Campaign for
Better Transport

Rising to the challenge

A shared green vision for RIS2

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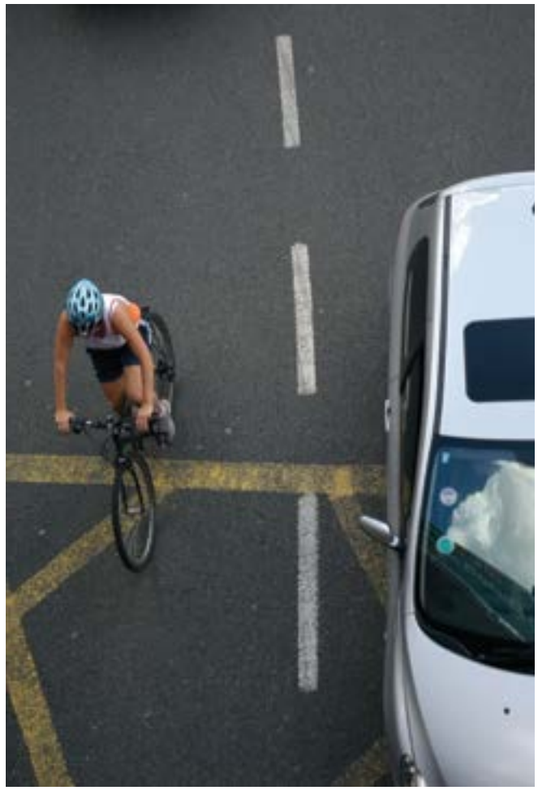


Introduction: a greener vision for RIS2

As an alliance of environmental and sustainable transport NGOs, we are setting out our priorities for England's Strategic Road Network (SRN).

We have also sought contributions from organisations directly concerned with the individual designated funds.

Our submission on the first Road Investment Strategy (RIS1) called for a roads programme that was 'better not bigger'. The second Road Investment Strategy (RIS2) is an opportunity to do things better still.

RIS1 set out a bold promise to "transform both our roads and the experience of driving on them, whilst also addressing strategic imperatives such as economic growth and climate change."

In practice its impact has been more mixed, with new roads often developed in isolation, the promised economic benefits undelivered, and critical environmental impacts still unaddressed. On carbon reduction, air quality and biodiversity protection, the UK is missing critical targets and legal obligations: Government transport policy, including the Road Investment Strategy, must play its part in achieving them.

The Designated Funds are an important part of delivering RIS1 and should be maintained and expanded in RIS2, but some have been very slow at getting off the ground. We propose improvements that will see the funds deliver effectively in RIS2.

Our vision is for a strategic road network that is developed as part of an integrated transport network, designed and delivered in a way that protects the environment as well as connecting communities.

In seeking this greener vision, we believe the following principles should underpin the policy goals, performance indicators and package of interventions in the second Road Investment Strategy.

Fix it first

RIS1 has seen massive investment in increased road capacity at great financial and environmental cost and with limited economic benefit.[1] Road users value reliability and safety ahead of speed and capacity.[2]

RIS2 should refocus on better maintaining the existing road network, improving safety, and delivering the green retrofit heralded in RIS1. NGOs have a wealth of expertise to share and should be more directly engaged by Highways England in shaping and where appropriate delivering these improvements.

An integrated strategy

RIS2 should not be developed in isolation but as part of an integrated transport strategy, including public transport, local transport, rail freight and provision for non-motorised users. RIS1 saw an imbalance of investment in the SRN compared to the rest (over 95 per cent) of the road network.

The devolution agenda will increase demands for a fair share of national roads funding to be used for local road maintenance, sustainable local transport and better multi-modal connectivity.

Environmental leadership

Major roads have a huge impact on the environment, from carbon emissions and air pollution, to destroying and fragmenting habitats, severing communities, and harming the landscape. On carbon reduction, air pollution and net loss of biodiversity, the UK is off track or simply failing to meet critical targets, and RIS1 has failed to reverse this.

RIS2 should put environmental leadership at its heart, both in terms of environmental management systems for Highways England operations and strong environmental targets, particularly on carbon reduction, against which future road investment will be judged.

Making it happen: the designated funds

In *Better not bigger* we called for dedicated funding for a green retrofit of the Strategic Road Network. As part of the £15 billion Road Investment Strategy, Highways England was allocated £900 million in five ring-fenced specialist budgets, the Designated Funds.

Fund allocations (2015/16 - 2020/21)

Fund	£million
Air Quality	100
Cycling Safety, Integration	250
Environment	300
Housing & Growth	100
Innovation	150

These funds have potential to help deliver environmental improvements and as a green retrofit that goes beyond business as usual, to pilot new approaches for future mainstreaming; and to enable targeted spending outside the SRN estate to deliver better outcomes against Highways England performance requirements.

With input from a range of partners, the funds have begun to deliver projects to enhance the environment around the SRN. They show how having an earmarked budget can deliver projects in a way that policy statements alone cannot.

We welcome the funds and believe they must be retained and expanded in RIS2. But they are still little known outside Highways England, which lessens their benefit to the wider community both in terms of awareness and as a practical means to progress best practice projects. Some of the funds are currently underspent, in contrast to the over-programming of the main RIS programme, and the wider road network is not benefitting as much as it could. This underspend reflects delays in getting the funding process underway, rather than any weakness of concept.

To enhance the benefit of the funds in RIS2, Highways England must:

- Allocate the resources necessary to deliver the green retrofit
- Publish full and clear information on how the funds are spent
- Report on the impact and learning from these projects
- Engage the expertise of the wider NGO sector.

Our report sets out some practical proposals for how RIS2 funding, whether in the mainstream budget or through designated funds, can be used to deliver the green retrofit.

Better information: better outcomes

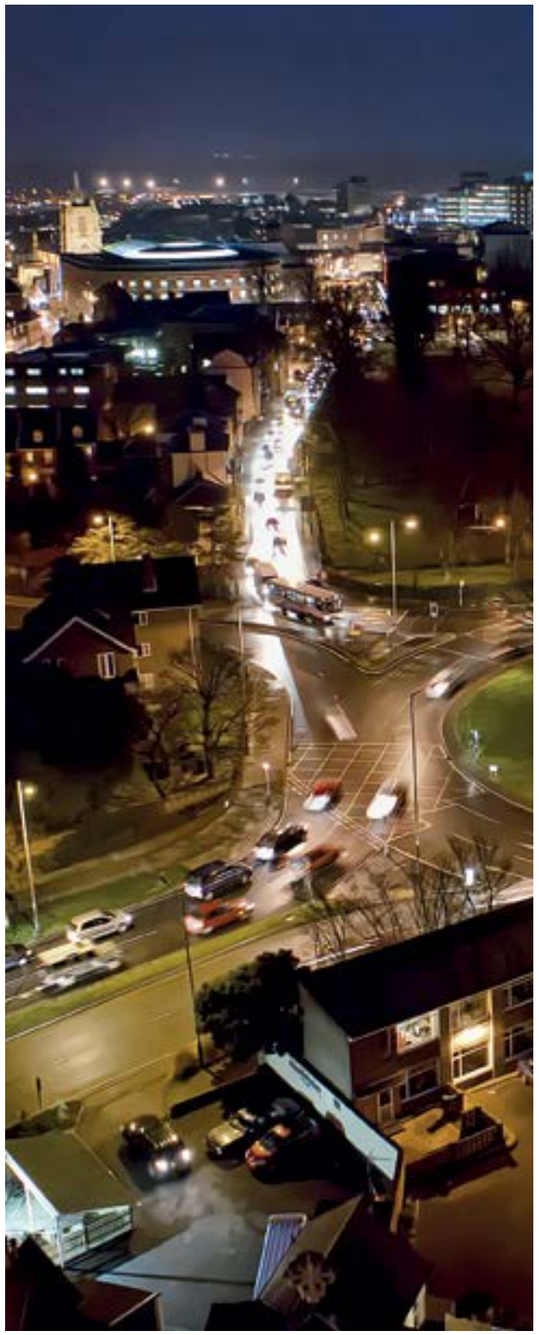
In addition to contributing to the development of RIS2, we advocate earlier engagement on RIS2 delivery with NGOs and vulnerable road user groups across the board.

All too often consultation has been on specific schemes at the point when the preferred option is well-developed rather than engaging a full range of NGOs at the options appraisal stage. When consultation does take place it is often focused on specific meetings, making engagement by NGOs and volunteer groups particularly difficult. An exception has been some of the work on the Strategic Studies, for example on the M25 SW Quadrant, where stakeholders have been engaged at an early stage in helping longlist options, with some positive results.

We advocate an 'open data, open door' approach, with an improved and expanded Highways England website to include not only current major projects but maintenance programmes and potential projects delivered through the designated funds.

Sharing open data on Highways England networks would enable NGOs, local authorities and other partners to better map opportunities for joint working on environmental enhancements and improved connectivity. For example, sharing open data on proposed cycling schemes would enable more effective joining up with the Local Cycling and Walking Infrastructure Plans that non-London English authorities are being asked to draw up as part of the Government's Cycling and Walking Investment Strategy (CWIS), and with the National Cycle Network.

Having an open door approach for submitting proposals for specific improvements would maximise the opportunity for the NGO sector to contribute constructively to the delivery of RIS2 and to see a better integrated SRN for the future.



Summary of proposed metrics

Theme	Performance metrics	Measured in...
Low carbon future	Make the SRN EV-ready	Number of smart, rapid charge points on the SRN
	Promote competition	Number of companies offering interoperable charge point access on the SRN
	Contribution of RIS to UK carbon budget	Predicted CO2 impact of RIS2 schemes, both individually and as a complete programme
	Prioritise maintenance, safety and green retrofit ahead of increasing capacity	Proportion of budget spent on increasing capacity compared to other objectives
	Integrate Sustainable Urban Drainage Systems (SUDS) to the SRN	Percentage of network that incorporates SUDS
	Make the network road-user charging ready	Percentage of network that could accommodate GPS distance-based road user charging
	Better rail freight integration	Number of Strategic Rail Freight Interchanges connected to the SRN
Making roads beautiful	Development of detailed standards for existing roads in sensitive areas	Publication and use of standards
	Proportion of roads in target areas renovated to the new standard	Proportion of target roads
	Visual impact of the SRN	Area of Zone of Theoretical Visibility
	Reduction in the number of heritage assets at risk on or near the SRN	Number of heritage assets at risk in general
	Minimise harm or risk to heritage assets as a result of future works to the SRN	Number of heritage assets at risk from works
	Design Panel influencing design of major schemes	Number of major schemes subject to early design reviews and post-opening design reviews
Safeguarding the environment	Condition of affected wildlife sites (e.g. Local Wildlife Sites and SSSIs)	Condition of sites
	Habitat connectivity on a landscape scale	Length and quality of network, using a connectivity score
	Natural Capital Account (NCA) of Highways England land	NCA metrics
	'No net loss' and 'net gain' approach to biodiversity	Net Gain, successfully achieved by end of RIS2 delivery period
	Ongoing monitoring and management of compensatory habitat	Compensatory habitat protected, maintained, and condition improves.

Theme	Performance metrics	Measured in...
Protecting our health	Contribute to delivery of Clean Air Zones	% of SRN within Clean Air Zones achieving compliance with legal limits for air pollution
	Working in partnership to deliver air quality compliance	Number of pollution reducing partnership projects delivered
	Ensure Highways England's own fleet is zero or near zero emission by end RIS2	% of Highways England's fleet that is zero or near zero emission
	Use of variable speed limits to control pollution	% of SRN that is managed with variable speed limits
	Water quality in key waterways affected by the SRN	Ecological status of water body as defined by the Water Framework Directive
	Reduce noise generation at source	% of SRN with noise reducing surfacing
	Reduction in the number of people impacted by noise from SRN	% of residential areas severely impacted by noise
	Tranquillity in areas of recreational use, landscape and wildlife value	Reduction in noise contour affecting designated landscape and heritage assets
Reconnecting communities	Improved safety, lower risk	Reduction in KSI casualties per trip for non-motorised road users Proportion of users reporting better safety experience
	Improved facilities	Miles of safe footway delivered along SRN corridors in urban centres Number of surface level crossings appropriate for all vulnerable road users installed Miles of IAN-compliant cycling provision along SRN corridors Number of links created to wider cycle and bridle path networks
	User take-up & satisfaction	Increased satisfaction in local area from Community Life Survey Reported ability to access key local services Increase in usage of dedicated cycling facilities Increase in usage of bridle paths and foot paths Satisfaction with provision for non-motorised users among those living or working in the vicinity
	Improved bus & coach interchange facilities	Number of interchanges delivered and the extent of their use
	Public transport reliability on the SRN and on key junctions across SRN	Minimum 95 per cent punctuality on priority SRN routes and junctions

Towards a low-carbon future

Domestic transport accounts for around a quarter of UK greenhouse gas emissions. The latest UK Committee on Climate Change report concludes that current policies fall far short of what is needed to meet the fourth and fifth carbon budgets. Significant further changes are needed, including greatly expanded use of electric vehicles, and reductions in travel demand.[3] RIS2 and Highways England must play a full and proactive role in delivering these necessary changes.

Cleaner vehicles

Reducing the need to travel, reducing the total number of vehicles on the road and promoting sustainable alternatives is a key part of any sustainable transport strategy. Within the context of the Road Investment Strategy, promoting low and zero emission vehicles should be a priority.

Zero emission vehicles simultaneously tackle both climate change and air quality, unlike simple switching between fossil fuels. Switching to diesel can reduce CO2 emissions but increases NOx emissions, while switching to petrol can reduce NOx emissions but increases CO2 emissions. The solution to both air pollution and climate change therefore requires a move away from fossil fuels altogether in favour of low and zero emission vehicles.

The focus on electric vehicles in the Government's draft Industrial Strategy is welcome. The RIS2 should further accelerate this necessary transition. The central role of the SRN in enabling the transition to electric vehicles is in providing **a reliable nationwide network of smart and rapid electric vehicle charge points**.

96 per cent of motorway service areas already have rapid charge points,[4] which has been very important for addressing range anxiety. This progress has been largely due to the pioneering efforts of one company (see case study below), but Government cannot rely on visionary pioneers alone. As we prepare for much greater levels of EV uptake to tackle air quality and

climate change, additional charge points will be needed on the SRN. RIS2 could help entice new entrants in to make the market work properly, by making investment in smart, rapid charging attractive, while promoting value and convenience for consumers, and smart data usage to optimise system performance.

Stronger government support to bolster the business case for charge point installation and promote competition in this emerging market is therefore essential to enable the SRN to keep pace with increasing uptake of electric vehicles. RIS2 should be designed to support this:

- RIS2 should exclusively focus investment in renewably powered **charge points that are both rapid and smart**. Rapid speed of charging is essential for a positive consumer experience, while the collection and application of usage data will ensure that charge point and electricity system operators are able to optimise performance

Case study:
Ecotricity's Electric Highway

Green energy company Ecotricity has pioneered the deployment of rapid EV charging points across the SRN, with around 300 installed to date. The scheme is supported by a smartphone app, and Ecotricity have included WIFI hotspots at charging stations to ensure access. This innovative approach has built one of the most successful rapid charging networks in Europe.[5]

Case study: MOBI.E

Portugal's MOBI.E is a nationwide network of over 1,000 EV charging points, including a smaller number of fast charging points. With national Government and EU support, it was provided free of charge in its pilot phase, with usage fees introduced from 2017. The key strength of the MOBI.E scheme is that while users can subscribe to different suppliers, all the charging points are inter-operable, providing a truly comprehensive network.[6]

- RIS2 should aim to deploy charge points at the **most convenient locations for EV drivers**, which is not necessarily in petrol stations. The ideal locations are those where motorists would be expected to leave the car stationary for around 30 minutes. Examples include picnic areas and motorway service areas with on-site cafes, restaurants, entertainment, or workspaces

- RIS2 should also promote **greater competition and interoperability** across the charge point market. Most SRN charge points are presently operated by one company, but several other operators are already providing charge points in urban areas. Contactless smart card and smart phone technology should enable quick and easy access to all charge points, rather than a burdensome sign-up process for each different operator. Interoperability should be a condition of support under RIS2.

Performance metrics	Measured in...
Make the SRN EV-ready	Number of smart, rapid charge points on the SRN
Promote competition	Number of companies offering interoperable charge point access on the SRN
Contribution of RIS to UK carbon budget	Predicted CO2 impact of RIS2 schemes, both individually and as a complete programme

New roads create new traffic

The conventional approach to roads policy maintains that the best way to reduce congestion on the network is to create more capacity, either by expanding existing roads or building new ones. Nevertheless, as research over the last century has repeatedly shown, **increased capacity fails to relieve congestion while causing considerable environmental damage**.[7]

The 2015 overall analysis of road schemes published by Highways England concluded that there was little evidence of induced traffic.[8] However, recent research commissioned by Campaign to Protect Rural England (CPRE) and undertaken by Transport for Quality of Life has challenged this. Across nine randomly-selected road schemes studied, all but one saw traffic grow significantly faster than the background trends for other regional roads, with the remaining scheme keeping pace with background trends. In addition, the longer these schemes were in place the more traffic they attracted, with an average 7 per cent increase for schemes completed three to seven years ago, compared with an average 47 per cent increase for those completed eight to twenty years ago.[9]

Rather than pursuing this failed approach, **RIS2 should treat increasing road capacity as a last resort.** Highways England should adopt a 'Fix it First' approach and focus on keeping existing roads in good repair and reducing their environmental impacts as part of a wider smarter travel hierarchy to inform government transport policy. This would seek to minimise demand, widen travel choices and improve efficiency ahead of increasing road capacity, thereby ensuring that public money is spent most effectively.

Performance metrics	Measured in...
Prioritise maintenance, safety and green retrofit ahead of increasing capacity	Proportion of budget spent on increasing capacity compared to other objectives

A resilient network

Climate change is a threat to us all, including the operation and maintenance of the Strategic Road Network. Increased instances of extreme weather and the development of land in flood plains, combine to increase the risk of flooding on the transport network.

RIS2 should avoid any new road construction on flood plains. There is an important opportunity to ensure that the network integrates SUDS (Sustainable Urban Drainage Systems) as standard. SUDs encourage storage and infiltration of rainfall close to source and include permeable paving, grass swales, soak-aways and wetlands. Retrofitting existing roads to be flood resilient should be a priority, ahead of new road construction: by using natural interventions such as SUDs, rather than engineered ones, a range of environmental goals (including biodiversity and landscape enhancements) can be delivered.

Large cuts in transport emissions of carbon dioxide are essential if the UK is to meet its climate change targets, and that means making radical changes in our transport lifestyle. These changes would also address challenges of congestion, air quality and maintenance on the Strategic Road Network.

The rollout of smart technology should be designed to accommodate future distanced-based road user charging, a change which would encourage drivers to take the most efficient route and discourages low occupancy trips.

Rail freight produces 76 per cent less CO2 per tonne carried than the equivalent road journey. By prioritising better integration with rail freight terminals, RIS2 could also help cut carbon.

Committing to a fix it first approach, prioritising green retrofit and ongoing maintenance ahead of new roads, is the best option to deliver a resilient Strategic Road Network for the future.

Case study: Los Angeles bioswales

Los Angeles highways had a significant challenge in managing storm water run-off. The conventional approach was to construct a large scale network of concrete storm drains at considerable financial and environmental cost. Instead, LA adopted a Low Impact Development approach, based on these principles:

- Beneficial use of rainwater and urban runoff
- Water quality improvement
- Rainwater harvesting
- Reduction of offsite runoff and provide increased groundwater recharge
- Reduction of erosion and hydrologic impacts downstream
- Enhancement of recreational and aesthetic values

A series of bioswales (shallow ditches with vegetation) and tree pits were planted, which have provided effective drainage through sustainable interventions.[10]

Performance metrics	Measured in...
Integrate SUDS to the SRN	Percentage of network that incorporates SUDS
Make the network road-user charging ready	Percentage of network that could accommodate GPS distance-based road user charging
Better rail freight integration	Number of Strategic Rail Freight Interchanges connected to the SRN

Making roads beautiful?

RIS1 was launched with the aspiration to protect and even enhance the beauty of the countryside, to create a road system in harmony with its surroundings and to establish a robust set of design principles that can transform the way road projects are planned and delivered. RIS2 provides an opportunity for this vision to be delivered in practice and to develop and embed new standards for landscape and heritage asset protection in the management of the SRN.

Landscape

Many sections of the SRN pass alongside or through valuable landscapes including National Parks and Areas of Outstanding Natural Beauty (AONBs). The types of roads vary from busy motorways, such as the M6 which passes between the Lake District and Yorkshire Dales National Parks, to single carriageway roads with relatively low traffic, such as the A64 through the Howardian Hills AONB.

In our RIS1 submission we noted that these roads rarely contribute to landscapes in a positive way due to their width; clutter such as signage, gantries and lighting columns; light and noise pollution; and the flow of moving traffic. Since then, evidence of landscape damage caused by the SRN has only grown. Recent research commissioned by CPRE and undertaken by Transport for Quality of Life found that 80 per cent of major road schemes for which data was available have had an adverse impact on the landscape.[11]

RIS2 must pay far more attention to the protection and enhancement of the landscape. In particular, **Highways England must uphold the strong presumption against any significant road widening or the building of new roads through National Parks** which is set out in national policy.[12] This policy also states that any investment in trunk roads should be directed to developing routes for long distance traffic which avoid the Parks.

Case study: National Grid's Visual Impact Provision project

Ofgem has agreed a £500 million allocation which National Grid is using to fund projects to reduce the landscape and visual impacts of the electricity transmission network on National Parks and AONBs via its Visual Impact Provision (VIP) project.[15]

The VIP process has convened local stakeholder groups to determine whether screening or re-routing power lines are the best option in each location. Four major VIP schemes have been prioritised, in Dorset, the Peak District, the New Forest and Snowdonia. A Landscape Enhancement Initiative (LEI), with an independent steering group, has a £24 million budget for small scale works to reduce the visual impact of power lines in other protected landscapes.

In addition, like all public bodies Highways England has a duty to consider the statutory purpose of National Parks and AONBs in its decision-making. Adopting new standards in RIS2 to explicitly address the impact of the SRN on landscape would demonstrate to the public, politicians and environmentalists alike that Highways England is taking this duty seriously.

To support Highways England in determining these new standards, **we recommend the adoption of a zone of theoretical visibility methodology** as a useful tool for determining the visual impact of road schemes. Highways England can use its geographic information system (GIS) technology to map zones and act accordingly to mitigate landscape damage, such as by removing excessive lighting columns and introducing new planting. As well as promoting other environmental benefits, such as reduced light pollution and new biodiversity corridors, these changes can help reconcile the SRN with England's precious landscape.

Highways England could learn from examples across the country of public bodies taking a responsible approach to landscape protection. The South Downs National Park Authority, the Wye Valley AONB Partnership and the Kent Downs AONB Partnership have all published design guides for road schemes in recent years.

Case study: South Downs partnership working

The South Downs National Park Authority has published a design guide for road schemes which highlight best practice for rural road design and management, including partnership schemes between parish councils, developers, and highways authorities.[13]

In the South Downs the four local highway authorities, Highways England and the National Park Authority have also agreed a protocol for the management of highways in the National Park which aims to conserve and enhance outstanding landscape quality and local distinctiveness whilst delivering a safe and convenient network for all transport modes.[14]

Heritage

The setting of heritage assets from Grade I listed stately homes to undesignated cottages can also be detrimentally affected by the SRN. 51 per cent of the schemes examined in the recent CPRE research affected an area with a national or local landscape designation or with a heritage designation.[16]

Any new road infrastructure should be of the highest design quality. Local materials should be used for construction where possible to minimise the impact on the historic and natural environment. Roads can have a dramatic impact on historic towns and villages and open landscapes, and extra care should be given to the design and location of signs and lighting columns in such locations. Motorway-height lighting columns have a negative impact on historic environments, whether urban or rural, and different columns will be appropriate in such locations.

In addition, thought should be given to ensuring maximum pedestrian and cyclist permeability in areas where the SRN cuts through a historic environment. For example, the A63 in Hull has been criticised by the Victorian Society as severing the city from its historic water front, with the proposed footbridge being insensitive to its location. Careful thought should be given to the central reservation barriers in urban areas and their use should be reduced where possible to enable greater permeability at quiet times. As indicated elsewhere in this document, the interests of pedestrians, cyclists and equestrians should be recognised alongside those of other road users.

Finally, **economic assessments for RIS2 schemes should take account of the harm caused to the heritage and outdoor recreation visitor economy in areas affected by the SRN**. While recognising the need to avoid additional clutter in the landscape, this could be partially offset by the provision of sensitively located brown signs at a reduced cost, as some heritage organisations report that the price is currently too high. Reduced costs for such signs could have positive benefits for the economy. Similarly, dedicated funds to improve heritage and landscape in areas negatively affected by the SRN could be transformative. The Heritage Lottery Fund provides grants for Landscape Partnerships, but Highways England currently does not participate.

Role of the Highways England Design Panel

The Highways England Design Panel champions good design across the Strategic Road Network. Its members come from statutory bodies, NGOs and the landscape design profession, chaired by Highways England.

While the Panel has done some good work on developing design principles, its input on specific schemes has largely been limited to receiving presentations on the same timescale as any other stakeholder rather than at a time and in a level of detail that the Panel can make a real difference.

We are not aware of any major road scheme that has been redesigned as a result of the Design Panel's work, despite the impact on the natural and built environment.

To make a difference, we believe the Panel must be resourced to:

- Engage with key schemes at the concept stage
- Retain oversight throughout the design and delivery process
- Conduct a post opening review as to whether design objectives were met.

Engagement should start prior to option development in order to identify critical design issues that could affect the choice of corridor, route or alignment, rather than simply engaging with the design of Highways England's preferred route.

The Panel should monitor priority schemes, providing constructive challenge to ensure that the design aspirations, including better planning for non-motorised users, are delivered in practice.

Given the lasting impact of highways infrastructure on the landscape and the commitment to learning lessons from completed schemes, there should be a post-opening review specifically examining how the scheme matches up to the design principles and scheme-specific design aspirations proposed by the Design Panel.

The Design Panel requires proper resourcing to enable working groups to be set up to review individual schemes and to pursue best design practice and its integration into 'business as usual': the funding to deliver this should be allocated as a priority within RIS2.

Performance metrics	Measured in...
Development of detailed standards for existing roads in sensitive areas	Publication and use of standards
Proportion of roads in target areas renovated to the new standard	Proportion of target roads
Visual impact of the SRN	Area of zone of theoretical visibility
Reduction in the number of heritage assets at risk on or near the SRN	Number of heritage assets at risk in general
To minimise harm or risk to heritage assets as a result of future works to the SRN	Number of heritage assets at risk from works
Design Panel influencing design of major schemes	Number of major schemes subject to early design reviews & post-opening design reviews

Key recommendations for RIS2

RIS2 is an opportunity for Highways England to step up its standards on landscape and heritage protection. If these are embedded in its environmental metrics, a real difference can be made over the coming years to the landscape and heritage assets of this country.

In order to deliver this difference, the following changes are needed:

- More effective implementation of the duty which applies to decisions affecting National Parks and AONBs
- The use of a zone of theoretical visibility methodology to determine the visual impact of road schemes
- Proper resourcing of the Design Panel to ensure that all new road infrastructure is of the highest design quality
- More attention paid to ensuring maximum pedestrian and cyclist permeability around heritage assets
- Including the impact on the heritage and outdoor recreation visitor economy in the economic assessments of schemes.

Safeguarding the natural environment

There is a real opportunity for existing and new wildlife-rich areas alongside the SRN to grow into a strategic wildlife network of ecological corridors with significant biodiversity value where roads are integrated with the landscapes through which they pass.

When designed and managed appropriately, these could deliver wider social and environmental benefits such as: barriers to noise; mitigation for water and air pollution; flood alleviation; enhanced landscapes; carbon sequestration; and climate change adaptation for species moving to more suitable climates.

Yet, so often, **main roads present a significant barrier to the movement and spread of wildlife** by physically separating habitats through which wildlife could otherwise move. This is being exacerbated by the trend to build more roads and retrofit existing roads with solid concrete central reservations and barriers. Disturbance and severance can also damage irreplaceable ancient woodland, wetlands and meadow habitats across a wide area.

RIS1 had aspirations for the operation, maintenance and enhancement of the SRN to move to a position of no net loss of biodiversity by 2020, with a longer-term goal of delivering net biodiversity gain. To achieve this longer-term goal in a meaningful way, that delivers lasting benefits for our environment, society and the economy, **RIS2 must set out clear standards** which:

- Avoid loss and damage to our existing network of protected nature conservation sites (e.g. Local Wildlife Sites and SSSIs) and irreplaceable habitats
- Secure biodiversity enhancement and restoration schemes across the SRN
- Ensure ongoing sensitive management of the SRN soft estate.

We expect the Government's 25 Year Environment Plan to be published prior to the start of the RIS2 programme. It is therefore crucial that the Department for Transport and Highways England deliver RIS2 in alignment with the objectives and

metrics of the Plan, consistent with the Government's aspiration to "be the first generation to leave the environment in a better state than we inherited it".

A handful of 'landscape bridge' projects have so far been implemented. Most have been carried out in an attempt to mitigate the damaging, negative overall effects of new road links, making their particular impact hard to judge.

Using Natural Capital Accounting (NCA) and geographic information systems (GIS), Highways England and the Environment Agency could identify the SRN corridors with the most potential for multiple benefits arising from improvements, both for wildlife (such as restoration, additional connectivity, planting etc.) and for other wider environmental and well-being benefits Highways England is aiming to achieve.

More holistically, SRN corridors that are in or adjacent to all of the following: Designated Landscapes (i.e. National Parks and AONBs); irreplaceable habitats; Nature Improvement Areas (NIAs); components of Ecological Networks; and Living Landscapes would be potential targets for action.

The Environment Fund introduced in RIS1 was a welcome catalyst for a green retrofit programme to help fix the deep-seated problems of past decisions and to reduce future impacts. But there is still much to do. Greater investment in RIS2 will ensure the good principles and work established during RIS1 can be fully realised.

Performance metrics	Measured in...
Condition of affected wildlife sites (e.g. Local Wildlife Sites and SSSIs)	Condition of sites
Habitat connectivity on a landscape scale - creation of natural green network with linkage to neighbouring estate, restoring adjacent habitats (plantations on Ancient Woodlands, degraded peat bogs and other important sites and habitats) – 'Miles of Connectivity'	Length and quality of network, using a connectivity score
Natural Capital Account (NCA) of Highways England land	NCA metrics
"No net loss" and "net gain" approach to biodiversity should follow the CIEEM/IEMA/CIRIA guidelines	Net Gain, successfully achieved by end of RIS2 delivery period
Ongoing monitoring and management of compensatory habitat	Compensatory habitat protected, maintained, and condition improves.

Case study: Hindhead Tunnel

The Hindhead Tunnel was created to reroute the A3 trunk road bypassing Hindhead. By involving environmental stakeholders, notably the National Trust, early in the project a longer tunnel was agreed which reunited two sections of the Hindhead Commons AONB. The Commons provide a rich habitat for heathland plants, birds and insect fauna, including rare crane flies. In addition to the biodiversity benefits, the project enhanced the landscape and provided safe access for walking and cycling.[17]

Delivering on the Biodiversity Action Plan

Useful principles to enhance biodiversity and connectivity were established in Highways England's 2015 Biodiversity Action Plan (BAP), for which the first annual review is outstanding (due July 2016).

The Biodiversity Action Plan sets the goal "We will be able to demonstrate that we have protected and increased biodiversity on our network."

To make this a reality in future, RIS2 requires:

- A commitment to avoid loss and damage to protected sites of international, national, and local nature conservation value (e.g. Local Wildlife Sites and SSSIs) and irreplaceable habitats (e.g. Ancient Woodlands, peat bogs etc.)
- Continued and enhanced designated funding for biodiversity into RIS2
- Review of BAP delivery to measure and appraise progress against actions
- Proper performance measures, underpinned by up-to-date, locally-informed baseline data
- Ongoing monitoring of SRN land; strategic mapping of the estate including any new compensatory habitat to identify future opportunities for enhancement, restoration and improved connectivity
- Investment in the sensitive long-term management and maintenance of the SRN's soft estate.

Case study: A38 Haldon green bridge

The A38 Devon Expressway severs the Haldon Forest SSSI, disrupting the extensive walking and cycling routes, breaking the landscape and providing a hazard to road users and wildlife, particularly deer.

Highways England has used the opportunity of the designated Environment funds for biodiversity and landscape to develop a major green bridge scheme. This new structure would re-connect the SSSI, providing a safe link for people and wildlife, with appropriate planting to complement the landscape and add to biodiversity.

This exciting project is still at the design stage, but has the potential to deliver on all the strategic priorities identified in this report:

- prioritising green retrofit to an existing damaging road
- integrating with other environmental projects and non SRN routes
- showing environmental leadership with an exemplary scheme.

Green bridges: a lifeline for nature

Green bridges can help reverse habitat fragmentation and improve road safety. Purpose-built 'natuurbrugge' (nature bridges) are a common feature in the Netherlands, including the 800m long Natuurbrug Zanderij Crailoo at Hilversum.

A new 'ecoduct' is being constructed at Groenendaal, Belgium, as the largest of a series of wildlife crossings that will reconnect the Soignes Forest across the Brussels ring road.
The 60m ecoduct is designed to include trees, plants and a chain of pools to support the widest range of wildlife. It is being funded and delivered by the national Highways Agency in collaboration with local and regional government, and the Nature and Forest Agency and supported by the EU Natura 2000 project.

In Korea, an architectural competition has recently been held for a green bridge to cross the Gyeongbu expressway, demonstrating the potential of this kind of structure to enhance the landscape as well as protecting wildlife.

Protecting our health

Reducing the number of casualties on the road is a continuing priority for Highways England, but the health impacts of the Strategic Road Network go beyond road safety. The Road Investment Strategy should play its part in addressing critical public health priorities.

Air quality

Harmful and illegal levels of air pollution are found in communities across England and is largely due to the impact of motor traffic, particularly diesels, on air quality.

The £100 million designated fund for air quality in RIS1 is an important contribution to addressing pollution on the network and it should be retained and ideally expanded in RIS2. However, the delay in publishing Highways England's Air Quality Plan, combined with a narrow scope on how the designated fund can be spent, has limited its effectiveness to date. That needs to change in RIS2.

The UK Government has been successfully challenged by ClientEarth twice for failing to tackle illegal levels of air pollution. Both the Supreme Court and the High Court have ordered the Government to produce air quality plans to show how it is going to meet legal limits of nitrogen dioxide in the shortest time possible. The need for Highways England to contribute to this effort is identified in the Government's 2017 air quality plans.

The Road Investment Strategy should have as a central aim not only reducing pollution from Highways England's operations, but also from traffic on the whole SRN. Many places in breach of mandatory air quality standards have motorways or trunk roads running through their centres or close to residential areas.

The most effective measures to reduce the air pollution impact of the current SRN would be:

- Reducing speed limits in highly polluted areas
- Reducing motor traffic levels
- Reducing emissions from vehicles, including a national network of Clean Air Zones.

The benefit of lower speed limits in reducing pollution has been acknowledged recently in plans for RIS1 schemes such as the M1 'Smart' motorway near Sheffield. This approach should be mainstreamed in RIS2.

Successive court cases have required the UK Government to act on air quality, prompting the roll out of more clean air zones, which will be introduced during the RIS2 period. **It is vital that the Road Investment Strategy plays its role in delivering clean air zones.**

RIS2 should continue to look at innovative ways to mitigate air pollution from traffic, by investing in pollution absorbing road surfacing and, where appropriate, barriers.

It should also look at accelerating the rollout of an EV fast charging network to support EVs making longer journeys on the SRN, which will help deliver lower carbon emissions, although relying on future uptake of electric cars alone will not deliver acceptable air quality.

Recognising that pollution does not respect boundaries, RIS2 should empower Highways England to work in partnership with local authorities, transport operators and other key bodies, and be free to contribute funds to joint projects such as charging-based clean air zones, developing better rail freight interchanges and promoting modal shift, which may lie outside the scope of RIS2 but which will contribute to reducing air pollution from motor vehicles across the network.

Water quality

Roads also contribute to water pollution, with many sensitive and highly polluted sites affected by the current operations of the SRN. Drainage ditches, notably at the A47 Acle Straight, can provide an important habitat for protected species.

Pollution from motor vehicles using the SRN enters the water, while hard landscaping and major construction works disrupt waterways.

Highways England has identified water quality as one of the 'strategic levers' in its Environmental Strategy and has delivered some major environmental improvements at locations including the Droitwich Pools under the M5 with the Environment Designated Fund.

In RIS2, such exemplar projects should be complemented by **a whole system approach to protecting water quality** and the natural aquatic environment.

Maintenance and construction programmes should be designed to prevent any further deterioration of water quality and to achieve good ecological and chemical status for all waters affected by the SRN.

Performance metrics	Measured in...
Contribute to delivery of Clean Air Zones	% of SRN within Clean Air Zones achieving compliance with legal limits for air quality
Working in partnership to deliver air quality compliance	Number of pollution reducing partnership projects delivered
Ensure Highways England's fleet is zero or near zero emission by end RIS2	% of fleet that is zero or near zero emission
Use of variable speed limits to control pollution	% of SRN that is managed with variable speed limits
Water quality in key waterways affected by the SRN	Ecological status of water body as defined by the Water Framework Directive

Noise pollution

The World Health Organisation (WHO) has reported that noise is second only to air pollution in the impact it has on human health.[18] It is a major cause, not only of hearing loss, but also of increased stress, annoyance and sleep disturbance, leading to increased risk of heart disease, stroke, and poor mental health. This can particularly affect densely populated urban areas and many low-income communities.

Noise from traffic on the SRN not only has adverse impacts on human health: it also undermines the tranquillity of the countryside and has damaging effects on wildlife. Highways England could contribute to mapping areas of tranquillity by publishing open data on the noise contours of all new and existing SRN infrastructure.

In the first Road Investment Strategy, Highways England sought to mitigate the impact of noise pollution through a programme of double glazing and other noise insulation in homes in Noise Important Areas. This approach fails to address the wider impacts of noise pollution in the public realm, and on the natural environment.

Barriers, while effective and essential in some locations, can be visually intrusive. Greater use could be made of natural barriers such as tree screening or use of traditional materials in man-made barriers, at visually sensitive locations. Dense planting can achieve a reduction of 3-5 dBA road noise per 100 feet according to the US Department of Transportation.[19]

The priority for addressing noise pollution in RIS2 should move beyond mitigating the impact to seeking to reduce the noise at source.

This should include ensuring as much as possible of the SRN is resurfaced with noise reducing surfacing with priority being given to areas such as National Parks and AONBs that are valued for their tranquillity and wildlife as well as those areas where noise affects high numbers of people.

Performance metrics	Measured in...
Reduce noise generation at source	% of SRN with noise reducing surfacing
Reduction in the number of people impacted by noise from SRN	% of residential areas severely impacted by noise
Tranquillity in areas of recreational use, landscape and wildlife value	Reduction in noise contour affecting designated landscape and heritage assets

Reconnecting communities

The design and operation of the Strategic Road Network has a major impact not only on drivers, but on non-motorised road users and on the communities through which roads pass. Transport Focus has noted that without a clear long-term vision RIS2 risks continuing a piecemeal approach to improvements on behalf of cyclists, pedestrians and equestrians.[20]

Dedicated funding for cycling, safety and integration has helped deliver improvements during RIS1: in RIS2 this should be continued, with a focus moving beyond basic safety to restoring connections across local networks, designed and located to best serve their users.

Contributing to pedestrian-friendly places

The SRN is not limited to cross-country motorways. Many rural A roads or urban trunk roads pass through communities, shaping the local environment. Where public rights of way cross the SRN, these must be safeguarded, with appropriate signage and crossing points that reflect established routes and desire lines. **Footways alongside the SRN must be fit for purpose, safe and well maintained.**

Where the SRN is part of a local high street or residential area, roads should not only be safe, but form part of the place, contributing to an attractive environment where people will want to walk and spend time. Whilst the SRN clearly plays a very important role in moving vehicular traffic, it is equally important that it is safe and easy to cross for those on foot. This is particularly important where bus stops are located on the SRN.

The performance of the SRN must be measured in terms of the level of service it provides to all users and to the communities affected by it, not just drivers. Pedestrians who use the SRN have often been badly catered for in the past. With increasing growth of urban populations, high quality provision for pedestrians should be a priority in RIS2.

Highways England's accessibility strategy has set out some positive principles in RIS1. In RIS2, these should be delivered consistently in practice.

Case study: learning from London

In 2012 the Mayor of London's Roads Task Force created a typology of street types in Greater London and designated all roads within the framework. The Street Types for London approach recognises that roads have a role in moving traffic and a role as places.[21]

To designate the roads, Transport for London held a series of workshops with transport authorities and other key stakeholders. This approach ensured the designation of the roads reflected local knowledge. The street types framework ensures that appropriate roads investment is delivered in the right locations.

This approach of local stakeholder involvement in the designation of SRN roads would be appropriate for delivery of the new Roads Investment Strategy, given the new framework of sub-national transport bodies and combined authorities in England. A similar approach would allow local stakeholders to indicate the function of the road and their preference for future investment.

Better provision for cyclists and riders

Cycling is recognised by the Government as a highly desirable transport choice: increasing the proportion of transport spending on cycling is a key way to achieve significant emissions reduction compared to other forms of transport infrastructure.[22]

Improved provision for cycling is increasingly being delivered as an integral part of the Road Investment Strategy. Yet too often good cycling policies are not translated into good provision on the ground.

The funding for cycling facilities and improved safety and accessibility in the RIS1 designated funds is welcome and should be continued and expanded in RIS2, in line with the aspirations of the Government's Cycling & Walking Investment Strategy (CWIS). This requires considerably enhanced investment if it is to achieve its admirable stated aims and targets.[23]

The guidance in **Interim Advice Note 195/16 on cycling design is welcome and represents best practice. It now needs to be implemented across the board**, both in new road schemes and as part of a comprehensive network-wide retrofit programme.

Case study: M5 Tithebarn Lane cycle bridge

As part of a project to connect new housing developments, Highways England and Devon County Council collaborated on a new foot and cycle bridge.

This bridge spans the M5 on the edge of Exeter providing an excellent link to the lanes and villages to the east of the city, to Exeter Airport and beyond that to the East Devon Area of Outstanding Natural Beauty.

Cycling facilities must not only be well designed but also in the right place. The Propensity to Cycle tool should be used to prioritise crossing locations and junction improvements on the SRN, as part of a data-led approach. By liaising with cycling organisations, local authorities, and other user groups at early stages of scheme design, new provision can link up with existing wider cycle networks, and other off road networks, and ensure that other vulnerable users are not unnecessarily excluded.

Equestrians using and crossing the SRN are particularly vulnerable, as highlighted by the British Horse Society's Dead Slow campaign, and often have no alternative routes available.

Crossing points should be designed in line with best practice, using the Pegasus design, and located to maintain and improve connectivity with the wider bridle path network, on the same principle as linking up cycling routes. Alternative provision for equestrians should be included in projects on routes which have been determined unsafe for walkers and cyclists and where safe alternatives are therefore to be provided.

Highways England should institute training programmes and ongoing quality audits for both in-house and contractor teams, to **ensure that best practice in cycling and equestrian provision becomes part of business as usual.** Simple design features, for example ensuring that there is end-to-end visibility through underpasses, can make a huge difference. Highways England can also contribute positively to road safety by requiring use of 'direct vision' lorries on its contracts.

The rollout of expressways could see the exclusion of non-motorised users from their local main roads.

Dutch five principles

When addressing the needs of cyclists the Dutch aim to deliver routes that are "coherent, direct, attractive, safe and comfortable."

- **Coherence:** consistent quality; ease of way finding, choice of routes
- **Directness:** no unnecessary detours; faster than a car, constant speed; minimum delays
- **Attractiveness:** perception of a pleasant route; personal safety; ability to ride side by side
- **Safety:** mix if possible; separate if necessary; no hard conflicts
- **Comfort:** smooth surfaces; minimal stops; protection against weather.

This is an opportunity for provision of high quality alternative routes (based on the Dutch five principles set out above) which must be integrated into the cost and scope of expressway programmes, and be applicable to all vulnerable users.

The best indicators of success are not simply the vital need to reduce casualties, but the broader goals of reduced risk, greater usage and improved satisfaction among both cyclists and equestrians.

Performance metrics	Measured in...
Improved safety, lower risk	• Reduction in KSI casualties per trip for non-motorised road users • Proportion of users reporting better safety experience
Improved facilities	• Miles of safe footway delivered along SRN corridors in urban centres • Number of surface level crossings appropriate for all vulnerable road users installed • Miles of IAN-compliant cycling provision along SRN corridors • Number of links created to wider cycle and bridle path networks
User take-up & satisfaction	• Increased satisfaction in local area from Community Life Survey • Reported ability to access key local services • Increase in usage of dedicated cycling facilities • Increase in usage of bridle paths and foot paths • Satisfaction with provision for non-motorised users among those living or working in the vicinity

Bus and coach integration

Bus and coach services bring great social and environmental benefits, connecting communities to jobs and services and reducing single occupancy vehicle traffic, which is a major cause of congestion on the road network. Every three buses can replace up to 200 vehicles on the road.

Congestion is one of the greatest challenges facing the UK's bus networks.[24] Over the last 50 years, bus journey times have increased by almost 50 per cent in the more congested urban areas. Performance data collected from GIS ticket machines is increasingly available as most operator fleets are moving to new generation ticketing, providing evidence of wider network performance. Slower speeds lead to a spiral of decline, with higher costs, higher fares, fewer passengers, loss of income leading to service decline and ever fewer passengers.

This is not just a city centre issue: interactions with strategic roads loom large for many of the UK's bus networks. In specific locations, it can be the key determinant of an effective and efficient bus service.

Motorways and dual carriageways can sever radial bus routes leading to poor reliability for passengers, while breakdown of the flow on motorways and trunk roads can regularly spill over onto local road networks, bring local bus services to a congested halt.

Motorways and trunk roads fulfil important roles in feeding edge of town Park and Ride facilities, as part of an overall integrated transport and parking strategy. Long-distance bus services using the trunk road network need convenient and accessible places to drop off and pick up passengers along the way. They are also reliant on convenient and safe crossing points at or close to the bus stops on the SRN to enable the buses to serve places in both directions.

FirstGroup case study: York Park and Ride

York has the largest Park and Ride network in the UK with 4,970 car spaces, and also one of the most successful, growing from over 1 million users in 2000 to over 4 million today. New locations have been introduced to intercept radial traffic and reduce tips around the York bypass, with 4 of the 6 Park and Ride locations serving the A64.

Signage along the approach roads is not prominent enough to promote use of Park and Ride. Research suggests that motorists are not aware of the Park and Ride option until after they have passed the site. This leads to increased congestion in York and unused capacity on Park and Ride services.

Installation of high-profile digital or variable message signing, providing information on journey time into York, car park capacity, and next departure times, could transform this for the better.

FirstGroup case study: Bristol M32 Park and Ride

Bristol is one of the UK's top 10 most congested cities, costing the city around £154 million a year in lost time. The M32 is the main strategic highway in and out of Bristol, with traffic build up on the M32 frequently spilling over into the city centre causing acute congestion and air pollution issues.

A Park and Ride site at or near M32 Junction 1 could intercept vehicles as they are starting their journey into Bristol, with the offer of a high frequency peak service of at least every 10 minutes towards the city centre.

It would leverage the £200 million national/local investment in Metrobus, the Bus Rapid Transport network due to be operational in 2017/18, thus relieving congestion on the M32 and the wider local road network, while at the same time maximising use of a key public transport corridor.

The rollout of expressways could see the exclusion of pedestrian access and bus and coach stops from what are currently key routes for passenger services. Any relocation of bus and coach stops off the network could have a further impact on services and needs to be carefully planned, with early consultation with operators, passenger groups and the relevant local authorities.

The mutual interdependence of bus networks and the Highways England network has not often received the attention it deserves, on the part of both highways and bus operators.

Highways England's Integration Fund, part of RIS1, offers the opportunity to change that, by developing a stronger ongoing engagement between Highways England and its users, and focusing interventions on some of the specific challenges faced where buses interact with the SRN. Progress in committing funding has been regrettably slow during RIS1: there is now an opportunity for Highways England to press ahead with identifying projects and commencing delivery.

Schemes that could be included in RIS2 are:

- Junction priority and filter lanes for buses and coaches
- Bus and coach only lanes on sections of key routes
- Coach interchange schemes, e.g. at service stations
- New Park and Ride provision and improved Park and Ride signage
- Providing improved waiting, access and crossing facilities for bus passengers on the SRN.

These ideas are just the beginning: as mutual understanding grows, and experience is acquired by Highways England network planners in tackling bus-related issues, additional opportunities for joint working will be identified. **It is therefore vital that the Integration Fund is continued into RIS2**, and that planning for bus and coach integration, including working with local bus partnerships, becomes mainstream to future road projects.

Performance metrics	Measured in...
Improved bus and coach interchange facilities	Number of interchanges delivered and the extent of their use
Public transport reliability on the SRN and on key junctions across SRN	Minimum 95 per cent punctuality on priority SRN routes and junctions

Conclusion

Our report has identified key challenges and opportunities for the second Road Investment Strategy.

Together, these show how RIS2 can contribute to tackling climate change and pollution, and protecting the natural environment; how we can improve the roads we have, rather than building new roads; and how the experience of non-motorised users can be transformed for the better.

These combine to offer an exciting vision of how the Strategic Road Network could develop, in harmony with the places and people it serves: we look forward to working with the Department for Transport and Highways England to help make this vision a reality.

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Report edited by Bridget Fox and designed by Fran J Bath.
Thanks to all the contributors particularly Daniel Carey-Dawes, James Bartholomeusz, James Beard, Joe O'Donnell, John Dowie, Rachel Hackett, Richard Barnes, Ruth Bradshaw and Steve Chambers, with additional contributions from Andrea Lee, Ben McCarthy, Chris Todd, Eugene Suggett, Jason Torrance, John Stewart, Lisa Lavia, Lorraine Mullally, Mark Weston, and Roger Geffen.

Campaign for Better Transport's vision is a country where communities have affordable transport that improves quality of life and protects the environment. Achieving our vision requires substantial changes to UK transport policy which we aim to achieve by providing well-researched, practical solutions that gain support from both decision-makers and the public.

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August 2017