



STRATEGIC TRANSPORT PROJECTS REVIEW

PROTECTING OUR CLIMATE
AND IMPROVING LIVES



Appendix I: Recommendation Appraisal Summary Tables

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1. Detailed Appraisal Summary

An 'Appendix I: Recommendation Appraisal Summary Tables (ASTs) Explanatory Note' accompanies this AST.

1.1. Recommendation 33 – Future Intelligent Transport Systems

Recommendation Description

This recommendation involves exploiting future technologies and services; these new technologies and services would contribute to reducing road accidents, the delivery of safer journeys, the provision greater resilience across the networks and deliver a higher level of service to all road users.

This recommendation covers adaptations to the service provided by Traffic Scotland in the form of both the deployment of new roadside equipment and the updates required to the Traffic Scotland System (TSS). Such changes shall accommodate Scottish Government policies affecting the structure and operation of the trunk road network, along with the adoption of new technologies and services, including any disruptive technologies such as Connected and Autonomous Vehicles (CAV) and Cooperative Intelligent Transport Systems (C-ITS).

The current TSS would have to evolve new approaches beyond the current standards to adapt to these challenges and to continue to deliver the services into the future.

This recommendation would look to progressively integrate passenger and freight modes into the Traffic Scotland National Control Centre (TSNCC) as opportunities and technological advances arise.

This recommendation relates to investment to enhance and future-proof the capabilities of the current TSS, including how to plan for the future renewal and replacement of equipment, systems and services to maximise network operations and resilience.

Possible future interventions include:

- **Enhancement of Network Operations:** Deployment of technology and infrastructure to support concepts such as Variable Speed Limits, incident management and support for bus priority (including use of hard shoulders and reallocation of existing road space)
- **Cooperative Intelligent Transport Systems (C-ITS):** Deployment of roadside or in-vehicle C-ITS infrastructure to enable the wider dissemination of safety, travel and traffic information
- **Data Services:** Future-proofing the TSS to address the next generation of data / services, including (but not limited to) the impact of CAVs and C-ITS services and data from third party providers
- **Digitalisation:** Digitalisation of Intelligent Transport Systems (ITS) services on the trunk road and motorway networks to align with European digitalisation of road networks to support the exchange of safety related information, CAV, Mobility as a Service (MaaS) and future new developments
- **Cyber Security:** Frequent system enhancements to deal with system resilience, cyber security, obsolescence and the avoidance of legacy systems issues
- **eCall:** Implementation of eCall, or similar functionality, to allow incident response to be triggered to Police Scotland and Transport Scotland simultaneously.

1.2. Relevance

Relevant to trunk road and motorway network across Scotland

This recommendation applies to, and would benefit, users of the trunk road and motorway network across Scotland but may have several wider uses in terms of new technology.

The TSS covers the planning, monitoring, control, co-ordination and response to all major travel incidents and severe weather incidents on the trunk road and motorway network.

This recommendation focuses on the need to future-proof the current services, so they can continue to provide existing services such as Variable Message Signs and the Traffic Scotland website, as well as be able to deal with challenges associated with new disruptive technology such as CAVs.

The recommendation also includes developing Vehicle-to-Vehicle (V2V) and Vehicle-to-Infrastructure (V2I) ITS, using wireless networks to enable secure, real-time interactions between compatible vehicles and between vehicles and the network infrastructure. These solutions are also known as Cooperative Intelligent Transport Systems (C-ITS).

This recommendation would enhance the capability of the TSS, plan for the future deployment of new roadside equipment, systems and services to maximise network operations and resilience, and to provide a seamless and consistent level of ITS service (particularly safety related information) while crossing the borders of the devolved administrations and Western Europe.

1.3. Estimated Cost

£26 million – £50 million+ Capital

Capital Cost for developing the Future ITS recommendation would range from £26 million - £50 million.

1.4. Position in Sustainable Investment Hierarchy

Maintaining and safely operating existing assets

This recommendation would contribute to seven of the 12 NTS2 outcomes, as follows:

- Help deliver our net-zero target;
- Adapt to the effects of climate change;
- Promote greener, cleaner choices;
- Get people and goods where they need to go;
- Be reliable, efficient and high quality;
- Use beneficial innovation; and
- Be safe and secure for all.

1.5. Summary Rationale

Summary of Appraisal

	TPO					STAG					SIA				
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
Low Scenario	+	+	+	+	+++	+	+	+	+	+	+	0	0	0	0
High Scenario	+	+	+	+	+++	+	+	+	+	+	+	0	0	0	0

This recommendation is expected to have a positive impact on a number of the STPR Transport Planning Objectives (TPOs) and STAG criteria, particularly in relation to climate change, safety, resilience and economy, as a result of maximising network operations.

The effect on the Strategic Environmental Assessment criteria is expected to be minor positive due to improved journey reliability and safety and resilience of the road network through the planning, monitoring, control, co-ordination and response to major travel incidents and severe weather incidents on the trunk road and motorway network.

The recommendation is expected to improve traffic flows, which in turn can help reduce fuel consumption.

The impact across all of the other Strategic Impact Assessment criteria is expected to be neutral.

In terms of deliverability, Transport Scotland already has extensive experience of advanced traffic management systems with the modern facility at South Queensferry and of installing new roadside technologies, so experience is proven and knowledge is mature.

With regards to C-ITS, the development of this technology and associated services is evolving, with currently no fixed European standards for its deployment. At this stage, the feasibility of widescale C-ITS schemes is therefore uncertain.

The main risks for feasibility will relate to the ability to use tried and tested technology / systems / software within an environment of continuous change and evolution.

It is also currently not fully defined what capabilities the service provided by Traffic Scotland will require in future years.

The level of public acceptability is linked to the overall provision of ITS services and is likely to be positive due to the ability to smooth / ease traffic flows, reduce and remove incidents more efficiently and inform transport users of 'real time' conditions.

Details behind this summary are discussed in Section 3, below.

2. Context

2.1. Problems and Opportunities

This recommendation could help to tackle the following problems and opportunities:

Relevant Problem & Opportunity Themes Identified in National Case for Change

- **Reliability:** without intervention, forecast increases in traffic volumes on the road network will impact negatively on reliability through increased congestion and more roadworks as greater pressure is placed on the operational efficiency of the network. [Reliability can also be an issue on the rail network.](#)
- **Safety and Security:** Scotland’s transport system needs to be safe. Whilst the [number of road accident casualties reduced by 11% between 2017 and 2018](#), the number of fatalities has increased. Women and disabled people in particular feel vulnerable when using public transport – particularly at bus stops, train stations or other transport interchanges.
- **Information and Integration:** high-quality journey planning information, both digital and physical, is important to enable a resilient transport system that allows people and goods to get to where they need to get to. Some journeys are not possible due to a lack of connections or accessible modes of transport, and long wait times, the need for multiple tickets and complex connections deter people from some public transport services resulting in many running below capacity.
- **Resilience:** a key challenge is providing a transport system that is resilient and speedily recovers from disruption, thus minimising impacts of delayed journeys on networks and users.
- **Adapting to Climate Change:** climate change directly affects the transport sector through the increasing number of more severe and frequent extreme weather events and the disruption they cause to the transport system. Disruption often disproportionately impacts vulnerable communities with fewer and less resilient transport options and can lead to significant disruption and high economic costs.
- **Air Quality:** transport, and road transport in particular, remains a significant contributor to poor air quality. Air pollution increases the risks of diseases such as asthma, respiratory and heart disease, particularly for those who are more vulnerable. Air quality is often worse in areas of deprivation and is a health inequality issue.
- **Global Climate Emergency:** the Scottish Parliament committed to an ambitious target of net zero emissions by 2045 and transport needs to play its part. Transport is currently Scotland’s largest sectoral emitter, responsible for 37% of Scotland’s total greenhouse gas emissions (greenhouse gas emissions encompass CO2 emissions) in 2018 ([National Atmospheric Emissions Inventory 1990-2017](#)). Our transport system needs to minimise the future impacts of transport on our climate.

2.2. Interdependencies

This recommendation has potential overlap with other STPR2 recommendations and would also complement other areas of Scottish Government activity.

Other STPR2 Recommendations

- Provision of strategic bus priority measures (14);
- Trunk road and motorway safety improvement to progress towards ‘Vision Zero’ (30);
- Trunk road and motorway climate change adaptation and resilience (31);
- Trunk road and motorway renewal for reliability, resilience and safety (32);
- Traffic Scotland System renewal (34);
- Intelligent Transport System renewal and replacement (35); and
- Speed Management Plan (38).

Other areas of Scottish Government activity

- [Scotland’s Road Safety Framework to 2030](#): The enhanced functionality of new roadside ITS services aligns closely with this long-term vision for road safety where there are zero road fatalities and injuries by 2050.

3. Appraisal

This section provides an assessment of the recommendation against:

- STPR2 Transport Planning Objectives (TPOs);
- STAG criteria;
- Deliverability criteria; and
- Statutory Impact Assessment criteria.

The seven-point assessment scale has been used to indicate the impact of the recommendation when considered under the ‘Low’ and ‘High’ Transport Behaviour Scenarios (which are described in Appendix F of the Technical Report).

3.1. Transport Planning Objectives

1. A sustainable strategic transport system that contributes significantly to the Scottish Government’s net-zero emissions target

Low Scenario	High Scenario
+	+

The existing TSS helps to control and improve traffic flow conditions, which in turn can have a positive impact through fuel consumption reduction. For example, one study found that pollutant emissions were reduced by between 2% and 8% on the M25¹ through the provision of Variable Message Signs (which are controlled at the Control Centre).

Elements of this recommendation which deal with [new technologies such as CAVs](#) could also have a positive impact against this objective as the majority of autonomous vehicles in Scotland are expected to be ULEVs.

Future ITS could also have a role in a sustainable strategic transport system by controlling the reallocation of road space to support public transport and could consume environmental data and utilise it to inform journey planning and routing.

Similarly, in time, C-ITS deployment should provide a multi-modal environment in which modal shift is encouraged and congestion is reduced (C-ITS provides the ability for authorities to address congestion issues in real time), thereby reducing the environmental impact of stationary vehicles.

Overall, this recommendation is considered to have a minor positive impact, with greater potential for positive impact from Enhancing Network Operations as a result of bus priority infrastructure.

This recommendation is expected to have a minor positive impact on this objective in both Low and High scenarios.

2. An inclusive strategic transport system that improves the affordability and accessibility of public transport.

Low Scenario	High Scenario
+	+

The Enhancing Network Operations component of this recommendation, which includes support for bus priority, has the potential to support this objective by reducing bus journey times and therefore improving accessibility.

Making bus a more attractive option could help to reduce reliance on private cars, and improve mobility and inclusion, particularly for disadvantaged and vulnerable users, however this recommendation is not anticipated to encourage sizeable modal shift to sustainable modes.

The impact of improving the Traffic Scotland System element to adapt to future conditions against the objective of an inclusive strategic transport system is considered neutral as the TSS performs back-office services and the proposed scope and functionality cannot be fully defined at this stage.

This recommendation will have no impact on the affordability of public transport.

Whilst the recommendation could have a positive impact on access to bus services through improvements to data services, there is no improvement to the physical access to public transport.

Overall, this recommendation is expected to have a minor positive impact on this objective in both the Low and High scenarios.

3. A cohesive strategic transport system that enhances communities as places, supporting health and wellbeing.

Low Scenario	High Scenario
+	+

The focus of this recommendation is on the trunk road and motorway network and therefore it is unlikely to have any significant impacts in terms of enhancing communities as places or supporting health and wellbeing objectives.

The [C-ITS](#) element of this recommendation could support pedestrians and cyclists (as well as other modes) and improve road safety, thus contributing towards a cohesive strategic transport system that enhances communities as places.

This improvement in road safety from C-ITS would help to increase mode share of active travel; though it is noted that the impact is likely to be limited as much of the current focus (although by no means exclusively) is on motorised transport.

As such, this recommendation is expected to have a minor positive impact on this objective in both the Low and High scenarios.

4. An integrated strategic transport system that contributes towards sustainable inclusive growth in Scotland.

Low Scenario	High Scenario
+	+

The existing services provided by Traffic Scotland help to control traffic flow conditions, which maximises efficiency and, in turn, has a positive impact on inclusive growth, for example through increased transport resilience, improvements to journey time reliability, reduced costs, and making better use of beneficial transport innovations.

This can benefit all road users, including those travelling by bus.

With regards to the C-ITS element, this also improves network efficiency by enabling a range of modes to communicate with one another, reducing congestion and reducing stop-start conditions, enabling sustainable growth in Scotland.

The impact of improving the services provided by Traffic Scotland to adapt to future conditions is therefore expected to have a minor positive impact against this objective in both the Low and High travel behaviour variant scenarios due to its potential to increase network efficiency and therefore economic competitiveness and resilience in domestic and international markets.

This recommendation is expected to have a minor positive impact on this objective in both the Low and High scenarios.

5. A reliable and resilient strategic transport system that is safe and secure for users.

Low Scenario	High Scenario
+++	+++

Improving the services to adapt to future conditions is considered to have potential for positive impacts against this objective. Monitoring the flow of traffic on the trunk road and motorway network to improve safety is one of the existing TSS main functions.

Improving the TSS to adapt to future conditions has the potential to have a further positive impact against this objective. For example, in the [first three years of ITS being deployed along the full Queensferry Crossing, accidents reduced by approximately two-thirds](#): any improvements to the existing services are anticipated to enhance capabilities.

Many elements of this recommendation, including new deployment, C-ITS, improving efficiency, cross-agency co-operation, improvements to data services and digitalisation of

ITS services are expected to improve reliability and resilience of the trunk road and motorway network.

Although measures which include use of the hard shoulder for bus priority could have a negative impact against the safety element of this objective, [one pilot study in Israel, which allowed bus operations on hard shoulders of a rural motorway during peak hours, showed no observed increase in hazardous events nor in traffic accidents.](#)

Further to this, [a National Highways study considered the safety of Smart Motorways.](#) This found that overall, the evidence shows that in most ways, smart motorways are as safe or safer than conventional ones; for example in three of the past four years the study looked at, the proportion of fatalities occurring on Dynamic Hard Shoulder and All Lane Running was lower compared to the share of traffic carried. However, injury rates were slightly higher.

The Enhancing Network Operations aspect includes other measures such as Variable Speed Limit signs and incident management and has been scored as having a minor positive impact against this objective, though it is noted that further evidence to support this would be beneficial.

Improving safety is also one of the biggest benefits of C-ITS. The European Commission’s [C-ITS Platform Phase II document](#) sets out that digital technologies, which C-ITS deploys, help to reduce human error, which is the greatest source of accidents in transport. The report also sets out that there are substantial safety benefits associated with the technology.

C-ITS also helps to improve route resilience as authorities can provide priority to particular vehicle types and thus improve the flow of traffic.

Overall, this recommendation is expected to have a major positive impact on this objective in both the Low and High scenarios.

3.2. STAG Criteria

1. Environment

Low Scenario	High Scenario
+	+

See Strategic Environmental Assessment (SEA) below.

This recommendation is expected to have a minor positive effect on this criterion in both the Low and High scenarios.

2. Climate Change

Low Scenario	High Scenario
+	+

This recommendation would support a wide range of ITS technology and applications, which would assist in addressing the impact from climate change.

This would be achieved from the reduction of fuel consumption and lowering emissions from transportation due to better management of incidents and congestion.

This recommendation would have a minor positive impact against Greenhouse Gas Emissions, Vulnerability to Effects of Climate Change and Potential to Adapt to Effects of Climate Change, through the planning, monitoring, control, co-ordination and response to major travel incidents and severe weather incidents on the trunk road and motorway network.

This recommendation is therefore expected to have a minor positive impact on this criterion in both the Low and High scenarios.

3. Health, Safety and Wellbeing

Low Scenario	High Scenario
+	+

Improvements which allow the TSS to enhance capabilities and adapt to future conditions have the potential to contribute towards accident reduction and thus improve safety through enhanced monitoring of the network and incident response. In particular, this could be achieved through improved data services.

Digitisation of ITS services, which includes support for technologies such as CAVs in future years, also has the potential to improve safety: [it is estimated that by 2030, CAV technologies could save over 2,500 lives and prevent more than 25,000 serious collisions in the UK.](#)

The anticipated enhancement and coverage of real time data sets from enhanced technologies such as CAV will enhance incident detection, leading to improve response times.

With regards to the C-ITS element, this is also considered to have a significant positive impact. [One study found that reduced accident rates constituted 22% of total cumulative benefits \(the second largest share after reduced travel times / increased efficiency\) of C-ITS deployment.](#)

Although measures which include use of the hard shoulder for bus priority could have a negative impact against the accident sub-criteria, [one pilot study in Israel, which allowed bus operations on hard shoulders of a rural motorway during peak hours, showed no observed increase in hazardous events nor in traffic accidents.](#)

The Enhancing Network Operations aspect includes other measures such as Variable Speed Limit signs and incident management but the impact on accidents is uncertain at this stage.

Further to this, [a National Highways study considered the safety of Smart Motorways](#). This found that overall, the evidence shows that in most ways, smart motorways are as safe or safer than conventional ones; for example in three of the past four years the study looked at, the proportion of fatalities occurring on Dynamic Hard Shoulder and Alternative Lane Running was lower compared to the share of traffic carried. However, injury rates were slightly higher.

The Enhancing Network Operations aspect includes other measures such as Variable Speed Limit signs and incident management and has been scored as having a minor positive impact against safety, though it noted further evidence to support this would be beneficial.

This recommendation is expected to have a neutral impact on Health, Access to Health & Safety Wellbeing Infrastructure and Visual Amenity.

Overall, this recommendation is expected to have a minor positive impact on this criterion in both the Low and High scenarios.

4. Economy

Low Scenario	High Scenario
+	+

The impact of improving the TSS to adapt to future conditions is considered to have potential for positive impacts on the economy.

With regards to C-ITS deployment, this helps to provide smoother traffic flows and provide road capacity optimisation. A 2016 study^{viii} estimated that the net benefits of deploying C-ITS in the EU could reach between €4 billion and €13 billion in 2030, based on deploying bundles of C-ITS services.

This recommendation would help to ensure goods can get to markets on time. For example, [the introduction of Managed Motorway type solutions on the M42 in England found that journey times in congested conditions were reduced by 16%](#). Enhancing Network Operations would be anticipated to deliver significant positive benefits.

Improvements which allow traffic flow to be monitored and controlled more efficiently and thus provide greater traffic flow optimisation are considered to have a minor positive impact on Transport Economy Efficiency (TEE) through reduced journey times and vehicle operating costs, including for business users and HGVs, and resilience of the economy.

The recommendation is not anticipated to have an impact on Wider Economic Impacts (WEIs).

Overall, this recommendation is expected to have a minor positive impact on this criterion in both the Low and High scenarios.

5. Equality and Accessibility

Low Scenario	High Scenario
+	+

This recommendation has no impact on public transport network coverage, active travel network coverage nor affordability.

The Enhancing Network Operations component of this recommendation, which includes support for bus priority, has the potential to support this criterion by reducing bus journey times and therefore improving accessibility.

Making bus a more attractive option could help to reduce reliance on private cars, and improve mobility and inclusion, particularly for disadvantaged and vulnerable users, however this recommendation is not anticipated to encourage sizeable modal shift to sustainable modes.

C-ITS can be deployed for bus users to receive various sources of travel information prior to boarding vehicles and also during the journey, thus promoting accessibility and social inclusion.

This also has the potential to have the greatest impact for those groups residing in more deprived areas, who are less likely to have access to a car.

In terms of comparative accessibility, the impact against certain groups, such as those residing in more deprived areas, is also anticipated to be neutral.

Also refer to EqIA / ICIA / CRWIA / FSDA below, as this provides additional impact assessment.

This recommendation is therefore expected to have a minor impact on this criterion in both the Low and High scenarios.

3.3. Deliverability

1. Feasibility

Transport Scotland already has extensive experience of Control Centres, with the modern facility at South Queensferry, so experience is proven and knowledge is mature. Whilst the functionality of Future ITS requires further development, other control centres, for instance CHARM in England and facilities in the Netherlands, would provide good examples to learn lessons and share knowledge on what does and does not work.

The main risks for feasibility would relate to the ability to use tried and tested technology / systems / software within an environment of continuous change and evolution with several disruptive technologies. It is also currently unknown what capabilities the TSNCC would require in future years.

ITS applications have been accommodated on the new Queensferry Crossing and approach roads and Transport Scotland has considerable experience of operating such systems.

As such Enhancing Network Operations aspects of this recommendation is therefore expected to perform well in terms of feasibility.

With regards to C-ITS, the development of this technology and associated services is consistently evolving, with currently no fixed European standards for its deployment. Several large-scale pilots and trails are currently in flight across Europe, including a large-scale deployment on the M50 in Dublin. However, the feasibility of widescale schemes remains uncertain at this stage.

Due to the mature knowledge and opportunities to share further knowledge as it develops, it is considered that this recommendation would be feasible.

2. Affordability

The existing Control Centre would be fully utilised for the development of Future ITS, significantly reducing the level of capital expenditure required and potentially reducing operational revenue expenditure.

A Benefit to Cost ratio of 3:1 for C-ITS has been predicted within the European Commission Strategy, but the [significant benefits are only likely to accrue between five and 10 years after initial investment and be societal not individual \(for example, safer travel in general\)](#).

3. Public Acceptability

The level of public acceptability is linked to the overall provision of ITS services and is likely to be positive due to the ability to smooth / ease traffic flows, reduce and remove incidents more efficiently and inform transport users of 'real time' conditions on the trunk roads and motorways.

The deployment of ITS infrastructure, including renewing, enhancing and new infrastructure has been subject to considerable scrutiny across Europe and evidence is available for high levels of public support and compliance for several schemes.

[Satisfaction with the Fife ITS scheme is high along the full transport corridor, most so with 'feeling of safety' \(97% satisfied\) and 'travel information' \(95% satisfied\)](#).

Enhancing Network Operations includes bus priority measures, an example of which is the initiative of actively managed hard shoulder (AMHS) bus lanes on the M90/M9 Queensferry Crossing corridor.

These are intended to encourage modal shift from private car to public transport by allowing buses to use sections of hard shoulder to offer a journey time advantage to public transport at times when the mainline traffic is moving slowly due to congestion or other factors. This particular element is expected to have public support, particularly from bus users, although it is noted that some car users may not support the use of the hard shoulder due to safety concerns

3.4. Statutory Impact Assessment Criteria

1. Strategic Environmental Assessment (SEA)

Low Scenario	High Scenario
+	+

This recommendation is likely to support SEA objectives related to quality of life and safety (Objectives 4 and 7) and climate adaptation (Objective 2) due to improved journey reliability and safety and resilience of the road network through the planning, monitoring, control, co-ordination and response to major travel incidents and severe weather incidents on the trunk road and motorway network. Minor positive effects are also assessed in relation to the sustainable use of the transport network (Objective 8), due to improvements in transport technology.

This recommendation would likely result in positive effects on the SEA objectives related to reducing greenhouse gas emissions (Objective 1) and improving air quality (Objective 3), as the recommendation is expected to improve traffic flows, which in turn can help reduce fuel consumption.

It is considered that there would be a negligible effect on the remaining SEA objectives (Objectives 6 and 9) as the recommendation is not directly related to them. However, it is not assessed to result in any negative effects on the achievement of SEA objectives related to noise and vibration (Objective 5), the water environment, biodiversity, soil, cultural heritage and landscape and visual amenity (SEA Objectives 10 to 14) and therefore these are considered neutral.

Overall, this recommendation is expected to have a minor positive effect on this criterion in both the Low and High scenarios.

2. Equalities Impact Assessment (EqIA)

Low Scenario	High Scenario
0	0

This recommendation is likely to have a neutral effect on equality groups overall. However, there could be some potential positive impacts on protected groups as a result of improvements to data services and information as well as a reduction in accidents on the trunk road and motorway network.

Overall, this recommendation is expected to have a neutral impact on this criterion in both the Low and High scenarios.

3. Island Communities Impact Assessment (ICIA)

Low Scenario	High Scenario
0	0

This recommendation focuses on the trunk road and motorway network and, therefore, is not directly relevant to island communities.

This recommendation is therefore expected to have a neutral impact on this criterion in both the Low and High scenarios.

4. Children’s Rights and Wellbeing Impact Assessment (CRWIA)

Low Scenario	High Scenario
0	0

The impact of Future ITS on children and young people is uncertain at this stage and is consider overall neutral impact at this stage.

This recommendation is expected to have a neutral impact against this criterion in both the Low and High scenarios.

5. Fairer Scotland Duty Assessment (FSDA)

Low Scenario	High Scenario
0	0

Future ITS is likely to have an overall neutral impact on reducing inequalities of outcome for socio-economically disadvantaged groups. However, people from deprived neighbourhoods are more likely to be injured or killed as road users, and [people in the highest socio-economic groups \(SEGs 1 & 2\) were found to be substantially less at risk of death as car occupants than people in the lower groups \(SEGs 4 & 5\).](#)

Therefore, improvements to safety on the trunk road and motorway network as a result of this recommendation could have potential positive effects for socio-economically disadvantaged groups with regards to safety and health outcomes.

Overall, this recommendation is expected to have a neutral impact on this criterion in both the Low and High scenarios.