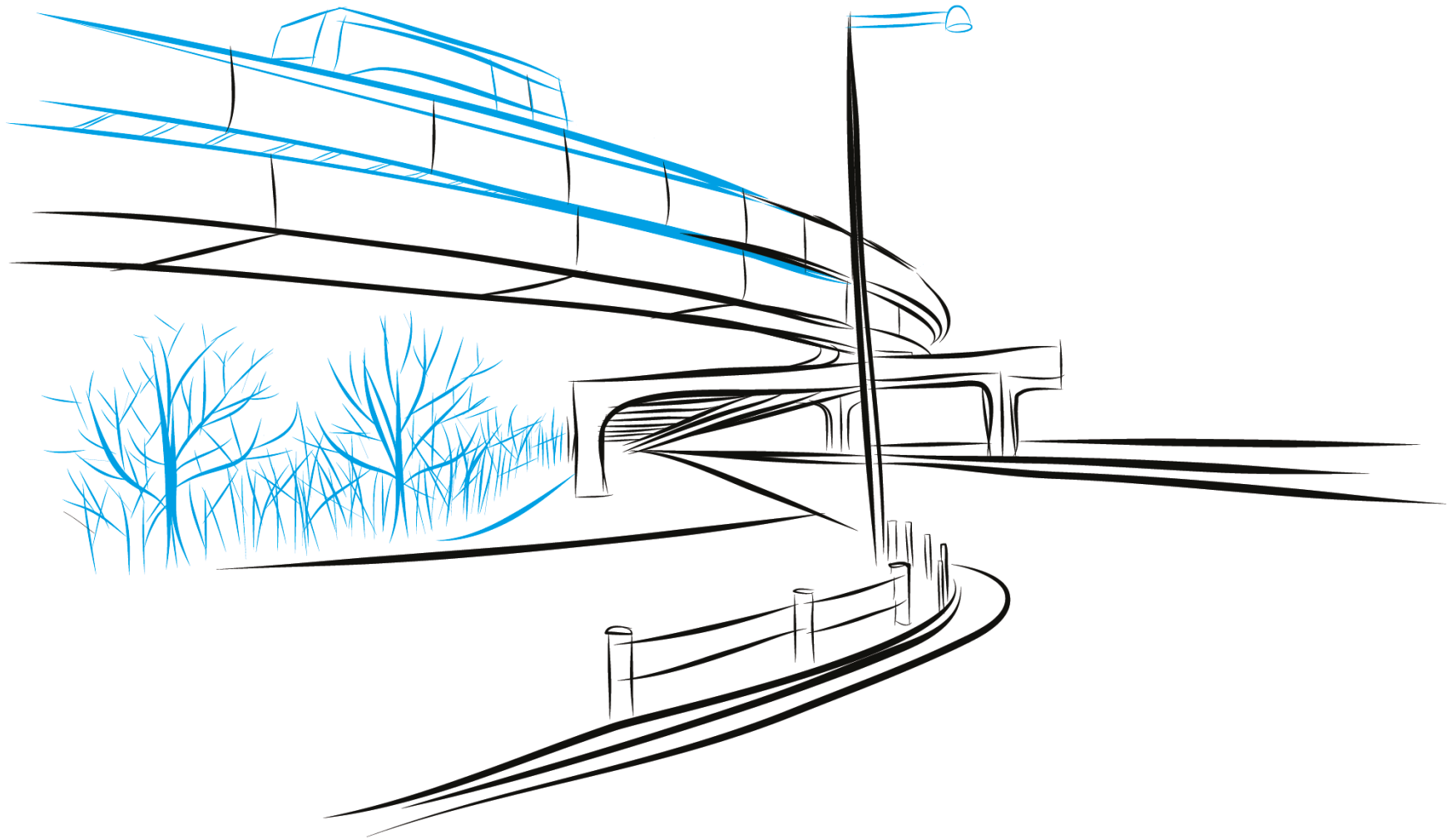


# Highways England

Strategic road network concept of operations





# Contents

## EXECUTIVE SUMMARY

<b>Overview</b> : Strategic Road Network Concept of Operations	5
--	---

## SECTION 1: DEMAND

<b>Key principle 1</b> : we will manage demand through influence rather than large-scale restrictions	10
---	----

<b>Key principle 2</b> : we will be accountable for our information	11
---	----

## SECTION 2: UTILISATION

<b>Key principle 3</b> : we will benchmark and drive increases in throughput	14
--	----

<b>Key principle 4</b> : we will promote sustainable transport	15
--	----

<b>Key principle 5</b> : we will promote the development of technology to improve operations	16
--	----

## SECTION 3: AVAILABILITY

<b>Key principle 6</b> : no one should be harmed travelling or working on the Strategic Road Network	18
--	----

<b>Key principle 7</b> : we will target our operational resources to incidents and situations which create most congestion	19
--	----

<b>Key principle 8</b> : we will minimise the adverse impact of roadworks on our customers	20
--	----

## SECTION 4: UNDERSTANDING

<b>Key principle 9</b> : we will seek out operational solutions to problems, as well as infrastructure ones	22
---	----

<b>Key principle 10</b> : we will be considerate of our customers	23
---	----

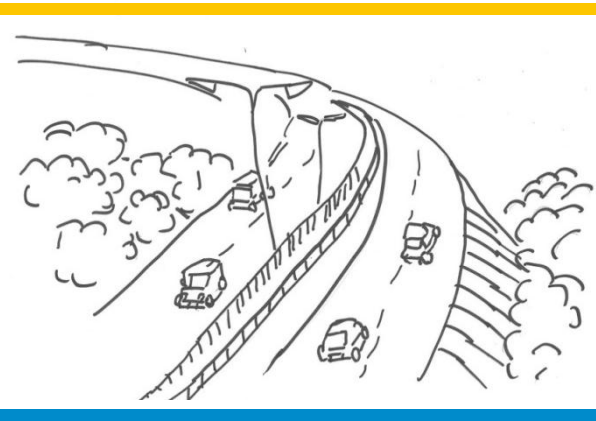


# Executive Summary

## Strategic Road Network Concept of Operations

### Context for this document

The Strategic Road Network (SRN) is one of the largest and most important pieces of infrastructure in the UK. It is at the core of our national transport system. Its many arteries connect our major towns and cities, ensure commuters make it to work every day and help millions of us visit our friends and families.



Our motorways and major A-roads are the most heavily used part of the national road network. They carry a third of all traffic and two-thirds of all freight, provide business with the means to get its products and services to their customers, give access to labour markets and suppliers and encourage trade and new investment. They are essential to the growth, wellbeing and balance of the nation's economy.

The Government's Roads Investment Strategy sets out an ambitious vision for the future of the network – by 2040 the network will be smoother, smarter and more sustainable. Our Strategic Business Plan describes how Highways England will enable better journeys on better roads and to improve service to our customers. Our Delivery Plan (2015-2020) sets out our planned activity in the medium term.

### What is a Concept of Operations?

A Concept of Operations is a document that describes in easily understood language how a system works from the viewpoint of those who operate it. In this case, the system being described is the Strategic Road Network, and those who operate it are staff and suppliers of Highways England, as well as the many key parties – such as the emergency services – who help to keep it working. We have previously developed and successfully used a Concept of Operations for smart motorways. Building on this experience, and recognising that how we operate the whole network will become increasingly important with rising traffic volumes, we have developed this first network-wide Concept of Operations. This document therefore describes how we will seek to operate in order to deliver our Delivery Plan and the longer term vision.

## Strategic Road Network Concept of Operations

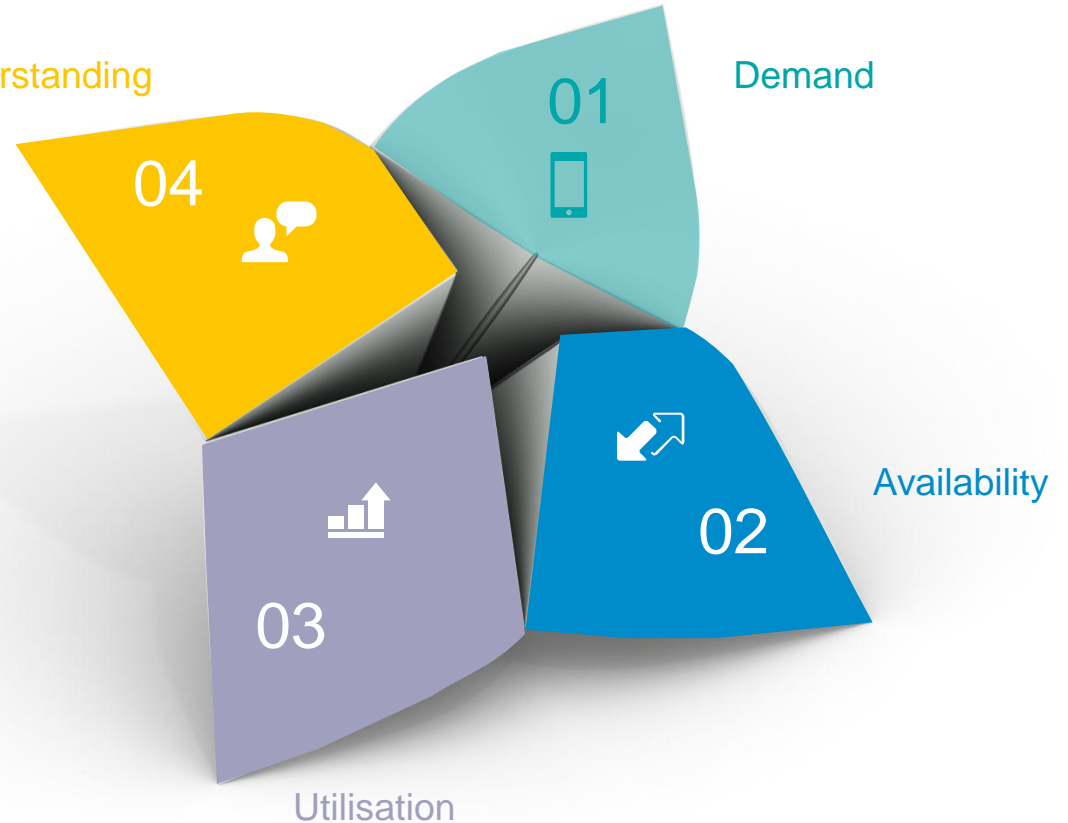
### What is its purpose?

The successful running of England's Strategic Road Network depends on doing many things well - not just a few - and integrating them. Without an overarching Concept of Operations, we will deliver disjointed operational services which fail to complement each other to best effect or, potentially, could make the situation worse.



### The SRN Concept of Operations covers four areas of operation:

Understanding



### The SRN Concept of Operations covers four areas of operation:

We will seek to enhance, maintain and manage the Strategic Road Network in an efficient way. However for the Strategic Road Network to be effective, we must listen to road users and help them use the network appropriately. At the core of this Concept of Operations is a recognition that we need to be better at engaging with our customers and those communities directly affected by our roads and reflect their concerns and needs in the way we operate.



**01** How we influence **demand** by ensuring that our customers have the information they need, in the format they prefer, at the time when they need it; to allow them to plan and manage their journey with a high degree of confidence of knowing when they will arrive.



**02** How we continuously improve **availability** through reducing the impact of incidents, smarter planning of roadworks, and by educating and informing customers.



**03** How we optimise **utilisation** of our network by getting the most out of every mile, maximising the throughput of people and goods, rather than vehicles; through initiatives like smart motorways, Intelligent Transport Systems (like smarter and more connected vehicles), and other innovations to squeeze every drop of capacity out of what we have.



**04** How we improve our **understanding** of the optimum performance of our network, its actual performance and the reasons for this by understanding the impact of the things we do on demand, availability and utilisation, such that we can make intelligence-based and increasingly informed interventions.

## Strategic Road Network Concept of Operations

### The intended audience

The intended audience for this document are the operators of the system we know as the Strategic Road Network – that is the staff of Highways England and its supply chain partners, as well as the many other parties who play a role in the daily operation of the Network.

As the system we operate becomes more complex – through increasing numbers of users with higher expectations – we want our operators to understand the system in its totality, how different elements of it interact, and where we intend to transform its operation and ultimately the service we provide to our customers.

The Concept of Operations is a set of guiding principles that will drive the enhancement of our operational capability as part of our transformation journey both within the current Delivery Plan period and beyond. It does not dictate a list of projects to be delivered; rather it establishes a holistic picture of the operational system called the Strategic Road Network, enabling our staff, suppliers and partners to understand where they contribute and where they can make improvements to its service.



### Format of the document

The document covers 10 main operating principles within our four areas of operation. These are set out in the following pages, each accompanied by text describing the supporting approach to delivery of the principle. We have also included areas of further development. It is important to recognise that Highways England needs not only to continually improve **existing services**, but that it may also need to develop **new services** to meet our customers' needs and meet our strategic objectives. Highways England will require strong governance to support the operations of existing services, while allowing space for new services to be considered, evaluated and developed.

The Concept of Operations describes how Highways England will operate the Strategic Road Network and sets the context within which we will develop our operational capability – all within the framework established by the Roads Investment Strategy, our Strategic Business Plan and our Delivery Plan (2015-2020).

The Concept of Operations is a high-level document that sets the direction Highways England will take in its operational services. Delivery detail will be further detailed in a range of supporting plans and strategies that build upon the high-level principles set out in this document, including the Operational Strategy and Traffic Information Strategy to be delivered later in 2015.

# Principles of the Concept of Operations



## Demand

We will positively influence demand for our network by providing our customers with information they need in the format they need it.

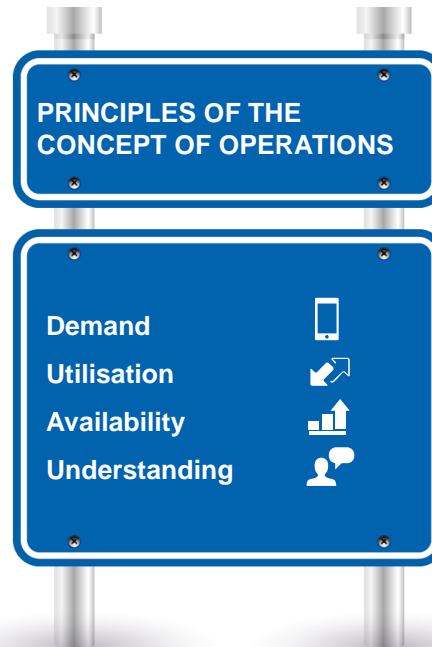
- 01 We will manage demand through influence rather than large-scale restrictions
- 02 We will be accountable for our information



## Utilisation

We will maximise throughput on the network by proactively managing vehicle movements.

- 03 We will benchmark and drive increases in throughput
- 04 We will promote sustainable transport
- 05 We will promote the development of technology to improve operations



## Availability

We will maximise network availability by reducing the impact of incidents and smarter planning of roadworks.

- 06 No one should be harmed travelling or working on the Strategic Road Network
- 07 We will target our operational resources to those incidents and situations which create most congestion
- 08 We will minimise the adverse impact of roadworks on our customers



## Understanding

We will improve our understanding of the network so that we can make intelligence-based and increasingly informed interventions.

- 09 We will seek out operational solutions to problems, as well as infrastructure ones
- 10 We will be considerate of our customers

## Section 1: Demand





**Key Principle 1:**

We will manage demand through influence rather than large-scale restrictions

**Supporting approach**

The level of demand placed on the Strategic Road Network varies constantly and, at times, demand exceeds capacity resulting in congestion. We want our customers to avoid this congestion wherever possible, whether it is recurrent or the result of an unplanned incident. In facilitating this **we will not** look to manage demand by rationing access to the Strategic Road Network unless it is for specific, short-term traffic management (such as that sometimes used around large-scale events or planned works or in the immediate management of an incident), where traffic management is applied for the safety of those travelling on and working on the SRN.

Instead, **we will** pro-actively provide relevant, high quality traffic information that will allow all of our customers to:

- Know how long their journey will take before they begin it, and while they are underway.
- Make changes to their route before or during their journey, enabling them to select the best route as circumstances change.
- Be confident in decisions they make while on their journey.
- Have information on and be confident of their predicted arrival time at any time.

Further, **we will** encourage and educate our customers to make use of the information we provide to ensure that they plan their journeys based on the most current and relevant information. And **we will** listen to our customers to ensure that we continue to provide relevant information to them in a form that they want.



### Key Principle 2:

We will be accountable for our information

### Supporting approach

To influence the demand placed on our network, particularly when it is at its most stressed, **we will** support the development of information solutions that improve our customers' experience of using the Strategic Road Network. In practice this means **we will**:

- Provide a step change in the quality and accessibility of information to our customers.
- Provide helpful information, telling customers not only when and where they might encounter a problem, but also how long it might last, what they can do about it, and what we are doing about it on their behalf. We will join up with other transport operators and intermediaries to facilitate the provision of quality information for any door-to-door journey that customers make that includes our network.
- Improve the quality of information, ensuring that it covers entire journeys. We will add our knowledge of how the network performs and what is happening in real-time, to provide information that supports prediction of the best route and journey time for our customers.
- Do all that we can to ensure that customers have access to personalised information for their journey. Where services don't exist that would give customers such information, we will look to develop them.
- Whatever sources customers choose to get their information from, we will be accountable for information on our network about our customers' journeys. When we provide information, we will seek to have it acknowledged as ours, whatever the channel - this will help foster stronger connections with our customers.



### Key Principle 2:

We will be accountable for our information

### Supporting approach

- Support and incentivise the traffic information provision market, focusing on exemplary provision of our traffic information. Our aspiration is that road users plan their journeys effectively, that Highways England's name is synonymous with high quality data and all traffic information providers will want to use our data and bear our logo.
- Demonstrate an over-riding long term objective to reduce roadside technologies and encourage personal or in-vehicle services to allow more rapid and personalised provision of information to our customers. If this requires us to develop some services, we will do so.

### Further development

#### Existing services

Building on the 2014/15 Information Plan, we will set out in our Traffic Information Strategy the information services we wish to provide to customers in future, including those we intend to provide ourselves, and those we anticipate the market will provide. This Strategy will also set-out how we will engage with local highway authorities to integrate journey planning across our networks and improve communication to our customers. Our aspiration is that by the end of the first Roads Period, our customers will have excellent quality door-to-door journey information available to them through a variety of channels.

We will explore whether we should introduce service level agreements for, and potentially licensing of, the data that we provide to others with the aim of increasing the quality of provision to our customers. We will also explore the appropriateness of a performance metric around our own provision of information to our customers.



## Demand: **Key Principle 2**



### **Key Principle 2:**

We will be accountable for our information

### **Further development Existing services**

In the short term, we will maintain and promote our Traffic England service, consider additional Highways England apps, the potential reintroduction of Traffic Radio, and how to use crowd sourcing to gain traffic information. We will improve our data quality and get our information right.

### **Further development New services**

We want our customers to have access to door-to-door information for any journey, by any mode, at any time. We may not be the only organisation that wants to provide this service. So we will explore the concept of a 'data warehouse' to hold our data alongside other transport providers, using a widely used internationally recognised format, enabling app developers and the market more widely to access our information to provide services to customers.

We will explore the use of innovative approaches to encouraging third parties to provide information sources on Highways England's behalf, for example through an annual award.

## Section 2: Utilisation







### Key Principle 3:

We will benchmark and drive increases in throughput

### Supporting approach

**We will** proactively seek examples of roads in England and across the world which are similar in design to Highways England's but manage to achieve higher vehicle throughput per hour per lane during peak times. **We will seek** to understand how this is achieved and benchmark ourselves against the best examples, setting an aspiration to achieve similarly efficient available capacity and throughput on all of our roads.

The Strategic Road Network exists to get people and goods to where they need to be – not vehicles. So while in the short term **we will** seek and benchmark examples of vehicle throughput, because that is what is currently measured, in the medium term we will focus not on maximising throughput of vehicles, but of people and goods.

### Further development

#### Existing services

In the short term we will benchmark our own performance against the highest levels of vehicle throughput from across the world, understanding the reasons for their efficiency, and assess whether we can implement any improvements on the SRN from that learning.

### Further development

#### New services

We will develop a shadow performance measure that focuses on the throughput of people and goods on the Strategic Road Network – this will help us to work with our stakeholders to assess where and how we might be able to get even more out of the SRN in future.



**Key Principle 4:**

We will promote sustainable transport

**Supporting approach**

Driving increases in throughput (key principle 3) may not at first glance seem to align with sustainable transport, so it is important to fully understand the focus on getting people and goods where they need to go. Our focus on people and goods means that **we will** support measures to maximise occupancy of vehicles. **We will** also support measures that enable people not to travel, or to travel at less busy times.

When our customers are travelling on the road, **we will** seek to promote more environmentally friendly road use, including improving driving styles and the use of low emission vehicles, both for our customers and for our own fleet.

**Further development**  
**Existing services**

We will continue to influence and facilitate sustainable transport through our engagement in the planning process.

**Further development**  
**New services**

We will seek to have a growing influence on vehicle occupancy during the lifetime of the first Roads Period.

In the short term, and working with other transport operators, we will assess how far we might need to go to incentivise our customers to use the network in a sustainable way. As part of this we will evaluate providing infrastructure we have not previously built (such as park & rides and electric vehicle charging points at outstations or motorway service stations) and services we have not provided before (such as bike ferries, the promotion of car sharing schemes ).

Also in the short term we are undertaking a feasibility project exploring the potential for dynamic electric vehicle charging on the Strategic Road Network



**Key Principle 5:**

We will promote the development of technology to improve operations

**Supporting approach**

Technology has the potential to deliver a step change in meeting our service objectives of improving safety, reducing congestion and keeping our customers informed. We believe that we have a key role to play in helping the market understand our objectives and challenges and the opportunities for technology in addressing these. **We will not** be passive observers.

Instead, **we will** actively work to provide an environment in which new technologies can be readily adopted where appropriate. **We will** work with the private sector and other transport operators to promote the development of technologies to increase the numbers of travellers per vehicle and vehicles on the road, promote cross-modal technologies, and identify opportunities to deploy those as appropriate, providing incentives and “test-beds” to support suppliers to develop quality products and services.

Further, **we will** seek to simplify how we manage and approve technology trials on our roads. Where we need to develop technology ourselves in order to prove a concept, **we will** do so.

While encouraging the market to lead innovation, we will demonstrate an overriding long term objective to reduce roadside technologies, for example encouraging personal or in-vehicle services, resulting in lower capital and operational costs and impact on customers and communities.



### Key Principle 5:

We will promote the development of technology to improve operations

#### Further development Existing services

We will continue to maintain our relationships and contacts with technology providers and with the European Commission. We will use these relationships to ensure that where we provide infrastructure, it is flexible enough to accommodate the rapidly changing technology environment.

We will explore lower cost solutions to congestion detection, and roll out detection more widely across the network.

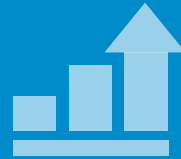
#### Further development New services

In the short term we will participate in the pilots of automated vehicles in England.

We will also explore how information is transmitted between us and a driver, via personalised devices rather than roadside technology. To facilitate this we will consider increasing connectivity opportunities on the SRN – such as through the roll-out of Wi-Fi.

We will deepen our relationships with vehicle manufacturers, to get a better understanding of the drivers of vehicle design. This will help us to understand how we might provide incentives for the more rapid take up of safety features such as radars to reduce headways while maintaining safety, or to help drivers to stay in lane – and the opportunities these provide to improve safety and increase capacity.

## Section 3: Availability





### Key Principle 6:

No one should be harmed travelling or working on the Strategic Road Network

### Supporting approach

**We will** continuously improve road safety and invest in our road network with the ambition of preventing incidents from occurring, while reducing their severity if they do occur. Our goal is that **we will** achieve year-on-year reductions in casualties on our roads by focussing on Safer Roads, Safer Vehicles and Safer People.

**We will** actively consider everyone's safety when making investment decisions on the new capital schemes and improvements programme – whether they be customers or our own workforce. Our value management process will reflect an increasing bias towards the new road safety vision and the road safety investment ambition set out above to ensure safety, as well as congestion, benefits are considered in developing the future programme. The funding to improve safety will form an integral part of the future capital investment programme.

### Further development

#### Existing services

We will re-engage with local safety partnerships to support an intelligence-led range of initiatives to cover enforcement, compliance and road user information. This may include upgrading enforcement cameras to digital, providing additional spot speed or average speed cameras on high risk routes, reinvigorating a programme of intelligence-led encouragement campaigns, considering the roll-out of more incident prevention and detection technology.

We will also continue and develop CLEAR incident management initiatives to continually improve the combined post-incident response, reducing the impact of those incidents which still occur.

We will continue to focus on the safety of our own workforce, through our Aiming for Zero programme and the design of all our infrastructure.



## Availability: **Key Principle 6**



### **Key Principle 6:**

No one should be harmed travelling or working on the Strategic Road Network

### **Further development**

#### **New services**

We will increase our focus on supporting cycling by making cycling on / over our network safer and easier; and reducing the perception of our network as being a barrier to non-motorised users.

We will also commission research and development for new standards and vehicle technologies to further improve safety.



### Key Principle 7:



We will target our operational resources to those incidents and situations which create most congestion

### Supporting approach

We believe that a targeted, specific incident response capability for the Strategic Road Network could deliver significant benefits for safety, incident management and weather-related issues. And we recognise that there are areas where unexpected delay causes a disproportionate impact on our customers – for example near ports and airports. **We will** work towards a more targeted incident response on the Strategic Road Network, which puts the right resources in place to meet times and locations and routes of greatest need.

A targeted incident response requires excellent real-time information on network conditions and incidents. **We will** improve our understanding of what is happening at all times across our entire network.

### Further development Existing services

We will develop flexible resourcing of our own staff, so that we can target our resources to the times and places where they are most needed.

We will consider whether this process would be assisted by clearly defining the areas of greatest operational need.

We will continuously improve our capability to clear incidents more quickly, through initiatives such as the righting of overturned vehicles.

We will roll-out incident detection across the entirety of the Strategic Road Network, focussing on the most efficient way to deliver this, and research and implement innovative approaches to mitigating weather-related situations.

We will re-invigorate the maintenance of our Alternative Diversion Routes, and consider implementing new ones where they do not yet exist.





## Availability: Key Principle 7

### Key Principle 7:



We will target our operational resources to those incidents and situations which create most congestion

### Further development

#### New services

We will explore options to involve traffic officers in more of the stewardship of our network. We will review best practice from our relationships with incident responders across the country, as well as best practice relationships from around the world, to identify how our partner organizations can target their resources to the greatest needs of the SRN. We will review whether any of the functions done by our partners, such as incident investigations, could potentially be done more effectively by Highways England.



### Key Principle 8:

We will minimise the adverse impact of roadworks on our customers

### Supporting approach

We have an ambitious programme of works to enhance and improve our network over the next 5 years, including the roll-out of over 600 miles of smart motorway and resurfacing of over 80% of the network. These works will have an impact at times on the availability of the network during their construction. Further, they are one of the most visible demonstrations of the work that we do for our customers.

Given that the vast majority of roadworks are planned well in advance, we need to do this more effectively, in particular in a way that puts our customers first by minimising any negative impact on their journeys and local communities. **We will** therefore overhaul the way we plan, schedule and manage traffic at our roadworks to minimise disruption to customers. **We will** also communicate more effectively the purpose of roadworks, so that customers understand their importance and the future benefits that will arise from these works.

### Further development Existing services

We will develop a new approach to how we plan, schedule and manage roadworks. We will continue to put the safety of road users and road workers at the heart of this, and we will consider customers and the impact of our works on them throughout the planning, scheduling and delivery stages. We will customise how works are delivered depending on the type of road, the demands of road users in a particular area and the impact on local communities. And at all times we will strike an appropriate balance between seeking to minimise the cost of our chosen roadworks approach and minimising disruption.

We will also aim to provide more accurate, comprehensive, and timely information on the roadworks that are taking place/are scheduled to take place and make this information more accessible.

## Section 4: Understanding





## Understanding: Key Principle 9



### Key Principle 9:

We will seek out operational solutions to problems, as well as infrastructure ones

### Supporting approach

As a road builder whose operator role is still relatively new, infrastructure improvements are generally better understood by the business than operational improvements. Smart motorways are an example of an innovative, more operational approach to addressing capacity. **We will** seek out more opportunities to develop innovative new operational solutions, alongside more traditional infrastructure ones.

Continuous improvement to reactive operations – such as incident response – will be led by those who deliver such services, primarily within Customer Operations. Continuous improvement to proactive operations – such as planning alternative diversion routes, or considering demand management – will be led by those who have a stewardship role of the Strategic Road Network, which is currently primarily within Network Delivery and Development.

### Further development New services

We will develop ways to better incorporate operational solutions into our business planning and value management processes.



**Key Principle 10:**

We will be considerate of our customers

**Supporting approach**

There are elements of operating our roads where the benefits can't easily be expressed in monetary terms – such as telling people why they are stuck in a traffic jam, and what we're doing about it – but that doesn't mean that we shouldn't do them. When things don't go well during a journey, our customers can get frustrated, so **we will** do everything we can to reduce this. We will be considerate of our customers, always treating them like people, not just 'road users'.

We also recognise that many people live close to our roads. In operating, maintaining and enhancing our network **we will** develop new approaches to reduce any negative impact we may have on these people and local communities.

**Further development**  
**Existing services**

As per key principle 2, we will make our information helpful and personalised. When we are dealing with any incidents, we will remember all the people being affected around it, and keep them as informed as we can.

**Further development**  
**New services**

We will seek to develop mechanisms to provide targeted information to customers who are trapped in stationary traffic for a significant time. We will seek to gain insight from our customers as to what makes them frustrated on their journeys and what they think we could do to help – this will help us to understand what things we could start to do differently and better.

© Crown copyright 2015.

You may re-use this information (not including logos) free of charge in any format or medium, under the terms of the Open Government Licence. To view this licence: visit [www.nationalarchives.gov.uk/doc/open-government-licence/](http://www.nationalarchives.gov.uk/doc/open-government-licence/)

write to the **Information Policy Team, The National Archives, Kew, London TW9 4DU**, or email [psi@nationalarchives.gsi.gov.uk](mailto:psi@nationalarchives.gsi.gov.uk).

This document is also available on our website at [www.highways.gov.uk](http://www.highways.gov.uk)

If you have any enquiries about this publication email [info@highwaysengland.co.uk](mailto:info@highwaysengland.co.uk) or call **0300 123 5000\***.

\*Calls to 03 numbers cost no more than a national rate call to an 01 or 02 number and must count towards any inclusive minutes in the same way as 01 and 02 calls.

These rules apply to calls from any type of line including mobile, BT, other fixed line or payphone. Calls may be recorded or monitored.

Registered office Bridge House, 1 Walnut Tree Close, Guildford GU1 4LZ

Highways England Company Limited registered in England and Wales number 09346363