14 improved sliproads*** – improvements around junctions 12 and 13, providing an additional lane on part of the route and improving capacity through the junction.
- ***M27 Southampton junctions*** – additional capacity at junction 8 through improvements to the Windhover roundabout. In addition, parallel improvements to the local road network funded through their investment plan will improve two railway bridges, near junction 5 and in central Southampton, to allow traffic to avoid unnecessary travel on the motorway.

- ***M271/A35 Redbridge roundabout upgrade*** – creation dedicated left-turn lane for traffic leaving the M271 for Southampton docks and city centre, plus an improved roundabout layout for traffic from the docks turning onto the M271.
- ***A27 Arundel bypass*** – replacement of the existing single carriageway road with a dual carriageway bypass, linking together the two existing dual carriageway sections of the road.
- ***A27 Worthing and Lancing improvements*** – improvements to the capacity of the road and junctions along the stretch of single carriageway in Worthing and narrow lane dual carriageway in Lancing.
- ***A31 Ringwood*** – widening of the A31 at Ringwood to three lanes, providing more capacity for local traffic using the road to cross the Avon, plus adjustments to the nearby local road network to allow for improvements for pedestrians in Ringwood.

Schemes committed subject to other contributions

- ***A2 Bean & Ebbsfleet junctions*** – improvements to junctions on the A2 near Bluewater to enable major developments in the vicinity of Ebbsfleet.
- ***M20 Junction 10a*** – a new junction near Ashford in Kent, in order to support a major new development to the south east of the town.
- ***A27 Chichester Improvement*** – upgrades to four junctions on the Chichester bypass.

Schemes funded from other sources

- ***A20 Access to Dover*** – upgrades to the at-grade junctions along the A20 along Dover's harbour front, providing better access to the ferry terminal, improving pedestrian access and supporting the development along the Waterfront.
- ***M27 Junction 10*** – major development north of Fareham creates a need for expanded capacity on the M27 at junction 10. Developers, with support from the Local Growth Fund, are likely to fund the addition of new sliproads to allow west-facing movements onto the motorway.

Schemes developed for the next Road Period

- ***Lower Thames Crossing*** – the Government continues to consult on the different route options for a new Lower Thames Crossing. A decision on a preferred option will be reached during this Road Period, and design work is likely to begin.
- ***A3 Guildford*** – improving the A3 in Guildford from the A320 to the Hogs Back junction with the A31, with associated safety improvements.

South West

Schemes committed subject to other contributions

- ***A30 Temple to Higher Carblake*** – upgrading the A30 to dual carriageway at the remaining single carriageway section north of Bodmin, connecting together the existing high-quality dual carriageway.
- ***A30 Chiverton to Carland Cross*** – upgrading the A30 to dual carriageway north of Truro, connecting together the dual carriageway section around Bodmin with the dual carriageway Redruth bypass. Coupled with the Temple to Higher Carblake scheme and smaller-scale safety enhancements on the route, this improves the A30 to a consistent Expressway standard from Camborne to the M5.

Newly announced in this Investment Plan

- ***M49 Avonmouth junction*** – creation of a new junction on the M49 to support development at Avonmouth.
- ***M5 Bridgwater junction*** – improvement of junction 23 through enhanced slip roads and more capacity on the junction itself.
- ***A303 Amesbury to Berwick Down*** – construction of a twin-bored tunnel of at least 1.8 miles as the road passes Stonehenge, coupled with a dual carriageway bypass for Winterbourne Stoke to link the existing dual carriageway section around Amesbury with the dual carriageway at Berwick Down.

South West England

Committed – subject to other contributions

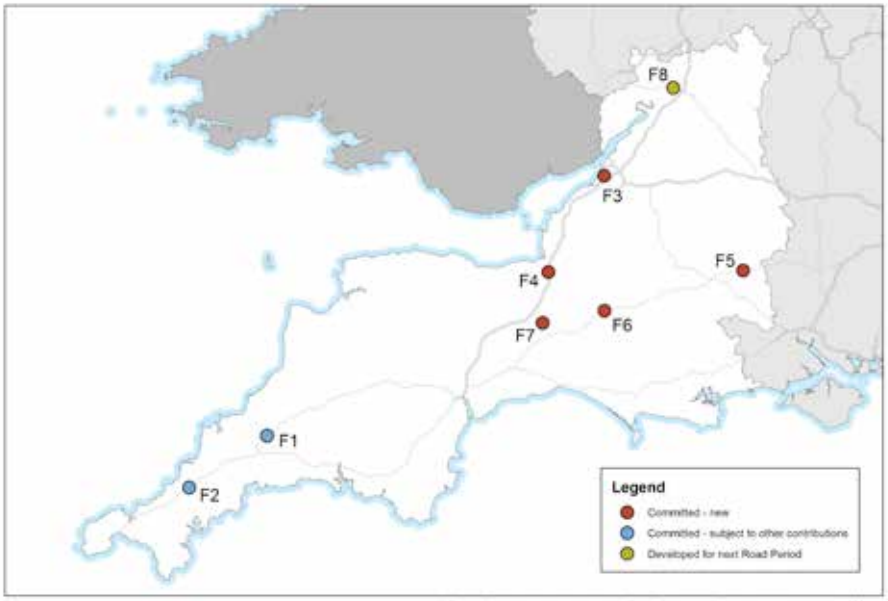
F1 A30 Temple to Higher Carblake
F2 A30 Chiverton to Carland Cross

Committed – new

F3 M49 Avonmouth Junction
F4 M5 Bridgwater Junctions
F5 A303 Amesbury to Berwick Down
F6 A303 Sparkford – Ilchester dualling
F7 A358 Taunton to Southfields

Developed for next Road Period

F8 A417 'Missing link' at Air Balloon



- ***A303 Sparkford – Ilchester dualling*** – dualling of a single carriageway section of the A303, linking together the Sparkford and Ilchester bypasses.
- ***A358 Taunton to Southfields*** – creating a dual carriageway link from the M5 at Taunton to the A303 incorporating upgraded stretches of the existing road into the strategic road network where appropriate.

Schemes developed for the next roads period

- ***A417 'missing link' at Air Balloon improvement*** – connection of the two dual carriageway sections of the A417 near Birdlip in Gloucestershire, taking account of both the environmental sensitivity of the site and the importance of the route to the local economy.

4. The strategic studies

Transforming our road network is the work of a generation. Chapters 2 and 3 set out the improvements that need to be made to the road network in the short and medium term to start this process. However some of the challenges and opportunities facing the network are too large and too complex to fix in a single Road Period. The answers could involve major new network connections, or fundamental choices about the future of transport in congested parts of the country. These issues need to be examined carefully, and the conclusions need to reflect the views of local residents, business, local authorities and road users of all kinds.

Building on the feasibility study approach in Section 2, we are commissioning a series of new strategic studies, to address of the biggest challenges facing the road network.

As with our previous feasibility studies, we will engage closely with interested stakeholders to set out and agree the details of the scope, timing and management of our study work, and how this may fit with other work considering future transport investments.

Northern Trans-Pennine

Between Leeds and Manchester in the south and Edinburgh and Glasgow in the north, there is no complete dual carriageway link between the east and west of the country. This is one of the most visible gaps in the UK transport network, and is seen as a barrier to business in the north of England. It also leaves the economy of the north of England heavily dependent on one road – the M62 – to provide strategic east-west connectivity.

There is potential to create a new strategic corridor in the region and link the A1 and the M6. Doing so could help the economies of the North East and Cumbria, as well as improve journeys between England and Scotland.

The two main east-west roads in this area, the A69 and A66, have been partially upgraded over the years. Both roads have a mix of high-quality dual carriageway and single carriageway. This study will examine the case for dualling one or both of these roads and making other improvements along their length. In doing this, we would further help the development of a northern powerhouse.

Trans-Pennine Tunnel

Following the Trans-Pennine routes feasibility study there is a need for further examination of the case for Manchester and Sheffield to be connected by a high-performance link. We are keen to explore the costs and feasibility of this potentially transformational improvement.

Such a connection could have a dramatic impact on the economy of the north, particularly in combination with plans for high speed rail links. It would be capable of

fundamentally changing the nature of the journey between two of the most important cities of the north. But the invaluable landscapes and ecological significance of the Peak District National Park rule out a surface link. The only credible solution may be to construct a tunnel under the central part of the Pennines. This carries with it the potential to bring important environmental improvements to the Peak District National Park.

Such a project would be the most ambitious road scheme since the construction of the first motorways fifty years ago. The engineering and delivery of such a tunnel would be a national first. The proposal therefore needs to be studied in detail to confirm its viability, and we want to begin a national debate.

Working in conjunction with Transport for the North, this study will examine the strategic options for the tunnel, to understand the viability, costs and deliverability of such a connection, and determine its role and priority within the emerging transport strategy for the north.

Manchester North-West Quadrant

The M60 plays a vital part in the life of Manchester and is a critical part of the North West transport network. The north-west quadrant of the road between junctions 8 and 18 contains some of the busiest stretches of road outside the M25. The mix of local traffic and strategic traffic, coupled with the design of the road, further exacerbates congestion and environmental problems.

Projected development is expected to put significant extra pressure on the road. To prevent the M60 becoming a block on Manchester's growth, more transport capacity must be provided in the area. This study will look at the options for improving the transport network around the north-west quadrant. It will need to consider a range of different modal options, to make sure that the local road network and public transport options play their part. If major enhancements to the SRN are a part of the solution, they will also need to be considered.

This study will need to work closely with Transport for Greater Manchester, the Greater Manchester Combined Authority and local transport providers.

A1 East of England

The A1 is one of our oldest trunk roads, and also one of the least consistent. With more than fifty years of local upgrades, the road today is a patchwork of different standards, ranging from four-lane motorway to elderly dual carriageway – sometimes in the same ten-mile stretch.

Major upgrade work will improve the road to motorway standard in Yorkshire, and to Expressway standard north of Newcastle. This study will look at bringing consistency to the southern section of the route, from the junction with the M25 in the south to Peterborough in the north. In particular, it will look at the case for improving the non-motorway section linking the two parts of the A1(M) to motorway standard.

Given the age of the road, much of the current route was chosen with little thought to the impact on the nearby environment. This study will examine whether improvements, including changing the alignment of the road, could reduce the environmental impact of the existing route and benefit local communities.

Oxford to Cambridge Expressway

Some of the fastest growing towns in England are located in a belt to the north of London. However transport connections between cities such as Cambridge, Milton Keynes and Oxford are notably poor and create an artificial barrier between hubs of knowledge-based growth. With better links, the synergies between these cities would be stronger, and would do more to drive growth in nearby towns.

Much of this Expressway can be created through improvements to the existing road network. This investment plan commits to widening the A428 from Caxton Gibbet to the Black Cat Roundabout, which will create an Expressway from Cambridge to Milton Keynes. The A34 near Oxford could also form part of the route.

However, a gap remains between the M1 at Milton Keynes and the M40 near Oxford: traffic travelling the 30 miles between the two cities by dual carriageway has to take a 60 mile route. Growth around Milton Keynes and Bicester creates strong arguments for upgraded transport infrastructure in the area. This study will examine the case for creating an Expressway to connect the towns and cities of the 'Brain Belt' together. It will also look at other enhancements on existing roads along the route, including the A34 around Oxford.

This work will take into account work already planned to improve the rail network in this area.

M25 South-West Quadrant

The south-west quadrant of the M25 is the busiest road in Britain. Pressure is also increasing fast: since 2004, the stretch between junctions 11 and 12 has gone from carrying 158,000 vehicles a day to over 187,000. And the busiest parts now carry over 220,000. Nine of the ten busiest sections on the SRN are in this area, and severe congestion is a regular occurance. The road is essential to local people, to traffic between the south east and the rest of England and to those getting to and from our busiest airports.

This investment programme will help improve conditions on this stretch, but further widening of the road beyond this point would be a considerable feat of engineering. It is time for a far-reaching study that can consider all of the options for transport in this area, taking account of any relevant findings from the Airports Commission. This will need to consider how to make best use of different transport modes and the local road network. It will also need to consider whether it is possible to strengthen or provide alternative routes for traffic to relieve pressure on the M25 itself.

The end result needs to be a lasting solution, which can keep people moving for a generation to come.

Severn Crossing

In addition to these strategic studies, the next Road Period is expected to include the end of the private concession on the Severn Crossings. Following the construction of the second crossing, which was almost entirely funded through private finance, the concessionaire was entitled to reclaim a defined sum, through tolls on the two bridges.

Current projections indicate that this sum will be recouped by 2018, at which point the concessionaire will no longer have the right to toll the bridge. From this point onwards, the Government has the right to recoup its own costs from the construction,

maintenance and management of the bridge until 2027. However, the exact nature of that regime has yet to be determined.

This is an appropriate moment to think about the long-term future of the crossing, including how best to secure its continued maintenance, how to support the economies on both sides of the bridge, and whether the legal regime at the crossing can deliver this. The Department for Transport, working with the Company, the Welsh Assembly Government and other affected parties, will examine the future of the crossing in detail during this Road Period.

5. Maintaining the Network

Expanding the network is important to helping our economy. Maintaining our network is essential to keeping it functioning. Road maintenance affects all aspects of performance – the time that roads must be affected by repairs; the likelihood of accidents; even emissions from vehicles on the network.

Most of the traffic on the SRN in 2040 will still drive on roads that are familiar to us today. On our most important corridors, where hundreds of thousands of vehicles travel daily at high speeds, the need for maintenance is greatest of all. The challenge of maintaining the network is therefore central to making sure that our roads continue to support our economy in the long term. Surfaces and structures need to be resilient for the long term – regardless of their age or the differing impacts of time – and the Company must continue to manage the challenge of maintaining an asset that is in use 24 hours a day.

A programme of effective asset management is integral to any investment programme. Our bridges and tunnels need to be fit to last for a century or more, not only in the face of current challenges but also in readiness for the potential impact of climate change. Plans need to be laid to protect the network for the long term, and the capacity must always be there to deal with emergencies.

As part of this Investment Plan, we are committing over three quarters of a billion pounds to long term capital renewals every year. This will allow for the repair and replacement of 80% of the road surfaces on the network, accelerating the transition from older surfaces to new ones that can be maintained overnight with less disruption for traffic. This also means that the noise impact of the network will be reduced further, as new surfaces are quieter than their predecessors.

This is on top of normal year-on-year maintenance, which handles day-to-day management of the network, and which is worth around £300 million a year. The total spending on maintaining and renewing the network will be over a billion pounds a year, 41% higher than it is at present, and fully committed as part of the investment plan. This will be coupled with a 38% increase in annual funding for local authority highway maintenance, helping to tackle potholes and other road repairs.

Overall, this means that our major roads and motorways will be among the best maintained in the world, and fit to last for future generations.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6. Ring-fenced investment funds

In setting out such a significant programme of investment, it is important not to lose sight of the wider impacts the network can have. This means striving to ensure that the interventions we make to the network are sustainable and beneficial to society as a whole. And we want the Company to be at the cutting edge of innovation in road construction and network management.

With this in mind, we have created a series of ring-fenced funds, worth £900 million up to 2020/21 to address a range of specific issues over and above the traditional focus of road investment. These five funds allow for actions beyond business as usual and will help the Company invest in retrofitting measures to improve the existing road network as well as maximising the opportunities offered by new road schemes to deliver additional improvements at the same time. The funds are:

- **Environment**
- **Cycling, Safety and Integration**
- **Innovation**
- **Air Quality**
- **Growth and Housing**

Environment Fund

It is vital that we strike a balance between increasing road capacity and mitigating the impacts of our roads on neighbouring communities and the environment.

As outlined in section 1, thanks to widespread improvements in design, we no longer face a stark choice between a well-functioning road network and a well-protected environment. We want to continue this progress, but also to tackle parts of the road network where previous road design has led to particular environmental problems. In addition, we need to ensure that the Company plays its part in reducing carbon emissions from road transport and adapting our roads to cope with a changing climate.

In order to do this we are setting up a £300 million Environment Fund to deliver specific enhancements to the network. This will enable the Company to deliver the improved environmental outcomes described in the Performance Specification, Statutory Directions and Guidance. In particular, the fund will be used to mitigate the worst impacts of noise on those living close to the network, support the transition to low-carbon road transport, improve local water quality and resilience to flooding, maintain an attractive landscape, and work to halt the loss of biodiversity.

The Company will also continue to draw on the expertise of different environmental organisations, deepening and widening these partnerships, and work with local authorities to help drive the best outcomes. Specialist input will be crucial to achieving our environmental aspirations for the network through sensible interventions and funding focused where it can have the greatest impact.

The Environment Fund will enable us to make a real difference. For example, by spending up to £75 million on the likes of noise barriers, combined with the extensive resurfacing programme, we expect to reduce the amount of people severely affected by noise from the SRN by at least 250,000. We will also support the shift to a lower carbon network by investing in rapid chargers to ensure that people will rarely be more than 20 miles from a rapid charger on the SRN, as well as converting the Traffic Officer Service fleet to ultra-low emission vehicles. We will spend around £100 million to enhance the network's landscape, address areas where there are negative impacts on sites of historic or cultural heritage and improve the impacts in local biodiversity.

Environment Fund: areas targeted and potential interventions	
Noise	Low noise surfacing on road links that would not be resurfaced due to age or condition, where benefit to the local community can be demonstrated.
	Feasibility assessment of Two Layer porous asphalt on one or more sections of urban motorway.
	Provision of noise mitigation to those properties exposed to the highest noise levels.
Carbon	Support for ULEVs on the road network (vehicle chargers). 95% of the Strategic Road Network will have a charging point every 20 miles. Where ever possible, these will typically be rapid charging points that can charge a battery electric vehicle in less than 30 minutes.
	Convert highways patrol fleet vehicle to ULEVs.
	LED lighting for Motorways and LED traffic signals.
	Reducing carbon emissions from maintenance depots.
	Renewable energy generation on the Company's estate.
Flood Risk Management & Water	Reducing flood risk to communities adjacent to the network and improving network resilience to flooding.
	Delivering water quality improvements (drainage and runoff) through use of Sustainable Drainage Systems.
Landscape	Mitigation of existing landscape problems on the network, especially in protected areas.
	Enhancing landcape quality through new schemes.
Cultural Heritage	Enhance the setting and condition of cultural heritage and historic features in the Company's ownership.
	Enhance the setting and condition of cultural heritage and historic features in proximity to the Strategic Road Network.
Biodiversity	Increasing the number of SSSIs in good or recovering condition.
	Interventions to support Nature Improvement Areas.

Cycling, Safety and Integration Fund

The SRN is an asset of enormous proportions. Inevitably this means that it runs close to, or in some cases through, local communities. On the one hand this means the SRN is well placed to provide the connectivity needed by individuals and business, including through its connections to other modes of transport. On the other it means the network has the propensity to sever pedestrian and cyclist access routes, and even whole communities. Another even more important consequence of the network's scale, particularly with the number of vehicles carried at high speeds, is the impact on safety. We have therefore ring-fenced £250 million in a Cycling, Safety and Integration Fund to help deliver improvements in these areas through both bespoke interventions, as well as enhancements to new and existing schemes.

Cycling

The SRN does not just impact on motorists but on other road users, especially cyclists. We want the road network to offer better provision for the needs of cyclists. This means, amongst other things, more segregated cycleways alongside trunk roads and safer junctions and crossings.

To promote a more cyclist-friendly network, we are committing around £100 million of this fund to deliver improvements for cyclists at 200 locations on the network.

Safety

The devastating impact of serious and fatal accidents mean that network safety remains the number one consideration of road users and a priority for those tasked with developing and managing the SRN. There is also a considerable economic cost associated with collisions, estimated at £15 billion annually to the UK economy. The long term strategic vision for the network set out in this first RIS includes an aspiration to eliminate accidents on the SRN that result in death or serious injury. To further this aspiration, around £105 million will be spent on additional measures to boost safety that extend beyond the high safety standards already in place.

Integration

The SRN is just one part of a multi-modal transport network that works best when its component parts are well connected and working in harmony. Such circumstances

Cycling, Safety and Integration Fund: areas targeted and potential interventions	
Cycling	600 potential areas identified for specific cycling improvements. Work ongoing to carry out feasibility assessments and develop schemes. 200 schemes expected.
Road Safety	Fence to fence maintenance (enhancing safety measures at the same time as planned maintenance to reduce overall costs)
	Road safety improvements (junctions, speed restrictions, anti-skid measures).
	Road safety innovation – HGV incident protection, new car technology etc.
Integration	Accessibility – Pedestrian crossings, bridges, disbled access etc.
	Modal Integration – to fund better links with local networks, e.g. Park and Rides, Station access.

offer users real choice and improved door-to-door journeys. The SRN plays a key role in integrating this overall network helping connect local transport networks, our international gateways, rail-freight interchanges and, in the coming years, HS2 stations. A further, no less important, aspect of integration is focused on accessibility and inclusion, including issues such as community severance, access for pedestrians and othe non-motorised road users. Our network must be easier to get over, under or around to ensure that roads serve communities instead of severing them. Around £45 million of this fund is therefore dedicated to improving all elements of integration.

Innovation Fund

The RIS *Strategic Vision* sets out the potential that technology holds to transform transport by exploiting novel and innovative technologies and techniques in road construction and management. This has the potential to revolutionise what it means to travel on our roads.

Improved gathering and dissemination of data, together with better information provsion, will lead to better informed drivers and improved journeys, while in the longer term, increasing automation can enhance road safety and efficiency and reduce congestion.

With Smart Motorways we have already begun to see the positive effects that innovative approaches can have. But that is just the tip of the iceberg as we move towards a technology-led SRN. To help us get there, we have created a £150 million Innovation Fund to allow the Company to place a greater emphasis on the future technologies that will positively impact users and the network. This will involve the full range of research, development, demonstration and deployment activities, whilst also supporting British innovation and capitalising on progress made internationally. The Government is determined that we are at the vanguard of road-sector innovation.

As stated in the Performance Specification, the Company will set out its approach to innovation, technology and research by the end of the first year of the Road Period, and this will include detailed plans for how the Innovation Fund will be spent.

Indeed, through the Innovation Fund we anticipate investing almost £40 million to further support the development of driverless and co-operative vehicles technologies, around £15 million to improve the information and data that helps drivers plan their journeys and over £20 million to work with academics and small to medium enterprises on research and development.

Innovation Fund: areas targeted and potential interventions	
Safety Technology	Investigate collision avoidance and casualty reduction through research into e-systems.
	Trials and deployment of new tunnel safety systems (e.g. Hindhead acoustic incident detection).
Improving Infrastructure	Research the use of data to improve asset management.
	Centralised lighting management system.
	Investigate ways to use technology, new surface materials and modular construction techniques effectively to improve performance.
	Roll-out alternative vehicle detection technologies, such as side-fire radar or Low Cost Congestion Detection technologies, to reduce on-road intervention.
Data and Information	Investigate the use of improved location technologies such as Galileo and 4G/5G in information provision.
	Provision of better information to customers. Roll-out an above-ground communication system to provide a platform for in-vehicle system developers. Target M2, M20, M25, M26.
	Expand the market potential for journey and customer specific information services.
	Provision of fuel price information on the motorway network.
New (Emerging) Technologies	Incentivise the advancement of in-vehicle, vehicle-to-vehicle, and vehicle-to-infrastructure technologies, through the provision of roadside wifi. Target M2, M20, M26, M25.
	Trial Co-operative Vehicle Highway Systems (CVHS) on the strategic road network including investigating HGV Platooning systems.
	Trial driverless vehicles on the strategic road network.
	Development and roll out of technologies to support Expressways.
Support to Sustainable Operation	Development of Smart Motorways operational algorithm to optimise air quality and journey times.
	Trial of electric vehicle charging loops embedded in the road surface including vehicle to vehicle.
	Technology enabled demand management.
Innovation and Technical Development	Promote the use of innovation to support the transformation programme in the Company.
	Collaborate with Transport Catapult, Universities and SME organisations to take advantage of innovations or support development on the strategic road network.

Air Quality Fund

Overall, air quality has improved significantly in recent decades. But we recognise there is more to be done. Vehicles that drive on our network are a major source of air pollution at the roadside. It is essential that we work with others, as many people and organisations, from the public to local councils to central Government, have an important role to play.

Government is playing its part, investing heavily in measures to reduce emissions. We have committed billions to increase the uptake of ultra-low emission vehicles, sustainable travel and green transport initiatives, all of which will help improve air quality. These measures will address both particulate matter and NO_X (oxides of nitrogen).

But we want to go further. In this Road Period, we are committing £100 million of funding in addition to the separate Environment Fund, specifically to target improvements in air quality. Interaction with local authorities will help shape how this fund is used and inform how the Company addresses this difficult but vitally important issue.

It is expected that this fund could tackle a number of locations and the Government is already in the early stages of pioneering this approach in Manchester, working with the local transport authority.

Growth and Housing Fund

Given the number of people and the amount of freight the SRN carries, not to mention its nationwide coverage, the SRN is vital to England's prosperity. In combination with local roads and other modes of transport, the SRN is an enabler of job creation and new homes thanks to its role in linking people and places.

We want to ensure that the Company is sufficiently equipped to play its part in realising growth in different parts of the country and has flexibility to engage positively with development plans and proposals that may still be at a formative stage. To enable this, we are establishing a £100 million Growth and Housing Fund.

This fund will provide enough leverage and flexibility for the Company to engage positively in progressing schemes on the SRN required to unlock strategic growth. It is to supplement – not substitute – developer contributions and other existing sources of funding. The fund will normally only be applicable to investment on the SRN that:

- Unlocks major housing development (for example, in the order of 5,000 new homes or more) or key economic growth; and
- Involves multiple developers; and
- Is funded – at least in part – by developer contributions.

We are already aware of some proposed SRN schemes where the Company may decide to draw on the Fund to supplement development contributions and other sources of funding. For example, we will consider adding capacity around junction 15 of the M4, in support of housing and employment development in Swindon, with appropriate support from local developers.

As with the other ring-fenced funds, it is vital that the Company works closely with local planning and highway authorities, the Homes and Communities Agency and Local Enterprise Partnerships in order to prioritise where SRN schemes are required to unlock growth. In this case the Company will also work with private developers, in negotiating the details of investment required.

7. Statement of Funds Available

This Statement of Funds Available outlines the level of funding for the Company to deliver the objectives set out in the Investment Plan and the Performance Specification.

Funding is outlined up to 2020/21, in line with the Spending Round 2013 (SR13) settlement, but the length of the first Road Period will be 5 years, ending in 2019/20. As a result, funding for 2020/21 is in fact the first year of the second Road Period. This funding is committed in the same way as that for the first Road Period, and a large part of its capital spend will be used to deliver the work set out in the Investment Plan; however a new Road Investment Strategy will cover the period from 2020/21 onwards. This additional certainty should assist planning at the company and among suppliers, by preventing the 'saw-tooth' funding profile seen in some regulated sectors.

In common with other areas of Government spending, resource budgets were set for 2015/16 in the 2013 Spending Round. The Government has therefore agreed a total 2015/16 resource budget of £1,025 million for the Company, including £285 million for maintenance. However, as an exception the Government also agreed future budgets for resource maintenance spending up to 2020/21, reflecting the importance of the Company taking sound maintenance decisions in line with good asset management principles. Resource funding for other areas in 2015/16 will be £740 million[3]. Remaining areas of resource funding for future years will be agreed at the next spending review in the usual way.

Statement of funds available, £m								
Sub Category	Spending Round 2013 Settlement Period						RIS 1 Total (2015/16 to 2019/20)	SR13 Total (2015/16 to 2020/21)
	RIS 1 Period					RIS 2 Period (Part)		
	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21		
Capital enhancements	1,064	1,101	1,509	1,789	2,230	3,114	7,693	10,807
Capital renewals	718	726	732	738	744	750	3,658	4,408
Resource maintenance	285	290	295	300	306	311	1,476	1,787

3 Subject to minor technical adjustments relating to the accounting treatment of different income streams.

Note: As part of the SR13 settlement, it was agreed that the Company will have the flexibility to bring forward or defer up to 10% of its capital funding each year, to ensure that the capital funding profile is efficient. Therefore capital totals may be subject to change if this arrangement is utilised. Updated capital totals will be published annually in the Company's Delivery Plan (see below).

Ring-fenced Investment Funds

As described above in section 6, ring-fenced funding will be made available within the capital allocation for specific areas, namely: Environment, Cycling, Safety and Integration, Innovation, Air Quality, Growth and Housing. This will be subject to maximising the value for money of interventions.

Fund, £m	RIS 1 Total (2015/16 to 2019/20)	SR13 Total (2015/16 to 2020/21)
Environment	225	300
Cycling, Safety and Integration	175	250
Innovation	120	150
Air quality	75	100
Growth and Housing	80	100

Other sources of funding

In addition to the funding in the RIS outlined above, the Company will be expected to secure contributions from third parties for certain schemes. These other sources of funding include developers and other sources of public sector funding such as the Local Growth Fund, EU funding and funding from Local Authorities.

The Department expects the Company to obtain third party contributions where possible. The exact amount will be subject to negotiation between the Company and the other parties.

Efficiency Savings

Transforming the Highways Agency into a Government owned company with a long term capital funding settlement will enable it to plan for the long term, delivering significant cost savings. These efficiencies as are over and above those that the Highways Agency is currently delivering as part of the SR10 settlement.

The major schemes and other spending proposals described above in the Investment Plan include capital efficiencies to be made over the first roads period, 2015/16-2019/20. These are based on efficiency assumptions of 2-3% year on year for enhancements and 2-4% year on year for renewals. Overall, the Company will commit to delivering total capital efficiency savings of £1.212bn over the first roads period.[1]

Efficiency savings are included in the estimated costs of the projects in the Investment Plan. Any further efficiency savings will be recycled into additional projects.

1 Efficiency savings in nominal terms, based on the efficiency assumptions used to develop the Investment Plan. These proposed efficiencies, and the underlying cost modelling and assumptions have been reviewed by external consultants Arup/Oxera. In the event that the Investment Plan undergoes significant revision – for example, movement between funding lines or years – the efficiency assumptions that underpin this target may need to be revisited which might necessitate a change to the headline number.

Monitoring arrangements

The Strategic Road Network Monitor will scrutinise the Company's delivery of the RIS. The Company will develop and publish a Delivery Plan (to be updated on an annual basis) that will set out detailed cost baselines and delivery timescales for schemes which start construction in that year and estimated costs and delivery dates for schemes which will start in subsequent years. It will also set out the plans for delivering the Ring-fenced Investment Funds, ensuring that these represent value for money.

This will allow the Monitor to examine the Company's performance against the assumptions of cost and timeframes set out in the Delivery Plan. The Monitor will also scrutinise the delivery of the efficiency targets set out by the Company, as well as the other elements of the performance specification. Further information is set out in *Transparency for Roads* [DfT, October 2014].

Protocols

Protocols are a way of managing additional functions or activities which are not core to the Company's role as a strategic highways company. Many of these functions and activities are currently carried out by the Highways Agency on behalf of the Secretary of State, and it is the Government's intention that this should continue. The Company is therefore instructed to undertake the following protocols, managed within its overall funding envelope (subject to confirmation of resource funding at the next spending review). Current protocols include:

Salt stocks

The Company will continue to maintain a strategic salt stock as an emergency reserve for local highway authorities for winter maintenance. The Company will also manage the allocation and distribution of salt to local authorities.

Management of non-core estates

The Company will continue to have responsibility for inspecting, maintaining and managing certain estates on behalf of the Secretary of State, which are not core to the SRN. The most significant of these is the Historical Railways Estate, which includes approximately 3,500 legacy bridges, abutments, tunnels, cuttings, viaducts and similar properties associated with closed railway lines. The Company will be responsible for inspecting and maintaining these disused former railway structures on a risk and priority basis, making sure they are safe.

Abnormal loads

The Company will continue to be responsible for authorising the movement of abnormal loads within Great Britain and for planning routes for the movement of the largest and heaviest abnormal loads within England and Wales. This includes the management and maintenance of the electronic service delivery system currently used to plan and approve the routes of all abnormal loads on behalf of the Secretary of State.

Support of tolling concessions

The Company will be responsible for fulfilling the Government's side of the M6 toll and Severn Crossings concession arrangements.

This will include:

- Approving certain matters relating to the road e.g. traffic signing
- Incident liaison

Standards and Guidance

The Company will continue to develop, maintain and publish the standards and specifications used for the planning, design, construction, maintenance and operation of the SRN. Where these publications also meet the needs of the devolved administrations of the Welsh Assembly Government, Transport Scotland and the Department for Regional Development Northern Ireland, they will be developed with their support. These documents are also available for use by other highway authorities and infrastructure operators, both nationally and internationally.

Department for Transport

Part 3
Performance Specification

Contents

Executive summary

Roads are fundamental to modern life, keeping people connected and the economy flowing. Roads are also the backbone of our transport system: 90% of passenger journeys and almost 70% of freight movements are made by road, many of which are on the motorways and all-purpose trunk roads that make up the Strategic Road Network (the Network).

This Performance Specification, part of the Road Investment Strategy suite of documents, sets out what government wants from the Highways Agency's successor, Highways England (the Company), over the course of the 2015/16 – 2019/20 Road Period (the first Road Period). This is a step towards achieving our long term Strategic Vision for the Network. The Performance Specification is focused on the needs of road users and the country as a whole, and sets targets that we consider to be challenging, yet achievable.

In order to assess performance we have set a number of Key Performance Indicators. As well as these Key Performance Indicators, the Performance Specification has established a framework that requires the Company to provide Performance Indicators which give a more detailed view of the performance of the Company and the SRN. We have also outlined requirements of the Company and, over the course of this first Road Period we require the Company to improve existing measures and develop new ones for future Road Periods.

Overall, we require the Company to focus its efforts on eight areas during the first Road Period, and work to be:

- **Making the Network safer** by continuing to reduce the number of people killed or seriously injured on the Network. The target of a 40% reduction against the 2005–09 average baseline by the end of 2020 is a stretching one; the Company will need to work proactively to find innovative ways to improve safety.
- **Improving user satisfaction** so that, by 31 March 2017, 90% of people responding to the National Road Users' Satisfaction Survey (NRUSS) are fairly or very satisfied – a score which should be maintained or improved during the rest of the first Road Period. The Company will be undertaking a significant programme of maintenance and enhancement, and we know that satisfaction with the management of roadworks is a major issue for road users, so this will be a challenging target. Transport Focus (the newly established road user Watchdog) will develop new satisfaction measures to replace NRUSS during the first Road Period.
- **Supporting the smooth flow of traffic** to minimise delay and inconvenience to road users. We want the Company to show what it is doing to reduce disruption caused by planned activities

and unplanned incidents, including:

  - Addressing the impact of planned activities; we require the Company to ensure that, during the first Road Period, at least 97% of the Network is available to traffic. While this figure is lower than the Highways Agency is currently achieving, the target reflects the impact that the Investment Plan, which includes maintenance activities, will have on availability; and
  - Ensuring that at least 85% of incidents on motorways are cleared within one hour to minimise the impact of unplanned incidents.

- **Encouraging economic growth** by working to minimise delay on the Network. A well-managed Network is vital to economic prosperity, supporting the movement of goods and people, and helping to unlock development and housing sites. To reflect this, the Company will report on average delay, providing an indication of the drag on the economy that congestion on the Network is causing.
- **Delivering better environmental outcomes** by building on the progress that has already been made. There is currently no single indicator that can capture this and we want the Company to develop new, broader environmental metrics for the next Road Period. In the meantime, the Company will demonstrate the progress it is making to improve the environment by:
  - Mitigating at least 1,150 Noise Important Areas by the end of the first Road Period, to help improve the quality of life of around 250,000 people living and working near the Network; and
  - Demonstrating its commitment to the environment by working to halt the loss of biodiversity, with the aim that activity in the next Road Period delivers no net loss of biodiversity.
- **Helping cyclists, walkers, and other vulnerable users of the Network**, supporting a key government aim of enabling people to be more active by walking or cycling. We recognise that the Network can act as a barrier to achieving that aim which is why we want the Company to report on the number of new and upgraded crossings it delivers during the first Road Period.
- **Achieving real efficiency** by delivering total capital savings of at least £1.212 billion by the end of the first Road Period. Moving to a system which provides more funding certainty will allow the Company to deliver greater efficiencies. We require the Company to show how it has delivered savings and that it is delivering the Investment Plan in a timely manner.
- **Keeping the Network in good condition** by ensuring that at least 95% of the pavement does not require further investigation for possible maintenance. The Network is the single largest asset owned by government, and during the first Road Period the Company will be developing improved asset condition metrics for the Network. This will provide a step change towards a more rigorous assessment of the condition of the Network in future Road Periods.

The performance of the Company will be assessed by the Office of Rail Regulation as the independent Monitor, the new Watchdog and by the government. The Monitor will have a formal role, with responsibility for taking action, if required, to encourage improved performance. The Watchdog will also gather the views of road users to formulate advice for the Secretary of State.

Our aim for the Company is that, by delivering the Investment Plan, and through the transformation and continual improvement of its business, it will meet the aspirations and targets set out in this document.

The Statutory Directions and Guidance, along with the Framework Agreement, will include additional requirements that the Department for Transport has. These may include business performance measures which focus on how well the Company is acting as a business, rather than as a network operator. These measures and requirements are separate from those contained in this document.

Safety

Our focus is always on providing a safer network for all road users and reducing the number of casualties

SAFETY SAFETY

40%

Reduction in the number of people **killed or seriously injured** on the network

SAFETY SAFETY

User satisfaction

Customer satisfaction is a measure of overall performance across a number of areas, assessed through the National Road Users' Satisfaction Survey

Overall satisfaction of at least 90%

Traffic flow

Free-flowing traffic is essential and we have two KPIs to enable the evaluation of the Company's impact:

97%

Network availability at a minimum, to keep traffic flowing and reduce the impact of roadworks

85% **Motorway incidents** cleared within the hour

Economic growth

The SRN will support economic growth. We have focused on **average delay**, monitoring time lost per vehicle per mile to illustrate the cost of delay

Environment outcomes

Improving environmental outcomes is a key requirement of this Roads Investment Strategy, with a twin focus on the built and natural environment

1,150

Noise important areas, as identified by DEFRA, mitigated by the end of the first Road Period

Reducing net loss of biodiversity during the first Road Period to achieve no net loss during the second Road Period

Cyclists, walkers, and vulnerable users

The company will report on the number of new and upgraded crossings they deliver during this Road Period

Efficiency

We expect the Company to show how it is delivering the Investment Plan in a **timely and efficient manner** to save over £1.2 billion across 5 years

Network condition

During Road Period 1, the Company will develop new improved metrics for the condition for all aspects of the asset

95% **Of road surface – 'pavement'** – in adequate condition

1. Introduction

Roads are fundamental to modern living, keeping the population connected and the economy flowing. They make it possible for people to travel for work and leisure, and for businesses to transport goods and materials. Roads are also the backbone of our transport system: 90% of passenger journeys and almost 70% of freight movements are made by road. Many of these journeys use the Strategic Road Network (the SRN, or the Network), which consists of the nation's motorways and all-purpose trunk roads (APTRs).

Turning the Highways Agency (the Agency) into Highways England, a government-owned strategic highways company (the Company) will facilitate the development of a flexible and efficient organisation with the ability to realise the government's Strategic Vision for the SRN and become a world-leading network operator.

This Performance Specification, part of the Road Investment Strategy (RIS) suite of documents, sets out the government's expectations for the Company and the SRN. It draws on specific aspects of government's long term vision for the Network and we expect the Company to align its objectives with that.

Rather than setting out how the Company should deliver the Performance Specification, we want it to work in the most effective way possible, delivering value for money and taking the actions that it deems necessary to achieve our long term aims and balanced outcomes across the eight areas detailed below.

The Performance Specification is focused on, and designed to emphasise, the needs of road users and the country as a whole. It sets out the high level objectives that the government has for the Network during the 2015/16 – 2019/20 Road Period 1 (RP1). It also puts in place a framework to develop improved measures for future Road Periods. We have detailed eight areas, which broadly link back to the Strategic Vision, where we require the Company to be focused:

- Making the Network safer;
- Improving user satisfaction;
- Supporting the smooth flow of traffic;
- Encouraging economic growth;
- Delivering better environmental outcomes;
- Helping cyclists, walkers, and other vulnerable users of the Network;
- Achieving real efficiency; and
- Keeping the Network in good condition.

Measuring success

In each area, we expect the performance of the Company and the Network to be assessed against:

- Key Performance Indicators (KPIs);
- Performance Indicators (PIs); and
- Requirements that will help to develop future strategy or performance measures.

This document includes text that provides the context for performance measurement, and our rationale for why we have included particular measures. The key details are set out in the summary tables for each performance area; these include the KPIs, PIs, and any Requirements that we have for each performance area during RP1.

Over the course of RP1 we require the Company to build its capability and continue to develop the data required to understand the impact of the breadth of its activities.

Key Performance Indicators

KPIs are high level measures of performance; as outcomes in the areas set out above can be hard to measure directly, and in many cases are not entirely within the Company's control, we will measure outputs and activities, as well as outcomes.

An example is the KPI for safety, which is the number of people killed or seriously injured on the SRN each year. This will give us a key indicator of the Company's performance as it relates to safety.

Where appropriate, we have set specific targets in relation to each KPI (such as reducing the number of people killed or seriously injured by 40% by the end of 2020). In some cases, the target will be to reach a certain level by the end of RP1, and in others to maintain a standard or show improvement. For some KPIs there will be no associated target, for example, reporting on the average delay on the SRN. It will be important for the Monitor to assess performance in order to understand trajectories and outcomes, and for baselines to be set for possible future targets.

Where Ministers consider that, due to unexpected issues coming to light, it would be appropriate to make a small-scale adjustment to one or more of the Performance Specification targets (such as a change to the way in which a target is measured, or a small relaxation of a target), this change may be made without a formal variation to the RIS through the change control procedure described in the Licence.

Performance Indicators

The KPIs by themselves do not, and cannot, fully reflect how the Company and the Network are performing. Accordingly, the Company will provide suites of broader PIs to give additional information on their performance.

We are specifying a number of PIs that the Company must provide, and the Monitor may propose additional ones. It will be for the Company to determine any further PIs and to decide whether to apply targets to any or all of them.

Requirements

The Performance Specification also sets certain Requirements. These may be for the Company to develop a strategy or a new, more effective, metric, or gather information on an issue. In many instances, such as developing broad environmental outcome based metrics, the Requirements will help to inform the setting of KPIs for future road periods. We require that progress in delivering these Requirements is reported annually at the very least.

Where the requirements relate to the development of new metrics, they should be used as PIs during any period of validation and while a baseline is established. The Company should clearly set out its delivery timetable for any new metrics, along with interim milestones, so that progress can be monitored. The Department for Transport (the Department) may choose to replace or supplement an existing KPI, or PI, with a newly developed metric during RP1 or wait to include it in the RIS for RP2[1] or RP3 depending on the time needed to establish it. In the event that the Department wishes to change, or add, a KPI, PI, or Requirement this will need to be agreed through a process of change control.

Operating the performance regime

We have established a new governance framework, which will allow the Company's performance to be assessed, and provide the sanctions and incentives to encourage the right behaviours. This framework includes the Office of Rail Regulation (the Monitor) and Transport Focus (the Watchdog) who, with the Department, will be involved in assessing the Company's performance and a high level of collaboration between all four will be required. In developing a RIS for a future Road Period, the Monitor will advise whether the outcomes sought are reasonable, based on the amount of money available, and whether the Company's proposals deliver these outcomes in an efficient manner. The Watchdog will gather the views of all road users and use these to formulate advice for the Secretary of State, as well as assisting the Monitor in assessing the performance of the Company.

We require the Company to collect data to report on the KPIs and PIs and to evaluate the extent to which its activities have driven changes in performance. The Monitor will then examine the efficiency and performance of the Company, independently and without bias, taking into account the analysis and explanation provided. For the avoidance of doubt, the Monitor should primarily focus on the summary tables in the document, and the PIs provided by the Company, when considering what to assess.

The rules on how the data relating to the KPIs and existing PIs will be gathered and analysed will be set out in an Operational Metrics Manual, which the Company will issue in advance of it starting operations, following prior agreement with the Department.

The Monitor will issue guidance that sets out how they monitor the operational and financial performance of the Company. The Watchdog may also issue guidelines setting out any additional requirements that it has.

The performance of the Company may lead to some form of reward or sanction. The details of this regime will be agreed and set out in advance of the Company starting operations. The Monitor will have a formal role to take action to encourage improved performance. In exceptional circumstances, the Department has the power to vary the Company's Statutory Directions and Guidance, make statutory interventions, or change governance. We envisage the development of a collaborative relationship between the Department, Watchdog, Monitor, and the Company, with potential problems being discussed and addressed in a timely manner. If elements of the Performance Specification are not met, the Monitor will be able to use a range of sanctions to encourage better performance.

1 Based on current assumptions for RIS development, new metrics would need to be available by 31 March 2017 to be used in the 2020/21 –2024/25 Road Period (RP2).

2. Indicators and requirements

This chapter sets out the KPIs, and a subset of the PIs, that will be used to monitor and understand the overall performance of the Company and the SRN, as well as the Requirements made of the Company during RP1.

Making the Network safer

There has been a general downward trend in the number of people killed or seriously injured (KSI) on the Network. We can be proud of the fact that the roads that make up the SRN are among the safest in the world. The human and economic cost of incidents is still too high and we want to do better. Our ultimate aspiration is for no deaths or serious injuries as a result of incidents on the SRN.

We expect the Company to proactively undertake activities to make the SRN ever safer. The Company cannot do this by itself. Concerted action by vehicle manufacturers, enforcement agencies, the emergency services, government and other partners, as well as the Company is required to meet our aspiration. It will also require changes in driver behaviour, improvements to road and vehicle technology, along with investment in our roads. This RIS provides the impetus for the Company to act to help achieve our aspiration.

Measuring success

We have opted to use the number of KSIs each year on the SRN as the clearest indicator of road safety outcomes in a given time period. This will not exclude the Company from taking additional factors and trends into consideration when evaluating the safety of the SRN.

We consider that the Company can support the ongoing trend of reductions in the number of KSIs over the next five years, to help achieve an overall reduction of at least 40%, relative to the 2005–09 average baseline by the end 2020, as set out in the Strategic Framework for Road Safety[2]. This is equivalent to helping prevent over 2,500 unnecessary deaths or serious injurys on the SRN during RP1. The Company must report against this target, including variances to the trajectory, and evaluate and demonstrate how their activities have contributed towards the outcome.

Accordingly, the Company should provide a set of PIs to inform what they are doing to make the SRN safer, and support detailed evaluation. These should include:

- The number of incidents on motorways, along with causation factors. Casualty numbers and causation factors on the APTR should also be reported. This will help

2 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/8146/strategicframework.pdf

the Company gain a better understanding of where incidents occur and determine how best to prevent them; and

- The Company should work with the Department and other highway authorities to identify the most appropriate road safety assessment rating system for assessing the comparative safety of our roads. This will build upon, but not be limited to, existing IRAP[3] star rating systems such as EuroRAP[4]. Once identified, the Company should develop and implement the chosen programme as appropriate. This work should feed into subsequent Route Strategies[5] and influence the development of the next RIS.

Road Safety – summary table	
KPI	The number of KSIs on the SRN.
Target	Ongoing reduction in Network KSIs to support a decrease of at least 40% by the end of 2020 against the 2005–09 average baseline.
PI	Suite of PIs to illustrate the impact of activities undertaken by the Company, and the influence of external factors with regard to making the SRN safer. These should include: ● Incident numbers and causation factors for motorways; ● Casualty numbers and causation factors for ATPRs; and ● IRAP based road safety investigations, developed in conjunction with the Department, to feed into subsequent Route Strategies.

3 http://www.irap.net/en/about-irap-3/methodology
4 http://www.eurorap.org/about-eurorap/
5 England's motorways and APTRs are covered by 18 Routes Strategies. Each Route Strategy will allow the Company to identify existing performance issues, anticipate future challenges, assess asset condition and operational requirements, plan investment, encourage participation from local and regional stakeholders, and understand local priorities. The Route Strategies will form a key building block for the development of the next RIS.

Improving user satisfaction

User satisfaction will reflect the success of the Company in delivering better performance in many of the other areas. Our research[6] shows that road users want to complete their journey safely and in the time they have allocated for it, with minimal stress and minimal need for decision-making. A positive journey experience is facilitated by good infrastructure, efficient road management, and the safe and effective provision of information.

The investment we are making on the Network will challenge and raise users' expectations of their experience of the SRN, and the Company needs to ensure that they are not disappointed. When planning and implementing initiatives to improve the SRN, the Company should take steps to ensure that road user expectations are met. In some instances this will mean setting realistic expectations about scheme benefits and the impact of any associated disruption arising from implementation (eg roadworks). It will also mean managing road user expectations as situations evolve, for example, during unpredictable disruption (eg incidents or poor weather). We know that road users value accurate and timely information when they encounter unexpected disruption as it helps them to re-plan both their journeys and the activities that depend on them.

The Company will also benefit from the findings of the Watchdog which will gather and present the views of the full range of users of the SRN, including vulnerable users, and the freight and logistics sector. This will provide a more comprehensive picture of what users think about the SRN and how the Company can raise user satisfaction; this should help it respond more directly to users' concerns. The Company should take steps to improve satisfaction, and should demonstrate how it is doing this.

Measuring success

The main measure of user satisfaction at the moment is the National Road Users' Satisfaction Survey (NRUSS). We have adopted a target of improving the overall NRUSS score to 90% by 31 March 2017 and then maintaining it to at least that level over the remaining years of RP1. The Company should report on progress, and demonstrate and evaluate how its actions are supporting the improvement in satisfaction.

While overall user satisfaction[7] with the SRN has remained high since 2011, there has been a downward trend. Over RP1 the Company will undertake a significant amount of maintenance, renewal, and enhancement work. This increased activity, which is necessary to deliver a better Network for the future, may well exacerbate the downward trend in satisfaction in the short term. Therefore, we consider the target to be a challenging one and the Company will need to be more proactive and innovative in order to meet it.

Accordingly, the Company should provide PIs to give more detailed information about user satisfaction, and support detailed evaluation.

6 See Roads Reform Social Research Programme Synthesis of Key Findings, November 2014, and Understanding Road Users; Wave 2 Qualitative Research, May 2014, for details of drivers of road user satisfaction.

7 The five areas of satisfaction are: journey time, roadworks management, general upkeep, signage and safety.

Measuring user satisfaction in the future

As part of its responsibilities the Watchdog will, with stakeholder input, undertake a thorough review of the basis on which user satisfaction is assessed, and the factors that influence this. The Watchdog will investigate how best to develop new surveys that provide a more accurate picture of road user needs and wants, and the Company should support the Watchdog in this work.

We expect that the new surveys will be developed for use during RP1 and initially run in parallel with the NRUSS to ensure that the results are consistent. The new surveys should be ready to replace the NRUSS by the start of RP2. They may be adopted earlier if the Watchdog, the Monitor, the Department and the Company feel it is sensible to do so.

User Satisfaction – summary table	
KPI	The percentage of NRUSS respondents who are Very or Fairly Satisfied.
Target	Achieve a score of 90% by 31 March 2017 and then maintain or improve it.
PI	Suite of PIs to provide additional information about the performance of factors that influence user satisfaction.
Requirements	Demonstrate what activities have been undertaken, and how effective they have been, to maintain and improve user satisfaction. To support the Watchdog as it develops replacements for the NRUSS.

Supporting the smooth flow of traffic

Road users expect the SRN to provide appropriate travel speeds and consistent journeys; congestion on the SRN impacts negatively on the economy, on the experience and lives of road users, and on the environment. We also know from the NRUSS that of the five key features of a journey that are measured, roadwork management, followed by journey time, score most poorly. The Company can and should work to tackle the congestion that can be predicted, such as cyclical increases in demand levels (for example, during the peak periods, or at the start or end of holidays), or through planned roadworks. We recognise that unpredictable congestion caused by, for example, incidents or extreme weather may be more problematic, due to their uncertain nature and impact on journey times. While such incidents may be outside the control of the Company, how it deals with them can impact on congestion and journey times. Therefore we have chosen two KPIs: Network availability and time taken to deal with unplanned incidents, to focus attention on issues which are important to road users and are within the Company's control.

- Since 2011, availability, excluding unplanned incidents on the SRN, has varied between 98% and 99%. During RP1 the Company will undertake a significant programme of maintenance, renewals, and enhancements; we recognise that this will affect network availability. That said, we also require the Company to deliver the programme of work we have set out in the Investment Plan while minimising negative impacts and keeping traffic moving. As such, we are setting a threshold for availability to help the Company balance these priorities. Setting the threshold too high will discourage the Company from delivering investments, while setting it too low will cause unacceptable disruption and delay. The Company should report on the percentage of the SRN that is available and act in such a way that lane availability does not fall below 97% in any given rolling year. A lane is considered unavailable if it is closed to traffic because of planned roadworks. This measures the extent of roadworks and so incentivises the Company to plan these works in a way that minimises driver disruption, whilst reflecting the impact of the Investment Plan. More broadly we require the Company to plan and deliver roadworks in a way that minimises inconvenience to road users.
- Traffic Officers play an important role in keeping traffic moving; helping road users in the event of breakdown or collision and clearing debris from the motorways and returning the road to use. The Company should demonstrate that it is clearing incidents as quickly as possible by reporting on incident management times. In addition, in line with the CLEAR (Collision, Lead, Evaluate, Act, Re-open) Initiative[8], the Company should demonstrate that it is working with the other emergency responders including the Police, Ambulance, and Fire and Rescue Services to improve incident response.

8 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/246620/0354.pdf; http://library.college.police.uk/docs/CLEAR-Aide-Memoire-2012.pdf

The Company should also provide a suite of PIs to help inform and evaluate what it is doing to improve traffic flow, though we recognise that several factors, such as traffic volumes, are not within their control.

These should include a PI or PIs to demonstrate the reliability of journey times that is different from that currently used by the Agency.

Traffic Flow – summary table	
KPI	*Network Availability:* the percentage of the SRN available to traffic. *Incident Management*: percentage of motorway incidents cleared within one hour.
Target	*Network Availability*: Maximise lane availability so that it does not fall below 97% in any one rolling year. *Incident Management*: At least 85% of all motorway incidents should be cleared within one hour.
PI	Suite of PIs to illustrate the impact of the activities undertaken by the Company, and the influence of other external factors, on traffic flow. This should include, at a minimum, reliability of journey times.
Requirements	Report annually on how the Company has minimised inconvenience to road users through roadworks over the previous year. Demonstrate that it is working effectively with its partners to improve incident response.

Encouraging economic growth

There is strong evidence that transport investment, including in roads, can improve productivity and GDP[9]. The SRN is a major facilitator of economic growth and having roads that meet the needs of all users, especially the freight and logistics sector, is vital for economic prosperity.

The SRN supports the flow of goods and freight, improving productivity and competitiveness, as well as helping to unlock key housing and economic development sites. In 2014 the World Economic Forum[10] ranked British roads 30th in the world, a fall of six places from the previous year. Free flowing transport networks support economic growth nationwide. Through the Route Strategies, the Company should identify the constraints to economic growth that the performance of the SRN could help alleviate and identify how future delivery and investment plans might address them.

Measuring success

Many of the effects of a well-functioning transport network are indirect and can be difficult to measure. We have, therefore, chosen to measure average delay to provide an indication of the drag on the economy that poor performance on the Network brings. Given that there are many factors that influence average delay, including the performance of the economy as a whole, some of which are not within the Company's control, we do not consider it appropriate to set a target for this measure in RP1, but the Company should act in a way that will minimise delay as far as possible.

The Company should provide a set of PIs to demonstrate and evaluate what it is doing to support the economy. These should include PIs to:

- Show how the Company is playing its role in the planning system as the Company will be inheriting the Agency's status as a major statutory consultee in the planning process;
- Help represent and support business users. These can include looking at individual driver delay on gateway routes[11] to represent service experience for importers/exporters and international travellers; and
- Demonstrate that the Company is supporting our ambition to increase the amount of departmental and public sector money spent with small and medium sized enterprises, and meeting government targets as agreed with the Department.

The Company will be undertaking a substantial programme of work over RP1, working with key suppliers in the construction sector, as it delivers the Investment Plan. Given the leading role that it will play, we want the Company to build on the good work that the Agency has started in supporting the five goals set by Government

9 Gemmell, N., Kneller, R., & Sanz, I. (2012). Does the composition of government expenditure matter for economic growth?

10 http://reports.weforum.org/global-competitiveness-report-2014-2015/rankings/

11 Routes linking major population centres, or business and manufacturing sites, with the most important ports and airports, and potentially strategic rail freight interchanges.

in Construction 2025[12], the industrial strategy for construction:

- People – an industry that is known for its talented and diverse workforce;
- Smart – an industry that is efficient and technologically advanced;
- Sustainable – an industry that leads the world in low-carbon and green construction exports;
- Growth – an industry that drives growth across the entire economy; and
- Leadership – an industry with clear leadership from a Construction Leadership Council.

The Agency's Roads Academy offers an innovative development programme that aims to drive improvement across the whole roads industry, to act as a catalyst for significant change in how the industry thinks, behaves, and performs to help meet future challenges and opportunities. We require the Company to continue to deliver the Academy programme across the industry.

By 31 March 2016 the Company should also set out its approach to innovation, technology and research funded through the Investment Plan. This will allow the Company to take advantage of new innovations, and respond to technological progress, by supporting a wide range of research, development, demonstration, and deployment activities.

Economic growth – summary table	
KPI	Average delay (time lost per vehicle per mile).
Target	No target set.
PI	Suite of PIs to help demonstrate and evaluate what activities have been taken to support the economy. These should, at a minimum, include metrics on: ● Being an active and responsive part of the planning system; ● Supporting the business, and freight and logistics sectors; and ● Helping the government support small and medium sized enterprises.
Requirements	The Company should report on average delay. Actively support the Construction 2025 goals. Deliver the Roads Academy programme across the industry. Develop its approach to innovation, technology, and research and agree an implementation plan by 31 March 2016. Through Route Strategies identify constraints to economic growth that the performance of the SRN could help to alleviate and identify how future delivery and investment plans might address them.

12 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/210099/bis-13-955-construction-2025-industrial-strategy.pdf

Delivering better environmental outcomes

A variety of environmental issues are affected by the SRN, including noise, carbon dioxide, and other greenhouse gas emissions, air quality, and biodiversity. In Action for Roads[13], and the response to the consultation on transforming the Agency into a government-owned company[14], we made a strong commitment to an ongoing improvement in environmental outcomes through the operation, maintenance, and improvement of the SRN; we require the Company to deliver this.

The Agency has already made significant progress in improving environmental outcomes. As a result of quiet surfacing, early relocation of affected species, and more intelligent design and landscaping, roads have less of an impact on the environment and surrounding areas than ever before. In some cases, like the A3 Hindhead Tunnel, the Agency have significantly improved the environment, and we want this to become the norm, rather than the exception.

Measuring success

At this stage, there is no single metric that can report on the overall condition of the environment with respect to the SRN. Accordingly, we require the Company to develop metrics to reflect its environmental performance. If possible this should support the government's aspiration to build natural capital[15] into the decision making process, and help demonstrate the aspirational goals of the Natural Environment White Paper[16].

Until this work is complete, we have chosen two important aspects of the environment to use as KPIs: Noise and Biodiversity.

- We know that noise is one of the biggest areas of complaint by communities, and exposure to elevated noise levels can adversely impact on people living and working near the SRN. It is also an area that is partly under the control of the Company to address, for example, through its assets such as low noise road surfaces and barriers. Investigating and mitigating at least 1,150 Noise Important Areas, as identified through the Defra Noise Action Plan[17], will help deliver a better quality of life to around 250,000 people as noise exposure is reduced.
- Biodiversity is intrinsically valuable. For example, it contributes to our economic and social wellbeing through food, fresh water, and clean air. Biodiversity also contributes to less obvious services such as protection from natural disasters, regulation of our climate, and pollination of our crops. We have an aspiration that the operation, maintenance, and enhancement of the SRN should move to a position that delivers no net loss of biodiversity. And, in the long term, the Company should deliver a net gain across its broader range of works. By 30 June 2015, the Company must

13 https://www.gov.uk/government/publications/action-for-roads-a-Network-for-the-21st-century
14 https://www.gov.uk/government/publications/transforming-the-highways-agency-into-a-government-owned-company-decision
15 https://www.naturalcapitalcommittee.org/natural-capital.html
16 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/228842/8082.pdf
17 https://www.gov.uk/government/publications/noise-action-plans-large-urban-area-roads-and-railways

publish a Biodiversity Action Plan to show how it will work with service providers to halt overall biodiversity loss, and maintain and enhance habitats and ecological networks. We require the Company to demonstrate progress against the Biodiversity Action Plan, to secure an ongoing annual reduction in the loss of net biodiversity due to its activities, with the aim that activity in RP2 delivers no net loss of biodiversity.

Our focus on noise and biodiversity as KPIs for RP1 will be complemented by work that the Company will undertake across a wide range of environmental issues. Accordingly, the Company should provide PIs to capture the broader range of work it is doing and support evaluation. These should include PIs for:

- Air quality: this is a major issue, with emissions from vehicles such as oxides of nitrogen, and particulate matter, having potentially harmful effects on human health and the environment. The Company should work with its partners to make progress on reducing the negative impacts on air quality which will support wider Government initiatives targeted at improving air quality; and
- Carbon dioxide, and other greenhouse gas emissions, for the Company and its supply chain as it operates, maintains and improves the Network. Changes in climate, and the financial and socioeconomic consequences of this change are increasingly well understood. The Company will need to demonstrate that it is playing its part in helping reduce carbon dioxide, and other greenhouse gas emissions, in line with current and future government targets[18].

We are also interested in the emissions of carbon dioxide, and other greenhouse gases that arise from the use of the SRN, though we recognise that this will depend on the types of vehicles that use it. In order to determine what vehicle emission levels from the use of the SRN are, the Company will need to develop an appropriate methodology for a new PI.

18 http://www.legislation.gov.uk/ukpga/2008/27/contents

Environment – summary table	
KPI	*Noise*: Number of Noise Important Areas mitigated. *Biodiversity*: Delivery of improved biodiversity, as set out in the Company's Biodiversity Action Plan.
Target	*Noise*: mitigate at least 1,150 Noise Important Areas over RP1. *Biodiversity*: The Company should publish its Biodiversity Action Plan by 30 June 2015 and report annually on how it has delivered against the Plan to reduce net biodiversity loss on an ongoing annual basis.
PI	Suite of PIs to provide additional information about environmental performance. These should, at a minimum, include: ● Air quality; and ● Carbon dioxide, and other greenhouse gas emissions for the Company and its supply chain that occur as they carry out work on the SRN.
Requirements	Demonstrate what activities have been undertaken, and how effective they have been, to improve environmental outcomes. The Company should develop metrics covering broader environmental performance. These should include: ● A new or improved biodiversity metric; and ● Carbon dioxide, and other greenhouse gas emissions arising from the use of the Network.

Helping cyclists, walkers, and other vulnerable users of the Network

The SRN provides connections between our towns and cities, and to other modes of transport, through links to stations, rail freight interchanges, ports, and airports. Over time as our cities and towns have grown, in places the Network can sometimes act as a barrier. In some instances, roads were built and developed with insufficient attention to keeping communities together, reducing opportunities for cycling and walking. We have a strong desire to fix historic problems, and prevent new barriers emerging.

Government has also stated that it wants to enable choice so people can be more active by walking or cycling. Accordingly, although some vulnerable users are not allowed on motorways, the Company should seek to facilitate the safe movement of vulnerable users across and alongside the SRN to address these barriers. In addition, we require the Company to undertake work to deliver sustainable and equitable outcomes to meet their Public Sector Equality Duty[19] as set out in the Equality Act 2010.

Measuring success

At present, the metrics for establishing how well the Company is doing to make the SRN better for cyclists, walkers, and other vulnerable users are very limited in number and scope. Therefore we require the Company to develop new metrics for future Road Periods, to help demonstrate that it is supporting the government's aspiration for improving provision for cyclists, walkers, and other vulnerable users more generally on and around the SRN. In the interim, we are using the number of new or upgraded crossings provided for cyclists, walkers, and other vulnerable users as a KPI.

We recognise the risk that a limited metric such as this may result in unwanted outcomes that do not encourage more cycling and walking. As such, we have not set a target for this KPI in RP1. We do not want the Company to focus exclusively on the provision of crossings; rather we want it to take action to help cyclists, walkers, and other vulnerable users of the Network. In determining what interventions to make, and evaluating their success, we would expect the Company to seek views of relevant Non-Governmental Organisations.

In recent years, the Agency has made progress to support cyclists, walkers, and other vulnerable users. It has developed positive relationships with a wide range of stakeholders and offered strong leadership in the field of sustainable journeys. We want the Company to continue to build on this successful foundation.

We require the Company to provide PIs that measure the safety of vulnerable users. Improving safety on and beside the SRN for vulnerable users can help encourage people to use the facilities on offer.

19 Section 149 of the Equality Act 2010.

Cyclists, walkers and other vulnerable users – summary table	
KPI	The number of new and upgraded crossings.
Target	No target set.
PI	Suite of PIs to demonstrate the safety of the SRN for cyclists, walkers, and other vulnerable users.
Requirements	Report annually on the number of new and upgraded crossings. New indicators which demonstrate improved facilities for cyclists, walkers, and other vulnerable users. Report on how it is delivering against the Public Sector Equality Duty.

Achieving real efficiency

We are creating a new governance framework for the management of the SRN that will generate more cost savings for the taxpayer and deliver better outcomes for road users. By managing the Network within a governance framework similar to other infrastructure companies and operators the Company should be able to deliver significant efficiency savings, both in RP1 and beyond. We have agreed that the Company should look to deliver £1.212 billion savings on capital expenditure by the end of RP1. This is within the context of delivering long term efficiency savings of at least £2.6 billion as efficiencies ramp up during RP2.

As well as delivering efficiency, we want to ensure that projects are delivered on time. For that reason we are also monitoring the progress of work against planned timescales.

Measuring success

The Company should demonstrate that it is on track to deliver the agreed efficiencies. This will provide reassurance that it is able to deliver the Investment Plan in a timely and efficient manner. We have set two KPIs:

- Cost Savings made to deliver a total saving of at least £1.212 billion, by the end of RP1 on capital expenditure. The Company is required to demonstrate how these efficiencies have been achieved.
- As part of the Company's Delivery Plan[20], and annual updates to it, which sets out delivery of the Investment Plan, the Company will provide a forecast of how work will be progressed during the year ahead. The Company should report on actual progress relative to both the forecasts provided in the annual updates to their Delivery Plan and expectations set at the start of RP1.

The Company should also provide a suite of PIs that will provide more information on how it is generating savings while delivering the Investment Plan. These should include Cost and Schedule Performance Indicators (CPI and SPI respectively) for major schemes and programmes. These will demonstrate that schemes in construction are being delivered at or below the original cost estimate, and whether key points in the delivery of schemes have been achieved in line with planned timescales[21].

20 The purpose of the Delivery Plan is to structure the inter-related projects, programmes, and initiatives efficiently, translating when and how the strategic objectives will deliver the expected benefits. There will be a strong focus on delivery risk mitigation, and the way the business will manage the complexity of a five year plan.

21 As defined at the achievement of Project Control Framework stage 5.

Efficiency – summary table	
KPI	*Cost Savings*: Savings on capital expenditure. *Delivery Plan Progress*: progress of work, relative to forecasts set out in the Delivery Plan, and annual updates to that Plan, and expectations at the start of RP1.
Target	*Cost Savings*: Total savings of at least £1.212 billion[22] over RP1 on capital expenditure. *Delivery Plan Progress:* meet or exceed forecasts.
PI	Suite of PIs to demonstrate that the portfolio is being developed and the Investment Plan delivered in a timely and efficient manner. These should include the progress of major schemes and programmes in construction through reporting CPI and SPI for schemes at Project Control Framework Stage 5 and beyond.
Requirements	Demonstrate on an annual basis how efficiencies have been achieved.

22 This target figure is in nominal terms, and is based on the efficiency assumptions used to develop the Investment Plan. In the event that the Investment Plan undergoes significant revision – for example, movement between funding lines or years – the efficiency assumptions that underpin this target may need to be revised which might necessitate a change to the target.

Keeping the Network in good condition

The SRN is the single largest asset owned by government, supporting both national and local economies by facilitating the movement of people and goods. The SRN should be managed and maintained so that it is, at the very least, safe and serviceable. This is essential for the successful delivery of all aspects of the RIS. Good practice asset management can facilitate delivery of safer, higher performing, and more efficient infrastructure. We expect the Company to adopt good practice asset management.

Measuring success

There are five main classes of asset that make up the Network:

- Pavement (eg the road surface);
- Structures (eg bridges);
- Technology (eg overhead message signs);
- Drainage; and
- Geotechnical works (eg embankments).

At present, the only well-developed asset condition metric available is the Network Pavement Condition (NPC) indicator. Therefore, during RP1, we will use this metric as a KPI, which looks at the condition of the road surface, as a proxy for the asset condition of the SRN as a whole.

The NPC reports on the pavement condition as a result of deterioration of the SRN due to time, traffic and maintenance. It shows the percentage of the Network that needs no further investigation for possible maintenance, and we require the percentage to be maintained at 95% or above.
To achieve this, the Company will be undertaking a major programme of maintenance and renewal funded through the Investment Plan.

As this KPI only looks at pavement condition, the Company is required to provide a suite of PIs to give a better understanding of the condition of the SRN as a whole.

Improving the quality of information across all asset classes will be a key factor in ensuring that the best operational, maintenance, renewal, and enhancement interventions are made on the SRN. To provide reassurance that the Company is taking action to improve asset information quality over RP1, it is required to produce an implementation plan, by 31 March 2016, so that progress of this work can be monitored.

Given the limitations of the NPC, we also require the Company to produce new enhanced condition metrics that adequately reflect the technical condition of the main asset classes, the quality and completeness of supporting asset information, the residual asset life, and asset performance. We recognise that this is a major undertaking, therefore this work should be phased with enhanced condition metrics for pavements and structures being available by 31 March 2017, and then validated over the following two years. Other new enhanced condition metrics for technology, drainage and geotechnical work should be validated by 31 March 2020. The intention is that these new metrics will be used as PIs, or KPIs, in RP2, or RP3, as appropriate.

Network condition – summary table	
KPI	The percentage of pavement asset that does not require further investigation for possible maintenance.
Target	Percentage to be maintained at 95% or above.
PI	Suite of PIs to provide additional information on the asset condition of the SRN as a whole.
Requirements	Produce an implementation plan, by 31 March 2016, to show how the Company will improve asset information quality over RP1. Develop new condition indicators for: ● Pavements and Structures for agreement by 31 March 2017 and complete validation for these by 31 March 2019; and ● Technology, Drainage, and Geotechnical Works for agreement by 31 March 2018 and complete validation for these by 31 March 2020.

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