CIHT

Progressing the UK towards Safe System implementation

Reducing the number of people killed and seriously injured on UK roads

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119 Britannia Walk
London N1 7JE
t: +44 (0)20 7336 1555
e: info@ciht.org.uk
www.ciht.org.uk

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Contents

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Foreword

Dr Suzy Charman, chair of the project group

To break our current stagnation in the numbers of people being killed or seriously injured on our roads, a step change is required. Many road safety partnerships, road authorities, and policymakers recognise the need to reimagine our current road transport system and reach for Vision Zero through the implementation of the Safe System. Systemic action across all elements of the Safe System will be needed to create a road transport system free from death and serious injury, delivered through the systematic removal of the potential for road collisions to result in death and serious injury.

This report has been written to identify challenges and blockers to Safe System implementation, particularly with regard to safe road infrastructure and safe speeds, and to provide some indicative actions that could be progressed to support delivery. At this critical time for road safety policy in the UK I would encourage the road safety community to keep going, to reinvigorate our collective understanding of a road transport system free from death and serious injury, and to give confidence to the government to take the bold and courageous steps that will be necessary to allow us to make a difference together.

Sue Percy, Chief Executive of CIHT

CIHT is committed to delivering and disseminating good practice in the field of road safety. We aim to help our members stay informed and we work closely with them to contribute to the development of solutions to issues faced by the sector. CIHT's members and our partnership network represent a wide range of transport professionals, and we believe we are strongly placed to help foster strong engagement between stakeholders on the need for sector-wide steps to implement the Safe System in the UK. Already, much discussion has taken place around the Safe System and there is now a need for practical actions focused on implementation and delivery. I encourage policymakers to read this report and to implement as many of the recommended actions as possible, so we can all enjoy a safer road network.

Executive summary

CIHT believes that everyone should have the ability to travel safely.[1] Mobility should not be associated with the unacceptable risk of death and serious injury. To support this objective, we have written this report to identify opportunities for the UK road transport system to be aligned with the Safe System. This report describes the Safe System as a practical and achievable system that, if implemented holistically, will lead to the reduction of death and serious injuries on UK roads. It explains what the Safe System is, identifies the barriers to implementation in the UK, highlights some of the actions required to overcome these barriers, and identifies stakeholders that can contribute towards alleviating them. This report features a broad set of recommendations made to the UK Government to encourage a renewed national-level focus on improved road safety outcomes.

Key recommendations and priority actions for the UK Government:

1. Show leadership and coordination

- We welcome the commitment from the UK Government for a new road safety strategy. We recommend that this strategy fully embraces the principles of the Safe System and sets ambitious long-term and interim targets and performance metrics for tracking progress.
- We call for a road safety board to be established with representation from all relevant government departments and devolved administrations to oversee strategic implementation and coordination.

2. Take legislative and regulatory action

- We call for the UK Government to work with devolved governments and road authorities to ensure that speed limits, and guidance on setting speed limits, are better aligned with survivable speeds.
- We call for adoption of the General Safety Regulations[2] and embracing of vehicle technologies such as intelligent speed assistance (ISA) to maximise their impact.

3. Develop knowledge through research and monitoring

- We call for the establishment of a national road safety investigation branch to investigate collisions throughout the UK.
- We call for the creation of a data-sharing approach to enable thematic learning on systemic action.
- We recommend a strategic review investigating the impact of road safety outcomes on the NHS, social care, and productivity, to be used to better inform the business case for investment in improved road safety outcomes.

[1] CIHT (2024), A transport network fit for all our futures, Chartered Institution of Highways and Transportation

[2] An integrated package of 15 measures, developed by UK vehicle safety research working with partners in the EU; see PACTS (2022), Vaccine for vehicles: Preventing death and injury on UK roads, Parliamentary Advisory Council for Transport Safety

Introduction

The Safe System is not a new concept. It is internationally recognised as best practice in road safety.[3] The principles of the Safe System have been incorporated into road safety strategies in Australia, Sweden, and the Netherlands, as well as by some road safety partnerships and road authorities in the UK. Transport Scotland and the Department for Infrastructure in Northern Ireland have introduced road safety frameworks based on the Safe System, while Transport for Wales is in the process of consulting on one of its own. However, across the UK, there has not been a nationwide, coherent adoption of the Safe System.

There are significant challenges preventing the Safe System from being implemented in the UK. These range from limitations in the availability of technical and financial resources in different parts of the sector, regulatory issues, design practice constraints, lack of high-level decision-maker focus on the topic, incompatibility of policy, standards and guidelines, and the need to reach delivery stakeholders outside of a "traditional" road safety focus. Overcoming these barriers to the Safe System will take time and persistent effort.

According to the World Health Organization, approximately 1.19 million people die each year as a result of road traffic collisions. Road traffic collisions are the leading cause of death for children and young adults aged 5 to 29 years. More than half of all road traffic deaths are among vulnerable road users, such as people walking, wheeling, cycling, or riding motorcycles. The societal cost of road traffic crashes for most countries is 1% to 3% of GDP. [4] In the UK, over 30,000 people are killed or seriously injured on the road network annually.[5] Road safety should be given more priority due to the added strain that crashes and associated medical care place on the UK's public health system and emergency services.

Under the Safe System, all stakeholders have a responsibility to take actions to make roads safer. This includes local, regional, and national governments, multi-sectoral organisations, vehicle manufacturers, road designers, managers, and users. A collective effort is needed to minimise the risk of deaths or serious injury on UK roads.

How to navigate this report

This report focuses on safe road infrastructure and safe speeds.

Part 1: Provides a general overview of the Safe System, including the five elements that make up the Safe System, and presents the argument for a change in UK road safety practices. It is aimed at those interested in gaining a better understanding of the Safe System.

Part 2: Looks at some of the core challenges and possible solutions that need to be addressed in order to progress road safety and has been informed by consultation with sector stakeholders. It is aimed at policymakers, road authorities, and practitioners.

Part 3: Features a technical matrix composed of issues, actions, and responsibilities aimed at delivery stakeholders. It details issues that need to be addressed, the practical actions required to mitigate them, and the ownership of each action. It aims to provide some indicative actions that could be progressed to support delivery of safe speeds and safe road infrastructure.

Appendix: Provides case studies that have informed our overview of the Safe System and some of the actions detailed in the Safe System matrix.

Development of the report

This report has been created through a series of engagement activities, including a workshop held online in March 2024, an in-person workshop at the Society of Road Safety Auditors (SoRSA) annual conference in July 2024, and the support of an advisory group representing the CIHT Partnerships Network, the CIHT Technical Champions, and other road safety experts.

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[3] According to the International Transport Forum 'implementing the safe system approach is the most effective way to improve road safety'

[4] WHO (2023), Global status report on road safety 2023, World Health Organization

[5] PACTS (2024), Manifesto for road safety 2024, Parliamentary Advisory Council for Transport Safety

1. The Safe System

What is the Safe System?

The Safe System aims to ensure the safety of all road users. Every aspect of a transport system needs to be considered. When a collision happens, the system elements must work in combination to mitigate the chance of death or serious injury.

The Safe System is composed of five core elements that support the systemic action required to improve road safety outcomes. For this to work, these elements need to operate in conjunction with each other. The Safe System cannot function if these elements operate in isolation.

The core elements of the Safe System are:

- **Safe speeds:** Ensuring that speed limits and travelled speeds are safe and appropriate for all road users present. As a result, crash forces should be survivable and not exceed human tolerance.
- **Safe vehicles:** Well-maintained vehicles that have both primary technologies (crash avoidance technologies such as lane keep assist) and secondary technologies (severity mitigation such as airbags) to reduce the risk of collision or the likelihood of harm to road users.
- **Safe roads and roadsides:** Ensuring that roads are well maintained, and that their layouts and characteristics are safe for the different users present. Roads can be designed to be self-explaining (to reduce fatal and serious crash likelihood) and forgiving (to reduce crash severity).
- **Safe road users:** Road users take responsibility for their own and others' safety by knowing and complying with road rules. The Safe System is designed to deal with different types of behaviours. For example, educational campaigns address knowledge gaps, and behavioural change programmes with enforcement and deterrence address intentional violation. Vehicle systems and road infrastructure can also influence behaviour of road users (such as self-explaining or enforcing roads and alcolocks[6]).
- **Post-collision response:** In the event of a collision, responses are effective and appropriate. This includes the immediate response for the injured from emergency professionals, medical treatment and longer-term rehabilitation (including mental health support), as well as support for bereaved families. Effective post-collision investigation not only identifies culpability but also supports systemic learning.

Principles of the Safe System

- **Shared responsibility:** Bringing down the number of people killed and seriously injured on roads requires buy-in from all stakeholders in the road network. Everyone has a responsibility to be proactive, taking action to reduce and end death and serious injury. This includes local and national governments, multi-sectoral organisations, vehicle manufacturers, road designers, managers, and users.
- **Human fallibility:** People make what can look like "mistakes" or "errors", but these are normal behaviours that result from limitations in our attitudes, attention, processing, memory, and judgement. The Safe System must be designed to accommodate the needs of the people using it and mitigate for likely limitations.
- **Human frailty:** The human body has a limited physical ability to tolerate crash forces. Injury thresholds change based on different factors in the event of a collision. The Safe System is designed to reflect this frailty and ensure survivability, whereby crash forces do not exceed human tolerances.
- **Layers of protection:** All parts of the road are strengthened in combination to multiply the protective effects, and if one part fails, the others will still operate to protect people. The Safe System has redundancy built in.

[6] A device installed in a vehicle that requires the driver to provide a breath sample before starting. The device locks the ignition if alcohol concentration in the breath sample is detected to be above a certain level

What is the difference between the Safe System and traditional road safety activity?

	Traditional	Safe System
Problem to be solved	Collisions	Death and serious injury
Responsibility for problem	Individual road users	System failures
Approach to solving the problem	Incremental reduction	Systematic and proactive reduction
Goal	Optimise collision reduction	Zero fatal and serious injuries

Source: Adapted from Swedish Road Administration 2015, as cited by the Towards Zero Foundation

The Safe System is underpinned by the overall long-term moral imperative of Vision Zero – the aim for zero road deaths and serious injuries.[7] The Safe System is delivered when we have systematically removed all possibility of death and serious injury resulting from road traffic collisions.

The Safe System focuses on the prevention of death and serious injury rather than preventing all collisions. The continuation of collisions occurring on our roads is inevitable, but the main goal is to manage crash forces, so they are not intolerable to the people using the system.

For the Safe System to be implemented, the road safety community must bring together best practice and established principles, working systematically and strategically. The Safe System is not simply an "approach". It requires a strategic and systematic framework that seeks to create the conditions necessary for the delivery of the Safe System. The conditions might include leadership and coordination, supporting policy, and design standards.

Setting quantitative killed and seriously injured (KSI) targets and also intermediate outcomes that are causally related to death and serious injury (for example, the gap between driven and safe speeds, seat belt use, sober driving, the safety quality of roads and vehicles, and emergency medical system response) supports the monitoring and evaluation of progress in delivery.

Why do we need the Safe System?

While the UK Government has not had official road safety targets since 2010, it has made a commitment to halving road deaths from 2021 to 2030.[8] However, the UK is not on track to meet this target. In a global context, the UK has one of the safest road networks in the world, but reductions in the number of people killed or seriously injured has slowed markedly since 2010.[9] In 2023, 1,695 people died on UK roads, a fall of around 5% from 2013, when 1,770 people died on UK roads. In the decade preceding this, the number of people who died on UK roads fell by over 50%, from 3,658 in 2003.[10]

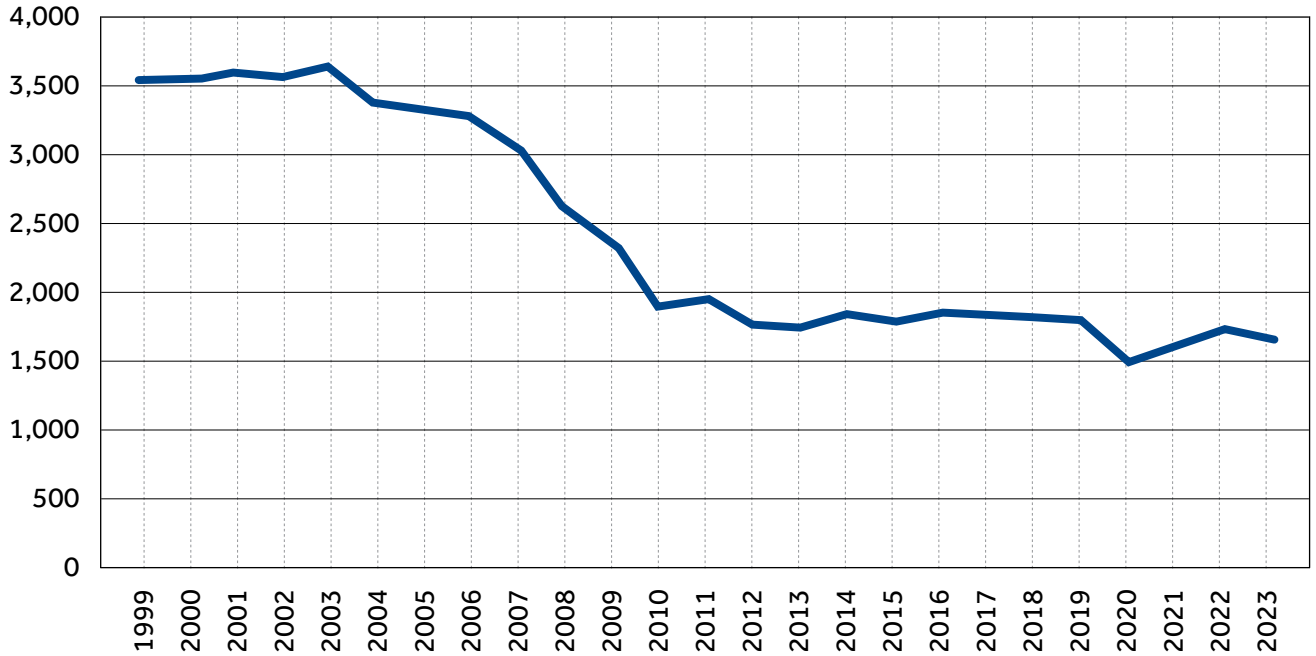
[7] See Swedish Vision Zero in appendix

[8] The UK has adopted UN General Assembly Resolution 74/299, adopted by the General Assembly on 31 August 2020

[9] Agilysis (2021), GB road safety performance index report, Agilysis

[10] DfT (2024), Reported road collisions, vehicles and casualties tables for Great Britain: RAS0404: International comparisons, Department for Transport

Road fatalities in the UK, 1999-2023



DfT (2024), Reported road collisions, vehicles, and casualties tables for Great Britain: RAS0404: International comparisons, Department for Transport

There is a concerning regional and socioeconomic disparity in UK road safety performance. Between 2015 and 2019, the rates of killed and seriously injured range from 20 per 100,000 population in some areas to levels over four times as high in others.[11] Evidence provided by Agilysis shows that reported deaths are disproportionately distributed on rural networks, with areas that have a larger proportion of rural roads posing a higher risk rate per head of population, when analysed using a KSI measure. The same report notes that in urban areas the proportion of people killed or injured when travelling by vulnerable modes such as walking, wheeling, and cycling has increased.[12] There is a pressing need to establish consistency in best practice and ensure this is widely available and accessible so that implementation can take place across the UK transport sector.

Changing patterns of road use could make the situation worse if action is not taken. The UK has an ageing population, meaning a likely increase in the number of older people using the roads. Older drivers, particularly those over 80, are already over-represented in serious crashes. In the 70 to 79 age group, car driver deaths are forecast to increase by 40% over the next 20 years, and by more than a quarter in the age bracket of 80+.[13] Older people tend to be frailer, which means the demands on the Safe System will be even greater for it to protect all road users from serious harm in the event of a collision.

[11] Agilysis (2021), GB road safety performance index report, Agilysis

[12] Agilysis (2021), GB road safety performance index report, Agilysis

[13] Older Driver's Task Force, DfT, Road Safety Foundation (2021), Supporting safe driving into old age technical report

Increased active travel uptake will help meet decarbonisation targets and create a healthier population. Cycling traffic levels in England have increased by 10.6% since December 2013.[14] The UK Government has previously aimed for half of all journeys people make in towns and cities to be by walking, wheeling, or cycling by 2030.[15] However, this will likely mean more vulnerable users on the road. In 2023, vulnerable road users (motorcyclists, people walking or wheeling, and pedal cyclists) accounted for around half (49%) of fatalities.[16] One of the key reasons people give for not choosing to cycle is the perception that it is unsafe.[17] Improved safety outcomes are needed to support active travel uptake and ensure better protections for vulnerable road users.

The Safe System will contribute to the UK's wider strategic targets by delivering health,[18] safety, and economic benefits. Increased investment and focus on road safety improvements will reduce pressure on the NHS and emergency services, contribute to net zero by ensuring modal shift is achieved safely, and has the potential to help foster technological and technical innovations in the UK transport system.

The UK Government has previously acknowledged[19] the Safe System is needed, and we welcome its commitment to producing a new national road safety strategy. It is imperative that this follows the principles of the Safe System and is accompanied by the introduction of ambitious road safety targets. Any framework for road safety must be followed up with a long-term plan for delivery and action, including coordination and collaboration with devolved governments and road authorities. Through a combination of devolved and reserved powers, the UK Government shares legal responsibilities for road safety with the devolved governments and road authorities and it is important they work in partnership to deliver joint objectives.

The Safe System in the UK: Overview of developments

- **Responsibility for speed limit setting:** Default speed limits on "restricted roads"[1] can be changed only by the UK Government or devolved governments. Local highway authorities have the power to vary the speed limits on the roads they control.[2]

- **Responsibility for roads:** The strategic road network[3] (SRN) in England is managed by National Highways. The trunk road and motorway network in Scotland is managed by Transport Scotland. The Welsh Government manages motorways and trunk roads in Wales. All roads in Northern Ireland are managed by the Department for Infrastructure. Major roads in London are managed by Transport for London. Local roads in England, Scotland, and Wales are managed by the relevant local authority.[4]

We have put together a list of relevant legislative, strategic, and guidance documents to provide further information on how the Safe System is being developed at various levels. More information can be accessed by clicking the links below. The list is not exhaustive and is subject to change as developments occur.

[14] DfT (2024), Cycling traffic index, England, Department for Transport

[15] DfT (2023), The second cycling and walking investment strategy (CWIS2), Department for Transport

[16] DfT (2024), Reported road casualties Great Britain: Annual report 2023, Department for Transport

[17] DfT (2024), National attitudes study (NTAS) wave 9: Cycling, Department for Transport

[18] According to Professor Scarlett McNally, "improved understanding and uptake of exercise would improve health interventions" but this requires "action at individual, social and institutional levels"

[19] DfT's Road Safety Statement 2019 made several references to Safe System, including "interventions to encourage use of a safe systems approach" by local authorities

	Law, policy, and strategy	Guidance	Safe System progress
National	Road Traffic Regulation Act 1984 (excludes Northern Ireland) Road Traffic Act 1988 (excludes Northern Ireland) Road Safety Act 2006	The Highway Code (excludes Northern Ireland) Design Manual for Roads and Bridges Manual for Streets 2	The UK has not had road safety targets since 2010. The UK Government published the Road Safety Statement 2019, setting out actions to progress road safety over the subsequent two years. The document emphasises road safety as a "major national issue", requiring close coordination and collaboration across government agencies, the devolved administrations, local government, enforcement authorities, and a host of other public and private bodies. The UK Government has confirmed it is working on a new road safety strategy.
England	Highways Act 1980	Setting Local Speed Limits	National Highways is developing the Road to Zero Harm road safety initiative for the SRN. It promises to "follow the globally recognised Safe System approach to road safety management", in support of its vision that no one should be killed or seriously injured on the SRN.
Scotland	Roads (Scotland) Act 1984 The Road Traffic Act 1988 (Prescribed Limit) (Scotland) Regulations 2014 Scotland Act 2016 Strategic Road Safety Plan 2016 Scotland's Road Safety Framework to 2030 Road Safety Framework Annual Report 2021 Annual Progress Report 2023/24 and Delivery Plan 2024/25 – Road Safety Framework to 2030	Good Practice Guide on 20mph Speed Restrictions	Scotland's Road Safety Framework to 2030, published in 2021, established the principles for Safe System implementation in Scotland. The framework sets the goal for Scotland to have the best road safety performance in the world by 2030 and to achieve Vision Zero by 2050. The framework was accompanied by interim targets, intermediate outcome targets, and intermediate measures to support progress and monitoring. Scotland is approaching the mid-point of the framework, with the latest annual progress report including an action-driven delivery plan for 2024/25.
Wales	Highways Act 1980 Road Safety Framework for Wales Wales Act 2017 Report on the Road Safety Framework for Wales 2013 to 2020 The Restricted Roads (20 mph Speed Limit) (Wales) Order 2022 Introducing default 20mph speed limits	Roads affected by changes to the speed limit on restricted roads: user guide Traffic Signs Regulations and General Directions: guidance on the introduction of the default 20mph speed limit Setting 30mph speed limits on restricted roads: guidance for highway authorities	The Welsh Government has recently consulted on a new Strategy for Road Safety in Wales, promising to incorporate Vision Zero and the Safe System. The Welsh Government has changed the default speed limit on restricted roads in Wales to 20mph.
Northern Ireland	The Roads (Northern Ireland) Order 1993 The Road Traffic Regulation (Northern Ireland) Order 1997 Northern Ireland Act 1998 Road Safety Strategy for Northern Ireland to 2030 Regulation (EU) 2019/2144 of the European Parliament and of the Council	The Highway Code for Northern Ireland Setting local speed limits in Northern Ireland RSPPG E051	In 2024, the Department for Infrastructure published The Road Strategy for Northern Ireland to 2030, along with a Road Safety Strategy Action Plan 2024/25. The strategy incorporates the principles of the Safe System and adopts an outcomes-based approach. The strategy aligns with targets set in the wider UN/EU/UK context, including the long-term goal of zero deaths and serious injuries by 2050, a 50% reduction in death and serious injury between 2020 and 2030, and intermediate outcome targets based on key performance indicators. The new Vehicle General Safety Regulations adopted by the EU have also been applied in Northern Ireland, in line with the Northern Ireland Protocol.

2. Barriers to progressing road safety in the UK

Many regional and local highway authorities in the UK have introduced strategies or plans aligned to the Safe System. However, without stronger alignment, progress in UK road safety performance at a national level may be limited.

Successful implementation of the Safe System in the UK will require alignment across all stakeholders in the transport system. This includes road users, workers, designers, emergency services, public health, occupational health, the private sector including vehicle manufacturers, highway authorities, local authorities, devolved governments, and the UK Government.

We have identified the following barriers and challenges to implementing the Safe System in the UK: national policy and leadership, local and organisational variation, and design, standards, and audits.

National policy and leadership

Leadership and collective vision

The UK Government has a leading role to play in aligning stakeholders, including devolved nations and regions, to improve the UK's road safety performance. Without a clearly defined collective vision, it is impossible to adopt a systematic strategy towards reducing the number of fatalities and serious injuries in the UK. While many of the legislative and policymaking actions the UK Government can take will focus on England, the new national road safety strategy should be founded on close coordination and collaboration with devolved governments to support alignment between road safety activities in England, Scotland, Wales, and Northern Ireland.

Strategic integration

Key strategic priorities like public health, decarbonisation, active travel, policing, and transport planning policy are closely linked to road safety.[20] The Department for Transport (DfT), the Treasury, the Home Office and the Department of Health and Social Care all have a vital role to play in the implementation of the Safe System. The Ministry of Housing, Communities and Local Government also has a critical role to play in ensuring consideration of safety in local planning. Aligning strategies across government departments can bring stronger clarity and consistency in public messaging and promote more strategic and appropriate allocation of funding. Coordinating with devolved governments can ensure that lessons learned in these regions can be applied to road safety actions in England and support alignment between policies across regions.

Evidence-based speed limits

According to the Organisation for Economic Co-operation and Development (OECD):

> "The speed below which 85% of drivers in free flow conditions travel (also called the V85 or 85th percentile speed) has historically been used as the first step in determining the maximum reasonable and safe speed ... This approach is increasingly considered as no longer appropriate for today's road environment now that the substantial increases in risk associated with small increments in travel speeds by a majority of road users are better understood."

The OECD report, published in 2006, recommended using "a Safe System approach", involving the assessment of the safety provision of road infrastructure and the notion of a "safe speed" in combination, as a more suitable alternative.[21]

Currently, DfT guidance on speed limit setting recommends that *"Speed limits should be evidence-led and self-explaining and seek to reinforce people's assessment of what is a safe speed to travel"*.[22] This means that the public, through their choice of speed

[20] See Scotland's Road Safety Framework to 2030 in appendix

[21] OECD (2006), Speed management, Organisation for Economic Co-operation and Development

[22] DfT (2024), Setting local speed limits, Department for Transport

reflected in the 85th percentile speed, are given the responsibility to decide what safe speed is. Instead, speed limit setting should be informed by evidence on human behaviour and survivability. Policymaking needs to shift towards a clearer, less ambiguous, and more evidence-based approach to speed limit setting.[23]

Clear and updated guidance

Transport analysis guidance[24] suggests that benefit–cost ratio (BCR) should not necessarily be the only priority in decision making about schemes. However, BCR often drives decisions. This can block important road safety projects, such as those that close central median gaps on dual carriageways or speed management schemes, because they slightly increase travel times for a lot of traffic. Once aggregated across all traffic, the journey time impact is considerable, which substantively lowers the anticipated BCR. As a result, schemes that could significantly reduce serious collisions may be rejected. A better understanding of Treasury guidelines and revisions to how journey time is considered (for instance, using functional speeds[25] as a baseline rather than driven speeds) could help BCR reflect the true road safety value of a scheme.

Long-term continuity

The task of aligning UK policy, legislation, guidance, standards, and more will be necessary to support Safe System implementation and should not be underestimated. Regulations will need to be strengthened, standards updated, guidance written and communicated, enforcement empowered, progress monitored, and sufficient funding allocated. Close collaboration and coordination between governments and road authorities will be needed to achieve UK-wide alignment. Implementing the Safe System will need to be a gradual, long-term process, which will require continuity across parliamentary cycles to ensure sustained progression.

Improving knowledge and understanding will support long-term progression. The UK currently has organisations dedicated to investigating safety incidents around rail, air, and sea across the country, but not roads. The creation of a road safety investigations branch will support better understanding on the causes of collisions.

Local and organisational variation

Fragmentation of ownership

Responsibility for who manages and maintains a road in the UK depends on the road location and whether it is a motorway or strategic trunk road or a local road. There are around 150 highway authorities in England alone.[26] The fragmented nature of UK road responsibilities can make strategic alignment challenging. Supporting lines of communication across different ownership groups will foster knowledge-sharing and enhance strategic relationships. For example, the UK Roads Leadership Group brings together representatives from national and local government across the UK, providing a useful coordinating body and helping to inform and shape policy to improve safety on UK roads.

Resources and funding

Local authorities are increasingly looking to understand and apply new knowledge around road safety, with many aligning themselves with Vision Zero and the Safe System. However, significant capacity and capability barriers prevent many local authorities from developing effective road safety strategies. Road safety is a highly specialised profession, with a need for knowledge of multiple aspects of the transport system, including design and engineering. It can be difficult for local authorities to find transferable skills and experience. As a result, expertise in local authorities can be scattered. Smaller road safety teams may often have to focus attention on areas of public concern, such as potholes, and lack the resources to communicate the importance of road safety measures. Innovations in technology and data play an increasingly important role in road safety, particularly when it comes to monitoring and evaluation. Technical expertise is required to utilise these innovations effectively.

There is insufficient funding to take an adequate reactive approach to road risk reduction, let alone progress to proactive risk reduction as demanded by the Safe System. A strategic and committed approach to funding will be needed to support implementation of the Safe System.

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[23] See Welsh Government speed limit setting in appendix

[24] DfT, Transport analysis guidance, Department for Transport

[25] See Dutch Sustainable Safety in appendix

[26] Michael Benson, Roger Tyers (2024), Road and vehicles FAQ, House of Commons Library

Collaboration and engagement

The Safe System requires closer collaboration between stakeholders. However, stakeholders too often work in isolation of one another. Improved cross-organisational cooperation will improve shared knowledge of how different stakeholders operate and how they interact.

One way of supporting stakeholder collaboration is through road safety partnerships. These are partnerships often led by local authorities and include other organisations such as the NHS, police, emergency services, and representatives of user groups.

Alignment and collaboration across local stakeholders can improve technical knowledge. For example, local authorities can work with police to provide a better understanding of STATS19[27] and in-depth collision analysis. While many local authorities recognise the importance of data, technical expertise is not always available to best utilise it, or understand less obvious underlying metrics that help contextualise collected data. While under-resourcing remains an underlying problem, supporting more effective cooperation between local authorities can help disseminate important technical expertise.

Design, standards, and audits

Maintaining and updating design standards

Road infrastructure should be inherently safe at the point of construction. The Design Manual for Roads and Bridges[28] (DMRB) is a collection of documents that outline the current standards and requirements for the design, assessment, and operation of motorway and all-purpose trunk roads in the UK. It is published by National Highways and overseen by National Highways, the Welsh Government, Transport Scotland, and the Department for Infrastructure for use by highway and road authorities, supply chain members, and industry bodies.[29]

Design standards can become outdated. When faults in designs become apparent, this could raise issues in the existing network where designs have already been implemented. As new evidence becomes available, older design standards may no longer be seen to produce maximum safety outcomes. For example, understanding of survivability suggests that the use of T junctions on a single carriageway road with a 60mph speed limit is inherently unsafe, but these are permitted in the DMRB. Updating the DMRB to take account of survivability would more closely align it with the Safe System.

Proactive road assessment

Road safety audits (RSA) are the process of independent review assessing the safety implications of engineering interventions for all road users. The objective is to identify areas where road safety may be impacted.[30] While RSA is a robust and important process, it does not produce a definitive "pass" or "fail" outcome for engineering interventions. Auditors produce a report, making any necessary recommendations, which need to be responded to by a design team and agreed upon by the scheme manager.[31] More can be done to empower road safety professionals, by ensuring that safety governance is more strongly integrated into the design process. In the Safe System, safety is delivered through design, rather than relying solely on auditors to produce safety outcomes.

SoRSA was established by CIHT to provide a forum to exchange best practice in the field of safety auditing and safety engineering. To improve understanding of the RSA process, SoRSA prepared comprehensive guidelines in 2021 to supplement the information contained within the DMRB GG 119 on RSAs.[32]

In addition to RSA, wider use of proactive road assessment tools such as iRAP (International Road Assessment Programme) will support improved safety outcomes by providing an objective measure of risk. Use of iRAP is becoming increasingly common, with National Highways and the Welsh Government using it to assess risk on their strategic road networks, and iRAP being an underpinning methodology for DfT's Safer Roads Fund. iRAP estimates where fatal and serious injuries are likely in the future based on known relationships between the characteristics and layout of roads, their operation, and fatal and serious crash risk. This gives an expected longer-term fatal and serious injury estimate along roads for which route-based treatments can be devised, helping to shift away from a reactive model based on where serious collisions have already happened.

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[27] The STATS19 database, Statement of administrative sources

[28] https://www.standardsforhighways.co.uk/dmrb

[29] National Highways (2021), Design manual for roads and bridges GG 101: Introduction to the design manual for roads and bridges

[30] Highways England (2020), Design manual for roads and bridges: GG 119: Road safety audit (Revision 2)

[31] CIHT SoRSA (2021), CIHT SoRSA road safety audit guidelines 2021, Chartered Institution of Highways and Transportation

[32] CIHT SoRSA (2021), CIHT SoRSA road safety audit guidelines 2021, Chartered Institution of Highways and Transportation

3. Aspirational actions to support implementation of the Safe System

Building on the issues identified above, this section outlines the actions that may be required to overcome these issues and the stakeholders with responsibility for delivering those actions.

In this report, we have sought to, with sector engagement, further develop work by the Road Safety Foundation and Agilysis on the Safe Systems matrix. The aim is to demonstrate that there is a practical, systematic route to achieving implementation of the Safe System in the UK. The Safe System matrix comprises the five elements of the Safe System and eight change mechanisms. The change mechanisms, as described by Agilysis,[33] are:

- Leadership and coordination
- Legislation and regulation
- Standards and training
- Investment and innovation
- Design and engineering
- Education and communications
- Compliance and enforcement
- Research monitoring and evaluation

Using the matrix means that we can think holistically and systemically about the actions necessary for delivery.

For each combination of change mechanism with the elements of safe roads and safe speeds, the potential actions have been identified, along with stakeholders and responsibilities. We have chosen to focus on the safe speeds and safe roads elements of the Safe System because we feel these elements represent the areas where CIHT as an organisation and our members are best placed to influence progressive action.

Implementing the Safe System in the UK will not happen rapidly, and many political, socioeconomic, and technical issues will need to be overcome. This matrix demonstrates that there are steps every stakeholder can take across the transport system to help progress the UK towards the Safe System.

The matrix shows that the Safe System can be achieved systematically through a commitment to a long-term process. It highlights the interplay between stakeholders in effecting change as well as making clear how "shared responsibility" works in practice. The matrix indicates that while some progressive actions are resolvable at the local level, there are also steps that will require government intervention.

Investment is very important but there are mechanisms of change that can be triggered even in times of economic uncertainty. Equally, there are clear economic benefits to progressing the UK towards the Safe System, given the societal and economic cost of stagnated road safety performance.

[33] Agilysis (2023), Our journey towards Safe System: Where we are and what we need to do, Agilysis

Safe speeds

Aim: To ensure that speed limits and travelled speeds are safe for all road users present; as a result no one should be killed or severely injured.

Leadership and coordination

Issue	Action	Who
Appraisal of road schemes has not kept up with modern thinking about transport and the need to support place and movement functions within the road network. As such, decision makers remain focused on value for money and the BCR generated in the economic case, over a compelling strategic case for road safety intervention. Decision makers have prioritised faster journey time over safer journeys irrespective of road function.	Provide clear leadership on the role of speed management to tackle road deaths and serious injuries, which would result in either a better understanding of economic versus strategic case or clear guidance on where journey time should or should not be counted as a disbenefit in the appraisal of road safety schemes.	Ministers, UK Government, DfT, Welsh Government, Scottish Government, Northern Ireland Government
The public and stakeholders have a poor understanding about speed and road safety (for example, the relationship between speed and crash severity, survivability rates of people walking, wheeling, and cycling struck at different speeds) and the positive co-benefits of smoother, lower speeds (carbon, noise, journey time, reliability, etc.).	Articulate the positive impact of slightly slower, smoother journeys in national campaigns, shared in clear and simple terms.	UK Government, DfT, Welsh Government, Scottish Government, Northern Ireland Government
Building the Safe System and achieving safe speeds requires coordination across many actors, including road safety teams, police, highway designers, development planners, developers, and more.	Establish a shared understanding of the Safe System across these professions, through communications and training, and establish coordinated practice across the sector.	Strategic and local road authorities, owners of private roads, police, judiciary
Mismatch in the value of journey time versus prevention. Journey time is valued 1.5–2 times higher than the equivalent time lost through loss of life.[34]	Correct the mismatch in the value of journey time versus prevention.	HM Treasury
New vehicle technologies (such as ISA) could play an important role in casualty reduction.	Adopt the General Safety Regulations[35] and engage directly with vehicle manufacturers.	UK Government, DfT

[34] Staton, M. (2024) Targeting road injury prevention (TRIP): A systems approach to road safety management Loughborough University

[35] See PACTS (2022), Vaccine for vehicles: Preventing death and injury on UK roads, Parliamentary Advisory Council for Transport Safety

Legislation and regulation

Issue	Action	Who
National speed limits do not align with survivable speeds, particularly on: • single carriageway roads where the 60mph national speed limit exceeds survivable speeds for head-on crashes, run-off-road crashes, and side impact crashes at T junctions and crossroads • some legacy dual carriageway roads where there are median gaps for turning manoeuvres and poor-quality roadside protection • roads where there are (or should be) people walking or cycling.	Align national speed limits to more survivable speeds. Start with lower national speed limits and "exception up"[36] where safety has been assessed and provisions made for the road to operate at higher speed.	DfT, Welsh Government, Transport Scotland, Department for Infrastructure
Vehicle technologies such as ISA rely on accurate speed limit information, but credibility is impacted by imperfections.	Recognise that the digital speed map project (under way) is critical to success, allowing digital speed limit orders (SLOs) to be applied accurately and in a timely manner.	DfT, road authorities
Not all vehicle manufacturers will introduce safety measures (including ISA) that are now mandatory in Europe without the UK adopting the General Safety Regulations.	Adopt the General Safety Regulations.	UK Government, DfT

[36] See Welsh Government speed limit setting in appendix

Standards and training

Issue	Action	Who
The DMRB does not align to the Safe System. For example, it will still suggest that putting a T junction on a single carriageway road with a 60mph speed limit is acceptable.	Review the DMRB and update it to take account of survivability.	National Highways, Transport Scotland, Welsh Government, Department for Infrastructure
The core benefit–cost ratio (BCR) used for early decision making includes journey time impact and value of prevention of road collisions. Other co-benefits to road safety and other factors such as journey time reliability, environmental impact (noise, emissions, carbon), quality of life, etc. are either not brought in at all or are brought in at a later broader economic case stage. This means that schemes that may have some excellent benefits are not progressed at an early stage.	Review the process for decision making and when (and on what road type) each benefit or disbenefit is considered. Align core values of the road authority with the performance metrics and appraisal process and determine appropriate responses should some of these values be discordant, establishing a hierarchy of priorities (such as how to deal with the common situation whereby a scheme offers excellent casualty savings but at a journey time cost).	HM Treasury, National Highways, Transport Scotland, Welsh Government, Department for Infrastructure
The Safe System and what it really means in practice is not well understood by those involved in speed management activities.	Provide training for all those involved in the safe speed space. Provide retraining when guidance is updated or newly introduced.	CIHT, other relevant professional bodies, technical partners
At present, setting speed limits is carried out on an ad hoc basis, often reacting to historical crashes and political or community pressure, rather than working in a proactive and strategic manner. This can mean inconsistency for the road user.	Establish a functional hierarchy or classification for roads with an idealised speed at which each road type should function based on the role of the road and what road users it needs to support. Speed management should involve the analysis of functional, safe, and credible speeds with priority given to ensuring the functional speed is both safe and credible. Speed limits should also be set to protect active modes of travel, such as walking and cycling.	Local highway authorities, National Highways, Welsh Government, Transport Scotland, DfT, Department for Infrastructure
Guidance for setting local speed limits (effectively the exceptions to the national speed limits) is not based on survivable speeds.	Align guidance for setting local speed limits to accord with road function and survivability.	DfT, Welsh Government, Transport Scotland, Department for Infrastructure
Roll-out of training will be needed to support any new approaches and guidance developed.	Develop suitable training for all involved in setting speed limits. This will include highway authorities, the supply chain, designers, and transport and development planners.	CIHT, other relevant professional bodies, technical partners

Investment and innovation

Issue	Action	Who
Insufficient funds available for road danger reduction.	Ensure hypothecation of revenue from speed enforcement is reinvested in road safety interventions. Explore innovative funding mechanisms such as social impact bonds for investment, or the state as the third party insurer (as in Victoria, Australia). Maximise social value obligations of contractors to implement road safety schemes. Make a better case for road safety investment, ensuring robust business cases are established, but also that the most promising political arguments are made for investment (such as impact on the NHS and productivity).	HM Treasury, economists and investors, road authorities
New forms of connected vehicle data offer much potential intelligence to practitioners but some data sets are potentially quite biased; moreover, without context some of the data can be misleading. For example, advanced driver assistance system (ADAS) intervention data may not be particularly predictive of future fatal or serious injury, as conflict is only one part of the intelligence needed, with survivability and severity being the other part.	Make available connected vehicle speed, harsh braking, and swerving data to all road safety practitioners. Create guidelines for the use of such data by practitioners and how it can be ingested into other broader contextual systems like iRAP and how it can be interpreted.	National Highways, DfT, Welsh Government, Transport Scotland, Department for Infrastructure

Design and engineering

Issue	Action	Who
Limited advice available to engineers on how to implement the Safe System for rehabilitation of existing roads.	Provide guidance specifically for speed management for the rehabilitation of existing roads to complement design standards for new roads and any national approach to speed limit setting and functional classifications. Road safety engineering measures that influence vehicle speeds and what is appropriate for different road types and speed limits should be specified.	Local highway authorities, National Highways, Transport Scotland, Welsh Government, DfT, Department for Infrastructure
Road safety audit recommendations are not always adopted by design teams and these could include consideration of speed limits and features to support safe speeds.	Develop and deploy the training and approach necessary for design teams and road safety auditors.	SoRSA

Education and communications

Issue	Action	Who
Poor understanding of safe and survivable speeds by the general public and the press, meaning that the measures are seen as unpopular rather than life-saving.	Governments to work with the press to promote understanding of safe speeds and setting of speed limits. Run campaigns designed to educate on survivability. Communication should be coordinated across different priorities such as net zero, active travel, and public health, ensuring consistency in messaging.	DfT, Transport Scotland, Welsh Government, Department for Infrastructure, local authorities
Effective promotion to decision makers and political leaders on safe and survivable speeds, and their broad benefits. Promotion of the benefit of smoother journeys (journey time reliability) and fewer major incidents, and the promotion of co-benefits such as quality of life and environmental impact.	Develop a better understanding of the relationship between speed and other potential benefits. Deliver effective communication about the co-benefits generally as well as for individual schemes. Provide myth busting about the negative impacts of slightly slower speeds.	DfT, Transport Scotland, Welsh Government, Northern Ireland Government, local authorities
Speeding is still culturally acceptable in a way that other issues are not (for example, drink and drug driving).	Design communications campaigns to address cultural acceptance of speeding. Learn from anti-smoking campaigns, which have supported changes to cultural attitudes around smoking. Start education at primary schools (science, technology, engineering, and mathematics activities explaining about kinetic energy and crash forces).	DfT, Transport Scotland, Welsh Government, Northern Ireland Government, local authorities

Compliance and enforcement

Issue	Action	Who
Police forces are concerned about changes to speed limits that they believe are unenforceable, and they sometimes do not support proposals to lower speed limits where 85th percentile speeds are too far above the proposed speed limit.	Provide Safe System education for the police and revise setting of local speed limits.	DfT, Home Office, local and regional police forces
Police forces often do not have access to speed data to help them prioritise their activities and measure the impact of different enforcement strategies over time.	Provide access to police forces to speed limit and connected vehicle speed data to allow them to prioritise routes with high numbers of fatal and serious crashes and those routes where compliance is poor. Create guidelines for the use of such data and the evaluation of different strategic approaches to speed enforcement. Consider using nationwide community speed watch programme data.	Police, DfT
Current deterrent can be strengthened.	Reduce enforcement thresholds of fines or penalty points to increase deterrence. Ensure a prompt justice response. Combine enforcement with educational initiatives (for example, with fire and rescue or speed awareness courses). Increase back office capacity to ensure all those violating speed limits receive a penalty or speed awareness course. Revise criteria for average speed cameras to be prioritised based on the "safety gap" (difference between driven and safe speeds). Make it easier to process speeders at the roadside. Improve training for police so that there is more awareness outside of traffic units.	Home Office, judicial system, UK Road Offender Education, police
Newer and emerging technologies offer opportunities to strengthen deterrence.	Revise the DfT circular 01/2007[37] guidance on speed cameras. Use and process dashcam evidence consistently. Improve the Home Office Type Approval process to enable further innovation in compliance technologies.	DfT, Home Office
Work with telematics insurance providers to incentivise adherence to speed limits.	Engage with the insurance industry.	Insurance industry, police

[37] DfT (2007), DfT Circular 01/2007: Use of speed and red-light cameras for traffic enforcement: Guidance on deployment, visibility and signing, Department for Transport

Research monitoring and evaluation

Issue	Action	Who
Use STATS19 collision reports alongside in-depth crash investigation reports, coroner's enquiries and Safe System review panels to better understand the role of speed in crashes and injury causation in order to drive policy on speed management.	Establish Safe System fatal review panels and create a data-sharing approach to help thematic learning on systemic action. Strengthen coroners' understanding of the Safe System and survivability. Conduct in-depth crash investigations for all fatal and severe crashes, ensuring that injury causation and survivability are better understood.	DfT, National Highways, Welsh Government, Transport Scotland, Department for Infrastructure, local authorities, coroners, research organisations
It is not clear what the operating parameters for speed for different road layouts and traffic mix should be today, or indeed in the future.	Review published literature and reach consensus on safe road operation parameters for different layouts and traffic mix for the present. Undertake analysis to determine the future gains that various technologies will bring to allow safe operation at slightly higher speeds than historical in-depth crash investigation research might suggest for today.	DfT, research organisations
Rich and granular connected vehicle speed data is becoming available. It can provide an excellent evidence base for speed management and can reduce the need for traditional speed surveys.	Make connected vehicle speed data available to road safety practitioners, ensuring data sources are representative and correctly interpreted.	DfT
Production of the digital national speed limit map is an essential action to ensure compliance with speed limits can be monitored.	Complete digital speed limit map project.	DfT
Evaluation of approach is rarely done well for speed management, and authorities lack the resource to do this properly.	Provide a system whereby all road authorities can record any speed management measures (engineering, enforcement, SLOs, etc.) to support more powerful research into the impact of different combinations of interventions. Link this to a national database of driven speeds for evaluation.	DfT

Safe roads

Aim: To ensure that roads are kept free from defect and that the infrastructure and layouts marry with the operational requirements, meaning that the opportunity for death or severe injury has been systematically treated and removed.

Leadership and coordination

Issue	Action	Who
Very few leaders show deep understanding of the Safe System, meaning that they do not necessarily realise that they are taking decisions and holding attitudes that are discordant with it.	Promote the meaning of the Safe System and key principles to politicians and decision makers.	CIHT, PACTS, other technical experts
The Safe System is still seen as conceptual rather than a system that can be implemented. This is largely because the requirements of the Safe System have not been clearly defined and a collective vision for safe roads has not been established. This can result in a piecemeal rather than strategic approach.	Draw inspiration from the Dutch Sustainable Safety[38] initiative where roads are categorised by function and a clear long-term ambition for each road type has been established.	DfT, Transport Scotland, Welsh Government, Department for Infrastructure
Building the Safe System requires coordination across many stakeholders, including road safety teams, maintenance teams, telecoms, development planners, highway designers, and many more.	Establish a shared understanding of the Safe System across these professions, through communications and training, and establish coordinated practice across the sector.	Strategic and local road authorities, telecoms, supply chain

Legislation and regulation

Issue	Action	Who
The statutory duty of the highway authority is to "ensure the highway is not dangerous for traffic". This is interpreted as the need to ensure proper maintenance of the fabric of the road so that it is in a reasonable state of repair.	Expand the definition of dangerous to include survivability and likelihood. Implementation will take time and so under legislation it will be necessary to provide for a road authority working towards the Safe System in a systematic and proactive manner.	DfT
Stronger legislative definition is needed. Updated definitions of road workers, road users, and other parties should be incorporated.	Accommodate the normal fallibility and frailty of humans into legislation. For example, legislation should define a careful driver as fallible.	DfT
As of July 2023, the Safe System assessment using iRAP or similar is suggested for new developments that are large or complex enough to require environmental impact assessment.	Strengthen this guidance by including requirements for a defined level of safety.	DfT

[38] See Dutch Sustainable Safety in appendix

Standards and training

Issue	Action	Who
Some known risks remain in standards and on the network; for example, internationally, boundary fences with cross-beams (installed on either side of the upright post) are viewed as problematic, and ramped end terminals pose a risk of launching vehicles when struck and consequently severe outcomes in collision.	Amend standards for wooden boundary fences and propose a passively safe alternative design. Replace ramped end terminals on vehicle restraint systems with passively safe alternatives.	Road authorities
Vehicle restraint systems are not tested for impacts and retention using vehicles that represent the modern vehicle fleet. Rather, tests are done using a 1980s saloon-style car that could be substantively lighter than modern (particularly electric) vehicles and may have a lower centre of gravity compared with popular modern SUVs.	Test barriers using sports utility vehicles (SUV) and heavier electric vehicles. Ensure accepted vehicle restraint systems (VRS) are suitable for today (and tomorrow's) vehicle fleet. Provide retraining when guidance is updated or newly introduced.	Road authorities
The DMRB does not align to the Safe System.	Review the DMRB and update it to take account of survivability.	National Highways, Transport Scotland, Welsh Government, Department for Infrastructure
The Safe System and what it really means in practice is not well understood by those involved in activities relating to safer roads.	Provide a training series for all stakeholders with a responsibility to deliver safe road infrastructure.	CIHT, other relevant professional bodies, technical partners
Roll-out of training will be needed to support any new approaches and guidance developed.	Develop suitable training for all stakeholders in the safe roads element of the system. This will include the highway authority, the supply chain, designers, and transport and development planners.	CIHT, other relevant professional bodies, technical partners
The Safe System requires a proactive risk-reduction approach to be adopted by road authorities. Often most, if not all, activity undertaken by road safety teams is reactive by addressing collision hotspots. This will be insufficient to systematically and proactively remove risk.	Undertake iRAP or similar surveys of strategic and major local roads. Proactively assess higher-priority A roads.	Strategic road operators, subnational transport bodies, local authorities
iRAP and similar proactive road assessment tools are beginning to be recognised as a critical Safe System tool to support decision making, but these are by no means well understood by all stakeholders in the system.	Provide training on iRAP or similar proactive road assessment tools as a critical Safe System proactive approach for highway authorities, network managers, project clients, legal departments (HA), designers, developers, transport planners, utility companies, contractors (project, term maintenance and in house), police.	Road Safety Foundation, road authorities, police

Standards and training (continued)

Issue	Action	Who
Road safety audit (RSA) and GG 104 of the DMRB, which sets out requirements for safety risk assessment, are not aligned to the principles of the Safe System (such as fallibility and survivability).	Update RSA to link it with safety governance (GG 104) using the Safe System (understanding survivability, fallibility, etc.). Update the controls over how RSA is conducted (price, number of auditors, need for a review of GG 119 of the DMRB, which sets out requirements for RSA). Require use of iRAP or similar proactive road assessment tools at every stage of scheme development as per RSA, using a standard set of hazards included in iRAP assessment. Align RSA stages to project development gateways.	SoRSA, road authorities
Scheme benefits are not well articulated beyond road safety benefits.	Collaborate with bodies who have a public health or sustainable or active travel agenda – investment in segregated infrastructure contributes to these other objectives.	Road authorities
RSA is sometimes not done early enough to maximise its impact on early conceptual development of schemes. It should be considered essential alongside a quantitative road safety impact assessment.	Introduce into standards the requirement for early conceptual stage RSA and road safety or safe system impact assessment.	SoRSA, road authorities
The development planning process does not maximise opportunity to increase safety provision.	Introduce quantifiable road safety performance levels that must be achieved for developments that align to the Safe System. Ringfence developer funding for road safety and sustainable travel. Local authorities should use local plans (to parish or town council level) and include improvements such as walking and cycling routes so that the funding can be used to provide the facilities identified at a local level (with support from highway designers, etc.) to benefit those communities affected or impacted by developments (such as housing). This would enable local road safety issues (which are often not apparent in STATS19 data) such as poor standards of footway (narrow, poor surface, overgrown, etc.) or lack of safe crossing locations (poor visibility, no dropped kerbs, etc.) to be addressed.	Local planning authorities, Ministry of Housing, Communities and Local Government

Investment and innovation

Issue	Action	Who
Insufficient funds available for road safety.	Ensure hypothecation of revenue from speed enforcement is reinvested in road safety interventions. Introduce hypothecation of insurance premium tax or state third party insurance. Explore innovative funding mechanisms such as social impact bonds for investment. Maximise social value obligations of contractors to implement schemes. Make a better case for road safety investment, ensuring robust business cases are established, but also that the most promising political arguments are made for investment (such as impact on the NHS and productivity).	HM Treasury, economists and investors, road authorities
Insufficient funds available to road safety engineers to make sufficient progress.	Establish further investments like the Safer Roads Fund for strategic, major, and local roads.	DfT, Welsh Government, Transport Scotland, Department for Infrastructure
The need to future-proof the road network is not well understood. What cars equipped with ADAS require to work effectively or indeed what connected and autonomous vehicles require from the road network are not yet specified.	Determine the road infrastructure requirements for ADAS-enabled vehicles and autonomous vehicles of the future. Understand future survivability and safe operational parameters for different road configurations. Determine how crash types are likely to change in the future to ensure tailoring of investment plans accordingly.	DfT, National Highways, Welsh Government, Transport Scotland, Department for Infrastructure

Design and engineering

Issue	Action	Who
Limited advice available to engineers on the Safe System approach to be applied to rehabilitation of existing roads that are often too constrained for design standards to be really applicable.	Develop and use guides on the typical remedial treatments for different roads. Example treatments for different road types can be used as blueprints for rehabilitation schemes.	National Highways, Transport Scotland, Welsh Government, Department for Infrastructure, DfT
RSA recommendations are not always adopted by design teams.	Ensure quantifiable Safe System road safety impact assessments and RSAs are done right at the start of scheme development so that risks that become impracticable or too costly to treat later on can be mitigated early at relatively low cost.	Road authorities, SoRSA
Maintenance regimes are not yet optimised in their detection and treatment of risk (such as flooding from poor maintenance of gullies).	Ensure that better intelligence is used to schedule maintenance, whether that is a flexible maintenance schedule for gullies or sensors that detect water levels, or use of connected vehicle data to identify areas where surface friction is severely diminished following rainfall.	Highway authorities
Equipment installed by third parties near the road should be adequately risk assessed and if there is a risk of serious or fatal injury items should be relocated or protected.	Conduct an inventory of telegraph poles, mobile phone masts and signal cabinets and risk assess these according to their type and distance from the running lane.	National Highways, Transport Scotland, Welsh Government, Department for Infrastructure, local authorities

Education and communications

Issue	Action	Who
Many designers and highway engineers do not understand the Safe System.	Provide needed education and promotion to the sector.	Road authorities, CIHT, professional bodies, technical experts
Public consultations on road safety schemes or more general road schemes do not include Safe System analysis and evidence.	Create examples of how consultation material can emphasise the Safe System and the way concepts have been developed to fulfil survivability requirements, and the shared responsibility with the public to ensure that roads are used safely.	Road authorities
No consistent approach to prioritisation and treatment taken across UK.	Recognise that guidance and training for road authorities on how to move towards Safe System implementation in a strategic and proactive manner is necessary. Then expect road authorities to develop their approach based on this for communication with the public on how they are implementing the Safe System.	DfT, Welsh Government, Transport Scotland, Department for Infrastructure, road authorities

Research monitoring and evaluation

Issue	Action	Who
Most road authorities do not have the time to undertake detailed evaluations of schemes.	Establish a system for logging information about schemes that can be used to support research into the impact of different interventions and combinations of interventions.	Local highway authorities, DfT, National Highways, Welsh Government, Transport Scotland, Department for Infrastructure
No monitoring approach consistently applied across main roads in UK.	Invest in iRAP star ratings or similar for monitoring the safety performance of (at least) all strategic road network (SRN) and major road network (MRN) roads.	Local highway authorities, DfT, National Highways, Welsh Government, Transport Scotland, Department for Infrastructure, subnational transport bodies
Difficulty in getting feedback from users of the road network.	Use citizen science (GIS interface to record issues) to complement other approaches, recognising the insight local people have regarding road danger.	Local highway authorities, DfT, National Highways, Welsh Government, Transport Scotland, subnational transport bodies

4. Summary

Mobility should not come at the cost of safety. This report emphasises the need for the UK to align its road transport system with the principles of the Safe System, which aims to eliminate road deaths and serious injuries by addressing their underlying causes through systematic and proactive measures. This report has been developed to identify opportunities for UK road transport infrastructure to align with the Safe System. With an emphasis on strategic coordination and sustained, action-driven delivery the Safe System can be a practical and achievable way of improving road safety outcomes in the UK.

Aligning the UK's transport system with the Safe System means taking action across each of its elements – safe speeds, safe vehicles, safe roads and roadsides, safe road users, and post-collision response. All parts of the transport system must be enhanced in combination to multiply the protective effects so that if one part fails, the others will still operate to protect people. Successful implementation of the Safe System in the UK will rely on many factors including political support, consistency between nations and regions, and updated design and standards issues.

Focusing on the safe roads and safe speeds elements of the Safe System, we have identified actions that can be taken by stakeholders to bring closer alignment with the Safe System.

Using these actions to guide our thinking, CIHT has produced a set of broad national-level recommendations and priority actions for the UK Government to implement in support of a renewed focus on road safety.

Key recommendations and priority actions for the UK Government:

1. Show leadership and coordination

- We welcome the commitment from the UK Government for a new road safety strategy. We recommend that this strategy fully embraces the principles of the Safe System and sets ambitious long-term and interim targets and performance metrics for tracking progress.
- We call for a road safety board to be established with representation from all relevant government departments and devolved administrations to oversee strategic implementation and coordination.

2. Take legislative and regulatory action

- We call for the UK Government to work with devolved governments to ensure that national speed limits, and guidance on setting speed limits, are better aligned with survivable speeds.
- We call for adoption of the General Safety Regulations and embracing of vehicle technologies such as intelligent speed assistance (ISA) to maximise their impact.

3. Develop knowledge through research and monitoring

- We call for the establishment of a national road safety investigation branch to investigate collisions throughout the UK.
- We call for the creation of a data-sharing approach to enable thematic learning on systemic action.
- We recommend a strategic review investigating the impact of road safety outcomes on the NHS, social care, and productivity, to be used to better inform the business case for investment in improved road safety outcomes.

5. Appendix: case studies

The idea of the Safe System is not new. As is true with all transport systems, thinking around the Safe System has evolved over time as knowledge, expertise, and technology have developed.

Since its emergence, innovations for the Safe System have been developed through the actions taken by different authorities. These frameworks demonstrate key themes and actions that have informed our explanation of the Safe System and some of the actions featured in the Safe System matrix.

Sweden Vision Zero

Using legislation to establish definition

Features

Vision Zero is legally embedded in Sweden. In 1997, the Swedish Parliament passed the Road Traffic Safety bill. The ethical principle that death and serious injury on the road network is unacceptable is legally mandated. Vision Zero shifts focus from dealing with current problems to working towards the aspiration of a safe road transport system. The responsibility for road safety is shared between system designers and the road users. Designers are responsible for the level of safety within the entire system.[39]

Following a relaunch of Vision Zero in 2016, the Swedish Transport Administration was tasked with leading collaboration on road safety work in Sweden. In its 2022–2025 Road Safety Action Plan[40] the Swedish Transport Administration identified 250 measures that 33 authorities and stakeholders had agreed to implementing. These measures targeted six priority action areas – speed, sober driving, safe cycling, safety for pedestrians, suicide prevention, and leadership for road safety.

Innovations

Sweden's Vision Zero establishes some of the common principles of the Safe System, as described above. The principles are established from the top, with policymakers taking legislative action to legally mandate a cultural shift in approach and ensure safety is placed at the centre of the Swedish road transport system.

Safety outcomes

Between 2000 and 2020, fatalities on Swedish roads fell by 65.5%.[41] In 2022, the number of fatalities in Sweden fell by 14.7%, compared with the average number of fatalities between 2017 and 2019.[42]

[39] Claes Tingvall and Narelle Haworth (1999), Vision Zero: An ethical approach to safety and mobility, Monash University Accident Research Centre

[40] Swedish Transport Administration (2023), Road safety action plan: 2022–2025, Swedish Transport Administration

[41] International Transport Forum (2021), Road safety report 2021: Sweden, International Transport Forum

[42] International Transport Forum (2023), Road safety annual report 2023, International Transport Forum

Dutch Sustainable Safety

A clear, long-term vision

Features

Introduced in 1998, Dutch Sustainable Safety is based on a multi-causal model that identifies collisions as being the result of interrelated factors, rather than simply "bad luck". Sustainable Safety targets the different causal factors in a collision in order to mitigate risk to the road user.

In this initiative there is a clear shared vision for the road network with blueprints for different roads, so road function becomes a very important starting point when developing strategies for implementation.

Since its original development, three iterations of Sustainable Safety have been published. In the latest version,[43] five road safety principles are outlined, including three design principles and two organisation principles.

Design principles:

1. Functionality of roads: road sections and intersections have only one function for all modes of transport, a traffic flow function or an exchange function.
2. [Bio]mechanics: limiting differences in speed, direction, mass, and size, and giving road users appropriate protection.
3. Psychologics (an understanding of human cognition and behaviour): aligning the design of road traffic environment with road user competencies.

Organisation principles:

1. Effectively allocating responsibility.
2. Learning and innovating in the traffic system.

Innovations

Dutch Sustainable Safety acknowledges the need for constant learning and evolution as societal and traffic patterns change over time. By the country's own admission, there is still work to be done in the Netherlands.[44] The latest edition has placed more emphasis on vulnerable road users, in-depth analysis of fatal road crashes for continued learning, and a proactive and risk-based approach that uses road safety performance indicators as a basis for action. Roads are categorised by function, and a clear long-term ambition for each road type has been established. What works now may not work in the future. Sustainable safety refers to managing the safety demands of present and future as "maximum safety".

Safety outcomes

Between 2000 and 2019, the number of annual road fatalities fell by 43%.[45]

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[43] SWOV (2018), Sustainable safety 3rd edition – The advanced vision for 2018–2030: Principles for design and organisation of a casualty-free road traffic system, SWOV Institute for Road Safety and Research

[44] According to the latest update of Sustainable Safety, while progress has been made, road deaths are no longer decreasing, serious road injuries are increasing, with cyclists particularly at risk

[45] International Transport Forum (2020), Road safety report 2020: The Netherlands, International Transport Forum

Scotland's Road Safety Framework to 2030

Aligning the Safe System with wider strategic priorities.

Features

Transport Scotland has set the target of zero road deaths or serious injury in Scotland by 2050 and is aiming for Scotland to have the best road safety performance in the world by 2030.[46] Scotland's Road Safety Framework [47] draws on the five core elements of the Safe System, describing safe road use, safe vehicles, safe speeds, safe roads and roadsides, and post-crash response as safety "outcomes". These outcomes are underpinned by interim targets, intermediate outcome targets, and intermediate measures to support them.

The framework also establishes principles that can be applied at a local level. For example, the Aberdeenshire Road Safety Plan 2021–2030 places an emphasis on partnership working. It describes partnership working as vital to efforts to change road user behaviour, build safety awareness, and reduce the emotional and financial impact caused by collisions across the road network. It is Aberdeenshire's sixth road safety plan, but it highlights that Scotland's Vision Zero targets require a step change in the council's approach to road safety whereby areas of risk are proactively targeted. Areas of concern across the network are targeted through a risk assessment process. This process supports the introduction of mitigating measures, which include Safe System techniques.

Innovations

Scotland's Road Safety Framework highlights the modes of strategic action that can be taken and links them with key themes of Scottish policymaking, including active travel, climate emergency, planning policy, education, justice, and health. The framework establishes top-down principles, supporting alignment between local-level decision making and national strategic interests.

Safety outcomes

Responding to provisional figures indicating that the number of fatal casualties for 2024 is tracking 26% above the same period in 2023, the Scottish Government allocated a record £36 million for road safety investment in the 2024/25 financial year and announced a package of actions relating to behaviour change and technology in order to maintain progress towards its targets.[48]

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[46] Scotland's interim targets to 2030 are: 50% reduction in people killed, 50% reduction in people seriously injured, 60% reduction in children (aged <16) killed, 60% reduction in children (aged <16) seriously injured

[47] Transport Scotland (2021), Scotland's road safety framework to 2030: Together, making Scotland's roads safer, Transport Scotland

[48] Transport Scotland (2024), Action to enhance road safety, Transport Scotland

Wales

"Exception up" speed limits

Features

In 2022, the Welsh Government announced it would develop a new road safety strategy that would incorporate Vision Zero and the Safe System.[49] The Welsh Government is aiming for 45% of journeys to be made by people using public transport, walking, wheeling, and cycling by 2040.[50] The Welsh Government cited safety as a key factor deterring people from walking and cycling.[51] In November 2023 a 12-week consultation began in which the government sought views on road safety to support the development of the new strategy. The consultation closed on 31 January 2024.

The Welsh Government focused on the role of speed in determining safety outcomes. In September 2023, Wales introduced a law changing the speed limit on restricted roads to 20mph. Restricted roads are usually in residential and built-up areas with high population densities.

Innovations

The Welsh approach has been to set a 20mph national speed limit and "exception up" where evidence supports the use of higher speeds. As part of this the Welsh Government has continued to develop this approach, recently publishing guidance on roads that may be more suitable for a speed limit of 30mph.

Safety outcomes

Since the introduction of the 20mph national speed limit in Wales, early indications have suggested average speeds have dropped by around 4mph.[52] There has also been evidence that the introduction of the national speed limit has prompted a drop in insurance claims. In June 2024, insurance company Esure reported that it had seen a 20% drop in claims for car accidents in Wales since the introduction of the legislation in September 2023.[53] While longer-term data is needed to fully assess the impact, in Q1 (January to March) 2024 the number of casualties on 20mph or 30mph roads was 19% lower than in the previous quarter (463) and 26% lower than in Q1 2023.[54]

[49] Welsh Government (2022), Cabinet statement: Written statement: Road safety strategy, Welsh Government

[50] Welsh Government (2024), Active travel delivery plan 2024–2027, Welsh Government

[51] Welsh Government (2022), Cabinet statement: Written statement: Road safety strategy, Welsh Government

[52] Welsh Government (2024), Cabinet statement: Written statement: 20mph early speed data, Welsh Government

[53] Esure Group (2024), Press release, 10 June 2024

[54] Welsh Government (2024), Police recorded road collisions: January to March 2024 (provisional), Welsh Government

London

Use of publicly available research and monitoring to improve public understanding

Features

In London, the Mayor of London and Transport for London (TfL) have developed the Vision Zero action plan, which incorporates Safe System thinking into its strategy.[55] The action plan outlines the principle of shared responsibility and targets an end to death and serious injury on London's transport network by 2041. London's Vision Zero approach places emphasis on safety being a key priority across TfL, boroughs, and roads policing.

The action plan incorporates the elements of the Safe System as "pillars of action". It argues that by categorising action into these pillars, a more holistic approach is encouraged that recognises that all parts of the Safe System work in combination. The plan considers the responsibility of the system designer to be greater than the system user.

Innovations

In its Vision Zero action plan, TfL identified research as a key means of strengthening its road safety programme. This included developing tools to better disseminate knowledge. In 2019, TfL published a toolkit of best practice design measures for reducing speeds to lower limits or 20mph, and in 2021 it reported that nearly 50% of London's roads operate with a 20mph speed limit.[56] In 2021, TfL also launched a Vision Zero Dashboard, providing accessible collision data, search tools, maps, and data visualisation. In 2024, TfL began publishing borough-level data to the dashboard, which allows users to identify issues in areas that need to be addressed. The data also demonstrated the link between deprivation and higher casualty levels.

Safety outcomes

In 2023, the number of fatalities on London roads was 30% lower than the average number of fatalities between 2010 and 2014. Between 2022 and 2023, fatalities on London roads reduced by 7%, compared with 4% for the rest of Great Britain.[57]

[55] Transport for London (2018), Vision Zero action plan: Taking forward the mayor's transport strategy, Transport for London

[56] Transport for London (2021), Vision Zero action plan progress report, Transport for London

[57] Transport for London, Casualties in Greater London during 2023: Road safety factsheet, Transport for London

About CIHT

CIHT provides strategic leadership and support to help our members develop, deliver, and maintain sustainable solutions for highways, transport infrastructure, and services that:

- **Address the challenges of climate change**
- **Support the economy**
- **Help address societal inequalities**
- **Reduce environmental degradation**
- **Respond to a changing world**

We bring members together to share, learn, and feel confident about addressing these challenges through the application of good practice, by embracing innovation and by acting with integrity. It is through this and the values that CIHT can demonstrate and deliver on thought leadership and shaping the highways and transportation sector for the public benefit.

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