ENGINEERS
AUSTRALIA

Reducing trauma on Australian roads

Submission to the Joint Select Committee on Road Safety

20 August 2021

Reducing trauma on Australian roads: Submission to the Joint Select Committee on Road Safety

www.engineersaustralia.org.au

Table of Contents

1. Introduction

Engineers Australia welcomes the opportunity to provide a submission to the Parliament of Australia Joint Select Committee on Road Safety. Crashes on Australian roads have killed over 190,000 people since 1925. Despite the population doubling and a threefold increase in registered motor vehicles, road trauma has decreased substantially since 1970.[1] From 1970 until the 1990s Australia was a world leader in reducing road crash casualties, however, Australia now lags countries around the world.

Around 1,200 people die on Australian roads annually, a number which is predicted to increase. Approximately another 36,000 people are seriously injured[2]. It has been estimated that the annual economic cost of road trauma in Australia is almost $30 billion and the direct cost of just one year s trauma to government budgets is more than $3.7 billion.[3] Improving safety on roads is critical for Australian business and society. Engineers will continue to lead the development of new safety measures to improve our road network and the safety of vehicles.

1.1 About this submission

This submission provides general comments for the committee to consider. It includes engineering perspectives regarding the terms of reference and makes recommendations on how these perspectives can be applied.

The terms of reference are as follows:

a) measures to support the Australian Parliament s ongoing resolve to eliminate road crash fatal and serious injuries with a focus on ways to achieving Vision Zero by 2050;
b) the effectiveness of existing road safety programs across Australia; opportunities to improve them and encourage broader take-up of effective approaches;
c) opportunities for government policy in health, education, industry, transport and other areas to contribute to road trauma elimination, integrating Safe System principles;
d) opportunities to embed road trauma prevention across Australian Government portfolios and agencies; and
e) opportunities to reduce road trauma in the workplace, working with Work Health and Safety agencies and employers across Australia; including a focus on heavy vehicles and the gig economy.

1.2 About Engineers Australia

Engineers Australia is the peak body for the engineering profession in Australia. With over 100,000 members across Australia, we represent individuals from a wide range of disciplines and branches of engineering. Engineers Australia is constituted by Royal Charter to advance the science and practice of engineering for the benefit of the community.

The submission is informed by members of Engineers Australia s Transport Australia Society (TAs) and their discussion paper on road safety.[4] The focus of TAs is key transport decisions affecting the well-being, productivity and sustainability of our cities and regions. Through their work they seek to improve public debate on strategic transport issues, and to provide valuable expert advice to governments making decisions regarding transport policy, reform, and infrastructure investment.

[1] 'Road Safety; *Australian Government Department of Infrastructure, Transport, Regional Development and Communications* (accessed 26 July 2021) *https://www.infrastructure.gov.au/roads/safety/*
[2] 'Modelling road safety in Australian states and territories; *Australian Government Department of Infrastructure, Transport, Regional Development and Communications* (accessed 26 July 2021) *https://www.bitre.gov.au/sites/default/files/is_94.pdf*
[3] 'Cost of Road Trauma in Australia ; *Economic Connections Summary Report* (accessed 9 August 2021) *https://www.aaa.asn.au*
[4] 'Road Safety: Transport Australia Society Discussion Paper *Engineers Australia* (October 2019) *https://www.engineersaustralia.org.au/sites/default/files/Learned%20Society/Road%20Safety%20Discussion%20Paper%20October%202019.pdf*

1.3 Contact information

Engineers Australia is keen to contribute to further dialogue on road safety. Several of the issues raised and their mitigations are complex and could be described in greater detail.

2. Summary of Recommendations

Summary of the recommendations made by Engineers Australia in this submission.

- Promote greater collaboration, coordination and an integrated approach between government agencies, companies, organisations and individuals.
- Engage with the public to assist in the widespread and effective implementation of road safety measures.
- Revise the safe systems approach to include post-crash response, evaluation of strategies and solutions, split out road users and drivers and adopt in full within the National Road Safety Strategy and standards.
- Use technology more effectively to detect risks, collect and analyse data to inform safe management and automate enforcement.
- Focus policy initiatives around adjusting the preconceived attitudes and perceptions of the general community, business, government, elected officials and the media from the idea that responsibility rests with the road user, to a more holistic view complimented with a focus on road system design, vehicles, road users and post-crash response.
- Support training organisations at all levels to provide updated continuing professional development training in road safety for all relevant participants across a variety of organisations and disciplines.
- Ensure that road safety professionals and others who can contribute to road safety are adequately trained in the work they are undertaking.
- Explore initiatives into management of consequences after crashes occur.
- Introduce policies providing for safer vehicles in Australia such as four-star crash rated cars being the minimum for all new vehicles (unless exempted for functional purposes, such as cranes or specialist agricultural equipment).
- Greater targeting of fatigue for general driving.
- All industries should include an explicit risk assessment and mitigation for road safety.
- Regulators should include an explicit requirement for road safety in workplace safety management.

3. General Comments

Traditionally, the engineering approach to road safety included three primary endeavours:

- engineer the road;
- educate the driver; and, finally,
- enforce the road rules.

In the late 1990s a new road safety philosophy was developed adapted from Sweden s Zero Goal which became Safe System. Safe System is based on the premise that road crash casualties are ethically unacceptable in society. A holistic approach is taken with responsibility for road safety shifting from the driver to a shared responsibility between drivers and road system designers. The Safe System approach describes four main road safety pillars. Following several catastrophes in the 1980s, other hazardous industries adopted a very comprehensive and sophisticated alternative approach to safety based on systems principles, which are fundamentally different to how road safety is managed. The core of this approach includes:

- More detailed incident investigations.
- Applying a wider range of policy tools such as incentives, disincentives and influencing.
- Incorporating the actions of more participants who can contribute to safety outcomes.
- Maximising the interactions between participants and the various actions.
- Influencing more of the system beyond the human-machine-environment interface view (or drivers, vehicles and roads for road safety).

Adopting this holistic and sophisticated approach to managing road safety is recommended. Governments should not rely on microeconomic cost benefit analysis for road safety choices. Road safety is economically valuable, but it is also a social responsibility. Many traumas experienced on our roads could be prevented through a robust road safety approach. Social marketing, with the intention of changing driver behaviour, has not been an effective strategy.

Road safety management needs to anticipate future issues (such as micro-mobility) and new solutions, many of which are already known from other fields or are emerging in transport planning and transport technology. The way people live, work and move has changed and is likely to continue to transform in the future. New technologies will shift the transport system and introduce new opportunities to improve road safety. Transport and safety practices in business and industry will need to adjust as new ways of operating evolve, such as working from home and adoption of new styles of freight delivery.

Australia failed to meet the targets it set for road safety for both 2010 and 2020.[5] While the honest reporting of recent rising crash rates is commendable and helpful for policy development, the information suggests that continuing previous road safety management practices will not be sufficient to achieve the objectives required. Furthermore, aggregate targets do not help inform good policy or allow for accountability. Specific targets are required for individual areas of activity, so it is clear which areas are not improving and therefore which participants need to do better.

[5] 'National Road safety Strategy 2011-2020 *Australian Government* (accessed 9 August 2021) *https//:www.roadsafety.gov.au/nrss/targets*

4. Responses to the Terms of reference

4.1 Vision Zero by 2020

Measures to support the Australian Parliament's ongoing resolve to eliminate road crash fatalities and serious injuries with a focus on ways to achieving Vision Zero by 2050.

Road safety management has primarily relied on key government agencies, particularly road authorities, police, transport agencies and road safety agencies. Transport today is more connected to business, land use, economics, society, health, and the natural environment than ever before. Consequently, road safety needs to reflect and respond to the complex environment in which it operates.

Greater collaboration between all government agencies, companies, organisations and individuals is required. Implementation of safe systems has tended to be a conversation between experts in Australia, rather than a broader discussion with multiple stakeholders and the public, the latter being crucial to engaging the level of support required for widespread and effective implementation of road safety measures.

Australia s road system and design standards should be reformed to prioritise Safe Collision Speeds by design, ahead of criteria secondary to road safety such as sight distance, stopping distance, horizontal curve radii, pavement superelevation and traffic lane width, which remain important considerations. All activities that contribute to reducing road trauma need to be focused through the design lens, within appropriate systems and processes and underpinned by staff capability and other resources (such as funding, equipment and data). Other aspects for the committee to consider include:

- Road safety strategies need revision to ensure they are current and implementation of them needs to be enforced.
- Update road design standards to match safe systems principles.
- Target speed limits based on risk, in conjunction with more appropriate road design, improvements to driver skills and education that foster driving at safe speeds.
- Utilise technology to detect risks, collect and analyse data to inform safe management and automate enforcement.
- Promote traffic modelling and safety modelling to inform designs and safety improvements.
- Undertake crash assessment that investigates and makes recommendations on all parts of the system that can be improved, as occurs in other transport safety investigations.

Additionally, Engineers Australia recommends supporting training organisations at all levels to provide updated continuing professional development training in road safety. This should be provided to all individuals who are responsible for designing elements of the road system, and in complementary fields such as land use planning, public policy, transport economics, occupational safety, and health.

4.2 Improving road safety programs

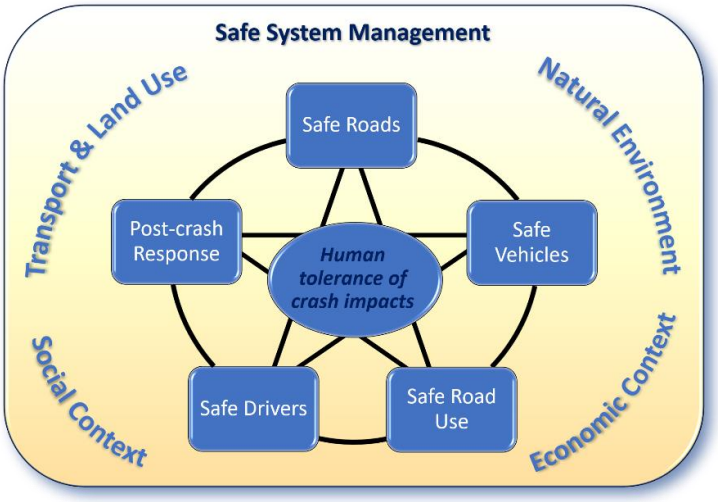
The effectiveness of existing road safety programs across Australia; opportunities to improve them and encourage broader take-up of effective approaches.

Governments priority historically tended towards savings and investment criteria, whereas road trauma is as much a social issue, about people and their behaviour. The cost/ benefit of current road safety activities is not clear especially when comparing different types of programs such as advertising and engineering works. There are also other innovative opportunities that are underfunded because their outcomes are not properly understood such as

promoting 'safety culture . Governments should aim for innovation in road safety management to develop and apply a wider range of policies such as economic levers.

Currently the National Road Safety Strategy (NRSS) 2011-2020 is based around four key pillars.[6] While the pillars of the Safe System approach provide a framework, they do not apply integrated safe system principles effectively and they do not include post-crash response. Roads in Australia comply with design standards set out in Austroads Guide to Road Design and these standards have contributed to a significant reduction in road trauma. However, as mentioned above, over the last two decades, improvements in road safety have not kept pace with other countries. This can be attributed to the fact that while Australia continues to engineer roads to the Austroads standard, maintains investment in driver education and utilises heavy enforcement regimes, the responsibility for road safety continues to rest primarily with road users, particularly drivers.

Engineers Australia recommends the safe systems approach be revised and the inclusion of additional pillars be adopted in full within the National Road Safety Strategy and road design standards. It is further recommended that policy initiatives be focused around adjusting the preconceived attitudes and perceptions of the general community, business, government, elected officials and the media from the idea that responsibility rests with the road user to a more holistic view complimented with a focus on road system design, the vehicles, road users and post-crash response. This approach is summarised in the following diagram.



A culture of safe operation is integral to all safety critical industries such as aviation and railways but is lacking in road safety. Cultural change is needed in Australia for everyone involved in road safety, especially the general public. Broader community engagement is essential and therefore requires a sound basis with proper planning design and funding and has three key parts:

- Changing human beliefs which leads to safer behaviours.
- Involving a much wider range of participants than has occurred in the past.
- The road safety attitudes as the target subject.

Road safety management needs to focus on proven treatments, which are often low cost such as intersection treatments (e.g., roundabouts, traffic calming and road signage):

- A regional road safety program.
- An urban road safety program with a focus on intersections.
- A program for vulnerable road users.

[6] 'Safe System Principles *National Road Safety Strategy* (accessed 30 July 2021) https://www.roadsafety.gov.au/nrss/safe-system

4.3 Opportunities for government

Opportunities for policy in health, education, industry, transport and other areas to contribute to road trauma elimination, integrating Safe System principles.

Road safety should be at the forefront of transport projects. If the loss of any human life is not acceptable, then road safety needs to be a principal objective. Furthermore, road crash consequences should not be reduced to a microeconomic cost. Every road project should describe the road safety outcomes in terms of the number of people who will be killed and seriously injured after the project is completed.

The best road safety management can only occur if professionals have the appropriate technical expertise. Many people involved in key agencies start work in road safety with limited knowledge and/or experience. Road design is usually carried out by separate groups of professionals to road safety analysis. Road safety decision making must include researchers with robust road safety backgrounds in implementation, rather than generalist project management knowledge. Quality professional training is critical but scarce. Strategic actions are needed to improve skills in strategy, analysis, design, implementation and operation by governments, businesses, consultants and road users. It is recommended that government ensure that road safety professionals and others who can contribute to road safety are adequately trained in the work they are undertaking.

Further opportunities exist within government to support road safety through policy. The first area requiring attention is management of consequences after crashes occur. While this includes emergency services and emergency departments, there are several other opportunities for improvement including first aid and subsequent stage medical treatment. Vehicle regulations should require higher quality active and passive safety features as a minimum requirement and optional safety features should be subsidised, including active technology (such as emergency autonomous breaking (EAB), lane keep assist and truck underrun protection bars).

4.4 Preventing road trauma across government

Opportunities to embed road trauma prevention across Australian Government portfolios and agencies.

There is an opportunity for different government agencies at various levels to integrate their activities and reduce siloed implemented. Therefore, every road strategy, policy, program and project should describe:

- How it complements or integrates with other activities.
- All the participants who can contribute to achieving the outcomes, particularly, but not limited to, other government agencies.
- What other activities can be complementary to maximising the outcomes from the activity.

This integration of actions and integration of participants is fundamental to systems approaches applied to safety in other hazardous industries, including in rail and air transport, but has been lacking in road safety.

4.5 Reducing road trauma in the workplace

Opportunities to reduce road trauma in the workplace, working with Work Health and Safety agencies and employers across Australia; including a focus on heavy vehicles and the gig economy.

Investment is required to train staff at all levels in organisations to ensure awareness of road safety as an occupational safety issue and to complement outcomes. Implementing the recommendations above, such as roads designed to complement their risk level, increasing awareness and training and a minimum four-star crash rated vehicles will provide a safer environment for workers on roads. Besides road safety professionals, there are many other participants in general industry, other government agencies and the general public, who need skills, knowledge and experience to contribute to road safety outcomes.

Industry and government industrial safety regulators should take responsibility to ensure workers are safe while on the roads. Road safety should be explicitly managed in every workplace and all workplace regulatory oversight. It is recommended the following areas be the target of initial mitigating activities:

- Minimum four-star crash rated cars but ideally five-star crash rated cars should be the minimum for all new vehicles (unless exempted for functional purposes, such as cranes or specialist agricultural equipment).
- Workers on road works sites must be provided with safe workplaces.
- Fatigue should be targeted for general driving especially for shift workers and fly-in-fly-out workers.
- All industries should include an explicit risk assessment and mitigation for road safety.
- Regulators should include an explicit requirement for road safety in workplace safety management.